

EXHIBIT A

INTERNET ARCHIVE
WaybackMachine
<http://www.citylinkmagazine.com/cover/coverstory060502.html> Go
 JUN JUL DEC Clc
 2 captures
 4 Jul 02 - 12 Dec 03
 2001 2002 2003 Hi

CITYLINK
 ONLINE

Hooked on Cyonics

A new South Florida company hopes to cheat death by freezing dying clients — or just their heads — in liquid nitrogen. But is cryonics science or science fiction?

by [Colleen Dougher](#)



In the late 1960s, Betty Schaerer of Hillsdale, Mich., saw Robert Ettinger on The Mike Douglas Show. Ettinger had written *The Prospect of Immortality*, a book about what

would become known as cryonics. It addressed the concept of freezing a corpse until a cure for the illness that killed the person was found and technology was advanced to the point of being able to revive them.

Schaerer told her husband, Gil, about the show, and he tracked down Ettinger, who was 90 miles away in Detroit, for an interview.

In addition to his business manufacturing paper tubes used to hold BBs and tampons, Schaerer and his business partner published *The Squeak*, a little newspaper that was a vehicle for everything from anti-war articles to stories on nudist camps.

What Ettinger told Schaerer intrigued him enough to arrange for his own "cryonic suspension." He's not absolutely convinced that he'll return, but Schaerer, who is now 75 and lives in Lake Worth, says it beats the alternative. "No one knows whether it's possible," he says. "It may be a billion to one. But if you're going to gamble in Las Vegas, why not gamble on this?"

Schaerer says his cryonic arrangements have given him a glimmer of hope. "Who wants to look forward to dying?" he asks. "It's not very appealing."

Schaerer is an atheist, and his wife is a Methodist. She's fine with her husband's arrangements but hasn't chosen them for herself. She's confident, her husband says, that she'll go to heaven.

But Gil Schaerer is hoping for a return trip. Two of the Schaerer's five grown children share their father's interest in cryonics. "To me, it's like father,

COVER STORY
 NEWS AND NEWS QUIRKS
 ARTS AND ENTERTAINMENT
 BEST BETS
 REVIEWS
 COLUMNS
 GALLERY
 PERSONALS
 STAFF

CITY LINK ★★ ★★
BEST OF
 2001

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

this whole method."

After attending many meetings of the Cryonics Society of South Florida, Ed Schaerer began assisting with local cryonics-related animal experiments, working alongside people he now considers pioneers. Cryonics, he says, "is becoming more and more viable all the time. Everything is going to happen; it's just a question of when."

Celebrity involvement could raise awareness. "Once we get one or two legitimate movie stars behind this, then it's like, 'Oh yeah, well, Michael Jordan is doing cryonics, or Tom Cruise,' " Schaerer says. "There are people who are already that famous who are interested in this but don't want to be in the limelight."

So far, the closest they've come to celebrity status is Dick Clair, who wrote for The Mary Tyler Moore Show, The Carol Burnett Show and other television programs. Cryonics almost found a poster boy in counterculture icon Timothy Leary, who reportedly said, "Cryonics is the second stupidest thing I ever heard of. Being eaten by worms is the first stupidest." Leary contracted to have his head frozen with a cryonics company in 1988 but, shortly before his death in 1996, decided against it, telling The Los Angeles Times that cryonics people had no sense of humor. "I was worried," he said, "that I would wake up in 50 years surrounded by people with clipboards."

So, cryonics still lacks a celebrity spokesman, but there have been a number of novels broaching the subject, in addition to movies like Mr. Freeze and Vanilla Sky.

Ed Schaerer notes that while many people think cryonics advocates are strange, about 80 percent of the people he talks to know what cryonics is, whereas five years ago, many hadn't a clue about it.

A new company in South Florida hopes to raise the profile of cryonics even more. Last month, Suspended Animation Inc., which plans to offer a new process in "cryonic suspension," registered with the state's Division of Corporations. So far, the company has purchased \$850,000 worth of cryonics equipment and plans to lease a building in Broward or Palm Beach county within four months.

For now, Suspended Animation, headed by David Shumaker, shares an address with Fort Lauderdale-based Life Extension Foundation, whose leaders — longtime cryonics activists Saul Kent and William Faloon — are also involved with the new company. Kent is serving as chairman director, and Faloon is providing significant funding, according to

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

in cryonics since a man with a traveling science show demonstrated liquid nitrogen at his high school.

"I looked at that," Shumaker recalls, "and said, 'This is the way out.' So, I got convinced right then and there — long before there was even a word called cryonics — that storage in liquid nitrogen upon death was something I was going to do."

Twenty years ago, he joined the American Cryonics Society. Last month, after spending most of his life working with infrared technology in the military, he became CEO of Suspended Animation. Shumaker views his company as a provider to other cryonics organizations with clients throughout the United States.

Rather than concentrate on storing bodies, Suspended Animation Inc. will focus on "cryopreserving" bodies before they are shipped to their not-necessarily-final resting places. They'll do so using a vitrification process developed by 21st Century Medicine, a California-based research-and-development company headed by Kent.

When notified that someone is near death, a team of as many as eight will be dispatched to the client so the process can be implemented as soon as they're pronounced dead, the idea being that the greater the delay, the greater the chance for damage to the biological systems necessary for delivering cryoprotectant chemicals to the cells.

"The team has equipment to cool the patient down and replace their blood with another fluid," Shumaker says. "And we inject a large amount of pharmacological agents to minimize the cellular damage — or ischemia — that results within minutes of death."

Once the blood is removed — so it doesn't clot — the body is brought to a central facility and perfused with cryoprotectant. Where in the past, glycerol was used, a complex mixture of hydrocarbons is now employed.

As body temperature decreases, the amount of protectant is increased. When full concentration is reached, the patient is cooled rapidly to what's called the glass transition point, then taken down to the temperature of liquid nitrogen, minus 196 degrees Celsius (minus 320 degrees Fahrenheit) — though in the future, he says, they may not take the patient down to liquid nitrogen temperature. The combination of the chemical and rapid cooling produces vitrification.

With this improved process, the water in the body, rather than forming ice crystals, becomes a glassy

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

So far, Shumaker says, Suspended Animation's team has cooperated with Alcor Life Extension Foundation in one human neurovitrification, a less-expensive process that cryopreserves only the head, the theory being that a new body can be cloned from DNA. His company plans eventually to offer whole-body vitrification.

Many cryonics customers choose neurovitrification.

Asked about the brain that's already within the cloned body, Shumaker says, "I don't think a lot of people want to talk about that right now." As for the possibility of growing a body with an inactive brain, Shumaker admits, "I don't think we understand those issues today. They're issues we have to deal with."

He will say that even those who have their entire bodies cryopreserved may be candidates for new bodies. "It may be easier to transplant that person's existence into a cloned body," he says, "than it is to fix the body itself."

While cryonics leaders agree that there have been strides in the process, many of them, including Shumaker, believe the process is far from perfect. While the new method may have reduced the damage once caused by ice crystals, Shumaker says, "There is still a significant amount of damage."

How will this damage be repaired? Many cryonicists, including Robert Ettinger, say the process still relies on nanotechnology, which one cryonics Web site defines as the building of "microminiaturized 'machines' small enough to be injected into the bloodstream, building copies of themselves, then following a program to repair cell damage."

Shumaker says whether cryonics relies on nanotechnology or not, it will definitely require "tomorrow's technology, as there are several things that we can't fix today."

He points to the cryonics-related animal experiments in which dogs were cooled to near-freezing temperatures, their blood removed, perfused with chemicals and left to lay lifeless — with no heartbeat and no heart-lung machine — for about five hours. Then, he says, some of the dogs were successfully revived.

However, beyond six hours, they weren't able to bring back any dog. And while they have been able to revive dogs, they haven't tested this method on humans. "The truth," Shumaker says, "is that we don't know how to warm anybody up at this moment. But as surely as the sun will come up

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 2002 2003

Close
Help

Shumaker is. An informed-consent form Alcor posts on its Web site (www.alcor.org) for individuals living or traveling outside the U.S. attests to this. It states: "I understand and accept that cryonics suspension is not consistent with contemporary medical or mortuary practice. I understand that many physicians, cryobiologists and scientists in other disciplines discount any reasonable possibility that cryonic suspension will be successful."

Some critics have gone beyond discounting reasonable possibilities. Dwight Brunoehler, president of Cryobanks International, an Altamonte Springs-based company that cryopreserves human tissues and stem cells, says he believes the chances of cryonics clients being revived are zero.

"I think there are many things out there that are hopeful treatments and cures," he says. "Everybody is hopeful and optimistic that they can live forever, be revived, have more hair, be better-looking. People will go to great lengths to achieve these things, and there are people out there willing to be involved in helping them reach that dream. But reality is an entirely separate issue."

When storing human tissue, Brunoehler says, one must coat each cell with a cryopreservative to ensure long-term storage. The same concept applies to cryonics. When someone dies, there's a certain loss of cells. Between death and storage at ultralow temperatures, there isn't enough time to coat all these cells, he says, and the result is the equivalent of freezer burn.

As for reliance on future science, Brunoehler says, "How can anybody refute something that may happen in the future? I can't say without any exception that something in the future couldn't happen, but the way things are now, and what we know now, there is just no way."

Brunoehler says he has seen nothing in peer-reviewed medical journals to indicate that new techniques have made the cryopreservation of humans — or their heads — possible, at least not to the extent that would make them revivable.

He says what's being sold now is a dream: "It certainly is not in the realm of medical technology at this point, nor is it reasonable to think that medical technology will come back and revive something that is damaged to that extent."

Despite reservations among medical professionals and people in the cryopreservation field, people have spent up to \$150,000 to be preserved. The money usually derives from life insurance policies that name a cryonics firm as the beneficiary or policy owner. Some clients have left large parts of

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 2002 2003

Close
Help

of which will be invested in research, so that when they return, they'll have money to get their lives rolling again.

Until then, their bodies or heads remain bathed in liquid nitrogen in tanks called cryostats, some of which are designed to hold several bodies, or stainless steel Dewar flasks. (Contrary to a popular myth, Walt Disney is not among them.) The bodies and heads in these tanks and Dewars are those of university professors, psychologists and people with a keen interest in technology.

The consensus among cryonics insiders is that men are more interested in this process than women. Last year, Ettinger told ABC News that twice as many men as women had signed up for cryonics services with his Cryonics Institute. But in terms of the people already suspended at his facility, it's just the opposite.

"There appear to be a lot of people who are anxious to freeze their mothers," he said. "That's partly, I suppose, because the mothers usually die before the fathers, or possibly because the mothers are better loved. I don't know — we seem to have more mothers than fathers. But of course the sample is, so far, relatively small."

Currently, the Institute has 390 members, and 22 of them live in Florida. All have made plans for the day they are pronounced clinically dead.

In cryonics circles, there's a big difference between clinically dead and absolutely dead. Clients are not seen as absolutely dead but as "patients in suspension" or people who have "de-animated." And if all goes according to plan, they'll one day be "reanimated." Cryonicists feel that absolute death occurs only when the brain is completely destroyed. Through cryonic suspension, they say, the brain can be preserved. The most optimistic cryonicists talk of a day when suspensions will be as common as vaccinations and perhaps even covered by HMOs and Medicare.

Today, however, fewer than 100 bodies — or in some cases, just heads — are bathing in liquid nitrogen and fewer than 1,000 people have made similar arrangements.

While interest in cryonics has increased substantially in recent years, Ettinger says the numbers today are still worse than his most pessimistic projections in the early years of the field.

In *The Prospect of Immortality*, which Ettinger originally published himself in 1962, the author suggested that many incurable diseases might be

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 2002 2003

Close
Help

freezing causes cellular damage but had — and still has — faith that tomorrow's science can repair that damage.

For Ettinger, the belief in what has become known as cryonics (from kryos, the Greek word for cold) was a natural progression. Having grown up in the 1920s reading Hugo Gernsback's *Amazing Stories*, Ettinger assumed there eventually would be a way to reverse the effects of old age, but he also realized that the means might not surface in his natural lifetime.

Then, in the 1930s, he read "Jameson Satellite," a short story by Neil R. Jones in a science-fiction magazine. "In this story," Ettinger recalls, "this Professor Jameson, after he died, was put into orbit, just as a whimsy, I guess. And the author mistakenly believed that his body would be at a temperature close to absolute zero out there."

So in this story, the eccentric, wealthy professor was kept extremely cold and his body preserved for millions of years, until the human race died out. Then, an advanced race of wandering aliens — with organic brains and mechanical bodies — discovered Jameson and repaired and revived him.

"They put his brain into one of their bodies," Ettinger says, "and he became one of their company and went on to have lots of adventures. But the author missed the point of his own story, which was that if it made any sense to expect the feasibility of repair and revival of a frozen person in the distant future by aliens for one eccentric, why not for a lot of people — for our own people — in the near future?"

Later, while recovering from battle wounds in a Michigan Army hospital after World War II, Ettinger learned that a French biologist had frozen frog sperm using glycerol as a protective agent and, days later, revived the sperm. Ettinger began to wonder once again, whether old and sick people might also be frozen and, when a cure was found, revived.

After emerging from the hospital, Ettinger earned a master's degree in physics and mathematics at Wayne State University. Ettinger wanted to interest people with scientific backgrounds, influence and the financial resources to implement what he saw as a potential life-saving process. So, he wrote to a few hundred people he selected from *Who's Who*.

The response was minimal. Thinking a book might be more convincing, he wrote *The Prospect of Immortality*, which Doubleday later published. It became what science author Ed Regis called "the bible of the cryonics movement."

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

man named Bob Nelson was interested. Nelson, president of the Cryonics Society of California, formed a company and purchased an underground vault at Oakwood Memorial Park in Chatsworth, Calif.

Nelson was extremely optimistic about cryonics, even believing in the possibility of "cryotoriums," which could accommodate hundreds of people. But he wasn't exactly an influential scientist with abundant financial resources. He was a TV repairman.

Nevertheless, he was responsible for the first known freezing of a human, a 73-year-old psychology professor named Dr. James Bedford, and later authored a book called *We Froze the First Man*. After reading *The Prospect of Immortality*, Bedford, who had lung cancer, contacted Ettinger because he was considering being frozen when he died.

"We corresponded over a period of time," Ettinger says, "and he eventually decided he wanted to take the plunge, and the only organization available at the time was Nelson's. So, he went with them."

Today, Bedford is frozen at Alcor. Nelson's other clients didn't fare as well. "He had a very badly thought-out operation," Ettinger says. "He took people on credit, and he was counting on rapid growth that didn't occur."

Some relatives of the people Nelson froze didn't make their payments to him. Others were people without money whom Nelson couldn't turn away.

In the transcripts of a tape-recorded interview posted on Cryonet.org in 1997, Nelson admits he accepted one patient — an 8-year-old girl whose parents wanted her frozen — without having a capsule to store her in, then lugged 300 pounds of dry ice 125 miles in his Porsche once a week to keep her frozen. He later stored her body, along with others, in a tank designed for a single body. In the late 1970s, the girl's parents demanded Nelson open the capsule. At some point, Nelson said, the capsule leaked.

An attorney for a relative of another person Nelson froze led journalists to the underground vault in 1978, where they found that the bodies had not been properly maintained.

In 1981, The Los Angeles Times reported that Terry Harris, a 38-year-old nurse, and his brother claimed to have paid Nelson \$20,000 to freeze their mother until a cure for her cancer could be found. When the brothers and two other families learned that their parents' bodies had been permitted to

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

Nelson blamed the thawing on financial woes, saying "the society ran out of money, out of people to help and just the energy to go any further." Nelson said he never promised to keep these people frozen forever, only for as long as was practical.

Furthermore, Nelson's attorney, Robert G. Wintherbotham, claimed that the bodies had been donated to the society for research. "This is a baseless complaint," he said. "How can you have fraud when each and every body was donated to the CSC?"

A Los Angeles County Superior Court jury apparently disagreed, and in June 1981, ordered Nelson and Klockgether to pay \$1 million in damages.

These were hardly auspicious beginnings. But by the time all this came to a head, with a judgment for damages being brought against Nelson's group in 1981, other cryonics groups had formed.

The Cryonics Society of New York, launched by Saul Kent, Curtis Henderson and others, reportedly froze several clients. When the organization folded, patients' relatives reportedly had a choice of arranging for their maintenance elsewhere or giving them a traditional burial.

In 1972, Fred Chamberlain, an electro-optical engineer who read Ettinger's book in the 1960s, formed Alcor Foundation. Four years later, Alcor performed its first suspension — on Chamberlain's father. Chamberlain's mother-in-law is now in cryonic suspension, too.

The year Alcor froze its first patient, Ettinger opened The Cryonics Institute, which soon froze its first patient, Ettinger's mother. Twenty-five years later, both groups, as well as a few more recently formed companies, remain operational.

Often, the people stored at these facilities are the loved ones of those closely involved in the organization. In addition to his mother, Ettinger has two wives stored at the institute. According to Alcor's Web site, several members of president and CEO Jerry Lemler's family are signed up, including his younger brother, son-in-law, wife and daughter. Alcor's membership administrator is also a member, as is her husband.

Shumaker says cryonics doesn't seem real to many people. "Maybe they've seen one little movie, where it's treated like the lunatic fringe, or a spot on the Discovery Channel, but it never becomes real. It's not in their life consistently enough," he says.

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

well.

Shumaker says his primary reason for launching Suspended Animation in South Florida is to increase the market and thereby increase the proficiency of the people who implement the procedures.

"If your doctor says you need to have bypass surgery, you would probably seek out the team that does five or 10 of these a week," Shumaker argues, "because they're the ones who are proficient and work like a team and therefore have a low risk."

These precautions, he says, are just as important in the cryopreservation business. "If we're only freezing 10 people a year in three organizations, no one ever becomes proficient, and that's a major problem," he says. "There are very few people at this moment who have a lot of skill in this area. There's really only one who's a well-rounded complete purveyor of cryopreservation."

That man is Mike Darwin, a principal of Suspended Animation who has agreed to help set up the company's South Florida facility and train paramedics and other personnel to implement the vitrification process.

Darwin's real name is Mike Federowicz, but he began using the pseudonym as a tribute to Charles Darwin (and as he reports in a cryonet message, because he got tired of spelling out Federowicz.) Cryonicists refer to him as "brilliant" and "quite the character."

"Mike is a high-school graduate with some college, and that's it," Shumaker says. "He's a voracious reader and has a 10,000-book medical library at his house. If you were to set him down beside a physician, you wouldn't be able to tell the difference. He's not a surgeon. He is purely self-educated. I think he participated in his first cryopreservation when he was a teenager."

Darwin has since served as the research director and president of Alcor, the head of BioPreservation and the research director at 21st Century Medicine. Shumaker says Suspended Animation's team participated in a neurovitrification in San Francisco because the clients requested that Darwin lead the team.

This isn't easy work. A number of things could — and do — go wrong. Sometimes, coroners and medical examiners want to, or are required to, conduct autopsies. This presents many problems for cryonicists, not the least of which are delays, which could result in severe biological compromise.

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 2002 2003

Close
Help

able to access the body moments after death.

Some states, cryonics groups point out, have passed statutes giving residents the right to prevent autopsy of their remains in most cases by signing a form stating that autopsy is contrary to their religious belief.

Then, there's the case of Saul Kent's mother, Dora Kent. When her health began to fail, Kent moved her to a California nursing home near Alcor, the cryonics facility that would handle her neurosuspension.

Her health deteriorated and on Dec. 9, 1987, Kent took her to Alcor. Just after midnight the following evening, she died. A surgical team, lacking a real surgeon, removed her head. The California Health Department refused at the time to issue a death certificate on the grounds that no physician was present when Dora Kent died.

The coroner's office accused Alcor of hastening Kent's death with a lethal dose of barbiturates in preparation for freezing, but the group's officials said the drugs were administered after her death to help preserve the brain and that Alcor had provided only care and comfort in her final days.

In January 1988, police raided Alcor, looking for among other things, body parts. Authorities apparently wanted to find Dora Kent's head. Her death was later ruled a homicide, but no charge was ever filed. Alcor states on its Web site that it was granted an injunction to protect Kent's head.

Cryonics has faced a number of legal challenges, many of them unprecedented. After a man named Thomas Donaldson was diagnosed with a brain tumor, he sought the right to be frozen prior to death. He had learned that his tumor was likely to damage his brain before it killed him, and he wanted to come back without brain damage. A California court ruled against him, finding that he did not have a constitutional right to a "state-assisted suicide."

Cryonics organizations typically gain control of their clients' bodies through donations via the Uniform Anatomical Gift Act, which was designed to eliminate legal barriers for people who wish to donate organs for transplant. But the act also allows for the donation of entire bodies for research.

"How that fits into the cryonics business, I haven't a clue," says John McCabe, legal counsel for the Chicago-based National Conference of Commissions on Uniform State Laws. "What we're talking about there, it sounds like to me, is that people make

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

While people donate their bodies in the hope of finding out whether cryopreservation works as a life-extension measure, McCabe says it's unclear if cryonics can be considered research. "You can't make exact conclusions about this without looking carefully at all laws that relate to certain areas," he says.

The act, however, does allow for an individual to donate his body to a specific group for research. As for vitrifications performed in Florida on clients who contract with out-of-state companies, McCabe says he doesn't know which state's laws would apply in such cases.

Dr. Lynn Romrell, director of Florida's Anatomical Board, doesn't understand why these bodies can be donated under the Uniform Anatomical Gift Act and not be subject to the laws that govern burials and cremations.

He acknowledges, however, that the process of donating under this act does give the organization, as well as the client, more control. When a person makes a donation, that designation prevents the intervention of family members.

Because cryonics is treated differently than burials or cremations, Romrell says, there isn't much oversight of these organizations. When donations are made under the Anatomical Gift Act, it's up to states to determine when or if there will be any oversight. Aside from a few states that require bodies to be cremated in a specified amount of time, most states have few laws governing donations.

A 1993 meeting of the CryoCare Foundation illustrates some of the obstacles facing cryonics. The foundation was established to offer cryopreservation with assistance from BioPreservation, which provided remote standby, transport, perfusion and cooldown capability, and CryoSpan, which managed long-term maintenance of stored patients.

The minutes of a CryoCare meeting on Nov. 7, 1998, documented cryonics practitioners describing their chosen field as "an unpleasant, bloody, frightening, dangerous business" and complaining about everything from sleep deprivation and the difficulties of finding competent help to "problems like [lying] on the floor for days waiting for someone to die and worrying that the relatives of the people you freeze are going to sue you." They also complained of supporters who "will not suffer for cryonics if it isn't their primary livelihood," clients who "may bolt in the middle of a case" and the effectiveness of the process itself.

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

don't think people frozen with today's techniques have a chance in a billion." Darwin, who was then the head of BioPreservation, apologized for being testy, said that he was sleep-deprived and left the meeting.

In 1999, CryoCare notified its members that it could no longer provide cryonics coverage. Today, a note on its Web site says its two human patients continue to be cared for "with maintenance costs covered for the indefinite future.

"Unfortunately," the note says, "we overestimated the potential growth and profitability of cryonics. Also, we underestimated the tendency of volunteers and enthusiasts to burn out, especially in a high-stress occupation such as remote standby work."

Cryonics technology has apparently improved since the time of that CryoCare meeting, but those who practice cryopreservation say it's still a somewhat frustrating process that requires cooperation from outside sources, ranging from doctors and hospitals to coroners and clients' family members.

While cryonics may get talked about more among families in which a member signs up, not all relatives relish the idea of their loved one retiring to a tank of liquid nitrogen or, worse yet, having his head removed after death. And when a dying person, his family and his cryonics standby team come together under one roof, the situation can get touchy.

The Cryonics Institute doesn't use standby teams but works with a network of funeral directors trained in preservation. This is one reason the company has been able to keep the cost of a pre-planned whole-body suspension relatively low: \$28,000.

The teams dispatched by companies like Alcor and Suspended Animation perform tasks that include running equipment, locating a mortuary, arranging for transport, finding ice and monitoring the patient until he's pronounced clinically dead.

Obviously, the longer a patient lives, the more it costs the client. In San Francisco, Shumaker says, they expected to arrive to a deceased patient, but that patient survived eight and a half more days. Should a patient live, then obviously an arrangement other than life insurance would have to pay for the expense of having a standby team.

Shumaker estimates that the average cost for a cryopreservation is about \$40,000. Then, of course, the client must consider long-term storage. Even with the least expensive organization, Cryonics

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

families who might want to charge them with murder.

"What we hope for is that the family wants what's best for the loved one and doesn't interfere," Shumaker says. "But I don't think in the past that has always worked out too well. There are heirs who have a financial interest, and there are just loved ones who fervently don't believe in what you're doing. So, there's all kinds of potential in that area. And there are physicians who have been trained all of their lives to think about [cryonics] as the lunatic fringe."

Certainly, local cryonics activists have done little to dispel that notion. William Faloon reportedly wears fireproof protective headgear during the takeoffs and landings of airline flights so that, in the event of a crash, his head might be saved and frozen.

Then there was Stephen Ruddel, who was once Saul Kent and Faloon's silent partner in the Life Extension Foundation.

In the mid-90s, the company was publishing a life-extension newsletter from a five-story Hollywood building owned by Ruddel, a man described as a regular Howard Hughes and an eccentric real estate mogul with a "penchant for cocaine and cryogenics and a fear of intruders"; he is said to have laced the air ducts of his building with barbed wire, controlled the elevators via a switch on the top floor and used an extensive video network to scan the doors.

According to newspapers, police arrested Ruddel, who had put up the \$100,000 used to start the Life Extension Foundation, after an August 1986 predawn helicopter raid; Ruddel was later convicted of cocaine possession and, as part of a plea agreement, got three years' probation. The Hollywood Police Department acquired the building.

A short time later, Kent and Faloon became involved with the Food and Drug Administration in a decadelong war that began in 1987 when the agency raided Life Extension Foundation's headquarters, seizing 5,000 copies of the organization's newsletter and most of its inventory. In 1991, an indictment charged Kent and Faloon with urging customers to buy drugs that hadn't been approved for sale in the U.S. from two overseas companies that apparently were nothing more than post office boxes.

Kent and Faloon maintained that the FDA had a policy permitting the importation of unapproved drugs for personal use and that they simply told people how to acquire them. They accused the FDA of interfering with people's right to access the

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

of contributing to the deaths of millions; and in 1994, established the FDA Holocaust Museum, which, Kent said, "documented the 70-year reign of terror that the FDA had perpetrated against Americans."

By 1997, following two grand jury investigations, the FDA had dropped 55 of the criminal charges it had filed against the foundation's officers.

While people interested in life extension and cryonics agree on a number of issues, cryonicists frequently debate everything from the policies of cryonics organizations to the question of cryopreserving bodies or heads. Despite their differences, many cryonics leaders believe it would be beneficial for the companies to come together to accomplish their mutual goals.

This summer, Ettinger's Cryonics Institute will host CryoSummit, a gathering of the leaders of cryonics outfits to establish a new era of mutual help and cooperation.

"I'm just hoping they don't issue baseball bats," says Shumaker, laughing. "There has been a fair amount of acrimony among organizations in the past. I'm interested in attending, and I'm interested in how it will work out."

Shumaker says cryonicists tend to be more philosophical than most people. "They're futurists, as a general rule, and dreamers, so they tend to get wrapped up in these philosophical arguments."

Ettinger says the agenda for CryoSummit has yet to be determined. No doubt, a discussion over the marketing of cryonics will arise.

In December 1998, The Journal of Evolution and Technology published the results of a consumer Internet survey designed to measure familiarity with and attitudes toward cryonics. The study, which polled 517 people, suggested that people generally know how much cryonics cost, though one-fifth of those surveyed thought it cost 10 times more. The data also found that "publicity aimed at the general public might be less effective than a marketing effort targeted at male agnostics and atheists, and that there may also be value in targeting individuals who are single, fairly well-educated, or younger than 25, or between 35 and 64."

The study found the obstacles facing cryonics include the belief that the process is unnatural, selfish and immoral; that it's too hard for friends and family to handle; and that it doesn't work.

Kent, apparently, has spent much time considering

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 2002 2003

Close
Help

works. Kent called for research aimed at improving suspension techniques.

Earlier this year, Life Extension Foundation announced that it has spent about \$5 million developing techniques that would improve the cryopreservation process. Now, the company says it plans to offer the new techniques in Florida.

But whether people will buy into cryonics remains to be determined.

For Raphael Haftka, a 58-year-old professor at the University of Florida's Department of Aerospace Engineering, cryonics started as something of a backup plan. When he was in high school, Haftka decided he wanted to become an astronaut and travel in a spaceship close to the speed of light. He believed that if you traveled at the speed of light, time would shrink.

So, a trip that took 10 years, Haftka contends, could return you to Earth after some 200 years have elapsed. With this in mind, he decided to study space engineering, and then came to the U.S. from Israel to attend school, graduating from the University of California in 1971.

Haftka has since discovered, not surprisingly, that traveling close to the speed of light is not as much of a possibility as it appeared to him in the 1950s, and that there is dispute over whether it will ever be possible.

So Haftka joined the Cryonics Institute. As for the chance of his one day being revived and remembering the life he had before being pronounced clinically dead, he says, "I don't really have a good idea how to estimate these chances, but that doesn't bother me, because I don't really have any alternatives. It's not as if I have to choose between plan A and plan B."

Ken Goodman, director of the University of Miami's ethics program, contends that cryonics is a business "that thrives more on unreasonable hopes than educated consumers." Scientifically, he says, "cryonics doesn't pass the straight-face test. Ethically, most of the urgent concerns I have have to do with full disclosure about a pretty far-fetched business proposition."

Among the questions people may consider is, Goodman says, "How do you know the best way to do this? Have we discovered that the people frozen 30 years ago are toast because it was done wrong? If so, how do we know the way it's being done now is right? Are buyers being made aware? Is there full disclosure about the risks involved?"

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

find themselves asking some of the other questions Goodman suggests considering. Among them: "What happens if they bring you back to life and you have the brain of a 2-year-old? What if they reanimate your body, and it's not you?"

Haftka believes being revived without his memories wouldn't be any different than just remaining dead. It's a chance he's willing to take.

"If somebody offered you a ticket to the lottery," Haftka says, "and told you that your chances to win could be as low as one in a million and as high as one in 10 ... but you could win \$100 million ... the prize is very high. So, it's worthwhile buying a ticket."

Goodman, however, says people are better off considering another way to spend their money and preserve their mortality, like a donation to a soup kitchen, a symphony, an ethics program or "a tree with a plaque on it."

People in the cryonics business realize there are unanswered questions but plod ahead with their efforts to attract more interest.

Shumaker says Suspended Animation plans to do a market study on a geographically limited area of Miami-Dade, Broward and Palm Beach counties.

"One of the things we will focus more heavily on is what's called at-need patients," he says. "Virtually all of the patients signed up right now are pre-need — it's like making funeral arrangements for yourself. But in many cases, the people who need this the most are near-need or at-need patients. The person who benefits most from this is the 7-year-old child dying from cancer, something that will almost absolutely be curable in 40 years.

"We're all dying from the same thing," Shumaker adds. "The one thing that's killing all of us is that we were born too soon."

Suspended Animation's goal, he says, "is getting you into the future, transplanting your birthday effectively downstream to where medicine will be able to help you, where it cannot do that today."

Shumaker says cryonics is not about living forever, though many associate cryonics with immortality. "We don't look at it that way. I think that has really hurt cryonics, as immortalism flies in the face of religious beliefs very strongly, while trying to live longer does not fly in the face of religious beliefs," he says.

Decapitation, of course, is an issue hindering cryonics' widespread acceptance. This is why

INTERNET ARCHIVE
WayBackMachine

2 captures
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 4 2002 2003

Close
Help

most emotionally or psychologically feared things in people's lives," Shumaker says. "I find it hard to believe we're going to sell a process to the American public that's based on decapitation."

But Alcor apparently sees decapitation as a necessity for people whose money runs out, since heads are cheaper to maintain than whole bodies. "It is conceivable," reads a message on Alcor's Web site, "that emergency conditions, including legal or financial emergencies, could at some point endanger the suspension of one or more patients. ... On ethical and emotional grounds, Alcor refuses to allow such termination as long as viable alternatives exist."

Instead, Alcor requires people who sign on for whole-body suspension to consent to decapitation if circumstances warrant it. The Cryonics Institute, meanwhile, doesn't practice decapitation but will store the heads of people who have their neurosuspensions performed elsewhere.

Despite these obstacles, Ettinger remains optimistic about the future of cryonics. "Under the surface," he says, "I'm sure that a positive sentiment is building. But when it will break through and when it will show itself in our actual membership numbers and when we'll get a real acceleration, I have given up trying to guess."

Saul Kent, who is also on Alcor's board of directors, hasn't. Another of the many ventures he's involved with is the Timeship Building, which has been described as "the Fort Knox of biological materials." The plan is for a huge structure on a parklike site that could accommodate the world's largest facility for life-extension research and the cryopreservation of DNA and biological tissues, as well as 10,000 cryopreserved clients vertically suspended in individual capsules.

The Timeship would also store, among other things, the DNA of many animal and plant species, cryopreserved cloned embryos of near-extinct species and human DNA specimens and embryonic stem cells to facilitate tissue and organ generation for transplant.

The building, according to the project's Web site (www.timeshipinfo.com), is designed to protect against terrorist attacks, sea-level changes due to global warming, earthquakes and interruption of energy supplies due to catastrophe.

The New York Times Magazine reported that the project's architect, Stephen Valentine, was commissioned by life-extension groups, including the Life Extension Foundation, to create a "cryoworld" with a hotel, conference center,

INTERNET ARCHIVE
WayBackMachine

[2 captures](#)
4 Jul 02 - 12 Dec 03

Go

JUN JUL DEC
2001 **4** 2002 2003

[Close](#)
[Help](#)

Kent told the Italian weekly Oggi Magazine that there's no guarantee when these so-called hibernauts might be reanimated but that "he who opts for preservation at least has a chance. Those who are buried or cremated have no chance at all. It's a question of having faith in future technologies."

He went on to discuss nanotechnology, the difference between clinical and "true death," and how "if one reacts in time, it's conceivable that one could be preserved in nitrogen before the tissues are irreversibly dead, before memories, emotions and the sense of self are erased in the brain — all that is the soul of a person. ... Who knows if one day we may not free ourselves of the physical 'shell' itself? Who's to say that one day we may not even be able to store all the information in our minds — our conscience — in a megacomputer, in order to transplant our selves from body to body? That would be the key to immortality."

Ettinger laughs when asked about the Timeship. "[This] is something that I don't know anything about except what I've read in the paper, and what I've read strikes me as a little bizarre. It doesn't sound realistic to me, but I could be wrong. I've been wrong before, and I could be wrong about this.

"It was the thinking of Saul Kent and Bill Faloon and some of those people. ... [T]heir thinking for many years has been that what they want to do is develop the best possible technology and appeal to rich people and get a sufficiently impressive result so that it will become feasible to recruit substantial numbers of people and especially substantial numbers of wealthy people.

"This has been dragging on for decades and with very little success so far. But of course, you never can tell. Maybe next year will be different. I hope it works; obviously, I hope they're right. And I hope they can build their \$100 million center with their 10,000 capsules."

EXHIBIT B

Home → Collections → Cocaine

Related Articles

Police Seize Cocaine, Arrest 3 Men On Drug Charges
December 31, 1987

Man Held On Drug Charge
April 24, 1986

Two Arrested On Drug Charges
January 11, 1986

Two Face Drug Charges
October 23, 1994

Pair Face Drug Charges
June 8, 1985

Owner Forfeits Building Anti Aging News Site Given Up In Drug Case

October 21, 1987 | By CHRIS MURRAY, Staff Writer

HOLLYWOOD -- Stephen D. Ruddel has voluntarily forfeited the well-known Anti Aging News building as part of his sentence for cocaine trafficking.

Giving up the building is the last financial penalty against Ruddel on the drug charge. He also has surrendered \$80,000 in coins and platinum to the federal treasury, paid \$80,000 in costs to the city of Hollywood and turned over \$2,500 to charity.

Ruddel pleaded guilty to cocaine-trafficking charges in Broward Circuit Court on Monday and was sentenced to 3 1/2 years' probation and 150 hours of community service in a program for children with drug problems.

The U.S. Attorney's Office in Miami estimated the building is worth \$800,000, said Ruddel's attorney, Michael Striar.

The city of Hollywood could receive the proceeds from the sale when the U.S. Marshal's Service auctions the building at an undetermined date. Of the auction's proceeds, \$260,000 will be deducted to settle the mortgage and back taxes.

The \$80,000 that Hollywood will receive has been earmarked for future police drug enforcement efforts, department spokesman Paul Dungan said.

The minimum sentence for a first-time offender trafficking in cocaine is three to five years, Striar said.

But Striar said he thought that because Ruddel did not sell the drug -- he only used it in large quantities -- and voluntarily forfeited his property, Broward Circuit Judge Mark Polen was lenient.

"It was substantiated that he never sold drugs, everything was for his own personal consumption," Striar said. "It probably saved his life that he was arrested at this time."

The trafficking charges stemmed from Ruddel's excessive use of the drug, Striar said. Federal law states that possession of more than 200 grams of cocaine is considered trafficking, he said.

Authorities found 330 grams of cocaine that Ruddel was converting into crack when they raided his home in August 1986 on the fifth floor of the building at 2835 Hollywood Blvd.

Since he gave up the drug, Ruddel began working again as a stock market trader dealing in commodities, platinum and gold, Striar said.

Recommend { 0

0

Tweet

0

Find More Stories About

Cocaine

Featured Articles



10 must-see places to visit in Florida



Coupon: \$8 off at Outback Steakhouse



\$1 Egg White Delight McMuffin at McDonald's through Thursday

MORE:

Low white blood cell count not always a sign of

Prominent Haitian broadcaster hides from

EXHIBIT C

Mannitol

From Wikipedia, the free encyclopedia

This is an old revision of this page, as edited by Adrian J. Hunter (talk | contribs) at 14:11, 8 March 2009. It may differ significantly from the current revision ([//en.wikipedia.org/wiki/Mannitol](https://en.wikipedia.org/wiki/Mannitol)).

(diff) ← Previous revision | Latest revision (diff) | Newer revision → (diff)

Mannitol is an organic compound with the formula (C₆H₈(OH)₆). This polyol is used as an osmotic diuretic agent and a weak renal vasodilator. It was originally isolated from the secretions of the flowering ash, called manna after their resemblance to the Biblical food, and is also be referred to as **mannite** and **manna sugar**.^[1]

Contents

- 1 Chemistry
- 2 Uses
 - 2.1 Medical applications
 - 2.2 In foods
 - 2.3 In illicit drugs
- 3 Controversy
- 4 See also
- 5 References
- 6 External links

Chemistry

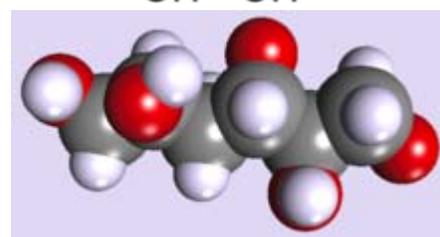
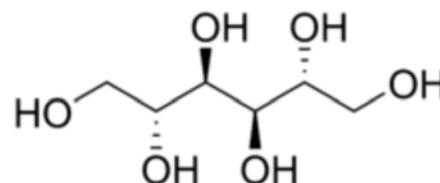
Mannitol is a sugar alcohol, that is, it is derived from a sugar by reduction. Other sugar alcohols include xylitol and sorbitol. Aqueous solutions of mannitol are mildly acidic and sometimes such solutions are treated to raise the pH. Chemical Abstracts Registry Numbers for mannitol are 123897-58-5, 69-65-8 (D-Mannitol), 75398-80-0, 85085-15-0, and 87-78-5 (mannitol with unspecified stereochemistry).

Uses

Medical applications

Mannitol is used clinically to reduce acutely raised

Mannitol



Systematic (IUPAC) name

(2*R*,3*R*,4*R*,5*R*)-Hexane-1,2,3,4,5,6-hexol

Clinical data

Pregnancy cat. C: (USA)

Legal status ?

Routes Intravenous
Oral

Pharmacokinetic data

Bioavailability ~7%

Metabolism Hepatic, negligible.

Half-life 100 minutes

Excretion Renal: 90%

Identifiers

CAS number 69-65-8

ATC code A06AD16 B05BC01 B05CX04

PubChem CID 453

DrugBank APRD01083

ChemSpider 6015

Chemical data

Formula C₆H₁₄O₆

Mol. mass 182.172

intracranial pressure until more definitive treatment can be applied, e.g. after head trauma. This use is controversial. It is also used to treat patients with oliguric renal failure. It is administered intravenously, and is filtered by the glomeruli of the kidney, but is incapable of being resorbed from the renal tubule, resulting in decreased water and Na⁺ reabsorption via its osmotic effect. Consequently, mannitol increases water and Na⁺ excretion, thereby decreasing extracellular fluid volume.

Mannitol can also be used to open the blood-brain barrier by temporarily shrinking the tightly coupled endothelial cells that make up the barrier. This makes mannitol indispensable for delivering various drugs directly to the brain (e.g. in the treatment of Alzheimer's disease). Mannitol is commonly used in the circuit prime of a heart lung machine during cardiopulmonary bypass. The presence of mannitol preserves renal function during the times of low blood flow and pressure, while the patient is on bypass. The solution prevents the swelling of endothelial cells in the kidney, which may have otherwise reduced blood flow to this area and resulted in cell damage.

Mannitol is also being developed by Australian pharmaceutical company as a treatment for cystic fibrosis and bronchiectasis and as a diagnostic test for airway hyperresponsiveness. The mannitol is orally inhaled as a dry powder through what is known as an osmohaler and osmotically draws water into the lungs to thin the thick, sticky mucus characteristic of cystic fibrosis. This is intended to make it easier for the sufferer to cough the mucus up during physiotherapy. The critical characteristic of the mannitol is its particle size distribution.

Mannitol is also the first drug of choice for the treatment of acute glaucoma in veterinary medicine. It is administered as a 20% solution IV. It dehydrates the vitreous humor and thus lower the intraocular pressure. However, it requires an intact blood-ocular barrier to work.^[2]

Mannitol can also be used to temporarily encapsulate a sharp object (such as a helix on a lead for an artificial pacemaker) while it is passed through the venous system. Because the mannitol dissolves readily in blood, the sharp point will become exposed at its destination.

Mannitol may be administered in cases of severe Ciguatera poisoning. Severe ciguatoxin, or "tropical fish poisoning" can produce stroke-like symptoms.

Mannitol is the primary ingredient of Mannitol Salt Agar, a bacterial growth medium, and is used in others.

In oral doses larger than 20 g, mannitol acts as an osmotic laxative, and is sometimes sold as a laxative for children^[*citation needed*].

In foods

Mannitol is also used as a sweetener for people with diabetes. Since mannitol has a positive heat of solution, it is used as a sweetener in "breath-freshening" candies, the cooling effect contributing to the fresh feel. The pleasant taste and mouthfeel of mannitol also makes it a popular excipient for chewable tablets.^[3]

In illicit drugs

Mannitol is sometimes used as an adulterant or cutting agent for heroin, methamphetamines or other illicit drugs. In popular culture, when it is used in this manner, it is often referred to as *baby laxative*.^[4]

Controversy

The three studies^{[5][6][7]} which initially found that high-dose mannitol was effective in cases of severe head injury have been the subject of a recent investigation.^[8] Although several authors are listed with Dr. Julio Cruz, it is unclear whether the authors had knowledge of how the patients were recruited. Further, the Federal University of São Paulo, which Dr. Cruz gave as his affiliation, has never employed him. Currently, therefore, the Cochrane review recommending high-dose mannitol^[9] has been withdrawn pending re-evaluation, as there is some evidence that mannitol may worsen cerebral edema.^[10]

See also

- Sorbitol
- Xylitol

References

- ↑ Cooley's Cyclopaedia of Practical Receipts, 6th ed. (1880)
- ↑ Veterinary Class Notes, Ophthalmology, The Ohio State University, provided by David Wilkie, DVM, DACVO
- ↑ Weiner, Myra L.; Lois A. Kotkoskie (1999). *Excipient Toxicity and Safety*. p. 370. ISBN 0824782100, 9780824782108 Check |isbn= value (help).
- ↑ An interview on the History Channel show Gangland showed a man claiming to be the chief methamphetamine "cooker" for the Pagans MC in Philadelphia, who stated that he used mannitol, a "baby laxative", as a "cut" for methamphetamine. He stated that in his hands the drug began as a purple color, and became first dark pink, then light pink, finally white as successive adulterations were done with mannitol. In the interview he stated that people snorting a line of the powder would need to go to the bathroom as a result of using it. He said that they incorrectly believed that this was the result of the potency of the drug, but it was actually caused by the added mannitol.
- ↑ Cruz J, Minoja G, Okuchi K. Improving clinical outcomes from acute subdural hematomas with the emergency preoperative administration of high doses of mannitol: a randomized trial. *Neurosurgery*. 2001 Oct;49(4):864-71. PMID 11564247
- ↑ Cruz J, Minoja G, Okuchi K. Major clinical and physiological benefits of early high doses of mannitol for intraparenchymal temporal lobe hemorrhages with abnormal pupillary widening: a randomized trial. *Neurosurgery*. 2002 Sep;51(3):628-37; discussion 637-8. PMID 12188940
- ↑ Cruz J, Minoja G, Okuchi K, Facco E. Successful use of the new high-dose mannitol treatment in patients with Glasgow Coma Scale scores of 3 and bilateral abnormal pupillary widening: a randomized trial. *J Neurosurg*. 2004 Mar;100(3):376-83. PMID 15035271
- ↑ Roberts I, Smith R, Evans S. Doubts over head injury studies. (<http://www.bmj.com/cgi/content/full/334/7590/392>) *BMJ*. 2007 Feb 24;334(7590):392-4. PMID 17322250
- ↑ Wakai A, Roberts I, Schierhout G. Mannitol for acute traumatic brain injury. *Cochrane Database Syst Rev*. 2005 Oct 19;(4):CD001049. PMID 16235278
- ↑ Kaufmann AM, Cardoso ER. Aggravation of vasogenic cerebral edema by multiple-dose mannitol. *J Neurosurg*. 1992 Oct;77(4):584-9. PMID 1527619

External links

- RXList-osmitrol (<http://www.rxlist.com/cgi/generic4/osmitrol.htm>)
- *1724907529* (<http://www.gpnotebook.co.uk/simplepage.cfm?ID=1724907529>) at GPnotebook

Retrieved from "http://en.wikipedia.org/w/index.php?title=Mannitol&oldid=275810087"

Categories: Sugar alcohols | Sweeteners | Excipients

-
- This version of the page has been revised.

Besides normal editing, the reason for revision may have been that this version contains factual inaccuracies, vandalism, or material not compatible with the Creative Commons Attribution-ShareAlike License.

EXHIBIT D

Home Mail News Sports Finance Weather Games Groups Answers Flickr More



Clifford

Mail

Web

Restricted to alcor.org

Images

Also try: [mannitol drug](#), [mannitol salt agar](#), [mannitol side effects](#), [more...](#)

Video

Shopping

Blogs

More

Anytime

Past day

Past week

Past month

[Asanguineous Ultraprofound Hypothermia - Cryonics: Alcor Life ...](#)
www.alcor.org/Library/html/tbwcanine.html Cached

A **MANNITOL**-BASED PERFUSATE FOR REVERSIBLE 5-HOUR ASANGUINEOUS ULTRAPROFOUND HYPOTHERMIA IN CANINES . by Jerry D. Leaf, Michael G. Darwin, and Hugh Hixon

[Human Cryopreservation Stabilization Medications](#)
www.alcor.org/Library/html/stabilizationmeds.html Cached

Mannitol has been proven effective in ischemia induced cerebral edema by promoting movement of fluid from the cells to the vascular space.

[The Cryonic Suspension of Roy Schiavello - Cryonics: Alcor ...](#)
www.alcor.org/Library/html/casereport9009.html Cached

Whilst Joe Allen and Michael Connaughton warned the **mannitol** to dissolve it I continued to measure out the rest of the perfusate components. At ...

[The Pathophysiology of Ischemic Injury - Cryonics: Alcor Life ...](#)
www.alcor.org/Library/html/ischemic.html Cached

The protective effect of **mannitol**, vitamin E, and glucocorticoid in experimental cerebral ischemia - influence on lipid peroxidation, energy ...

[Future Directions in Human Cryopreservation Combinational ...](#)
www.alcor.org/Library/html/medications_review.html Cached

Mannitol is not only the osmotic agent of choice in stabilization, it is also a core component in the hypothermic organ preservation solution MHP-2, ...

[Cryopreservation Case Report: Arlene Fried](#)
www.alcor.org/Library/html/fried.html Cached

A **mannitol**-based perfusate for reversible 5-hour asanguineous ultraprofound hypothermia in canines. Cryovita Laboratories, Inc. and Alcor Life Extension Foundation, ...

[Comparative Study in Experimental Human Suspended Animation](#)
www.alcor.org/Library/html/casereport8511.html Cached

IV **mannitol**. This technique is used for neurosurgery when the optic nerves must be exposed. While the brain can tolerate considerable volume reduction, ...

[Advances in Cryonics Protocols, 1990-2006](#)
www.alcor.org/Library/html/protocoladvances.html Cached

Mannitol Maalox. Gaining access to the circulatory system of a patient to deliver these medications and fluids has often been a challenge during Alcor cases.

[Alcor Case Report for Patient A-2061 - Cryonics: Alcor Life ...](#)
www.alcor.org/Library/html/casereportA2061.htm Cached

... Excellent team work in getting the meds kit to the airport for Aaron to take on the flight, however the **Mannitol** medication, which was stored separately, ...

[Alcor 1997 Stabilization and Transport Manual - Chapter 8 ...](#)
www.alcor.org/Library/html/1997manual-chapter08.html Cached

MANNITOL: 2g : METUBINE IODIDE: 0.07mg : GENTAMICIN SULFATE (OR) 1mg : ERYTHROMYCIN: 1g in all : BACTRIM: 10ml in all : DEXTRAN-40: 500cc at most : MAALOX: 250cc

Also Try

[mannitol salt agar](#)
[mannitol drug study](#)
[mannitol drug](#)
[mannitol drug medication](#)
[mannitol side effects](#)
[mannitol mechanism of action](#)
[mannitol test](#)
[mannitol iv](#)

Get the latest updates on mannitol

1 2 3 4 5 Next

mannitol Search

[Yahoo!](#) [Help](#) [Suggestions](#) [Privacy](#) [Legal](#) [Advertise](#) [Powered by Bing™](#)

EXHIBIT E

The Biology of Cryonics

A Quick Summary for Medical Professionals

by Charles Platt, for Alcor Foundation, November 2002;
edited and updated by Mike Perry, June 2011.

Alcor Foundation
7895 East Acoma Drive
Scottsdale, AZ 85260-6916



Phone 480-905-1906
Fax 480-922-9027
Information 877-GO-ALCOR
email info@alcor.org
web <http://www.alcor.org>

1. Fundamental Purpose

We believe that intelligence, memories, and personality are determined primarily by the structure and chemistry of the human brain. Our aim is to preserve the brain so faithfully that its unique identity will also be preserved, so that future science may be able to revive the individual. We realize that this is highly speculative, but we feel that human life is sufficiently precious to justify our attempt, even though the outcome is unknown.

2. The Nature of Life and Death

Neurons depend on a steady supply of oxygen and glucose delivered by the blood stream. At normal body temperature, after about ten minutes of cardiac arrest, most neurons have consumed their last reserves of fuel and a complex process of ischemic injury has begun. While this process is not fully understood, we know that the outcome of cardiopulmonary support (CPS) tends to be poor if it is attempted on patients who have endured more than six to eight minutes of zero blood flow at normal body temperature.

This picture changes dramatically when a patient experiences hypothermia (lowered body temperature) after cardiac arrest. Resuscitation medicine has successfully revived patients after more than two hours without any vital signs, in cases where the patients have fallen into ice-cold water or snow. From the Arrhenius equation, which was derived more than a century ago, we understand that all chemical reactions occur more slowly at lower temperatures; and harmful chemical reactions on a cellular level are no exception to this rule.

Resuscitation medicine also has determined that medications such as antioxidants and calcium channel blockers may help to inhibit posts ischemic injury.

3. Initial Procedures

We begin our attempt to protect and preserve the brain by using medications, CPS, and external cooling immediately after cardiac arrest. From our perspective, so long as the integrity of the brain is protected, the patient retains some chance of renewed life in the future.

Ideally, within minutes after legal death has been pronounced, we immerse the patient in a portable ice bath, inject medications to minimize blood coagulation and postischemic injury, provide oxygen, and use mechanical CPS to induce circulation. This process of cooling coupled with metabolic support continues without interruption as we move the patient to a suitable location (often a mortuary) where we raise the femoral vessels, cannulate them, and wash out the blood with a preservation solution similar to formulations that are used routinely to preserve organs donated for transplantation.

4. What We Need

To perform our initial procedures, ideally we hope that legal death will be pronounced quickly. We prefer that the patient will have an IV installed, enabling us to administer drugs such as heparin and streptokinase to reduce the risk of blood clotting. We will attempt to intubate a patient to maximize the effective delivery of oxygen. Because the patient has been pronounced, the steps we take are not classified as medical procedures and are not subject to medical regulations.

If hospital policy or other circumstances make it impossible for us to perform our procedures postmortem, we will move the patient offsite as rapidly as possible. At a minimum, we hope to inject heparin and administer some CPS to circulate the heparin throughout the body.

5. What Can Go Wrong

Our procedures will be less effective if we cannot reach a patient promptly. Blood clots will obstruct our access to the circulatory system, and may result in catastrophic brain damage. A prolonged period of cardiac arrest at normothermic temperature will also cause brain damage. The precise length of this interval, and the reversibility of ischemic injury, are controversial; but obviously we have a better chance if we can intervene promptly. Time is of the essence.

If a patient is atherosclerotic, fragile blood vessels will be difficult to cannulate and may rupture during perfusion. If a patient suffers from respiratory conditions such as pneumonia, the lungs may be unable to oxygenate the blood. We cope with these problems as best we can.

Our worst-case scenario is accidental death, which may entail an autopsy. In such

Our members choose the "neuro option" for various reasons. First, we may be able to provide more effective and complete cryoprotection if our efforts are focused solely on the brain. Second, our long-term maintenance costs are much lower. Third, the patient will be easier to relocate if this is ever necessary. Alcor has successfully moved all of its whole-body patients from our previous location in California to our current facility in Arizona, but this was a difficult and delicate operation. By contrast, a neuropatient can be transported in a small LR-40 Dewar in a minivan.

At the present time Alcor can apply vitrification techniques to whole-body cases as well as neuropatients. Under good conditions the brain is expected to vitrify in both types of patients. Other tissues in whole-body patients are expected to undergo vitrification or limited freezing depending on the tissue type. Alcor treats the entire body of whole-body patients with advanced cryoprotectants to inhibit ice formation.

12. Informed Consent

We caution all of our members and applicants that the results of human cryopreservation are impossible to predict. All members have been fully informed about the possibilities of irreversible damage that may prevent resuscitation by any future technology, and they have signed documents affirming that they are taking a gamble where the odds are unknown.

We do everything we can to eliminate any chance that we are offering false hope to people who are afraid of death. We will not accept members unless they or their agents are competent to make medical or legal decisions. We are cautious about accepting last-minute cases where a patient's rationality is in doubt.

On the other hand, when we are sure that a person has given informed consent for our procedures, we will defend our right to provide those procedures. In some cases, family members have objected to cryonics, and have sued to take possession of cryopreserved patients in our care. We have resisted such challenges vigorously, because we believe that all people have an absolute right to choose the way in which they are treated after legal death, so long as their choice does not violate the law or harm other people.

13. Additional Information

Cryonics raises many questions that may not be covered in this brief document. If you would like to learn more about our procedures or the principles on which we have based them, we will be happy to respond. As a tax-exempt organization, part of our purpose is to disseminate information. We also maintain a library of informative publications and can provide references to relevant papers by cryobiologists.

10. Damage Repair

Many cryonics patients were preserved before vitrification was possible. Their brains were protected only by a glycerol solution, which could not prevent significant injury. Some people suggest that we may be wasting our resources by preserving people who have been subjected to such damage.

This is not necessarily true. Nobel laureate Richard Feynman predicted in 1959 that mechanical devices could be miniaturized down to the molecular level. He pointed out that there is no physical law to prevent us from moving individual atoms, which could be assembled to create "molecular machines."

Feynman's prediction has been validated by the scanning-tunneling electron microscope. Scientists at IBM have demonstrated that this device can use an ultrafine probe to manipulate individual atoms.

Computer scientist Eric Drexler suggested that this principle could be applied in an entirely new area of science which Drexler named "molecular nanotechnology," meaning that it would work on the scale of a nanometer—one billionth of a meter. Drexler proved theoretically that a molecular machine the size of a bacterium could contain onboard computing power equivalent to a modest-sized microprocessor chip. The machine could make copies of itself, or could be programmed to perform tasks in the same way that industrial robots are programmed today. He suggested that billions of molecular machines could invade a cryopatient and perform repairs on individual cells. Thus, nanotechnology offers some hope of repairing ice damage.

This is highly speculative, and we do not expect sophisticated nanotechnology in the near future. Still, our cryopatients are in no hurry. At the temperature of liquid nitrogen, they remain unchanged as the years pass.

Our goal is to refine the process of cryopreservation to the point where it causes so little damage, a person can be resuscitated without any need for repairs via technology that has not been developed yet. In the meantime, we provide the best protection we can, because this is the only alternative to permanent death.

11. Preserving Only the Brain

We are confident that tissue regeneration will be perfected to the point where a new human body can be regrown around a brain. This technology will be a natural progression from imminent technologies that will enable spinal regeneration, limb regeneration, and organ regeneration following severe trauma. Since many Alcor members feel confident that future science will be capable of growing a new body, they choose to preserve only the brain. In practice this means that we preserve the entire head of each "neuropatient," since the skull provides optimal protection for the brain. The remainder of the patient is usually cremated.

a case the waiting period can last for days, and the autopsy usually entails dissection of the brain. When the patient is finally released into our possession, we will still attempt cryopreservation if the patient's sign-up documents directed us to make this attempt under any circumstances. We have an ethical and legal obligation to follow our members' wishes, even in situations where future resuscitation seems vanishingly plausible.

6. Subsequent Procedures

After blood washout and perfusion with organ preservation solution, the patient is moved as quickly as possible to our operating room. If legal death has occurred in a remote location, the patient is covered with bags of ice, placed in a standard mortuary shipping container, and transported to Alcor by scheduled airline or chartered jet.

Our task now is to protect the patient from freezing damage. Normally, as the temperature falls below 0 degrees Celsius, ice grows between cells causing cellular dehydration and mechanical injury. Ideally we prevent this damage by perfusing the patient with a "vitrification solution" similar to solutions that have been used experimentally for ice-free preservation of transplantable organs. The solution is circulated at increasing concentration, and decreasing temperature, through the vascular system for four to five hours. It replaces more than half of the water around and inside cells with chemicals that prevent ice formation, even at an extremely low temperature. When the process is complete, we cool the patient to -196 degrees Celsius, which is the temperature of liquid nitrogen. For all practical purposes, biological processes cease.

7. Long-Term Cryopreservation

Liquid nitrogen is cheaply available in bulk in many urban areas. We receive deliveries from a local supplier and pipe it into "Dewars" that function like oversize Thermos bottles. Each Dewar is vacuum-insulated and large enough to hold four whole-body cryopatients. Since the liquid is delivered at -196 degrees, we do not need refrigeration equipment. Gradually some heat penetrates the Dewars and causes some of the liquid nitrogen to vaporize, but when the level falls, we receive another delivery to replace the boiloff. Our storage facility is unaffected by power outages, and our reserves of liquid nitrogen can last for up to a month between deliveries.

While Alcor cannot guarantee the survival of its cryopatients or itself as a corporate entity, we are a nonprofit, tax-exempt organization under section 501(c)3 of the tax code. Our bylaws were designed to protect us from hostile acquisition or asset-stripping, and all of our patients are prepaid, usually via life insurance policies. After we cover the costs of cryopreservation, the remainder of each patient's funding is placed in a trust that generates interest to pay for liquid nitrogen for the indefinite future.

8. The Legal Basis for Cryonics

The Uniform Anatomical Gift Act (UAGA), which has been adopted by all 50 states, provides a mechanism by which medical or research organizations may take possession of organs that are donated for transplant or research. Our members have executed a document affirming their desire to donate all of their organs—their entire body—to Alcor. Thus, Alcor is entitled to take possession of the patient under the Uniform Anatomical Gift Act. We will be glad to provide a copy of any member's UAGA document to any medical organization or professional who will respect our member's wishes for confidentiality.

Burial and cremation of human remains are controlled by state laws, but human cryopreservation is not subject to these statutes, since it is a relatively new process. Naturally Alcor must comply with legal requirements such as pronouncement of death by a medically qualified person, and must execute standard documents that enable transportation of a deceased person across state or county lines. We are affiliated with a mortician who insures that correct procedures are followed.

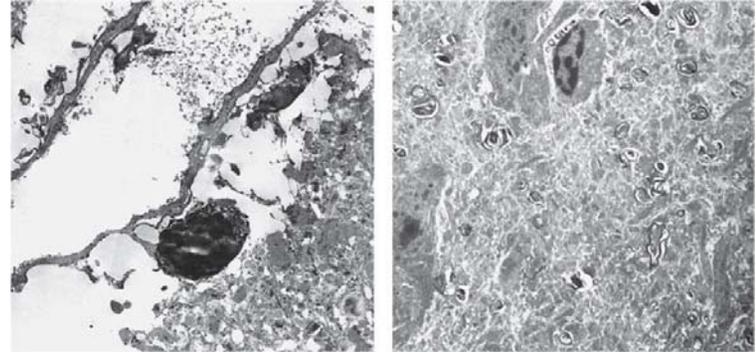
Some people have suggested that we could optimize brain preservation if our members could choose their time of death. This is often true, especially in cases involving cerebral tumors. However, assisted suicide remains illegal in almost every state, and would provide grounds for an autopsy. In any case, our primary motivation is to maximize human life, not curtail it. For obvious ethical and legal reasons Alcor cannot be involved in any treatment of a patient before legal death is pronounced, and cannot attempt to influence the pronouncement.

9. The Biological Basis of Cryoprotection

News stories about cryonics often include quotes from scientists who state that ice damage is irreversible. Unfortunately, in almost every case, these scientists are not cryobiologists. Consequently they are not properly informed or qualified to give an opinion on the inevitability of ice damage in brain tissue.

The field of cryobiology was established fifty years ago by British scientists who derived its name from the Greek word "kryos," meaning "cold." Their early work demonstrated that some types of cells could be rewarmed and revived successfully if they were soaked in a solution of glycerol before freezing. The glycerol functioned as a "cryoprotectant," replacing some of the water and minimizing ice damage that would normally occur.

Today, glycerol is used routinely to protect semen samples and very small human embryos before the cells are immersed in liquid nitrogen. Not all embryos survive this procedure, but many have been rewarmed and implanted, and have matured as normal, healthy human beings. These people—many of them now grown to adulthood—



Advances in Brain Cryopreservation: *Left, electron micrograph shows severe damage in brain tissue by traditional protection from freezing. Either side of a capillary, massive tears (white areas) have been caused by ice. A naked cell nucleus with no cell membrane is visible (dark rounded object). This is the kind of damage that many commentators assume is common among cryonics patients. Their assumption is outdated and inaccurate.*

Right, brain tissue preserved with a modern vitrification solution shows virtually no ice damage. Whole neurons are visible with intact membranes and well defined structure. This is the excellent preservation which Alcor can achieve in human patients. Most commentators who complain about irreparable damage caused by cryonics procedures are unaware that such preservation is now possible, under optimal circumstances.

demonstrate that human life can resume after weeks, months, or years in stasis at a very low temperature.

Unfortunately, glycerol is toxic at high concentrations and cannot provide sufficient protection to guarantee 100 percent survival. Also, while it is reasonably effective on individual cells or small clusters of cells that retain some individual mobility, it does not provide adequate protection for large, highly structured organs such as the brain. For decades this problem seemed intractable, but in the late 1990s some scientists working in the field of cryobiology developed vitrification solutions that can prevent ice in large organs under ideal conditions. Instead of forming ice crystals, the water becomes a uniform, "vitreous" substance.

While today's vitrification solutions have not received certification yet for use with living patients, Alcor uses the solutions to preserve the human brain because they cause far less toxicity than would occur with other methods of morphological preservation, such as chemical fixation. Preliminary electron micrographs indicate excellent preservation of ultrastructure in animal brain samples. Ice damage no longer needs to occur, so long as the patient's vascular system is sufficiently robust and unobstructed to permit cryoprotective perfusion.

EXHIBIT F

Transport Protocol for Cryonic Suspension of Humans (1990)

Alcor's 1990 transport manual, written by Michael Darwin, was a landmark in the evolution of procedures for human cryopreservation. This manual incorporated everything that had been learned during the 1980s, when Leaf and Darwin developed the concept of a bedside standby and performed research to validate a washout solution that was formulated to provide metabolic support and postpone cell death. A slightly modified form of this washout solution is still used by Alcor to protect the human brain during transport of cryopatients to Alcor's facility.

Although Alcor's procedures have continued to evolve, the 1990 manual established and explained basic principles which are as relevant now as they were then.

The manual was originally created with older software that was not capable of importing illustrations. Illustrations were literally pasted onto the laser-printed pages, and copies were reproduced on a photocopy machine. Consequently the typesetting is not up to contemporary standards, and gray tones in the photographs have been lost. The PDF files presented here were made by scanning pages from a copy of the manual.

Although there are three gaps in the page numbering, all evidence suggests that no pages are missing, and the numbering itself was inconsistent.

The addendum to this document was dated 1992, and includes some revisions of the medication protocol together with an abbreviated guide to emergency response.

DISCLAIMER: This manual is provided for general orientation and historical reference only. Some of the techniques and medications described are outdated and have since been replaced by better equipment and methods.

The manual is available here as individual chapters in PDF format:

[Cover pages and acknowledgements](#)

[Chapter 1 - Introduction](#)

[Chapter 2 - General Instructions and Administrative Procedures](#)

[Chapter 3 - Assessment, Planning, and Gaining Cooperation](#)

[Chapter 4 - Options for Cardiopulmonary Support](#)

[Chapter 5 - Cardiopulmonary Support: Evaluation and Intervention](#)

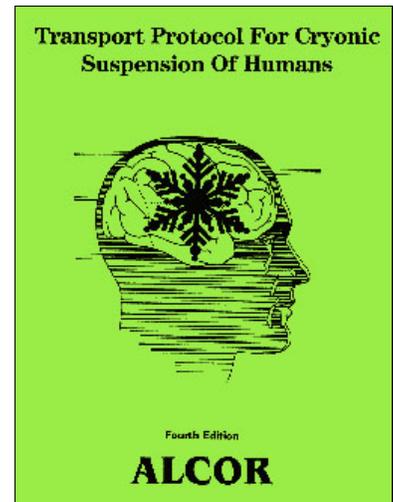
[Chapter 6 - The Heart-Lung Resuscitator \(HLR\)](#)

[Chapter 6A - The Michigan Instruments Heart-Lung Resuscitator \(HLR\)](#)

[Chapter 7 - Placement of Temperature Probes](#)

[Chapter 8 - External Cooling](#)

[Chapter 9 - Establishing Intravenous Access](#)



[**Chapter 10 - Preparation of Medications for Intravenous Administration**](#)

[**Chapter 11 - Transport Medications: Pharmacology and Administration**](#)

[**Chapter 12 - Administration of Medication through the Gastric Tube**](#)

[**Chapter 13 - Collection of Blood Samples**](#)

[**Chapter 14 - Shipment of the Patient**](#)

[**Glossary**](#)

[**Appendix A - Metric Conversions**](#)

[**Appendix B - Basic Anatomy and Topography of the Body**](#)

[**Emergency Instructions for Stabilization of Alcor Cryonic Suspension Patients**](#)

Chapter 11

Transport Medications: Pharmacology And Protocol Of Administration

Medications administered during transport and the induction of hypothermia in cryonic suspension patients have the objectives of:

- 1) Protecting against or minimizing re-perfusion injury which may result from restoration of circulation following ischemia associated with pronouncement of legal death.
- 2) Minimizing the effects of agonal and CPR-associated hypoperfusion and inadequate gas exchange.
- 3) Protecting against or minimizing the effects of hypothermia during CPR, and cold ischemia during subsequent air transport or other shipment.
- 4) Supporting perfusion pressure by maintaining vascular tone and/or replacing depleted circulating volume.
- 5) Protecting against the return of consciousness during cardiopulmonary support.

What follows is a list of the medications with dosage, the route of administration, and purpose of the medication as it is employed in the transport of cryonic suspension patients. Medications are to be given in the order listed below:

Potassium Chloride, 1 mEq/kg, is an electrolyte. Potassium chloride is administered by rapid IV infusion to reduce cerebral metabolic demand by eliminating electrical activity and reducing brain energy expenditure in "pumping" potassium.

Sodium Pentobarbital (Sagatal, Nembutal, Diabutol), 33 mg/kg, is a general anesthetic. Pentobarbital is administered intravenously as a bolus at the start of the resuscitation effort to eliminate the risk of the patient regaining consciousness and experiencing discomfort during cardiopulmonary support. It also reduces brain metabolism to protect the brain's energy stores.

Do not draw up this medication more than one hour in advance of need, since it will rapidly degrade the rubber seal on the syringe. The solubility of pentobarbital is dependent upon the pH; it must not be diluted in other solutions or medications prior to administration. It should be given as a "push" or bolus through the medication port of the IV solution administration set. Never dilute pentobarbital or give it with any other agent or vehicle solution.

Deferoxamine HCl (Desferal), 2 g IV push, is an iron-chelating agent. Deferoxamine combines with free iron (ferritin, hemosiderin) and renders it chemically non-reactive. There is substantial evidence that production of free iron during ischemia is a major cause of free radical-mediated ischemic injury. Desferal chelates the iron and thus prevents subsequent cascades of free radicals which iron can generate.

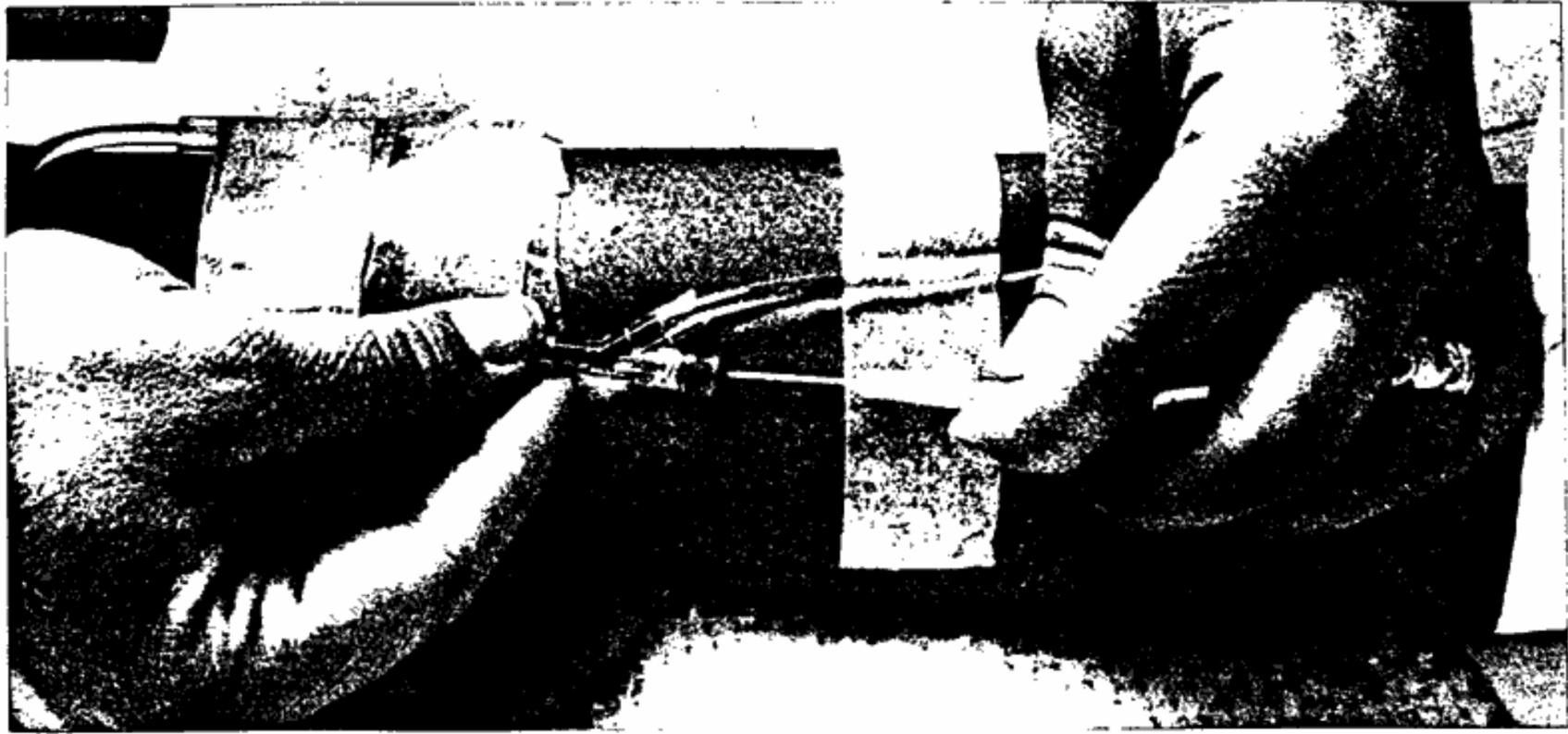


Figure 11-1: "Piggybacking" a second administration set onto the medication addition port of a primary solution administration set.

Nimodipine (Alcor supplied), 10 micrograms/kg IV push followed by 60 micrograms/kg/hr by continuous IV infusion. Nimodipine is a calcium channel blocker used to minimize or prevent injury resulting from calcium influx into cells during hypoxia or ischemia.

Caution: This product is supplied by Alcor in the amount of 5 milligrams.

During ischemia or hypoxia, the electrolyte balance of the cells becomes disturbed because there is insufficient energy available to the cells to power the electrolyte pumps which are present in the cell membranes. Normally, the concentration of calcium present outside the cell is 10,000 times greater than that present inside. Initial imbalances (primarily in the concentration of sodium and potassium in the cells) result in the opening of the calcium channels. Once these channels are open, large amounts of calcium enter the cells from the blood and other extracellular fluid. This influx of calcium deranges cell metabolism and results in the production of very damaging compounds and free radicals which directly degrade cell structure and cause the release of structure-destroying enzymes which exacerbate the problem, in part by opening up the membrane to even more calcium influx.

Nimodipine helps to close off or inhibit the flow of calcium through the calcium channels and thus block the secondary damaging effects of calcium.

Calcium channel blockers tend to have a fair amount of specificity for a given tissue type. In both laboratory and clinical trials, the most effective calcium entry blocker for the ischemically injured *brain* is nimodipine.

Nimodipine is a powerful drug that is pharmacologically active in microgram per kilogram quantities. It is completely insoluble in water and only poorly soluble in ethanol or propylene glycol. A vehicle solution consisting of 25% (v/v) each of ethanol, propylene glycol, polyethylene glycol 400, and water is used to dissolve the drug for administration.

Nimodipine is also somewhat sensitive to white light and, decomposes to inactive degradation products upon extended exposure to white light. Thus, nimodipine should be shielded from light until it is to be given by leaving it within the foil over-wrap. Do not draw up the medication until it is to be administered.

The procedure for preparing nimodipine for administration is as follows:

Packaging and Preparation Procedure

Each amber ampule of nimodipine contains 5 mg of the drug dissolved in a vehicle solution and ready for administration.

Nimodipine should be drawn up as close to the time of use as possible and kept foil wrapped since it is photosensitive and since it may be absorbed into the plastic and rubber of the administration equipment. Use the following method to draw the medication up and administer it:

- 1) After determining the dosage, remove the ampule from the foil over-wrap and draw up the required amount of medication. Attach an 18 gauge 1½" needle to the syringe.
- 2) Administer the medication. Do not leave medication in the syringe for an extended period of time, as the vehicle solution will react with the plunger/syringe barrel.

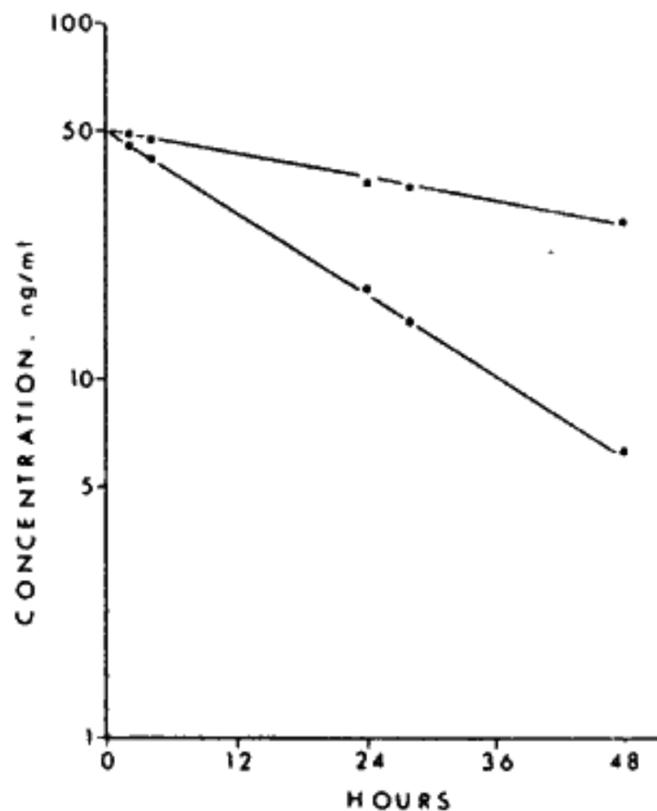


Figure 11-2: *Degradation curve for nimodipine in vehicle solution upon exposure to white light (■) and ultraviolet light (•).*

Diltiazem HCl (Alcor supplied), 300 micrograms/kg, is a calcium channel blocker for field use as an alternative to nimodipine. Diltiazem is a cardiospecific calcium channel blocker which has been shown to have some cerebroprotective effects as well.

Diltiazem is freely soluble in water and can be dissolved in normal saline or other water-based vehicle solution. It is hygroscopic and temperature sensitive and must be stored *desiccated and under refrigeration until use is anticipated.*

Packaging and Preparation Procedure

Diltiazem is supplied by Alcor as a powder in nonsterile 5 cc amber ampules. It must be sterilized by filtration through a 0.20 micron filter after being dissolved in an appropriate vehicle solution.

After dissolving the drug in a vehicle solution such as normal saline, draw it into a syringe and attach a Millex 0.2 micron filter (take care to keep the downstream, "needle end" of the Millex *sterile*). Attach an 18 gauge needle to the tip of the Millex and prime the Millex and needle with medication solution. The medication may then be injected into the patient and the Millex will filter sterilize it as it is administered. See the drawing below for details.

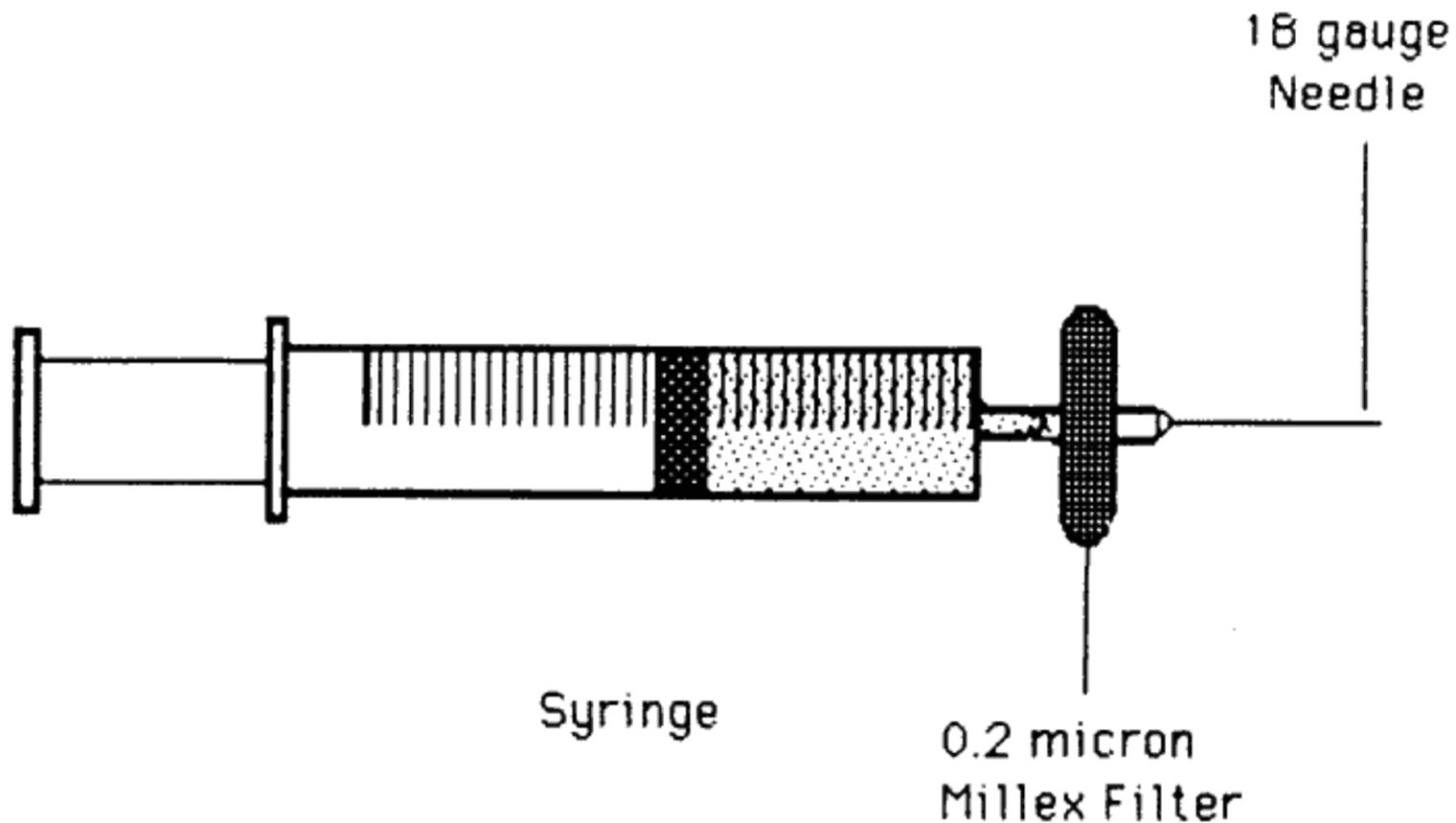


Figure 11-3: *Assembly for in-line filter sterilization of diltiazem during administration.*

Sodium Citrate, 120 mg/kg, is a calcium chelator. It chemically reacts with calcium in a way that renders the calcium chemically nonreactive. Sodium citrate reduces serum calcium concentrations and helps minimize reperfusion injury due to calcium influx into ischemically compromised cells.

Tromethamine (THAM), 252 mg/kg, is a potent organic buffer. The initial dose of tromethamine is 100 cc of a 0.3 M solution given intravenously by rapid infusion at the start of CPR, followed by slow infusion of the remaining 400 cc over the following 2 to 3 hours.

A buffer is a chemical compound which, when present in solution, resists change in the acidity or alkalinity of the solution. After a period of ischemia, or reduced gas exchange, or tissue perfusion, blood and body fluids shift from being slightly alkaline (normal blood pH is 7.4) to being moderately acidic (pH 6.6 to 7.3). For the purposes of this discussion, pH may be defined as a measure of the acidity or alkalinity of a solution (the hydrogen ion concentration). Low pH is damaging to cells and promotes the release of structure-destroying enzymes from intracellular

organelles. It also promotes blood clotting and tissue swelling and causes clumping of red blood cells resulting in blockage of capillaries and further reduction in tissue perfusion.

Tromethamine is used to counteract the organic acids produced by metabolism in the absence of adequate oxygen and nutrients and thus to restore the pH of blood and body fluids to normal or near normal levels.

It is very important to understand that the pH scale of measurement is a logarithmic one. Thus, when the pH changes by 0.3 units, the hydrogen ion (H^+) concentration (acid concentration) doubles or halves:

pH	H^+ ion concentration
7.4	Normal
7.1	Double
6.8	Double Again (4 x Normal)

An examination of the table above readily reveals why problems occur during cardiac arrest or reduced perfusion. What appear to be small changes in pH numerically are in reality massive alterations in the concentration of ions. When ion concentration increases, pH decreases.

Sodium Heparin (Heparin), 420 I.U./kg is an anticoagulant. Heparin is given as a bolus by administration through the medication addition port of the IV solution administration set. It is important to check the strength of the heparin preparation being used before administering it, as it can vary widely depending upon the intended use i.e., dilution in an IV, direct administration, and so on). The usual strength employed in cryonic suspension operations is 10,000 units/ml.

Heparin is administered to *prevent* coagulation of blood not only during initial stabilization and external cooling, but also during subsequent air shipment of the patient. This is important, because blood will normally clot if it is not kept in constant motion, even within the blood vessels of the body. Obviously, after external cooling is complete, artificial circulation will be discontinued to facilitate air transport and, in the absence of anticoagulation, clotting would normally be expected to occur.

It should be noted that the effectiveness of heparin is to a great extent dependent upon proper control of pH. If the pH drops significantly below 7.0 (more than 0.3 units), heparin will start to degrade and inactivate. Adequate control of pH is thus essential in order to achieve and maintain anticoagulation.

Note: Heparin will not reverse clotting. It only prevents it.

Chlorpromazine (Thorazine, Largactil), 3 mg/kg IV push, is a membrane stabilizer which has shown effectiveness in reducing both warm and cold ischemic injury. The mechanism of action is not known. Chlorpromazine is also a major tranquilizer.

Methylprednisolone Sodium Succinate (Solu-Medrol), 1 g by slow IV injection. Methylprednisolone is a corticosteroid which acts to stabilize cell membranes during ischemia and hypothermia. It must be administered slowly, over a period of 3 to 5 minutes.

20% Mannitol (Osmitol), 2 gm/kg, is a sugar which is used to inhibit cell swelling and in particular to control cerebral edema. It is administered by continuous intravenous infusion over the first 60 to 90 min. of cardiopulmonary support. *Do not spike this bottle until needed.*

Mannitol is an effective osmotic or "water binding" agent. Because it cannot freely pass through cell membranes, it is effective at attracting and holding water in the extracellular spaces, thus preventing cell swelling. Cell swelling is a normal response to hypoxia, ischemia, and tissue injury. The brain, because it is encased in a rigid, bony shell (the skull), is particularly susceptible to the effects of tissue swelling. If brain swelling occurs, the pressure inside the skull will increase, reducing blood flow. Further swelling will then result from decreased blood flow, and a vicious cycle is set up which ultimately results in total inhibition of blood flow to the brain.

Mannitol acts to transiently prevent and even to reverse brain swelling, providing that some blood circulation to the brain is still intact. Mannitol is also a highly effective diuretic (promotes urine formation) and may (although this is very unlikely, due to low perfusion pressure) result in urine production during transport.

An added benefit to the use of mannitol during Transport is its free radical scavenging ability.

Redissolving Mannitol

Carefully examine the bag or bottle of mannitol for the presence of crystals as long in advance of use as possible. If crystals are present in a *bottle* of mannitol, they may be redissolved by warming the bottle in a double boiler or on a coffee warming plate. (Never use a true hot plate, lest the bottle explode). Once the mannitol is redissolved, the bottle should be kept in a warm place or crystallization can recur. Bottles of mannitol may also be heated *very cautiously* in a *microwave*. Great care must be taken to avoid overheating the contents and rupturing the bottle. The procedure for rewarming sealed bottles in the microwave is as follows:

- 1) Remove the wire hanger ring from the bottom of the bottle. (Retain it as you will need to put it back on when the procedure is completed.)
- 2) Place the bottle on its side in the center of the cavity of the oven with the top (neck) pointing towards the rear of the oven.
- 3) Close the door and activate the oven for 15 seconds.
- 4) Open the oven and check the bottle temperature.
- 5) Repeat steps #3 and #4 above until the bottle is almost too hot to handle. *Do not try to boil the liquid inside!*
- 6) Using a paper towel, remove the bottle from the oven and invert repeatedly until the crystals have all dissolved. Reheat the bottle carefully as often as necessary to maintain a "hot to touch" temperature.

Bags of mannitol may be rewarmed by placing them (within their outer, protective wrap) in water that is just under boiling temperature, or with a microwave, using the following technique:

- 1) Remove outer, protective bag.
- 2) Place container in the center of the microwave oven cavity.
- 3) Heat bag for 30 seconds and evaluate for temperature.
- 4) Repeat step #3 until bag is very hot to touch.
- 5) Remove bag from oven using paper towel and repeatedly invert until crystals dissolve.

Metocurine (Metubine Iodide), 0.07 mg/kg is a muscle-paralyzing agent. Metocurine is administered intravenously as a bolus via the medication addition port on the solution set. Metocurine is a synthetic derivative of curare, the South American arrow poison used by South American Indians to paralyze prey. It is used to inhibit the shivering which can occur as a response to external cooling.

Shivering increases metabolic demand, consumes valuable cellular energy reserves, and results in production of additional metabolic waste products, further exacerbating acidosis. While not all suspension patients will respond to the induction of hypothermia by shivering, some will. Such shivering may consist solely of action by slow-twitch muscle fibers, which is not readily noticeable. Thus, it is important to protect against the possibility of shivering by administering an agent such as metocurine which inhibits the action of voluntary muscle fibers.

Gentamicin Sulfate (Garamycin, Garamicina), 1 mg/kg IV push. Gentamicin is an aminoglycoside antibiotic which is primarily effective against gram negative bacteria. Gentamicin is used to prevent bacterial overgrowth during cooling and transport of the patient.

Trimethoprim and Sulfamethoxazole (Bactrim), 160 mg Trimethoprim and 800 mg sulfamethoxazole by slow IV infusion. Bactrim is a synthetic antibacterial combination product used to prevent bacterial overgrowth during cooling and transport of suspension patients. Bactrim is effective against a range of both gram positive and negative bacteria.

Bactrim *must* be given by slow IV infusion. It may be added to the Dextran-40 or the mannitol immediately before they are administered.

Erythromycin (Erythrocin), 1 gm for adults, 500 mg for children under 12 years of age. Erythromycin is a broad spectrum antibiotic which should be administered slowly by intravenous infusion in a minimum of 20 cc of sterile water for injection. Erythromycin is supplied as a powder and must be dissolved in water prior to administration. It is very important that the erythromycin not be dissolved in any agent other than sterile water for injection to which no preservatives or other agents have been added. Failure to observe this precaution will result in the formation of a viscous gel that cannot be withdrawn from the container. *Note: Erythromycin is to be used only as an alternative to Bactrim/Gentamicin where sensitivity to the latter is known to exist.*

* * *

A Note on Transport Antibiotics:

Antibiotics such as bactrim, gentamicin, and erythromycin are given in order to prevent bacterial overgrowth in the gut, respiratory tract, and circulatory system of the patient during transport. Patients experiencing legal death remote from cryoprotective perfusion facilities will require lengthy HLR-supported external cooling and air shipment packed in ice. The time delays imposed by these logistic constraints offer the opportunity for overgrowth of microorganisms (in particular, cold anaerobes: organisms which can proliferate in the cold). A broad spectrum antibiotic is required to guard against this possibility.

At first glance, the antibiotics listed above would not seem to be the optimum choice for broad spectrum antibacterial activity. The penicillins or cephalosporins would be better candidates because of the wider range of organisms whose replication they can inhibit. Unfortunately, penicillin, cephalosporins, and most other antibiotics are also effective at promoting cold-associated clumping or agglutination of red blood cells. Bactrim, gentamicin, and erythromycin are the only antibiotics known to be free of this effect, hence they have been selected for use in transport operations.

* * *

Dextran-1 (Promit), 1.5 g, which is given IV push, is an allergy-blocking agent used to prevent a possible anaphylactic reaction to Dextran-40. The clinical dextrans are produced by microorganisms in culture, and in fact also are produced by microorganisms which live in the human gut. Thus, a significant fraction of the population is at risk of severe anaphylactic or allergic reaction when Dextran-40 is administered IV. To prevent such a reaction, *Promit should always be administered before Dextran-40 is given.* Promit binds to and locks up the sites on antibodies which would normally react with Dextran-40 molecules to form immune complexes capable of provoking an allergic reaction.

Administration of Dextran-40 must begin within 15 minutes of the administration of Promit. If a longer period of time has elapsed between the administration of Promit and the start of the Dextran-40 infusion, the Promit must be readministered. Promit must never be admixed or diluted with Dextran-40 before being given. Promit should ideally be given 1 to 2 minutes prior to the start of the Dextran-40 infusion.

6% Dextran-40 in normal saline (Gentran, Rheomacrodex), 200 cc to 500 cc, is a plasma expander and inhibitor of cold agglutination. Dextran-40 is administered slowly over a 60 to 90 minute period with a solution administration set. Administration of Dextran-40 should not be undertaken until after completion of the infusion of mannitol and tromethamine. It should begin immediately after the administration of Dextran-1 (see above).

Dextran-40 is an oncotic agent: a compound which is effective in holding water in the vascular (blood compartment) space and preventing the development of fluid accumulation between the cells (interstitial edema). It is also effective at reducing the likelihood of cold agglutination during hypothermia.

50% Dextrose in Water may be given as needed to acutely adjust blood sugar. Each 2 cc of 50% dextrose will raise the blood sugar of the average 72 kg patient by 1 mg/dL. Dextrose is the fuel on which most body cells operate. Dosage should be carefully titrated to avoid "overshoot" since serum concentrations of dextrose in excess of 70

mg/dL have been associated with added cerebral injury during CPR. (For details on administration, see page 5-9)

5% Dextrose in Water (D5W), may be given prn by slow IV infusion to support blood glucose during transport. Marked hypoglycemia can occur during transport and cooling of the patient (See above).

Streptokinase (Streptase), 30,000 IU/kg, given IV as a bolus. Streptokinase is a fibrinolytic (clot dissolving) agent to be used only in patients who have experienced 1 or more hours of ischemia in the absence of cardiopulmonary support or transport medications. The use of streptokinase is speculative and has not been documented as effective in cryonic suspension procedures. It is not provided in Alcor kits due to its high cost and the need for refrigeration. Streptokinase may be obtained from the hospital pharmacy. If this agent is needed, call ASC for instructions/support.

Aluminum Hydroxide/Magnesium Hydroxide (AH/MH) (Maalox), 200 cc, is a stomach antacid. AH/MH should be given via gastric tube after the administration of those transport medications which are given as a bolus. AH/MH is a direct neutralizer of gastric hydrochloric acid. Neutralization of gastric HCl which is already present in the stomach at the time of cardiac arrest is critical in protecting the gastric mucosa from ulceration during subsequent hypothermic transport, TBW, and cryoprotective perfusion.

Alcor 1997 Stabilization and Transport Manual

[Table of Contents](#)

Chapter 8: Medication Administration

Surface cooling, respiration, and the restoration of circulation do not provide complete protection for cells which have been deprived of oxygen. Any discontinuity in oxygen flow to the cells will cause the depletion of oxygen reserves and the consumption of other forms of available energy, like glucose. Once the oxygen reserves are jeopardized, the cell begins to search for additional sources of fuel. Some of the cell's systems will begin to fail, and since the resources aren't available to prevent or repair the new damage, each failure precipitates others. These failures spark a chain reaction of cell damage which becomes increasingly difficult to stop. In some cases, simply restoring the flow of oxygen will be sufficient to reverse the damage. More extreme cases require medication. But in many cases, twelve minutes without oxygen is sufficient to cause currently irreversible brain damage to a living body [22, 23].

Every human being is constructed from trillions of cells. These cells need oxygen. If you learn even a little about how oxygen deprivation and other factors (like hypothermia) affect sensitive cell function, you will begin to understand the importance of this step in the transport procedure.

Cell Dysfunction

The cell membrane is only two molecules thick and is comprised of lipids and proteins. This tiny layer acts as a "gatekeeper" by controlling the composition of the cell, letting pass only those molecules it needs to survive. Lipids are fats, and anything that is fat-soluble may enter the cell. Various kinds of small molecules will also enter the cell.

Proteins in the cell membrane actually protrude through the lipid bi-layer and bond with nearby molecules. Bonding modifies the protein configuration, and when reconfiguration is complete, the nearby molecule will be "trapped" on the inside of a cell. Protein channels are very efficient regulators of ion concentration. They are capable of maintaining ionic concentrations of 10,000:1 between extracellular and intracellular fluid.

Ion Channels

One of the most important types of protein channel is one that regulates potassium and sodium. Potassium and sodium, along with calcium, maintain a rhythmic heartbeat, regulate the body's acid-base balance, and are responsible for the conduction of nerve impulses and muscle contraction. Because both potassium and sodium are plentiful in almost all foods, the body maintains few reserves. Potassium is more concentrated inside the cell, while sodium is found in higher concentrations outside the cell.

Another important channel regulates calcium levels. Normally, the extracellular to intracellular ratio of calcium is about 10,000:1. Disruptions in the sodium and potassium levels will cause the calcium channels to open haphazardly. Calcium will flood into the cell and cause the production of destructive enzymes.

A host of medications will help prevent calcium damage. Nimodipine inhibits smooth muscle contractions by

blocking the influx of calcium into cells. Since destructive enzymes are created with excess calcium, they will be less abundant. Nimodipine is also involved in reducing damage caused by arterial spasms during ischemia. Because of its relaxative properties, patients will also experience a drop in blood pressure (which may be countered with epinephrine).

Because it is highly lipophilic, nimodipine may cross the blood-brain barrier to provide effective protection for the cerebral vasculature.

Diltiazem hydrochloride has comparable effects and is an alternative to nimodipine. The primary relevant distinction between the two is that diltiazem targets the heart, not the brain.

Sodium citrate is also used to prevent calcium damage. It binds calcium into a nondestructive, chemically-stable compound.

Another ion to neutralize is iron. Iron is essential to the structure of hemoglobin. When the red blood cells degrade, iron (Fe+2) is released to scavenge for oxygen. Deferoxamine hydrochloride chelates iron by forming a stable complex that prevents iron from being involved in further chemical reactions.

Hemoglobin

Hemoglobin comprises most of the volume of red blood cells, which constitute about half of the volume transported by blood. These are the cells in which oxygen will bind for delivery to the tissues. When blood flow stops, the blood cells fall heavily to the vessel floor. They settle. When blood flow begins again, the lighter, smaller objects and fluid above the hemoglobin "floor" will begin moving, but the densely packed blood cells won't. This effect is called *sludging*. Without enough red blood cells, the tissues will remain undernourished after an ischemic episode. Capillary sludging may be blocked by the administration of Dextran-40 [25].

In the absence of oxygen, red blood cells will bind with other red blood cells. These red blood cells will combine in seemingly haphazard patterns. Capillaries are tiny and will only allow structures about the size of single blood cells to pass. As structures formed of multiple red blood cells, they become lodged in the capillaries and restrict vessel flow severely or prevent it completely.

Heparin will prevent the formation of new clots, but it won't reverse those clots already formed. For this reason, it is essential that heparin be the first transport medication administered to a patient.

Lysosomes and Peroxisomes

Floating freely within the cell are two further dangers. Lysosomes and peroxisomes are essentially sacs of poison awaiting the signal to burst. These are dangerous substances which cause complex molecules to break down into simpler forms.

The lysosomes and peroxisomes won't self-destruct until more than an hour after cardiac arrest occurs [25, 26, 27]. **Rigor mortis** is an indication that these sacs have begun bursting, and the stabilization protocol (with the exception of cooling) will not be administered to patients displaying evidence of *rigor mortis*.

Rigor mortis refers to the stiffening of muscles that occurs after death. It starts three to four hours after

pronouncement and is usually complete within twelve hours. This stiffness will gradually disappear over the next 48-60 hours. Other factors affect the onset of *rigor mortis*, including the amount of physical exertion occurring before pronouncement. If signs of *rigor* are observed sooner than expected, they will recede sooner as well.

In cases where *rigor* is present, cardiopulmonary support and subsequent perfusion may be attempted, but decisions will be made on a case-by-case basis. For those patients where *rigor* has come and gone, no attempts should be made to restore circulation. Transport team members will simply prepare for shipment to Scottsdale in such circumstances.

The extent of ischemic damage may be partially assessed using complex chemistry and blood gas analyses. These analyses are routinely performed in hospitals for heart attack victims. Complex chemical analysis is beyond the capacity of an Alcor transport team, but testing the pH of a patient's blood is a simple way to gain useful information.

pH

This is the symbol used to express the degree of acidity or alkalinity of an aqueous solution. A more precise definition is that pH is the negative logarithm of the hydrogen ion concentration, relative to water. Acids are those substances which break down and release hydrogen ions, while bases (alkaline solutions) break down and release hydroxyl ions. On a scale of 0-14, a solution with a pH=7 is neutral; one with a pH=0 to 6.99 is acidic, and one with a pH=7.01 to 14 is alkaline (or basic). In humans, pH falls between 7.3 and 7.5.

As a patient's body temperature is reduced, the pH may be expected to fall by 0.07pH PER °C [28, 29]. This drop in pH is overshadowed by ischemia's effect on pH: expect the transport patient's pH to drop (become more acidotic) significantly. When lysosomes or peroxisomes burst, the toxins released into the blood will begin breaking the bonds of complex molecules to form more simple molecules. Many of the simple molecules form acids of various sorts.

Sodium bicarbonate and tromethamine are two medications which will help regulate acid/base levels in a transport patient. Each of them buffers against the buildup of acid in the blood. Tromethamine is part of the medication protocol, and sodium bicarbonate is used in cases where the transport team has the personnel available to monitor and regulate pH changes once all other medications have been administered.

Glucose

Glucose in the body is converted to energy by all the cells. The glucose concentration in the blood will determine the amount of insulin produced by the pancreas. Insulin is a hormone which promotes the absorption of glucose by the liver. Normal metabolic levels for glucose should be maintained during a transport, if personnel are available. If not glucose levels aren't regulated, they will break down into lactic acid, which is damaging to the cells.

The administration of dextrose, which is another name for glucose, will increase glucose levels in the blood. Normal serum glucose levels range from 90-110 mg/dl. If dextrose (50% concentration) is used, blood glucose levels will rise by approximately 2 mg/dl per ml administered.

50% dextrose (ml) = $\frac{[\text{required glucose level (mg/dl)} - \text{measured glucose level (mg/dl)}]}{2}$

2

Medication Packaging

There are a variety of ways a medication can be stored prior to use. Solutions may be stored in vented or unvented glass bottles, plastic bladders, vials, or ampules. Bottles and bladders are used for medications administered in volumes generally exceeding 50ml. They require an intravenous line. Vials and ampules are generally used in cases where the volume is less than 50ml. Small bottles and ampules may also contain a powder which must be hydrated prior to administration. Most packages also contain slightly more than the label indicates. Be certain to measure out only the amount needed for the patient.

One thing all medication packages have in common is that there is a plastic protective cap covering the port from which the medication is re-moved. These caps are easily removed from the package. Once removed, these caps cannot be replaced, so they should only be removed when the medication is being drawn up for administration. Once the caps are removed, the seal underneath should be swabbed with alcohol. In the case of multi-dose vials, this should be done *every* time medication is withdrawn.

When medications are withdrawn into syringes, there may be tiny air bubbles attaching to the insides of the syringe. Simply tap the syringe gently to allow the bubbles to rise to the tip, and depress the plunger until all bubbles are removed.

Bottles

Glass bottles are divided into two categories: those which are vented and those which are not. This characterization is important to the choice of an IV line, as IV lines also come with a venting option. If the medication is stored in a vented bottle, an unvented line must be used, and with the unvented bottles, a vented IV line. In cases where no vented IV line is available to use on an unvented bottle, an IV needle may be spiked through the seal and used to introduce air. (This is risky. Bottles should never be left unattended during pressure infusion to avoid air being introduced into the IV line.)

Medications degrade when exposed to air. Placing a medication on ice will reduce the rate of degradation, but this deterioration will begin once the sterility or vacuum of a container is breached and applies to all forms of packaging, including syringes. Once spiked for administration, a medication must be used within 24 hours. If the medication isn't used immediately, it should be stored on ice in an ice chest or refrigerator.

Bottles must be hung (spiked end down) from an IV pole or similar high structure. Gravity will provide the necessary pressure to infuse the solution, and because of this, bottles must be hung as far above the chest of the patient as is possible (preferably at least 2-3 feet, and the length of the IV line will generally determine the upper limit).

Glass bottles pose a serious risk of air emboli, and must be constantly attended to avoid the accidental introduction of air into the patient.

Bladders

Flexible bladders are used for large volume medications, and they are all unvented containers. For rapid infusion, an inflatable pressure cuff may be used. Using the pressurization technique will pose a serious risk of air emboli here as well, and pressurized bladders must be constantly attended to avoid the accidental introduction of air into the patient.

Solutions contained in bladders may be administered without venting, as the flexible sides of the bladder may be compressed to force the fluid into an IV line. For best results, all of the air should be removed from the bladder prior to hanging it for infusion. This is accomplished by spiking the bag with an IV line, opening the line to fluid flow, turning the bag upside down, and squeezing the air out through the line. A pressure cuff may then be placed around the bladder (for rapid infusion) and both are hung from the IV pole. Once hung, the inflation bulb of the pressure cuff is squeezed several times. This will begin the rapid flow of fluid out of the bladder.

The use of bladders and pressure cuff is preferable to using glass bottles. With the air removed from the bladder before it is connected to the patient, there is less chance that air will accidentally be administered to a patient. The pressure cuff also enables faster infusion of medication than gravity will provide.

Vials

Vials are essentially small bottles which contain medication in either liquid or powder form. These small bottles generally have a rubber stopper at the top which must be pierced by a needle to access the medication. They are also vacuum-sealed for sterility. Rubber stoppers are designed for one injection only or for multiple dose administration. Labels on the vial and any associated box will provide this information. Only a "multi-dose" vial may be punctured more than once and still maintain the sterility of the solution.

Vials which contain powder must be rehydrated with the appropriate solution (usually sterile water). The packaging slip stored with the vial will provide full details about reconstitution of the powder. Required amounts of rehydrating solution are pulled into a syringe and then injected through the rubber stopper. The syringe is then removed and the vial is gently turned to dissolve the medication. Once the powder is completely dissolved, the medication may be removed for administration.

There is another type of vial which deserves mention: Mix-O-Vial. This is an ingenious container which has two separate chambers for powdered medication and the reconstituting solution. Simply depress the plunger to combine the powder and fluid, invert gently until the powder is dissolved, and withdraw from the vial using a needle and syringe.

Before fluid medication may be removed from a vial, the transport team member must be wearing gloves and have assembled appropriate sterile needles and syringes. Remove the plastic cap and swab the rubber stopper with an alcohol pad. Attach a needle to the tip of the syringe. No fluid may be removed from a vial without first injecting some air through the rubber stopper.

Fill the syringe with a volume of air identical to the amount of fluid you will withdraw. Insert the needle through the stopper. Inject a quantity of air into the vial and, without removing your thumb from the syringe, release the pressure on the plunger. Fluid should flow into the syringe easily, as the pressure in the vial rises with the injection of air. The tip of the needle should remain below the fluid line to avoid simply filling the syringe with air.

Ampules

These are the final category of medication packaging, and they provide the greatest risk for injury of the transport team member. Ampules are small containers with neither lid nor injection port. They are glass and must be broken before the medication can be withdrawn. Ampules contain a single dose of medication.

The ampule is generally tapered at one end to provide a hand-hold for breaking off the top. Before breaking open an ampule, make certain to wear gloves and wrap the tapered part of the ampule with gauze. Snap sharply to break the top. While holding the ampule with one hand and a syringe with the other, withdraw the medication.

Medication Preparation

All of the medications to be administered to a patient must be prepared before they are needed, if possible. It takes some time to calculate the dosages and withdraw them for injection. If done in advance, transport team members must make certain that all syringes, bottles, and bladders are labeled. Bottles and bladders are labeled by the manufacturers, but syringes must be labeled with the medication name (or recognizable abbreviation) using a semipermanent marker. Once labeled, syringes may be stored for later administration.

If a patient is clearly agonal, medications may be drawn up, but transport team members must be aware that predicting time of death is an extremely inexact science. Past Alcor patients have historically exceeded their physicians' estimates for time of death and have experienced agonal declines that were hours (and in one case, days) longer than anticipated. The reason for this is that medical professionals concentrate on making people well. Little time has been spent on the mechanics of death. As a result, predictions are often wrong. This is important, because there is generally only one set of medications in each local emergency response kit. If medications are drawn up and the patient lingers, the medications will degrade and become unusable within 24 hours. Margins of 24 hours are usually sufficiently close that a second set of medications is rarely needed, but if this happens, more medications may be shipped from Alcor Headquarters.

Intravenous Access

An IV provides a portal to the circulatory system through which large-volume medications may be pushed. IVs are always placed into veins. Using an artery to administer medications to a patient is dangerous, because of the high pressures of arterial circulation and because the arterial side of the vascular system is unfiltered. (The lungs act as an emergency filter for emboli.) Improper IV technique causes damage to the vessels and could result in irreparable damage to the vessel, as where a needle is driven *through* a vessel instead of eased into it.

Primary access points for transport patients include the basilic or axillary veins in the arm, the saphenous vein in the leg, and the jugular vein in the neck. The jugular vein, and indeed any central IV (like a subclavian), is a less-desirable IV site for the transport patient, because the displacement of blood caused by the high pressures of the heart-lung resuscitator will reduce the amount of fluid transported by these vessels. Femoral vessels are less desirable because that is where surgical access for blood washout is likely to occur. Placing an IV into the femoral area may also cause damage to the vessel and make access to this area during the blood washout difficult or impossible.

Medications should be administered to a patient as soon after pronouncement as possible and concurrent with

both surface cooling and the initiation of cardiopulmonary support.

While some medications may be administered using an intramuscular (into the muscle) or subcutaneous (under the skin) injection during a routine hospitalization, these administration methods are not used on a cryonic suspension patient. During bouts of ischemia and severe trauma, the body will shunt blood away from the skin and muscles and redirect it to the vital organs. This reduces the efficiency of intramuscular or subcutaneous medication absorption. Absorption into the blood is fastest when medications are injected directly into the circulatory system.

There are four primary failure modes for IV therapy which must be avoided: air emboli, hematoma, infiltration, and clotting. Because IV placement requires training and practice, it should only be done by experienced personnel. However, this does not eliminate the responsibility of transport team members to observe the condition of the patient or the IV. Any transport team member observing problems with an IV line should tell the transport team leader or other delegated individual immediately.

Clotting

Clotting is the easiest complication to avoid, and one of two failure modes which may be avoided with simple diligence. An IV line, when in the patient but not being used momentarily, should be filled with heparinized saline and flushed occasionally to prevent blood in the line or needle from clotting. If a line cannot be flushed, the tubing is first replaced without removing the needle from the patient. Attempt another flush, and if it also fails, place a new IV.

Air Emboli

An embolus (plural: emboli) is a plug within a vessel which floats, or migrates, freely until blood vessels narrow and it becomes lodged. Once lodged, the embolus will obstruct circulation. An embolus could be a blood clot, an air pocket, a fatty deposit, or a tumor [2]. Air emboli are air bubbles which have been administered to the patient, bubbles which block blood flow.

There are several ways these bubbles could be administered to a patient. Each of them should be avoided. If air is administered to the patient, it must be recorded in the transport notes. Include the circumstances and an estimate of the volume of air administered.

Some medications are stored in IV bags or sealed bottles. Both the bags and the bottles frequently contain some air. Air can easily be removed from an IV bag, because of its flexible sides, and indeed should be removed before the IV lines are connected. Proper sterile techniques should be observed at all times. During a transport, the transport team member who is administering medications is responsible for making certain that no IV bag is hung for the patient with air inside. It is rarely possible, during a transport, to arrange for constant supervision of an IV line, so prevention is key to avoiding this threat to perfusion.

Bottles are another matter—the air cannot be removed from the container. If a bottle is allowed to run dry without the line being clamped, air will enter the patient's circulatory system. The IV line must be clamped before the bottle runs dry. During a transport, the transport team member who is administering medications is responsible for making certain that no bottle runs dry.

IV lines may be a source of emboli if they aren't primed with fluid prior to starting the infusion.

Safety Precautions

No transport team member will prepare or administer medications without wearing gloves.

Once the plastic covering has been removed from a needle, *do not* recap that needle. Carefully remove the needle from the syringe and place it into the Sharps container. Once all sharp objects have been collected, seal the container for shipment with the patient.

A completed *Incident Report Form* should be included in the transport notes if any transport team member is exposed to infectious material, as would happen with a needle-stick.

Intravenous Cannulation

There are three basic types of needles and catheters used in peripheral lines for administering medication. First, a winged infusion set consists of a needle with plastic wings and tubing with an adapter for IV lines and syringe tips. Then, there are two catheters. One is "over-the-needle" and the other is "inside-the-needle". Over-the-needle catheters are preferable to inside-the-needle catheters, as placement is easier.

Catheters are preferable to winged infusion sets, as it is generally possible to infuse larger volumes of fluid into the patient more quickly. Catheters may also be more securely fastened to the patient. Use the largest size possible. (Note: needles, cannula, and catheters are sized such that the lower numbered sizes are the largest needles.)

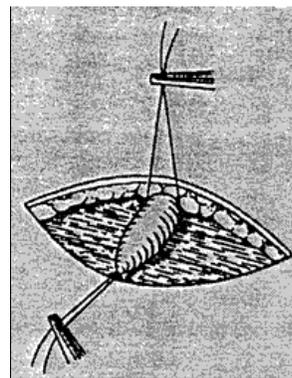
If a patient has been pronounced in the hospital or while under the direct supervision of a physician, there may already be catheters in place. If so, request that they be left in place after pronouncement. Before using any lines that have been left in place, make certain that the injection port is compatible to any medications which will be administered through it. Also make certain that any blood in the line has not clotted. This can be avoided by pushing a low concentration Heparin solution (10U/50m1) through the line every few minutes.

Generally, IV lines will only be placed by transport team members who have experience and training. However, all team members must be familiar with the types of IV lines and needles available and how to manage an IV.

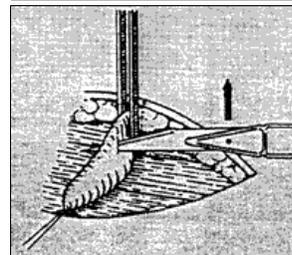
Catheter Placement Using Cutdown

- 1. Once a vessel has been located (usually through palpation) and the skin cleaned with Betadine, an incision may be made into the skin.**
- 2. Blunt dissection is used to isolate the vessel from the surrounding fatty tissue (fascia) and muscle. Avoid cutting any blood vessels in the area. (Cauterize or clamp as needed and able.)**

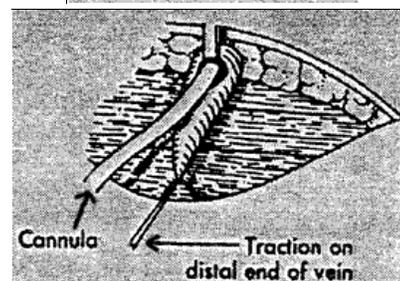
3. Once the vessel has been cleared of any connective tissue, slide forceps underneath and pull sutures underneath. (At least one proximal and two distal.) Tie off the distal end as far down as the incision will allow.



4. Use the proximal suture to elevate the vessel (to prevent undue bleeding). Use a Bulldog clamp to hold in place. Use forceps to hold the vessel in place. Using a #15 blade, cut the vessel with an upward stroke beginning about half way down.



5. Use the forceps to stabilize the hole and hold it open. With the other hand, insert the catheter. Remove the clamp and advance the catheter as far as it will go. Tie the proximal suture. Use the second distal suture to secure the catheter.



IV Management

Most medications will be administered through an IV line. There are several kinds, including vented and unvented or filtered and non-filtered. Be certain to use the appropriate line with each medication.

All IV lines have clamps to stop the fluid flow. Most have ports for administration of medication from a syringe, in addition to a bottle or bladder. Other ports may allow for the addition of another IV line into the loop.

If a needle and syringe are used to add medication to an IV line, clamp the line above the port and inject the new medication. Never administer air. Never let an IV run dry.

All medications administered to a patient must be recorded for the patient's permanent record (time administered, medication name, and amount given). Another tenant of medical practice is applicable to cryonics: "if it wasn't recorded, it wasn't given." This will be the assumption in post-suspension evaluation of both the team's performance and the quality of the suspension received by the patient. The transport coordinator's *Emergency Response Manual* contains forms designed for the recording of this information. Use them.

It is easiest, in situations where transport personnel are plentiful, to assign one individual scribe duties and another medication administration duties. It is the responsibility of the individual giving the medications to ensure that the appropriate information is recorded.

Conclusion

A great deal of information is contained in this chapter, and much of it will be useful to the transport team member during a standby or transport situation. Many physicians and nurses are interested in the types of medication administered to Alcor patients. Demonstrating an understanding of the purpose of medication and the damage it mitigates will help enhance the credibility of cryonics in the medical community. Recognizing the failure modes of medication will help a team member prevent damage to the suspension patient, which is the goal of a transport.

Medication, in conjunction with cooling and cardiopulmonary support, will provide the optimal structural protection for a patient, within current constraints. The transport team which can accomplish these steps will have performed admirably. Only a blood washout remains as a protective measure. That is the subject of the next chapter.

Calculating the Volume of Medication to Administer

Volume to give is calculated with the formula:

dosage x weight of patient in kilograms ÷ package concentration

MEDICATION	DOSAGE (units/kg)	Weight of Patient (KG)	Package Concentration (units/ml)	Volume to Give (ml)
HEPARIN	420U			
POTASSIUM CHLORIDE (OR)	1mEq			
SODIUM PENTOBARBITOL	30mg			
DEFEROXAMINE HCL	2g in all			
EPINEPHRINE	0.2mg			
NIMODIPINE (OR)	10ug			
DILTIAZEM	300ug			
SODIUM CITRATE	120mg			
ASCORBIC ACID	125mg			
TROMETHAMINE	250mg			
CHLORPROMAZINE HCL	3mg			
METHYLPREDNISOLONE	1g in all			
MANNITOL	2g			
METUBINE IODIDE	0.07mg			
GENTAMICIN SULFATE (OR)	1mg			
ERYTHROMYCIN	1g in all			
BACTRIM	10ml in all			
DEXTRAN-40	500cc at most			
MAALOX	250cc			
STREPTOKINASE	1,000U			
VERAPAMIL	0.30mg			

- **HEPARIN:** is an anti-coagulant (prevents new clots from forming, doesn't affect clots already formed.)
- **POTASSIUM CHLORIDE:** reduces cerebral metabolic demand.
- **SODIUM PENTOBARBITOL:** reduces cerebral metabolic demands and electrical activity in the brain.
- **DEFEROXAMINE HCL:** binds excess free-iron into a non-destructive, chemically stable compound and reduces free radical damage.
- **EPINEPHRINE:** supports blood pressure and helps to counter the relaxative properties of nimodipine and diltiazem.
- **NIMODIPINE:** inhibits smooth muscle contraction by blocking the influx of calcium into an injured cell, reduces arterial spasms during ischemia, and provides protection against cerebral "no reflow."
- **DILTIAZEM:** has similar effects to nimodipine.
- **SODIUM CITRATE:** binds excess calcium into a non-destructive, chemically stable compound and reduces cerebral reperfusion injury.
- **TROMETHAMINE:** combats acidosis.
- **CHLORPROMAZINE HCL:** stabilizes the cell membrane and protects against cold ischemic injury.
- **METHYLPREDNISOLONE:** functions similar to chlorpromazine.
- **MANNITOL:** reduces free radical damage and prevents cerebral edema.
- **METUBINE IODIDE:** paralyzes the muscles to inhibit shivering and reduces overall metabolic demand.
- **BACTRIM:** prevents microbial overgrowth. An anti-bacterial agent.
- **ERYTHROMYCIN:** has similar effects to Bactrim.
- **GENTAMICIN SULFATE:** has similar effects to Bactrim.
- **DEXTRAN-40:** minimizes capillary sludging and supports blood pressure in volume-depleted patients.
- **MAALOX:** prevents gastric acid accumulation and reduces the chance for gastric hemorrhage.

- **STREPTOKINASE:** dissolves clots.
- **VERAPAMIL:** reduces intracellular calcium loading.

Go to [Chapter 9](#) or [Table of Contents](#)

January 30 , 2007

A shorter version of this article appeared in *Cryonics*, Spring 2006.

Human Cryopreservation Stabilization Medications

by Aschwin de Wolf

The goal of human cryopreservation standby and stabilization procedures is to preserve the structure and viability of the brain *after* medico-legal pronouncement of death. To achieve this goal we employ three different techniques: cardiopulmonary support (CPS), rapid induction of cooling (hypothermia), and pharmacological intervention.

The primary purpose of the medication protocol is to reduce or eliminate injury from cerebral ischemia. Ischemia is interruption of the delivery of adequate amounts of both oxygen and nutrients to the brain. The better we protect the brain from ischemic injury, the better the patient's chances of future revival. This brief introduction will familiarize the reader with the different classes of medications we use, and some of the issues associated with administering them.

Although virtually all the medications ultimately are given to help mitigate ischemic injury, many of them are pharmaceuticals with other uses in mainstream medicine. Therefore, EMT's, paramedics and nurses may be familiar with many of them. The most important differences are the number used, the different context and sometimes rationale of use, and different dosages than are common in orthodox medical practice.

Anesthetics

Although the human brain accounts for only 2% of total body mass it accounts for about 20-25% of total oxygen consumption. Therefore, the first priority is to reduce cerebral oxygen consumption to make the brain more tolerant to the limited blood flow CPS produces. This can be achieved by inducing deep anesthesia. Because we prefer to use medications that are not scheduled drugs and which also confer anti-ischemic benefits, the current anesthetic of choice is *propofol* (*Diprivan*). Naturally, this medication should be given just before, or *immediately* after, starting CPS. The choice of *diprivan* is a typical example of the sort of trade off that sometimes needs to be made in human cryopreservation. *Propofol* produces transient hypotension which is undesirable in the context of trying to restore optimal cerebral blood flow.

Anticoagulants, Antiplatelets and Fibrinolytics

The formation of blood clots during human cryopreservation cases is problematic for a variety of reasons. It may frustrate our attempt to provide adequate CPS, cause serious problems during blood washout, or complicate perfusion with a vitrification solution (in cases without blood washout). Because anticoagulant and antiplatelet agents like *heparin* and *aspirin* only *prevent* blood clotting, a fibrinolytic, *streptokinase*, is given to dissolve

existing blood clots.

Vasopressors

In human cryopreservation vasopressors (pressors) are used to increase blood pressure and selectively shift blood flow to the vital organs (including the brain). The current vasopressors of choice are *epinephrine* and *vasopressin*. Because avoiding *some* of the side effects of these medications is not as high a priority in human cryopreservation as in conventional medicine, protocol and dosages may differ somewhat from current practice in cardiopulmonary resuscitation. It is hard to overestimate the importance of restoring adequate cerebral blood flow in the human cryopreservation patient. It is also important to note that epinephrine needs to be given intermittently at short intervals, or continuously infused, instead of administering just one single large bolus [1]. This is done because epinephrine has a short half-life and is rapidly metabolized. Ideally, cardiac output and oxygenation of the brain are measured to validate stabilization procedures in general, and to make informed decisions about the use of vasoactive medications, in particular.

Cerebroprotective Agents

In the ideal case, circulation and ventilation are restored immediately after pronouncement of medico-legal death, in conjunction with the administration of medications and induction of (surface) cooling. Although this protocol is fairly aggressive compared to that which is usually employed by paramedics in out-of-the-hospital resuscitation from cardiac arrest, it is usually inadequate to meet the metabolic demands of the patient. This is especially true if the patient has already experienced some ischemic injury prior to pronouncement and/or the standby team is not able to start the stabilization protocol immediately, or if the patient is febrile at the time of pronouncement.

No (or inadequate) blood flow fails to provide (enough) energy to maintain ion gradients across cell membranes, leading to depolarization. The depolarization of presynaptic membranes overactivates the neurotransmitter glutamate, causing increased calcium ion (Ca^{++}) influx. In the absence of adequate energy production, excessive Ca^{++} leads to a cascade of damaging events including pathological activation of various enzymes, inflammatory mediators, generation of harmful free radicals and apoptosis (programmed cell death), producing an explosive positive feedback-loop in which one event amplifies and accelerates others [2].

The agents that are used in human cryopreservation to mitigate ischemia and reperfusion injury (the largely free radical induced damage caused by restoring circulation and ventilation) include a variety of antioxidants, excitotoxicity-inhibitors and inducible nitric oxide synthase-inhibitors to target different parts of the damaging cascade of events resulting from inadequate blood flow.

Administration of kynurenine increases production of kynurenic acid, an endogenous antagonist of excitatory amino acid induced excitotoxicity, one of the upstream events in cerebral ischemia. *S-methylthiourea* (SMT), an inducible nitric oxide synthase inhibitor, is primarily used to mitigate inducible nitric oxide and associated formation of the peroxynitrite radical. SMT also increases mean arterial pressure.

Ischemia-reperfusion induced free radical generation is further mitigated by a proprietary antioxidant cocktail called *Vital-Oxy*. *Vital-Oxy* contains antioxidants like *D-alpha tocopherol* (Vitamin E), *melatonin* and the free radical spin trapping agent *alpha Phenyl t-Butyl Nitron* (PBN). *Vital-Oxy* also includes the anti-inflammatory drug

carprofen. Another antioxidant administered in cryonics is the low molecular weight superoxide scavenger *4-Hydroxy-Tempo* (TEMPOL).

This multi-modal approach in treating cerebral ischemia has been developed and proven to be effective in recovering dogs after 17 minutes of normothermic cardiac arrest at Critical Care Research, a California-based resuscitation research company.

A relatively recent addition to this multi-modal treatment of ischemia is a class of agents called PARP-inhibitors. The overactivation of the DNA repair enzyme poly (ADP-ribose) polymerase (PARP) during ischemia leads to a rapid depletion of the major energy sources of the cell. Studies of PARP-inhibitors in animal models and "knock-out" mice (mice with inactivated PARP genes) indicate the potential of PARP inhibition in mitigating cerebral ischemia. One advantage of PARP inhibitors is that PARP activation is a final common pathway in many of the events in the ischemic cascade, potentially offering a greater degree of protection and providing a longer window of opportunity in mitigating cerebral ischemia. The current PARP inhibitor of choice in cryonics is *niacinamide*, better known as vitamin B3.

Buffers

Although human blood normally has a pH of 7.4, which is kept in a very tight range in a healthy human being, after a (prolonged) period of ischemia, and/or inadequate circulation and ventilation, the typical patient becomes acidotic. This is a serious concern because this condition damages cells, accelerates blood clotting, induces clumping of red blood cells (agglutination) and exacerbates cold agglutination. Acidosis also renders *epinephrine* and *heparin* inactive because, as in the case of *epinephrine*, the drug is effective only within a certain pH range, or in the case of *heparin*, acidosis degrades the drug and inactivates it. To prevent and treat acidosis a buffer is given. The current buffer of choice in human cryopreservation is *tromethamine* (*THAM*) because it does not have some of the side effects (like cell swelling) of *sodium bicarbonate*. In the ideal human cryopreservation case, pH is meticulously monitored and additional buffer is administered if acidosis is observed.

Volume Expanders and Oncotic Agents

As indicated above, intravenous access is not only necessary to administer medications but also to administer fluids to address electrolyte imbalances and replace volume (in the dehydrated patient). A fluid like *dextran-40* is not only a volume expander but also improves microcirculation and somewhat inhibits hypothermia induced cold agglutination. Another medication employed in fluid resuscitation is *mannitol*. *Mannitol* has been proven effective in ischemia induced cerebral edema by promoting movement of fluid from the cells to the vascular space. Other advantages of mannitol are reduction of blood viscosity (improving perfusion) and its free radical scavenging properties. Both of these fluids are given in fairly large volumes (compared to most of the medications), so a basic understanding of fluid balance and electrolytes is desirable to make informed decisions for the patient.

Antibiotics

Microbial overgrowth can be an issue during long (normothermic) transport times. The aminoglycoside *gentamicin* kills (aerobic) bacteria by irreversibly binding to bacterial ribosome, causing the production of faulty proteins. Administration of antibiotics and the use of sterile technique have sometimes been perceived as redundant and

expensive for treating cryonics patients. One answer to this objection is that the guiding philosophy of stabilization is to provide a level of care and commitment at least equal to, or better than, the care the patient received before pronouncement of legal death. It's also important to note that antibiotics and sterile technique are not only used to treat the patient, but also to protect the *stabilization team members* from infection.

General Issues

The fairly large number and volume of the medications raise the obvious question of what the preferred sequence should be. The most important consideration is that the sequence should reflect medical priorities. For example, *propofol* is administered as the first medication to reduce cerebral metabolic demand. The second consideration is to give the small volume medications first, and the larger volume medications later, so that most of the medications can be given in the shortest period of time. Naturally, there can be a conflict between the two. When not desirable to delay the administration of a drug, a small portion of the total volume can be given rapidly and the rest can be administered (as a drip) later.

Although the medications currently used in human cryopreservation reflect years of experience and research, it needs to be stressed that this does not completely release the cryopreservation technician from using medical common sense. For example, considering the total volume of medications in our protocol, a normally hydrated infant may have different fluid (and medical) needs than a severely dehydrated large adult. A patient may have already been heavily pre-medicated with some of the medications in our protocol (*aspirin* for example). If prompt cardiopulmonary support is not possible, it may be questionable to administer medications to mitigate early ischemic injury.

These kinds of issues stress the importance of comprehensive data collection, detailed reporting and systematic analysis. The more we learn about the different effects of our protocol in different situations, the better we may be able to refine it to suit a particular patient's needs. In this respect human cryopreservation is not unlike conventional medicine; one size *doesn't* fit all.

References

1. Jakob Johansson (2004). *Cardiopulmonary Resuscitation: Pharmacological Interventions for Augmentation of Cerebral Blood Flow*, Dissertation, Uppsala University Sweden
2. Paul Morley , Joseph S. Tauskela, and Antoine M. Hakim (1999). "Calcium Overload" in *Cerebral Ischemia: Molecular and Cellular Pathophysiology* (ed. Wolfgang Walz), pp. 69-105

EXHIBIT G

X-Message-Number: 4328
Date: Mon, 01 May 95 16:20:10
From: dave <DAVE@alcor.org>
Subject: info on VenturVille

Thanks to everyone who has written me for more info on VentureVille.

Since I have had several requests for more information I will just post it to everyone here on CryoNet. Please excuse me for not posting personal replies, as I am a little behind in my work since we are so busy lately.

VentureVille is presently a 2000 square foot house on a 1 1/2 acre parcel of land. It has 3 bedrooms in the main house and a one-bedroom small apartment.

The 3 tenants in the main house will each have their own private bedroom and share the kitchen, living room and bathroom. The tenant in the apartment will have his/her own private bedroom-den kitchenette and small bathroom.

There is a huge ranch-style screened porch that all tenants share for sitting out on balmy nights and philosophizing, having parties and cryonics get-togethers.

There is room to add more bedrooms and bathrooms to the house when we get more than 4 tenants. There is room to add more houses to the land. There is more land available in the area. WE CAN GROW.

The land has some native, large trees and we have planted 30 more. In a few years we will have a lush, very private area.

Our future plans include to add a library, offices for Venturists to do volunteer work, a pool, a sports court, and other amenities. We also want to build a hospice some day where terminal cryonicists can come to deanimate in an environment supportive of cryonics.

Venturists that live in VentureVille can have very low rent if they do some volunteer work in their spare time. There are lots of jobs in Phoenix so there is opportunity to make a good outside living.

Some of the work the Venturists are going to start will be: selling cryonics information; appearing on radio and TV talk shows; building a hospice; creating a place for storage of personal items while cryonicists are in suspension waiting to be reanimated; and creating a safety back-up organization to rescue our members in suspension if their suspension organization goes out of business.

For more information please call me.

Day 602 922-9013 Home 6pm to 8pm MST 602 943-0753.

Also send me your snail mail address and I'll mail you a package of more information about the Venturists.

The Society of Venturism is not affiliated with Alcor or any other suspension organization. Venturist members include suspension members of most of the present cryonics organizations.

Come on out to Arizona, get involved.

Thanks.

Dave Pizer

Rate This Message: <http://www.cryonet.org/cgi-bin/rate.cgi?msg=4328>

EXHIBIT H

X-Message-Number: 4707
Date: Wed, 02 Aug 95 18:31:17
From: dave <DAVE@alcor.org>
Subject: VentureVille

Announcement

I would like to announce that the concept of VentureVille as it presently exists is well accepted, but the actual facility in its present state (a four-bedroom house) seems to be premature and not the most desired sleeping and living arrangements.

Right now there is only one cryonicist living there. There is room for several more, but the main objection seems to be that most potential tenants want individual housing. There is room on the large lot to construct more buildings, but the cost would be prohibitive now.

Therefore, if there is not more interest and more persons do not move in soon, I am going to sell the present facility and look for something more like a small apartment building with individual units.

David Pizer

Rate This Message: <http://www.cryonet.org/cgi-bin/rate.cgi?msg=4707>

EXHIBIT I

An interview with **Larry Johnson** Director of Clinical Services



Cryonics Magazine recently caught up with Alcor's new Director of Clinical Services, Larry Johnson, in his office at the Scottsdale Central facility. Here is an interview with our newest employee, concerning his background and various facets of his new position.

CM: Larry, tell us a little bit about yourself, for instance, where are you from originally, about your schooling and background?

LJ: I grew up in Albuquerque, New Mexico, and was born and raised in that area. Once I was through high school, I became interested in emergency medicine, primarily the paramedic field, which interested me quite a bit. I actually had some buddies who were paramedics on ambulances, and had ridden out with them as I was going through high school, and as soon as I graduated, I went to the University of New Mexico School of Medicine—they had formed the EMS Academy for the Education of Emergency Medical Technicians and Paramedics, so I went there—this was back in the late 70s. I have been a paramedic for 25 years as of this April. My background is pretty much that—it's emergency medicine. I started out as an EMT, worked my way up to paramedic, and have held various positions, everything from a street paramedic to a field training officer to a supervisor to a director of clinical services education. I was a program director for an air medical helicopter service in Dallas. It was one of the first in the nation to employ an all-paramedic crew on their aircraft. I basically developed and implemented that program myself along with the help of a couple buddies of mine, and ran that program successfully, which is still successful today.

CM: Specifically, what were you doing immediately prior to coming here to work at Alcor several weeks ago?

LJ: I was actively working as a field paramedic in Las Vegas, Nevada, providing emergency care for the 911 system up there.

CM: And how long had you been doing that?

LJ: I was with Las Vegas right at a year. As I stated before, I am originally from the Southwest, my mother is in Las Vegas, my

dad actually lives here in Phoenix, and I had moved from Texas to be a little bit closer to family, and that is what kind of drew me to the Las Vegas/Phoenix area.

CM: I know in a conversation we had several weeks ago, you were telling us about some of your experiences with the Waco incident. Could you relate to our readers some of what that was all about?

LJ: Waco was the fiasco several years ago. I was working as a flight paramedic for Care Flight Dallas, which is the second largest air medical service in the country, and we had gotten a call one morning to fly out to Waco, that there was some sort of outbreak or something against the ATF out there. As we were loaded into the helicopter, we were briefed with more information as to what had actually gone on and what had happened out there, and it was quite an experience—it was extremely stressful. I originally flew out the first set of ATF officers who were initially shot, and then I was called back several weeks later, actually when the compound had caught fire, and I was there to fly those injured individuals out.

CM: Thanks. I'm not sure anything we have here at Alcor is going to be quite that exciting, but can you tell us what it was that attracted you to answering the advertisement that Alcor had placed in a variety of publications? You saw the ad, of course, and responded, but what was going on in your mind? What did you think about when you saw the ad, and had you heard of us before?

LJ: I actually did hear of Alcor probably a couple years before. It was actually perfect timing. I was really at a period in my life here several months ago where I was really tired of the same old thing. As I stated earlier, I've been a paramedic for 25 years, so I got to the point where I wasn't feeling too challenged, I was pretty bored with my job, and I have found that a buddy of mine was aware of how I was feeling but he also knew I was interested in all types of sciences and that I wanted to get into something kind of new and he knew I was interested in research. He was actually the individual who first saw the ad that Alcor was running, and he had gotten on the phone to tell me about it. I

went ahead and got online, checked it out, and contacted Charles Platt.

CM: I know you are married and your wife's name is Beverly. What were her thoughts about the possibility of the two of you coming down here, moving to Scottsdale, and you taking this position with Alcor?

LJ: She's always been real supportive of what I want to do in regard to my career. She could see that I was really getting tired of what I was doing in the field as a paramedic, and I am one of those individuals who can become bored easily if I am not challenged and it shows in my actions. She knew I was at a point where I needed something new, and I had talked about it for so long that I didn't feel that challenge. So, I guess another thing she could see is the paramedic game is really for young individuals. It's a young person's career. I'd get home at the end of a 12-hour shift after running 14 or 15 911 calls, and I'd look like I'd been beaten to death. I'd come right home, get in bed, and sleep on a heating pad all night. So, I was getting a little old for that field. I'm very thankful for the experience I've had, I just can't think of any other way I could have gained the clinical experience and the clinical knowledge I have if it would not have been for that career field, and I'm very grateful for that. When this came up, she knows of my interest in research and new sciences, and so she was completely supportive. She's not a stranger to the Phoenix area—she lived in Mesa several years ago.

CM: I know you had just come down here, and very briefly after you started, you were on several Standbys and involved in more than one suspension. What was it like literally having no time to receive any on-the-job training?

LJ: It seems like that's the best way I really learn. I can sit down and listen to lectures and read books, but it really doesn't have any kind of impact on me until I actually get out there and do it, so I was really anxious to get out there and do what I've heard about and what I've read about, so it was a very good experience for me, and I look forward to more of these types of experiences.

CM: Larry, I know you have suggested and chosen (with our agreement) the title of Director of Clinical Services. What made you choose this particular title, and what does it mean? What should Alcor members know that this title means?

LJ: Director of Clinical Services is a title that is very well known in the medical profession, and I think with that title I can help build some bridges and relationships with what we're doing in this particular field versus what is going on in the medical business. I think it's a title that other medical professionals (i.e. nurses, physicians, those types) can relate to. So I truly believe that will help bridge that gap.

CM: Well it certainly is no longer a job requirement, but my

understanding is you are planning on joining Alcor as a member, and what's driving you to do that? Was that almost from the get-go, or has anything that you have seen or done here since you've started working here augmented your desire to become a member?

LJ: Well it's actually something that's kind of been in the back of my mind for some time even before I came to work for Alcor. I've always been interested, and I've actually done a lot of reading on the subject of cryonics and of nanotechnology, so I was somewhat knowledgeable of that when I walked in the door here. Actually, I just turned in today my membership application to Jennifer. I regret that I didn't get it turned in earlier, but as you stated earlier, as busy as we got a few weeks ago, I never really had time. However, my application is in, and I'm very excited about that, and again my wife is very supportive of my decision.

CM: And to clarify for our readers, today as Larry mentioned is Thursday, March 20, 2003. What have been maybe one or two highlights of your brief tenure here with us? What has maybe even pleasantly surprised you about your work since you've joined us?

LJ: I really enjoy how close-knit everyone is. It's kind of like a small family. I had the opportunity to meet the folks out in southern California—a bunch of really nice individuals out there. I also got to meet several people from around the world at the recent training we had up at Creekside Lodge. It was very friendly, and seems to be a very close-knit family.

CM: And, in all fairness to our readers and to try to remain somewhat objective in this interview, what perhaps has disappointed you more than anything else since you've been with us aside from having your motorcycle stolen?

LJ: I really can't think of anything disappointing as far as my work is concerned right now, as far as Alcor. So far I've been very pleased with what I've seen and with what has been going on. And as you stated, with the exception of having my Harley-Davidson stolen here in north Scottsdale, I feel like everything else has been okay.

CM: In this issue of *Cryonics*, which features our building up of the infrastructure and the professionalization of the network, obviously you are an important part of those programs. What do you see for yourself besides the activities on Standby operations doing for the technical aspects in the field operations or even here at Alcor Central? I know you had mentioned something about a professional paramedic network that you were thinking about developing. Can you share some of that and any other thoughts with us on this matter?

LJ: Actually some of my goals for the next several months include trying to help professionalize this group. In the past I have

been involved in the developing of some professional organizations, and have a little bit of background on that. I'm looking at the possibility and have already started some work in my spare time when I have it, developing a national registry—actually an international registry—for cryonics specialists. The acronym for this is IROCS. I have already written the bylaws, code of ethics, and mission statement. This will obviously take more individuals than myself to make these kinds of decisions, but I have started to lay the groundwork to try to professionalize this business.

CM: Well Larry, I think we've come to pretty much the end of the interview. Can you think of any questions I might have posed

but didn't or anything else you would like to share with our readership before we sign off today?

LJ: Just that I'm looking forward with everybody out there in this business. I've got a lot of ideas and a lot of plans that I'm sure everyone will be very pleased with.

CM: Thanks, Larry, for submitting yourself for this interview, and we'll look forward to hopefully a long and healthy relationship and a productive one between you and the foundation!

1

Cryonics Gets a Possible Boost from Cardiac Resuscitation Research

© James Clement, March 21, 2003

After learning that most victims of cardiac arrest (heart stoppage) die not from the injury to the heart, but due to brain damage, researchers at the Argonne National Laboratory (a U.S. Department of Energy laboratory operated by the University of Chicago), working with the Emergency Resuscitation Research Center (ERRC), also at the University of Chicago, decided to look at ways to protect brain cells during the trauma. One answer they came up with was *ice*. Resuscitation without brain injury is difficult after four minutes of cardiac arrest at normal temperatures. However, researchers also know that when cells are cooled, their metabolism and their chemical processes slow dramatically. For example, a skater who falls into an icy pond can be resuscitated even after being submerged for a significant amount of time.

Unfortunately, applying ice to the outside of the body works too slowly, so the team proposed that an ice slurry be injected into the lungs to start cooling down the blood faster. According to the researchers, an ice slurry would effectively cool critical organs of the body rapidly with just a small amount of coolant. This ice slurry would be inserted into the lungs, and EMS personnel would perform chest compressions to circulate the cooled blood, allowing it to reach the brain and preserve brain cells.

In research funded by a \$4 million grant from the National Institutes of Health, Argonne researchers used animal studies to discover that a patented ice slurry quickly cools the brain by 2 to 5 degrees Celsius. This process appears to keep the brain cool for about an hour, which would give medics and doctors more time to revive normal blood flow and brain activity. The extra time this procedure buys could reduce the brain damage to little or none.

According to Roger Poeppel, director of Argonne's Energy Technology Division, "Sudden cardiac arrests strike about

1,000 people a day, and the survival rate is at best 2 to 4 percent. If we can improve survival rate by just 1 percent, we will save the lives of 10 people every day."

In cryonics, a person who is already "legally" dead has a mixture of cryoprotectants (antifreeze) pumped through their organs, replacing up to 60 percent of the water inside the cells. The body is then cooled below -130 degrees Celsius, and the tissue chemistry is thereby slowed to a stop. In conventional medical research, vitrification has been successfully applied to embryos, ova, pancreatic islets, skin, and vascular grafts. Work continues to make vitrification reversible in larger systems. Once medical technology advances sufficiently, it is hoped that the cryopreserved person will be unfrozen and then resuscitated without significant brain damage. During the reanimation process, the "cause" of death would be repaired as well.

Although the ice slurry being developed by the Argonne and ERRC researchers does not freeze the brain, the knowledge being gained by them could help cryonicists understand better how hypothermia preserves brain cells and how the resuscitation process should proceed to minimize damage. ERRC is also working on a method for clinicians to monitor free radicals in humans after ischemia (lack of blood supply). Lacking such a monitor, current therapies with antioxidants have no way to determine if the therapy has achieved its goal. A multidisciplinary team consisting of bioengineers from Argonne National Laboratory, doctors, and scientists are now developing a free radical detector device for use by paramedics and doctors that will overcome this obstacle to antioxidant treatments. Further work is needed to refine prototype biosensors for real-time measurements of oxidant stress in people.

1

EXHIBIT J



Prescott,

AZ Lodging at it's Finest at the Creekside Lodge Preserve



Get Away From It All! We Offer Private Cabins on the Creek



Enjoy a Complimentary Hot Continental Breakfast

From the large porch on your cabin you can watch the native wildlife. Enjoy a comfortable cabin with a fireplace, microwave and small refrigerator. Many cabins even have indoor Jacuzzi-type tubs.



The Creekside Lodge, or "The Preserve" (as we like to call it), fronts on State Highway 69, which offers quick and easy

Rustic Cabin overlooking the Creek area with In-Room Hot Tub. (The Creek runs seasonally.)

Rates (for a party of two). Print out the coupon below and present it at check in to benefit from these special rates. Our phone number is (928) 632-0777:

Week nights:

\$79 a night

Week ends & holiday periods: \$99 a night

Call (928) 632-0777 to ask about our low weekly rates (for seven consecutive nights).

Scroll down for our coupon and print and present this offer at check in.



Call (928) 632-0777 to reserve your Cabin with Private Jacuzzi. (We require a 72 hour notice for cancellations.)

The Creekside Preserve offers Prescott area visitors something rare in Prescott lodging, such as...

- Private cabins on Big Bug Creek.
- Your own private porch overlooking the Big Bug Creek area. (The creek runs seasonally.)
- A romantic heart-shaped jacuzzi hot tub in most rooms.
- Cabins with comfortable king beds.
- Microwave, coffee maker, refrigerator and cable tv in each room.



access to some of the more entertaining [points in the Prescott, Arizona region](#).

See why we're one of the most popular Prescott, AZ area lodging

destinations!

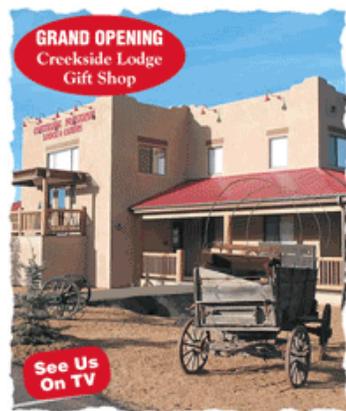
[Call us today for more information.](#)

- Free continental breakfast.
- A [comfortable lodge](#) with many amenities.

The Creekside Preserve is a popular lodging spot for Prescott area visitors. Here's why...

- We are animal friendly! Bring your dog with you (\$10 a night extra charge per pet).
- Trail rides are now available through Potagold Stables near the Creekside. Call (928) 632-4430 for information and rates.
- We are within close proximity to two of Northern Arizona's most popular casinos.
- Outdoor lovers enjoy our close proximity to the Prescott National Forest (approximately 4 miles).
- ATV riders and back-country explorers love the endless miles of trails and many historical sites that wait to be discovered in the area!
- You will be centrally located to [many fun things to do in the area](#).
- Enjoy our restaurant on-site! A delicious dinner is only short walk from your cabin.
- Our prices are amazingly low too! [Reserve your Prescott area cabin today](#)

*** NEW!! LOWER WEEKDAY SPECIAL RATES!!***



40 Minutes North Of Phoenix
20 Minutes From Prescott
www.creeksidepreserve.com

**Creekside
Lodge
& Restaurant**
Mayer, Arizona
(928) 632-0777



INTERNET SPECIAL:

- A private cabin with Jacuzzi hot tub and fireplace, overlooking the creek!
- Hot continental breakfast next morning!

\$79 Sunday thru Thursday*
\$99 Friday, Saturday, & Holiday periods

10% off any dinner at the Creekside Lodge Dining Room.
* = Except holiday periods

Also Available:
You Can Bring Your Dog For \$10
With One Night's Stay

[Click Here To Take Advantage of Our Weekday Special!](#)

**CREEKSIDE PRESERVE
(928) 632-0777**

[Creekside Preserve Home](#) : [Dining & Cocktails](#) : [The Lodge](#) : [The Cabins](#)
[Things to Do in Prescott](#) : [Make a Reservation](#)

EXHIBIT K

TOP STORIES IN LIFE & CULTURE 1 of 12



2 of 12



3 of 12



THE A-HED | January 21, 2006

A Cold Calculus Leads Cryonauts To Put Assets on Ice

With Bodies Frozen, They Hope to Return Richer; Dr. Thorp Is Buying Long

Article

Comments

MORE IN THE A-HED >

Email

Print

Available to WSJ.com Subscribers

By ANTONIO REGALADO | Staff Reporter of THE WALL STREET JOURNAL

You can't take it with you. So Arizona resort operator David Pizer has a plan to come back and get it.

Like some 1,000 other members of the "cryonics" movement, Mr. Pizer has made arrangements to have his body frozen in liquid nitrogen as soon as possible after he dies. In this way, Mr. Pizer, a heavy-set, philosophical man who is 64 years old, hopes to be revived sometime in the future when medicine has advanced far beyond where it stands today.

And because Mr. Pizer doesn't wish to return a pauper, he's taken an additional step: He's left his money to himself.

With the help of an estate planner, Mr. Pizer has created legal arrangements for a financial trust that will manage his roughly \$10 million in land and stock holdings until he is re-animated. Mr. Pizer says that with his money earning interest while he is frozen, he could wake up in 100 years the "richest man in the world."



David Pizer

Though cryonic suspension of human remains is still dismissed by most medical experts as an outlandish idea, Mr. Pizer is not alone in hoping to hold onto his wealth into the frosty hereafter.

"I figure I have a better than even chance of coming back," says Don Laughlin, the 75-year-old founder of an eponymous casino and resort in Laughlin, Nev. Mr. Laughlin, who turned a down-and-out motel he bought in 1966 into a gambling fortune, plans to leave himself \$5 million.

At least a dozen wealthy American and foreign businessmen are testing unfamiliar legal territory by creating so-called personal revival trusts designed to allow them to reclaim their riches hundreds, or even thousands, of years into the future.

Such financial arrangements, which tie up money that might otherwise go to heirs or charities, are "more widespread than I originally thought," says A. Christopher Sega, an adjunct professor of law at Georgetown University and a trusts and estates attorney at Venable LLP, in Washington. Mr. Sega says he's created three revival trusts in the last year.

At 88, Former AIG Boss Is Building a New Empire



Britain's Split Personality Over EU Ties



Dell Founder Won't Raise Bid



Tycoon's Rise and Fall: A Modern Greek Drama



Don't Miss

[?]



Five Things Farm Stands Won't Tell You



Get That Tesla Before Your Home State Says 'No!'



Meet Buffett's 28-Year-Old Go-To Executive

More A-heds

Listen Up! Here's One Convention Where Talk Is Cheap

Fedspeak: Complex Monetary Policy Spawns Flights of Metaphors

Fans Take Videogame Damsels Out of Distress, Put Them in Charge

In Stone-Skipping Circles, A Rocky Debate Over Equipment

In December, a trusts expert from Wachovia Trust Co., part of Wachovia Corp., participated in the First Annual Colloquium on the Law of Transhuman Persons held in Florida. His PowerPoint presentation was titled "Issues Facing Trustees of Personal Revival Trusts." A Wachovia spokesman confirmed the bank is named as trustee in one cryonics case but declined to comment further for this article.

To serve clients who plan on being frozen, attorneys are tweaking so-called dynasty trusts that can legally endure hundreds of years, or even indefinitely. Such trusts, once widely prohibited, are now allowed by more than 20 states -- including Arizona, Illinois and New Jersey -- and typically are used to shield assets from estate taxes. They pay out funds to a person's children, grandchildren and future generations.

The chilling new twist: In addition to heirs or charities, estate lawyers are also naming their cryonics clients as beneficiaries. If they come back to life after being frozen, the funds revert back to them. Assuming, that is, that there are no legal challenges to the plans.

Thomas Katz, an estate planner at the law firm Ruden McClosky in Fort Lauderdale, Fla., believes cryonics could raise fundamental legal quandaries. Upon coming back to life, for instance, would a person have to repay their life insurance? "Our legal notion of death is pretty fixed. The scientific notion might not be as time goes by," Mr. Katz says.

Christopher Gloe, a senior attorney with the Marshall & Ilsley Trust Co. in Milwaukee, says his organization rejected an offer to invest money in a cryonics case after the question went before the bank's management committee several years ago. "We turned it down because we are a conservative Midwestern trust company, and not likely to get involved in an unproven entity such as a cryonics trust," said Mr. Gloe.

Some 142 human bodies or heads, including that of baseball legend Ted Williams, are now held in cold-storage at one of two U.S. cryonics facilities, Alcor Life Extension Foundation in Scottsdale Ariz., and the Cryonics Institute of Clinton Township, Mich.

People interested in cryonics are mostly male, frequently single, and typically have a strong interest in technology and predicting future events. And yet it's hard to know just how wide-spread the phenomenon of personal revival trusts is, since some wealthy individuals may fear ridicule if their hopes for immortality became known. Like in the tale of Dr. Frankenstein's monster, "the image of local farmers climbing the mountain with pitchforks and torches is still in people's minds," says Kenneth Weiss, 63, co-founder of RSA Security, which markets SecurID computer-user-authentication cards.

Mr. Weiss, who retired in 1996 with RSA stock valued in the tens of millions of dollars, says he plans to be cryopreserved and is now working with a Swiss bank to stash money off shore. Mr. Weiss says he knows several "billionaires" with similar plans but declines to name them. "People who are really taking this thing seriously have no need for notoriety," he says.

The cryonics-trust phenomenon dates back at least to 1989, with the formation by two American entrepreneurs of the Reanimation Foundation, a trust based in Liechtenstein, the tiny European principality known for its liberal tax rules. It offers memberships to people willing to put in as little as \$25,000, say clients. According to a promotional flier, which asks "How Rich Will You Be?," a \$10,000 investment could grow to \$8,677,163 in 100 years. "You'll be able to buy youth and perfect health for centuries," says the pitch.

One successful businessman planning for the future is Robert Miller, the owner of Future Electronics Inc., a wholesale electronics distributor based in Montreal. Mr. Miller, whose net worth is \$4 billion, according to the company, declined to be

Short of Cod, Massachusetts Chefs Suggest a Dish of Blood
Cockle

Popular Now

What's This?

**Two Confirmed
Dead in San
Francisco Plane
Crash, Dozens...**



**Permits to Allow
Concealed Guns
Soar**



**Blast From Train
Hits Quebec Town**



**Egypt Retreats
From ElBaradei**



**Snowden Offered
Asylum by
Venezuela**



Show 5 More

Content from our Sponsors [\[?\]](#)

interviewed.

However, Pierre Guilbault, Future's chief financial officer and executive vice president, confirmed that Mr. Miller "does not want to pass away" and has plans to put a "substantial" sum away for himself in a trust for when he is cryopreserved. Mr. Miller gives generously to charity and other causes, but Mr. Guilbault says "the question is who earned the money. You earned it, and it's yours."

No one knows just what future technology may bring, or what form a new existence could take. Mr. Laughlin confronted that issue in a meeting last August with his lawyers while drafting a trust. Mr. Laughlin opted against allowing a mere biological clone to get his money. He insisted whoever gets the funds should have "my memories."

"We can't anticipate the science of the future, so we need some definition that will be flexible and stand the test of time," says Scott Swain, Mr. Laughlin's tax attorney.

Since people like Mr. Laughlin may rest in icy slumber for hundreds of years, protecting their assets from the living is apt to be a key challenge. After all, even the most standard of trusts have long been susceptible to dishonest managers -- not to mention challenges from disgruntled heirs.

When Jakob P. Canaday, a Florida investor, died in 2004 of throat cancer, he left behind plans to stash his millions in a long-lasting trust with directions that he would recoup the money if and when his "human remains are revived and restored to life," according to court documents.

On the eve of Mr. Canaday's death, however, his two daughters produced a new will, which left his fortune to them.

Now there's a lawsuit pending in Broward County, Fla., Circuit Court. Mr. Canaday's brother, Siesel "Bud" Canaday, a retired Wall Street bond trader, says his sibling always wanted to be frozen and insists that the second will is not valid. No matter how bizarre his brother's choices may be, Mr. Canaday says, "it's tradition to honor the will of the deceased." Daughter Michelle Canaday declined to comment on the case.

Despite the uncertainties, cryonauts are choosing their investments carefully. Edward O. Thorp, a hedge-fund industry pioneer, created a cryonics trust in 1997 funded by a \$200,000 life-insurance policy. At 73, he says he's now arranging a larger trust -- of between \$1 million and \$50 million -- which he will direct to invest in no-load index-tracking mutual funds to avoid management and trading fees. He puts the odds of a person frozen today coming back at 2%. "I figure it's worth a lottery ticket," says Dr. Thorp, who has a Ph.D. in mathematics. The Orange County Business Journal estimated his net worth to be more than \$100 million to \$300 million.

In Arizona, Mr. Pizer says he hopes his wife will join him in cryonic storage. And even if his trust money is somehow lost or stolen during his time on ice, he'll be content just as long as he returns to life. If he does, he says he'd use the opportunity to work hard and create new businesses. "I made it the first time from nothing, and I could do it again."

—Rachel Emma Silverman contributed to this article.

Write to Antonio Regalado at antonio.regalado@wsj.com

JOIN THE DISCUSSION
Be the first to comment

MORE IN
The A-Hed »

Email

Print

Order Reprints

Don't Miss



New Details on Birth of Britain's Royal Baby



Musician Brings Grand Piano and Calm to Istanbul



Wanted: Lightweight Female-Only Cabin Crew



Billionaire Lynn Tilton's Biggest Blunder

You Might Like

[Chris Noth Reveals His Marriage Has Spurred Racist Hate Mail](#)

[A Nissan Altima's Harsh Ride](#)

[Which is better: shutting down a computer or putting it in sleep mode?](#)

[Can cookware get any better than the sturdy, naturally non-stick cast-iron classics we love? Actually, yes.](#)

[What Today's Wealthy Look Like](#)

Content from our Sponsors

What's this?

['Wonder Years' Crush Winnie Cooper Has Grown Up Gorgeous \(Zimbio\)](#)

[Vanessa Williams DNA Test Showed Genes From Across the World \(Ancestry\)](#)

[Michelle Obama's DNA Test Show Slave Owner as Ancestor \(Ancestry\)](#)

[Chelsea Clinton's \\$4.48M Flatiron Home Up for Sale \(DNAinfo\)](#)

[10 Great Cities for Older Singles \(AARP\)](#)

Add a Comment

JOURNAL COMMUNITY

[Community rules](#)

To add a comment please

[Log in](#)

[Create an Account](#)

Your real name is required for commenting.

Track replies to my comment

Editors' Picks



Egypt's Tumult and Cairo's Storied Yacoubian Building



A Strategy for Keeping the Robots at Bay



Tycoon's Rise and Fall: A Modern Greek Drama



Dishing the Dirt on Hand-Washing Guidelines



Listen Up! Here's One Convention Where Talk Is Cheap



[Subscribe](#) / [Login](#)

[Back to Top](#)

Customer Service

[Customer Center](#)

[New! Live Help](#)

[Contact Us](#)

[WSJ Weekend](#)

[Contact Directory](#)

[Corrections](#)

Policy

[Privacy Policy](#)

[Data Policy](#)

[Copyright Policy](#)

[Subscriber Agreement & Terms of Use](#)

Ads

[Your Ad Choices](#)

[Advertise](#)

[Advertise Locally](#)

[Place a Classified Ad](#)

Tools & Features

[Apps](#)

[Newsletters and Alerts](#)

[Graphics & Photos](#)

[Columns](#)

[Topics](#)

[Guides](#)

[Portfolio](#)

More

[Register for Free](#)

[Reprints](#)

[Content Partnerships](#)

[Conferences](#)

[SafeHouse](#)

[Mobile Site](#)

[News Archive](#)

Old Portfolio



Jobs at WSJ

Copyright ©2013 Dow Jones & Company, Inc. All Rights Reserved.

EXHIBIT L

X-Message-Number: 22350

[foobar]

Rate This Message: <http://www.cryonet.org/cgi-bin/rate.cgi?msg=22350>

X-Message-Number: 22400

[foobar]

Rate This Message: <http://www.cryonet.org/cgi-bin/rate.cgi?msg=22400>

EXHIBIT M

osdir.com

mailing list archive
F.A.Q. -since 2001! Search**Subject: CryoNet #22340 - #22351 - msg#00013**

0

List: [culture.science.cryogenics](#)**culture.science.cryogenics Navigation:**Date: [Prev](#) [Next](#) [Date Index](#) Thread: [Prev](#) [Next](#) [Thread Index](#)[Website Performance Monitoring](#)

CryoNet - Thu 14 Aug 2003

#22340: Re: CryoNet #22329 - #22339 [THnsn8]
 #22341: Death may not be the end in Boca [aschwin de wolf]
 #22342: Carnegie Mellon Researchers Developing New Ways To Store Tissue, Organs [Igor Artyuhov]
 #22343: choices; time and space [Harvey Newstrom]
 #22344: More Bill Williams and "former employee of Alcor"? [Omnedon]
 #22345: Space, Time, Qualia [Doug Skrecky]
 #22346: Is it significant that a self-circuit spans time? [Brook Norton]
 #22347: News from Alcor [other]
 #22348: Re: community #22329 [mike99]
 #22349: The seemingly disgruntled Larry Johnson [Omnedon]
 #22350: Alcor Press Release [Mathew Sullivan]
 #22351: discussion re: Alcor and Larry Johnson [Bob]

Administrivia

To subscribe to CryoNet, send email to:
 cryonet-request@xxxxxxxxxxxxx
 with the subject line (not message _body_):
 subscribe
 To unsubscribe, use the subject line:
 unsubscribe

To post a message to CryoNet, send your message to:
 cryonet@xxxxxxxxxxxxx
 (Note: A "Subject:" line starting the message body replaces
 the "Subject:" line in the header. This gives a second
 opportunity to provide a meaningful subject line.)

Since all CryoNet messages are archived and accessible via WWW,
 including search engines, make certain that your postings
 reflect how you want the world to see you.

To retrieve past messages, send email to:
 archive@xxxxxxxxxxxxx
 with the message numbers in the subject line.
 (Message 0003 describes the advanced syntax.)
 You also can retrieve them via the CryoNet web page at URL:
<http://www.cryonet.org/>

For administrative or other questions/suggestions, send email
 to me at "kqb@xxxxxxxxxxxxx".
 - Kevin Q. Brown

 Message #22340
 From: THnsn8@xxxxxxxxx
 Date: Wed, 13 Aug 2003 06:45:29 EDT
 Subject: Re: CryoNet #22329 - #22339

--part1_15d.22ef2455.2c6b70c9_boundary
 Content-Type: text/plain; charset="US-ASCII"
 Content-Transfer-Encoding: 7bit

In a message dated 13/08/2003 10:00:53 GMT Standard Time, Mike Perry writes:

> *This strikes me as a diabolical choice. As if you are coldly calculating*
 > *whether your chances of survival would be maximized if you (1) overfund*
 > *your suspension, (2) put extra funds into a trust, or (3) make it possible*
 > *for a friend to survive so he/she can "stand by your side" and maybe*
 > *improve your own chances. On purely humanitarian grounds I would strongly*
 > *favor (3), but it strikes me that that is generally not an option. Most*
 > *people really don't seem interested even if you offer to pay the costs--I*
 > *personally know of several such cases.*
 >

I have also found option 3 to be a non starter..... although the attitudes of
 people to the viability of cryonics will hopefully 'warm' as we move nearer
 to the suspended animation scenario that appears to 'sell' itself in a better
 way to mortalists. Maybe they get comfort from seeing SA in the movies.....
 'so it must be ok!'. :) Getting back to the thread I think that to donate
 the
 remainder of your assets to your suspension facility makes big sense as
 'success' in this context is certainly interdependent, however, rehabilitation
 is a

Recent Msgs:

[general/2013-07/msg02950.html](#)
[OpenSceneGraph-Users/2013-07/msg00019.html](#)
[clojure/2013-07/msg00057.html](#)
[OpenSceneGraph-submissions/2013-07/msg00041.html](#)
[general/2013-07/msg03281.html](#)
[users.mina.apache.org/2013-07/msg00006.html](#)
[emacs-orgmode-gnu/2013-07/msg00086.html](#)
[help-smalltalk-gnu/2013-07/msg00001.html](#)
[solr-user.lucene.apache.org/2013-07/msg00080.html](#)
[selenium-users/2013-07/msg00071.html](#)

labour intensive operation and is likely to remain so in the future, so consequently I expect it to be expensive.

It could take several years to regain the level of knowledge required to undertake gainful employment and become self supportive so I am still of the opinion that a 'hole' exists in most cryonauts arrangements that needs plugging.

Regards.....

Tim Hanson.

--part1_15d.22ef2455.2c6b70c9_boundary

Content-Type: text/html; charset="US-ASCII"

[AUTOMATICALLY SKIPPING HTML ENCODING!]

Message #22341
From: "aschwin de wolf" <amwdewolf@xxxxxxxxxxxxxxxxxxxx>
Subject: Death may not be the end in Boca
Date: Wed, 13 Aug 2003 07:36:27 -0400

This is a multi-part message in MIME format.

-----=_NextPart_000_0042_01C3616D.9B194540
Content-Type: text/plain;
charset="iso-8859-1"

Death may not be the end in Boca

http://www.palmbeachpost.com/news/content/auto/epaper/editions/wednesday/news_f3931b11158512281040.html?2410

By John Murawski, Palm Beach Post Staff Writer
Wednesday, August 13, 2003

BOCA RATON -- This city of cosmetic nips and tucks could soon offer what believers say is the ultimate preservation: the deep-freeze process of cryonics.

A Boca Raton company, Suspended Animation, proposes to be Florida's only freezing facility for humans and the fourth in the nation that prepares eager Rip Van Winkles for an extended hypothermic slumber. The cost: up to \$200,000 per person. The company has applied for permits in city hall and expects October approval from the city council to begin freezing operations and related animal research off Clint Moore Road.

"We are in essence a time machine," said the company's president, David Shumaker, who describes frozen volunteers as time travelers.

Dismissed by mainstream scientists as science fiction, the 40-year-old practice of cryonics made headlines last year when the children of Boston Red Sox slugger Ted Williams fought in court over whether the deceased baseball legend's remains should be cremated and scattered over the Florida Keys or frozen in liquid nitrogen at 77 degrees Kelvin. In December, Williams' three children agreed to preserve their frozen father indefinitely in a steel tank at the Alcor Life Extension Foundation in Scottsdale, Ariz.

Followers, who call themselves cryonicists, donate their bodies for freezing -- or sometimes just their heads -- in the belief that scientific breakthroughs still hundreds of years away will allow doctors to regenerate youthful bodies from DNA.

"Really, everything that makes you the person you are exists in your head," said Suspended Animation's chief operating officer, David Hayes. "If you come up with a technology to unfreeze me and bring me back to life, then by that time you will also be able to figure out a way to grow a body back on my head."

Kenneth Goodman, director of the University of Miami's Bioethics Program, calls cryonics "one of the great knee-slappers in the history of science."

"This is theology, not science," he said Tuesday. "Even if you get this critter that you've just flash-frozen to reanimate, the very idea that it will have the same memory of the person doesn't pass the straight-face test."

Nationwide, about 1,000 people are signed up to be frozen, and about 100 are already in deep freeze -- 30 of whom are head-only preservations, Hayes said. It costs about \$60,000 to be frozen and from \$30,000 to \$150,000 to be stored, depending on the facility.

In addition to city permits, Suspended Animation will need a license from the state Board of Funeral Directors and Embalmers because the agency contends Suspended Animation's two-to-three day time frame to freeze a body and prepare it for shipping out of state amounts to storing cadavers.

Shumaker disputes the state's interpretation, saying cryonics patients are not being "stored" any more than patients waiting at a doctor's office are being "stored." The company hopes to persuade state regulators not to require an embalming license or to create a separate licensing category for cryonics.

In Boca Raton, most of the cryonics work will involve research in improving methods of preserving the human body, Shumaker said. The company expects to be ready to commence operations next year and plans to freeze fewer than five people a year, according to its application. The frozen bodies will be shipped to one of three states that permit storage of frozen cadavers: California, Arizona and Nevada.

In cryonics, the patient's blood and fluids are flushed out within 20 minutes after death. This phase takes place at the mortuary. The body would then be moved to Suspended Animation's lab at 1082 Rogers Circle and pumped with special preservatives. Then it would be slowly cooled to minus 130 degrees Fahrenheit. The entire procedure takes up to 28 hours, according to Suspended Animation's filings in city hall.

Suspended Animation picked Boca Raton because it was the only South Florida city that would allow controversial animal research, primarily on laboratory rats, Shumaker said.

South Florida is convenient geographically because Shumaker, a physicist, lives in Port Charlotte; Hayes, a computer engineer, lives in Delray Beach; and the company's private financing comes from the Life Extension Foundation, a Fort Lauderdale vitamin and health concern heavily involved in cryonics.

"Only one municipality in all of South Florida would permit our animal research activities," the company's Web site says. "Finding a similarly friendly landlord in that one small town proved difficult."

The company's chief scientist is Christopher Dougherty, who holds a Ph.D. from the University of Miami's medical school and master's and undergraduate biology degrees from Florida Atlantic University. The director of research and patient services, Michael Quinn, has a bachelor's degree from the University of West Florida.

Hayes, 40, said he signed up to have his head frozen when he was a 28-year-old U.S. Marine. Shumaker, 58, said he's been a believer in cryonics since he was a teenager, but is waiting to commit until Suspended Animation perfects a freezing practice called vitrification, which would allow entire bodies to be frozen without forming ice crystals that pierce and destroy cells and tissue.

Not counting Ice Age accidents, the world's first cryonicist was James Bedford in 1967.

"James has been frozen for (nearly) 40 years and there's no hurry to get him out," Hayes said. "When we do get him out, it'll be a five-minute nap for him."

john_murawski@xxxxxxxxxx

-----_NextPart_000_0042_01C3616D.9B194540

Content-Type: text/html;

[AUTOMATICALLY SKIPPING HTML ENCODING!]

Message #22342

From: "Igor Artyuhov" <i_artyuhov@xxxxxx>

References: <20030813090001.70593.qmail@xxxxxxxxxxxxxx>

Subject: Carnegie Mellon Researchers Developing New Ways To Store Tissue, Organs

Date: Wed, 13 Aug 2003 16:55:53 +0400

Source: <http://www.sciencedaily.com/releases/2003/08/030813071518.htm>

Carnegie Mellon University

Date: 2003-08-13

Carnegie Mellon Researchers Developing New Ways To Store Tissue, Organs

PITTSBURGH -- Carnegie Mellon University's Yoed Rabin and Paul Steif have received \$1.3 million over the next four years from the National Institutes of Health to develop more efficient ways of storing transplant tissue and organs in cryogenic temperatures. Mechanical Engineering professors Rabin and Steif are working to improve techniques of cryopreservation, the process of storing biological materials in extremely low temperatures.

"Our long-term goal is to reduce the destructive mechanical stresses induced during the cryopreservation of organs and tissues of a significant size," said Rabin, who specializes in heat transfer in biological systems.

"It is a little bit like watching an ice cube break up in a glass of water and trying to figure out what made the ice fracture and devise ways to prevent it from cracking," Rabin said.

Both Rabin and Steif are charged with developing engineering tools to monitor when these breakups are likely to occur and develop improved methods for storing transplant tissues such as blood vessels and heart valves, and ultimately for life-saving organs like kidneys, lungs or the heart.

The Carnegie Mellon researchers will work with Chicago-based Organ Recovery System, a company specializing in the clinical preservation and storage of tissues.

"We are extremely pleased to be working with Carnegie Mellon and its expert research team," said Mike Taylor, vice president of research and development for Organ Recovery System. Taylor said his company will provide Carnegie Mellon researchers with their proprietary preservation technologies for blood vessel systems to test and study the thermal stresses during cryopreservation.

At present, clinicians are able to store embryos, sperm and stem cells in freezers, but Carnegie Mellon researchers want to develop systems for the safe storage of more complex tissues and organs, which could offer a significant breakthrough in the treatment of diseases and perhaps broaden the cache of transplant organs available to an increasing number of patients. As of August 1, 2003, 82,129 people nationwide were waiting for an organ transplant compared with 53,167 in 1997, according to the Richmond,

Va.-based United Network for Organ Sharing. In addition, new preservation technology emerging from this basic research will be important as an enabling technology for the emerging disciplines of tissue engineering and regenerative medicine that seek to replace damaged or diseased tissues with new living material.

 Message #22343

From: "Harvey Newstrom" <mail@xxxxxxxxxxxxxxxxxxxx>
 Subject: choices; time and space
 Date: Wed, 13 Aug 2003 11:29:29 -0400

James Swayze <swayzej@xxxxxxxxxxxx> wrote,
 > Subject: Can Good Sex Keep You Young? WebMD article

1.6 years is not statistically significant in my opinion. Besides, we always have to consider cause-and-effect when we detect these statistical correlations. Maybe sex doesn't cause longevity. Maybe longevity factors such as good health, good body, good diet, high intelligence, and money lead to more sex.

--

Harvey Newstrom, CISM, CISSP, IAM, IBMCP, GSEC
 Certified InfoSec Manager, Certified IS Security Pro, NSA-certified
 InfoSec Assessor, IBM-certified Security Consultant, SANS-cert GSEC
 <HarveyNewstrom.com> <Newstaff.com>

 Message #22344

From: "Omnedon" <Omnedon@xxxxxxxxxxxxxxxxxxxx>
 Subject: More Bill Williams and "former employee of Alcor"?
 Date: Wed, 13 Aug 2003 14:11:59 -0400

Maybe I missed something, but who was this 'former employee of Alcor'?

Excerpt from The Boston Channel article:
 "The report is based on internal documents, e-mails, photographs and tape recordings supplied by a former employee of Alcor Life Extension Foundation in Scottsdale, Ariz."

Link to the aforementioned article:
<http://www.thebostonchannel.com/sports/2402067/detail.html>

I would hope that this kind of thing is being be dealt with, and will be prevented in the future. To be fair, nothing is completely fool proof, or safe. Forgive me if this topic has already been dealt with, and I missed it.

(This is a fascinating list, and I've appreciated its existence for several years now.)

Omnedon@xxxxxxxxxxxxxxxxxxxx
 www.BladesOfLegend.com

 Message #22345

Date: Wed, 13 Aug 2003 12:05:43 -0700 (PDT)
 From: Doug Skrecky <oberon@xxxxxxxxxx>
 Subject: Space, Time, Qualia

In Message #22334 Ettinger@xxxxxxx wrote:

> *Scott Badger writes in part:*
 > >Ettinger s notion of a
 > standing wave in the brain, the various states of
 > which constitute qualia sounds like Dualism to me,
 >
 > qualia strike me as epiphenomenal side-effects
 > of normal brain processes.
 >
 > I don't want to get into a discussion of epiphenomena, or whether there are
 > any such things, but certainly we have to consider our own subjective
 > experiences as "normal." As to the last sentence above, I'm not quite sure
 > what it means, and it needs to be reworked, I think.
 >

Agreed, qualia are a rather slippery subject. If one defines brain processes as autonomous from qualia, so that qualia are a mere epiphenomena, then Occam's razor eliminates all qualia. Stated otherwise, if all brain processes occur truly independantly of the existence of qualia, then qualia are entirely epiphenomena. If a brain process is truly independant of the existence of qualia, then it can not veridically report on qualia. If all qualia are entirely epiphenomena, then no brain process can attest to the existence of qualia. Since some brain processes do truefully attest to qualia, then qualia can not be entirely epiphenomena, and some brain processes can not be entirely described by purely material (qualia free) references. Space, time, qualia - go figure.

 Message #22346

Date: Wed, 13 Aug 2003 12:31:37 -0700 (PDT)
 From: Brook Norton <brooknorton@xxxxxxxxxxxx>
 Subject: Is it significant that a self-circuit spans time?

Bob Ettinger writes in part

>>
Many things (everything?) must span time or/and space to exist. In a simple instance, a molecule must include a region of non-zero volume. A brain, or the important part(s) of a brain, must include a non-zero volume. A standing wave must include a non-zero interval of time as well as space.
>>

I agree with the above. Bob, when you write of the self-circuit, you usually include that it is perhaps a standing wave, and that it spans time. Therefore it seems you mean that a self-circuit spans time in some sense other than most other objects, or that spanning time is especially important for a self-circuit, otherwise, why mention it. Is spanning time more significant for a self-circuit than for most other objects?

Brook

Message #22347
Date: Wed, 13 Aug 2003 16:30:17 -0400 (EDT)
From: other@xxxxxxx
Subject: News from Alcor

An interim Alcor News bulletin has been placed online at:

www.alcornews.org

The bulletin contains a preliminary response to allegations from paramedic Larry Johnson, which have been published in Sports Illustrated.

At alcornews.org please click on the Archives link and select the most recent Alcor News, number 15. You do not have to sign in or register, to view Alcor News archives.

Message #22348
From: "mike99" <mike99@xxxxxxxxxxxx>
Subject: Re: community #22329
Date: Wed, 13 Aug 2003 15:48:00 -0600

In Message #22329 "Robin Helweg-Larsen" <robin@xxxxxxxxxxxx> wrote:

...
> *Suppose cryonics had begun 200 years ago, and we were now starting to*
> *reanimate those frozen in 1803. Those people were neither the super-rich*
> *nor paupers, but just a mixture of middle-class homeowners and*
> *renters. One*
> *of them, however, managed to leave a substantial investment of \$1000 in a*
> *watertight trust with an after-fees, after-tax net annual return*
> *of 2%. On*
> *stepping out of the tank in 2003, he finds his wealth is now well over*
> *\$50,000! And not only that, he can buy items with that money that he had*
> *never dreamed would exist: a car, a computer, a round-the-world trip by*
> *airplane!*
>
> *On the other hand, he can go back to school for a couple of years*
> *and start*
> *earning that money annually very easily, so long as he is flexible in his*
> *thinking and choice of activities. ...*

I think going back to school is an excellent idea.

Regarding the creation of a long-term trust, I am not so sanguine. Although I am not a lawyer, I have heard lawyers discussing the rule against "perpetuities" which makes me fear that such a trust fund might be vulnerable to the courts as well as, of course, the uncertainties inherent in any economy.

So I think I'll just enroll at some kind of university, college or technical school around 2150 and see if I can upgrade my job skills :)

Michael LaTorra

mike99@xxxxxxxxxxxx
mlatorra@xxxxxxx

Member:
Extropy Institute: www.extropy.org
World Transhumanist Association: www.transhumanism.org
Alcor Life Extension Foundation: www.alcor.org
Society for Technical Communication: www.stc.org

Message #22349
From: "Omnedon" <Omnedon@xxxxxxxxxxxx>
Subject: The seemingly disgruntled Larry Johnson
Date: Wed, 13 Aug 2003 22:34:22 -0400

I would think at this point, this Larry Johnson person would be hard pressed to find anyone that would succumb to any motivation to suspend him in the event of untimely demise. Am I unfairly biased in this?

Whatever problem this guy has, he apparently has no problem risking the potential futures of the current patients, and prospective patients. Logically (not legally) it could be argued that this is tantamount to attempted murder or some flavor thereof.

Sensationalism beats journalism all too often:

http://story.news.yahoo.com/news?tmpl=story&cid=383&ncid=383&e=1&u=/lbsys/20030814/lo_WCVB/1740495

Perhaps the 'publicity' could be turned into something positive, if it motivated a reputable nationally high profile newsperson to investigate and report fairly. Maybe from Fox News? It's pretty popular these days...

(If it matters, I have not been and am not affiliated with Alcor. Though I would like to be at some future time. If anyone wants to sponsor me, or employ me appropriately... feel free to drop me a line.)

Omnedon@xxxxxxxxxxxxxxxxxxxxx
www.BladesOfLegend.com

Message # 22350

Date: Wed, 13 Aug 2003 19:51:20 -0700

From: Mathew Sullivan <mathew@xxxxxxxxxx>

Subject: Alcor Press Release

Alcor Life Extension Foundation

August 13th, 2003

For immediate release

Following the furor over the Sports Illustrated Article, Alcor Vows to Prosecute Ex-Employee Larry Johnson

Carlos Mondrag n, a director and former president of Alcor Life Extension Foundation, has adamantly refuted allegations by ex-employee Larry Johnson in the current issue of Sports Illustrated magazine. "We believe that Johnson felt he was underpaid, resented the tasks he was asked to perform, and is a typical ex-employee trying to exercise a grudge and make a name for himself," Mondrag n commented today. "Johnson is a nationally certified paramedic, but he deliberately violated our members' confidentiality. He taped conversations without anyone's consent or knowledge, he has removed company property, he has violated our standard nondisclosure agreement, and we have reported him to the police. We are formulating further action in consultation with our attorneys."

Jerry Lemler, MD, Alcor's president and CEO, is undergoing chemotherapy and is not available for comment. Carlos Mondrag n is acting as Alcor's spokesperson in Dr. Lemler's absence.

Alcor's privacy policy prevents it from commenting on individual cases. Every employee of Alcor is subject to a confidentiality and nondisclosure policy that coincides with our confidential obligations to our patients. Mr. Johnson signed a confidentiality agreement and he, and the individuals and entities that knowingly breached these confidential obligations, will be pursued with all legal remedies available to Alcor and its patients.

No Alcor Cryopatient has been treated negligently in the style that Johnson suggested to Sports Illustrated. "If Johnson made these statements, we believe they are knowingly false and, consequently, may be grounds for criminal prosecution and several civil actions," Mondrag n stated. Cryonics was first proposed in the 1960s as a procedure to preserve the human brain and possibly also the human body in the hope that future science will enable resuscitation. During the past decade, Alcor Life Extension Foundation has led the field by introducing a new technique known as vitrification. When optimally applied, vitrification can eliminate the ice damage which used to decimate brain cells in cryopatients who were treated with earlier technology.

Vitrification does involve a tradeoff which is thoroughly understood and has been communicated to all Alcor members. Instead of massive damage to millions of cells, a cryopatient is likely to experience some simple fracturing caused by thermal stress during cooling. Since the fracturing is a minor form of injury compared with ice damage, and since many people believe that future science such as nanotechnology should be capable of repairing simple fractures, Alcor believes it has made radical progress toward its ultimate goal of zero-damage preservation. To suggest that Alcor has been negligent in allowing fractures to occur is erroneous and defamatory. The fractures are a small price to pay for reduced cell injury.

Anyone who seeks cryopreservation at Alcor must sign legal documents clearly stating that cryonics is an experimental procedure which has an unknown outcome. Alcor members are willing to accept the risks, since there is no other viable option to preserve the human brain for decades or even centuries.

"All we are doing at Alcor is honoring the wishes of our members and their families," according to Carlos Mondrag n. "A person may choose to be buried, cremated, or cryopreserved after legal death. Cryopreservation provides a chance of future resuscitation, while cremation and burial offer no chance at all. Cryonics is usually chosen by people who have a strong love of life."

Regarding the allegation that Alcor created holes in a patient's skull, Mondrag n states that the organization uses a perforator--a standard medical tool--to create a small opening through which the brain can be observed during cryoprotective perfusion. "Our whole purpose is to minimize

injury," according to Mondrag n. "If we cannot observe the brain during perfusion, we run the risk of creating capillary damage that can interfere with our protective procedures. A small perforation is trivial by comparison. It could be repaired even using today's medical technology."

Mondrag n believes that Larry Johnson is well aware of these facts. He helped to teach Alcor's field procedures at a training session earlier this year, and was preparing training materials for another session in the Fall.

"Johnson signed up for cryopreservation himself, fully aware of the protocol that we use," according to Mondrag n. "This is no secret. He talked about it openly in a segment for Los Angeles CBS TV news, earlier this year. You have to wonder why he suddenly decided to denounce the procedures that he said would enable him to see the future."

Larry Johnson was hired by Alcor in January, 2003, but claimed that he had been interested in cryonics for many years.

"I know that Johnson had some personal differences with our CEO," Mondrag n comments. "But we pledged to resolve any issues. Apparently the pledge wasn't good enough for him, and he appears to have spent several weeks trying to find ways to embarrass us. Since his allegations are inaccurate and we find no instance where he has accused Alcor of any illegalities, we regard his attack as a spiteful parting shot by an employee who may have personal problems and definitely had an exaggerated opinion of his own worth."

Carlos Mondrag n can be reached for further comment at:
480-905-1906x115

Mathew Sullivan (mathew@xxxxxxxxx)
Director of Suspension Readiness

Alcor Life Extension Foundation
7895 E. Acoma Dr., Suite 110, Scottsdale AZ 85260-6916
Membership Information: (877) GO-ALCOR (462-5267)
Phone (480) 905-1906 FAX (480) 922-9027
info@xxxxxxxxx for general requests

<http://www.alcor.org>

The Alcor Life Extension Foundation was founded in 1972 as a non-profit, tax-exempt 501(c)(3) organization, and has 58 patients in cryostasis. Alcor is the world's largest provider of professional cryotransport services with over 640 members who have pre-arranged for cryotransport. Alcor's Emergency CryoTransport System (ECS) is a medical-style rescue network patterned after Emergency Medical System (EMS). Alcor CryoTransport Technicians, as with EMTs and Paramedics on an ambulance, are advised by our Medical Director, Jerry Lemler MD or other physicians who are Alcor members and/or contract physicians.

If you start everything...
you will finish nothing.

Message #22351
Date: Thu, 14 Aug 2003 01:31:09 -0700 (PDT)
From: Bob <thimblerig101@xxxxxxxxx>
Subject: discussion re: Alcor and Larry Johnson

<http://www.network54.com/Hide/Forum/90236>

=====
---Bob

Do you Yahoo!?
Yahoo! SiteBuilder - Free, easy-to-use web site design software
<http://sitebuilder.yahoo.com>

End of CryoNet Digest

Search

Thread at a glance:

Previous Message by Date:
[CryoNet #22329 - #22339](#)

Next Message by Date:
[CryoNet #22352 - #22355](#)

Previous Message by Thread:
[CryoNet #22329 - #22339](#)

Next Message by Thread:

[CryoNet #22352 - #22355](#)

[Home](#) | [News](#) | [Sitemap](#) | [FAQ](#) | [advertise](#) | OSDir is an [Inevitable](#) website. [GBiz](#) is too! | Source may include [bb10](#)

EXHIBIT N



SEARCH

 The Web CNN.com

Search

Home Page
World
U.S.
Weather
Business
Sports
Politics
Law
Technology
Science & Space
Health
Entertainment
Travel
Education
Special Reports

SERVICES

Video

E-mail Newsletters

CNNtoGO

SEARCH

Web CNN.com

Search

TRANSCRIPTS

[Transcript Providers](#)

Transcript:

[Return to Transcripts main page](#)

LIVE FROM THE HEADLINES

The Story of Ted Williams

Aired August 13, 2003 - 19:46 ET

THIS IS A RUSH TRANSCRIPT. THIS COPY MAY NOT BE IN ITS FINAL FORM AND MAY BE UPDATED.

ANDERSON COOPER, CNN ANCHOR: Well, the story of the late baseball great Ted Williams just keeps getting stranger and stranger, if that's possible. The hall of famer, the last player to finish season with a .4 batting -- or .400 batting average died last summer. When he did, his son had his body frozen in a facility in Arizona. John Henry Williams' stated hope was that one day science would allow the one-time Red Sox great to be brought back to life.

Our Gary Tuchman picks up the story.

(BEGIN VIDEOTAPE)

GARY TUCHMAN, CNN CORRESPONDENT (voice-over): He was one of the greatest baseball players who ever lived, which made his death and the details that came out afterwards so notable and bizarre.

The body of Boston Red Sox slugger Ted Williams is suspended in chemicals at a Arizona cryonics company called Alcor. The decision was made amid fighting among his children.

But according to a "Sports Illustrated" investigation, Williams' body is not resting upside down in a liquid nitrogen tank at Alcor, as has been reported. Instead his head is stored in a liquid nitrogen filled steel can that resembles a lobster pot.

Alcor says some clients hoping to restore their loved ones to life someday agree to just save the head. But sources talking to "Sports Illustrated" say that's not what Ted Williams' family wanted.

LESTER MUNSON, "SPORTS ILLUSTRATED": When he arrived they had no idea what they were supposed to do. They bring him into what they called their operating room where chaos immediately ensues. They are arguing over whether to remove the head. They are arguing over what the wishes of the family were. It was a complete mess.

TUCHMAN: "Sports Illustrated" says it received extensive cooperation from the Alcor's ex-chief operating officer, Larry Johnson, who alleged other improprieties too. But regarding the Ted Williams' situation, Alcor tells CNN it denies any impropriety and vows it will seek Johnson's criminal prosecution, saying he is an ex- employee with a grudge.

Johnson certainly doesn't mind using his connections as an ex- employee to make a buck. CNN has learned Johnson started a Web site, where for a so-called donation of at least \$20, graphic photographs were displayed, photographs, he said, documenting the fate of Ted Williams. Johnson won't talk on camera about Ted Williams, but his attorney acknowledges "Sports Illustrated" was not told about his client's money making plans.

"Sports Illustrated" is owned by AOL-Time Warner, which is CNN's parent company.

The sordid story continues to upset many including other former Red Sox stars, like Rico Petrocelli.

RICO PETROCELLI, FMR. RED SOX PLAYER: It's really sad. It's getting sadder, unfortunately. I just wish they would, you know, let him rest in peace.

TUCHMAN: Gary Tuchman, CNN.

(END VIDEOTAPE)

COOPER: Lester Munson, associated editor of "Sports Illustrated," worked on the story recounting the latest revelation

in an already bizarre case. He joins us now from Chicago.

Lester, thanks for being with us.

The former COO of this company is the man who is really provided a lot of the background material for your story. He's now got this Web site where he's charging money and folks can log on and look at what he says are, you know, photographs of, I guess, the head of Ted Williams. Do you -- I mean, what is his motivation, as you understand it?

LESTER MUNSON, "SPORTS ILLUSTRATED": I think the motivation for the Web site is to raise money to allow a fragment of Ted Williams' family to go back to court and follow his dying wishes, which were to be cremated and to be spread over the fishing waters of Florida.

(CROSSTALK)

MUNSON: Actually, on the Web site he says he's raising money because he feels he's going to be legally challenged and he needs money to be able to defend himself and try to sort of help this movement to get Ted Williams' body out of there.

COOPER: I mean, do you at all, as a writer, doubt his motives?

MUNSON: I do not doubt his motive. I think that he was -- for all the good reasons, he left the company when he realized what bad shape it was in, how they were abusing their customers and their patients. He came to us with what turned out to be solid information. We double checked it and we triple checked it. As we were doing our story, we knew that he was planning a Web site but the Web site was not up. It was not running when we finished our story on Monday. So this is all new and has happened in the last day or two. I don't know why he would need money to defend himself. I think yes, there are going to be some legal fees if Bobby Joe (ph), Ted Williams' daughter, goes to court.

(CROSSTALK)

COOPER: He's apparently going to need some money because now Alcor is saying they're going to sue him and they're going to go after him.

We got a statement from....

MUNSON: Alcor says a lot of things and they don't always happen.

COOPER: Here's one of the things Alcor said to CNN when we contacted them about Larry Johnson, their former COO, who's the basis of a lot of this story. And I'm going to put it on the screen.

He says -- quote -- "We believe that Johnson felt he was underpaid, resented the takes he was asked to perform, and is a typical ex-employee trying to exercise a grudge and make a name for himself."

Whether or not -- I mean, whether or not you believe Larry Johnson or not or Alcor, I mean, this thing is just so bizarre. When you went into this -- I mean, did you have any idea? Did it shock you? I mean, as you reported this?

MUNSON: Anderson, it's the most bizarre thing I've ever reported on and I've reported on some very unusual things in the world of sports.

The -- to me the most shocking thing was the cavalier attitude that Alcor people have towards Ted Williams, toward his body, and toward their responsibilities for his body. When Larry Johnson found out that they were planning on dumping Ted Williams' body back on the family because they had not paid the bill, and found out about other plans they were making, he decided that he had had enough and that he would leave the company and that he would find a way to allow the rest of us to know what is going on with this great baseball player, this great hero of two wars.

COOPER: It is a fascinating -- it's a very sad tale no matter how you look at it.

MUNSON: It is.

COOPER: Lester Munson, appreciate you joining us from "Sports Illustrated." And I anticipate this is not the last we've heard of this story. Thanks very much.

MUNSON: You're welcome.

TO ORDER A VIDEO OF THIS TRANSCRIPT, PLEASE CALL 800-CNN-NEWS OR USE OUR SECURE ONLINE ORDER FORM LOCATED AT www.fdch.com

[International Edition](#) [Languages](#) [CNN TV](#) [CNN International](#) [Headline News](#) [Transcripts](#) [Advertise With Us](#) [About Us](#)

SEARCH [The Web](#) ● [CNN.com](#) ●

© 2005 Cable News Network LP, LLLP.
A Time Warner Company. All Rights Reserved.
[Terms](#) under which this service is provided to you.
Read our [privacy guidelines](#). [Contact us](#).

-  All external sites will open in a new browser. CNN.com does not endorse external sites.
-  Denotes premium content.
-  Add [RSS headlines](#).

EXHIBIT O

INTERNET ARCHIVE  http://www.cmonitor.com/stories/news/local2003/081503_ted_williams_guy_2003 Go

3 captures
23 Sep 03 - 11 Jan 05

AUG SEP NOV
23
2002 2003 2004

[SUBSCRIBE](#) [CLASSIFIEDS](#) [PLACE A CLASSIFIED](#) [PERSONALS](#) [MONITOR YELLOW PAGES](#)
[NEWS REVIEW](#) [PAST NEWS](#) [MOST POPULAR](#) [SEARCH](#)



/NEWS/LOCAL

Front Page

News

LOCAL
STATE
NEW ENGLAND
NATION
WORLD
POLITICS
OPINION
WEATHER
FOR THE RECORD
PAST NEWS

Business

Sports

Community

Arts & Ent.

Monitor Info



[A world of news](#)

Material posted to this site retains copyright. See the [User's Guide](#) for details.

 [SAVE THIS](#)  [EMAIL THIS](#)  [PRINT THIS](#)  [MOST POPULAR](#)

Local author linked to Ted Williams story

Whistleblower contacted Laconia's Polidoro in May

By **ED PILOLLA**
Monitor staff

Sports Illustrated reported this week that the body of baseball great Ted Williams has been mistreated and some of his DNA is missing at an Arizona cryonics company. The story hit the newsstands Wednesday, and it has been retold widely around the world.

But the story might not have been told as it was if not for a little-known Laconia author.

Jack Polidoro had gained a brief amount of notoriety after authoring a fictional novel about cloning Williams. The book, *Project Samuel*, was published just months before Williams died last year.

Williams's body was shipped to Alcor Life Extension Foundation in Arizona, where it was cryogenically frozen. The hope was the Red Sox legend might be brought back to life sometime in the future.

As Williams's children still feuded over what to do with his remains, an employee of the company quietly phoned Polidoro in May and described what was happening to the body.

"He wanted to do a book deal with me," Polidoro said yesterday. "I said, 'Why mess with someone like me? I'm not a well-known author.' I told him, 'You don't need me for a book deal, you need to come out and reveal what you know, and some major publisher will pick you up and you'll be known as the guy who saved Ted Williams.' "



[Monitor Classifieds](#)



Use [AdHound](#) for e-mail delivery of classified ads.

INTERNET ARCHIVE
WayBackMachine

3 captures
23 Sep 03 - 11 Jan 05

Go

AUG SEP NOV
2002 23 2003 2004

frozen body and have it cremated.

That attorney "had a connection" at *Sports Illustrated*, Polidoro said.

The attorney, John Heer, did confirm yesterday that Polidoro, who opposes the freezing of Williams's body, had referred Johnson as a client. However, Heer would not answer further questions because he had an appointment, he said. Heer could not be reached for comment later in the day.

Efforts to reach Johnson also were unsuccessful. Johnson, who had been chief operating officer at Alcor, resigned days before the story ran.

Johnson supplied the magazine with internal company documents, e-mails, photographs and tape recordings. Johnson told the magazine that surgeons decapitated Williams's body and suspended both parts in liquid nitrogen.

The *Sports Illustrated* story said Williams's head had accidentally cracked 10 times after being shaved and drilled with holes.

The company's director, Carlos Mondragon, denied the claims in the story. He told **AP** Associated Press yesterday that Williams's body had not been mistreated. It had undergone the normal procedure for cryogenic freezing, he said, and the cracks in his skull were microscopic.

A spokeswoman for *Sports Illustrated*, Sheryl Spain, said yesterday the magazine stands behind the story.

Polidoro said Johnson was "fascinated by the fact that Ted Williams ended up there . . . He was looking forward to exposing what he considered to be negative aspects at Alcor and to support the efforts of freeing Ted Williams."

Polidoro recently severed contact with Johnson. He is upset with Johnson because, Polidoro said, Johnson had posted "graphic" and "unorthodox" photographs of Williams on the Internet at freedted.com.

Those photographs had been yanked from the site Wednesday, Polidoro said.

According to **AP** Associated Press, the site briefly offered to give people who donated \$20 access to a private site where they could view "extremely disturbing" photographs documenting Ted Williams's fate. The Web site yesterday posted a letter, purportedly from Johnson, soliciting donations.

INTERNET ARCHIVE
WayBackMachine
 3 captures
 23 Sep 03 - 11 Jan 05

Go

AUG SEP NOV
 2002 23 2004
 2003

interacting with him in the future.

"The agenda changed," Polidoro explained. "The objective was to free Ted Williams, get it exposed, and it would result in getting Ted free . . . He (Johnson) is out of a job. He's gonna need money. And his approach for looking for money was wrong. And he knows it was wrong."

(Ed Pilolla can be reached at 528-2027 or by e-mail at epilolla@cmonitor.com.)

Friday, August 15, 2003

 [SAVE THIS](#)  [EMAIL THIS](#)  [PRINT THIS](#)  [MOST POPULAR](#)

[TOP](#) [HOME](#) [NEWS](#) [BUSINESS](#) [SPORTS](#) [ABOUT US](#) [SEARCH](#)

© Concord Monitor and New Hampshire Patriot
P.O. Box 1177, Concord NH 03302
603-224-5301

EXHIBIT P

PINA

Phone Report / Notify Victim



Scottsdale Police Department Offense/Incident Report Face Sheet

Original
 Supplement

DR# 03-07221
RELATED DR
PAGE 1 OF 2

Domestic Violence Child Abuse Arson Homicide Hate Crime Elderly Gang Related Liquor Establishment

Reporting Officer W. Smyth PSN 5699 [Redacted] Dist 3 Beat 19

Rpt Date 03.15.03 Rpt Time 1845 hrs Occ Date 03.15.03 to 03.15.03 Occ Time 1000 hrs to 1830 hrs

STATUTE	W/ Subsection	Description	M	All Comp	Law	PE	MOE	POE	POX	LS	CAC	WFC	SP Use
#1	13-1814A.1	AUTO THEFT	<input checked="" type="checkbox"/>		20A		F N U			4		95	
#			M	Ab			F N U						
#			F	Comp			F N U						
#			M	Ab			F N U						
#			F	Comp			F N U						

Distinct Characteristics:

Person # 1 Code VI Type I OIT # 1 S # 1 V/S Rel Y N U Last Name JOHNSON First LARRY Middle DEAN Sfx

Alias/Nickname Social Security Number [Redacted] Sex M Race W Eth H Hgt-Range 5-7 Wgt-Range 165 Hair BRN Eye BRN

VP Driver's License [Redacted] Gang Affiliation Member Assoc. Entered ACIC/NCIC NIC #

Home [Redacted] Home [Redacted]

[Redacted] [Redacted]

Person # 1 Code VI Type I OIT # 1 S # 1 V/S Rel Y N U Last Name JOHNSON First LARRY Middle DEAN Sfx

Alias/Nickname Social Security Number [Redacted] Sex M Race W Eth H Hgt-Range 5-7 Wgt-Range 165 Hair BRN Eye BRN

VP Driver's License Number DL ID Per State AZ Gang Affiliation Member Assoc. Entered ACIC/NCIC NIC #

Home Address: City Set State AZ Zip Home: ()

Occupation Employer/School Name Address City Set State AZ Zip Emp: ()

Vehicle Status VV - Victim's Vehicle SV - Suspect Vehicle L - License Plate Stolen S - SPD Stolen Vehicle Type Passenger Car Truck or Bus Other Vehicles

Pop # 1 Yr 02 Make HARLEY Model FAIRBOY Style MC Color BLK Lic # 11E88 St NV Mo/Yr 103 Value

VIN 1HD1BM11127078387 Title in Veh? Y N U Veh Locked? Y N U Keys in Veh? Y N U Reg in Veh? Y N U Odometer 1,100

Description - Unique or Identifying Characteristics LOTS OF CHROME / TWO SMALL BELLS ON FRONT FORK

Registered Owner Name VICTIM Registered Owner Address S.A.A. City Set State AZ Zip

Insurance Company FARMERS Entered NICB Records Use Only Entered ACIC/NCIC 454640153

Synopsis: ON 031503 BTRW. 1000 AND 1830 HRS PERSON(S) UNKNOWN, BY UNKNOWN MEANS, UNLAWFULLY REMOVED VICTIM'S MOTORCYCLE FROM AN ASSIGNED PARKING SPACE, AT [Redacted]

CHARGE X ARREST EXCERPT ADULT REVENUE WILL YOU PROSECUTE? YES NO

VICTIMS RIGHTS BY TELEPHONE: WAIVED INVOKED FORM SENT VIA MAIL VICTIMS RIGHTS? YES NO (S/S REQUESTED)? YES NO

Data Entry Entry Date 3-15-03 Reporting Person W. Smyth PSN 5699 Approving Supervisor [Signature] PSN 537

This document contains information that may not be complete and accurate. Use of this document is regulated by LAW. It is furnished for OFFICIAL USE ONLY and should only be used for the purpose requested. When explanation of any information contained herein is needed, communicate directly with the agency that originated this information.

03 MAR 16 AM 5:58



**Scottsdale Police
Department Supplement**



Auto Theft
Nature of Occurrence

031503
Date of Supp.

03-07221
D.R. Number
Page #: 2 of 2

On 031503 at approx. 2000 hrs. I spoke to (Victim) Larry Johnson at [redacted] reference an Auto Theft. He related the following:

On 031503 at 1000 hrs, he saw his Harley-Davidson motorcycle parked in his assigned parking space [redacted] on the north side of his apartment complex at [redacted]. The motorcycle was double locked, one lock on the ignition and one on the handlebars. It was not secured to a fixed object and it was not covered.

At 1700 hrs. Mr. Johnson and his wife left to run an errand but he did not check to see if his motorcycle was still in the space. On returning to the complex at 1830 hrs. he saw the motorcycle was gone. He checked the empty space for any possible items of evidence, with negative results.

The motorcycle was mainly black in color with lots of chrome. Two small bells hung from the front fork. One was brass and the other was a southwestern style with beads. The tank was 1/8 full. There was approx. 1,100 miles on the odometer.

Mr. Johnson still has both keys. It was not advertised for sale and he had not loaned it to anyone recently. There was no lien on the motorcycle. The motorcycle weighs approx. 650 lbs. It was never stolen before.

There are no known witnesses or suspects. An MDC All was sent and an Info Log entry was completed. NCIC/ACIC completed by [redacted] in Records, NIC V454640153. Victim's Rights information was explained and mailed.

03 MAR 16 AM 5:58

William Smyth B699
Reporting Officer

Reviewing Supervisor

This document contains information that may not be complete and accurate. Use of this document is regulated by LAW. It is furnished for OFFICIAL USE ONLY and should only be used for the purpose requested. When explanation of any information contained herein is needed, communicate directly with the agency that originated this information.

05 05 03

Date of this Supplement



03-07221

D.R. Number

STOLEN VEHICLE RECOVERY SUPPLEMENT

Scottsdale Stolen

Scottsdale Stolen/FOJ Recovered

FOJ Stolen

SOURCE OF INFORMATION (Citizen/Other Jurisdiction)

Name Hawkins Serial # 590
 Address _____ Phone _____
 Recovering Agency _____ FOJ DR# _____
 Information received by Teletype Yes No

VEHICLE INFORMATION

YEAR 2002 MAKE Honley MODEL Ford STYLE MIC COLOR black
 LICENSE PLATE _____ STATE _____ YEAR _____ VIN 1HD18MY1124078387
 Location Vehicle Recovered 04 25 03 1130 hours
 Location Vehicle Stored 9065 E. Via Linda
 Tow Company Name Ford-BW Phone _____

CONDITION OF VEHICLE

Keys in Vehicle	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Unk <input type="checkbox"/>	Vehicle Arson	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Unk <input type="checkbox"/>
Partially/Fully Stripped	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ignition	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Switched License Plates	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cracked	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
License Plate Missing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hot Wired	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VIN Missing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Punched	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ADDITIONAL INFORMATION

Processed at Scene	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Teletype Confirmation Received	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Impounded for Processing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Teletype Confirmation Sent	<input type="checkbox"/>	<input type="checkbox"/>
Cleared ACIC/NCIC Stolen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Owner Contacted	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Entered ACIC Impound	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Date/Time <u>0502 03</u>		
Recovery Letter Mailed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	By <u>Hawkins #590</u>		

NARRATIVE (Include Suspect Information):

Please refer to 03-10971, [redacted]
 [redacted] bike found during search warrant under
 03-10971

Page 1 of _____

Reviewing Supervisor _____

Ser. No. _____

Reporting Officer Hawkins 590

Ser. No. _____

White/Records D.R. Jockey

Yellow/CIB Auto Theft

Pink/CIB Program Supervisor

PD02145 (4/94)

This document contains information that may not be complete and accurate. Use of this document is regulated by LAW. It is furnished for OFFICIAL USE ONLY and should only be used for the purpose requested. When explanation of any information contained herein is needed, communicate directly with the agency that originated this information.

03 MAY - 6 PM 3:33

WHITE - Case Report CANARY - FBI PINK - Detention GOLDENROD - Officer

A62817

KMS B747

PD02535 (3-00)

PLEASE PRINT
USE BALLPOINT PEN

ARREST/BOOKING RECORD

PAGE 1 OF 2

JAIL BOOKING NO.

INDICATE REFUSED AND UNKNOWN INFORMATION

LAST NAME FIRST MIDDLE INITIAL

DUFF JOHN DAVID

V.P. ALIAS SCARS TATTOOS (LIST ADDITIONAL ITEMS IN MISC. SECTION)

1 Lt Arm Trib Scar Lt Side neck

HOME ADDRESS
8948 E. Davenport Drive, Scottsdale, Az 85260

HOME PHONE NO.

661-9180

CITY AND STATE

Arizona

BUREAU/JACKET NO.

RACE SEX HT. WT. HAIR EYES AGE

W M 602 225 Red Hzl 27

PLACE OF BIRTH
California

CITIZEN
US

SOC. SEC. NO.

OCCUPATION

EMPLOYER NAME

BUSINESS ADDRESS

BUSINESS PHONE NO.

NEAREST RELATIVE NAME

RELATIONSHIP

ADDRESS PHONE NO.

COLORS YEAR MAKE MODEL STYLE LIC. PLATE NO. & STATE

LOCATION DISPOSITION OF VEHICLE

TRAFFIC ACCIDENT REPORT YES

COMPLAINTS EVIDENCE OF ILLNESS/INJURY? YES TREATED NO NOT TREATED REFUSED

ON PRESCRIBED MEDICATION? YES NO ALCOHOLIC OR USING NARCOTIC? YES NO

BLOOD TYPE FBI NO. 140916VA3

CIS+ACCH NO. AZ09897216

ARREST RECORD

ARRESTING AGENCY Scottsdale AGENCY ARREST NO. 44979 ARREST DATE 5-2-03 ARREST TIME 1530 OR NUMBER S 03-10971, 03-07221, 03-09989, 03-09999

ARREST LOCATION 9065 E. Via Linda (SPD HQ) GRID/BEAT 12 ARRESTING OFFICER NAME J. Kirkham SERIAL NO. 499 WORK UNIT D42

ARRESTING CITIZEN NAME WAGON OFFICERS SERIAL NO. 1. SUPERVISOR APPROVING NAME/SERIAL NO. KEILOFF B747

BA OPER. NO. BA. DRIVER'S LICENSE STATUS MVD INFO/CHECK PROVIDED BY DWI CONVICTION DATES (LIST ADDITIONAL DATES IN MISC. SECTION)

EVIDENCE IMPOUNDED-WHERE YES SPD HQ PERSONAL PROPERTY IMPOUNDED-WHERE YES SPD HQ M.C.S.O. ID CODES M.C.S.O. ID USE ONLY

Table with 6 columns: I-NO, CODE, CHARGE, 2-NO, CODE, CHARGE. Includes MISC. section.

Table with 8 columns: COUNTS, CHARGE DESCR, VIOLATION CODE/SEC/ARS/CITY, CLASS, VIOL. DATE, WARRANT/CITATION NO., COURT JURISDICTION, BOND. Includes release dates like 5/2/03.

Table with 8 columns: ROL. DATE, TIME, DAY, CELL, PROPERTY LOCKER #, REASON, JAILER NAME & SERIAL NO., PHOTOS, PRINTS. Includes release info for MCO.

PRISONER'S RECEIPT FOR PROPERTY - DESCRIBE IN DETAIL: \$ 24.56 Yellow metal necklace Az ID 3 keys Pr Sunglasses Lt Blue and white shoes, Yellow metal car stud with clear stone Cell Phone

OFFICER SIGNATURE DELIVERING PRISONER X

This document contains information that may not be complete and accurate. Use of this document is regulated by LAW. It is furnished for OFFICIAL USE ONLY and should only be used for the purpose requested. When explanation of any information contained herein is needed, communicate directly with the agency that originated this information.

I HAVE RECEIVED ALL MONEY PROPERTY HELD BY JAIL FACILITY, AS LISTED

03 MAY -3 AM 11:34

EXHIBIT Q

[See [Chronology of Attempted 2004 Cryonics Legislation in Arizona](#)]

**[PLEASE NOTE THAT THIS LEGISLATIVE ALERT IS NO LONGER IN EFFECT;
IT IS REPRODUCED HERE FOR HISTORICAL PURPOSES]**

February 20, 2004

To Our Members,

As you may have heard, Alcor is currently engaged in a serious legislative matter. Representative Bob Stump has introduced a bill to the Arizona House of Representatives that proposes to regulate cryonics. **HB 2637 (embalmers; funeral establishments; storing remains)** proposes cryonics be regulated under the Funeral and Embalmer's Board and that Alcor's use of the Uniform Anatomical Gift Act (UAGA) be stripped.

Although fifty legislators signed on as co-sponsors, we are finding as we contact them one by one that the support for this legislation may be a mile wide, but it is only an inch deep. Most of the co-sponsors with whom we've spoken are saying that they did it as a favor to the sponsor, Representative Stump, and would likely vote against it in its current form in committee or on the floor. We need your help to ensure this likelihood becomes reality.

Attached is the [one-page briefing paper](#) that we've been distributing to the Arizona Legislature in PDF format.

We'd like you to choose a few of the talking points listed at the end of this letter which are most significant to you personally, and have you phone and fax your district Representatives and ask them to oppose the bill.

Please also contact the members of the House Health Committee by fax, email and phone and urge them to vote against HB 2637 regarding embalmers; funeral establishments; storing remains. Our hearing is scheduled for Thursday, February 26, 2004 at 9:00 am, so it's imperative that you contact them immediately.

Read below for examples of things to say.

The House Health Committee members are listed below. Any of them can be reached through the toll-free number for the Arizona Capitol, 1-800-352-8404.

[LIST REMOVED BECAUSE LEGISLATIVE ALERT IS NO LONGER IN EFFECT]

If you receive a response from any of the legislators, please let us know immediately.

In the most polite and non-confrontational but firm way here is what you should say in either email or phone calls:

- Give them your brief credentials. It helps significantly if you are a registered voter in their district, and mention also that you are a doctor or researcher who works with our organization; you are an employee or a member of Alcor, or you are a family member of an Alcor patient - in other words what your direct connection is.
- Thank them for their time and consideration.
- This bill is a solution without a problem. That no one has identified the public health or public safety reason for this proposed legislation.
- This bill would have the likely effect of eliminating our ability to continue performing cryopreservation procedures and research in Arizona.

- Alcor was not invited to participate in the dialogue about this proposal until the very last minute and had virtually no input into the development of this legislation.
- Finally ask them if they will please vote against the bill (if you are talking to a secretary or legislative assistant ask them to have the legislator get back to you with how they will vote).

If you don't know the District number in which you live, you can look this up on the web at: <http://www.vote-smart.org/index.htm>. This form, located in the upper left navigation bar of the website, requires knowing your full nine-digit zip code, which may be obtained from: <http://www.usps.com/zip4/>. With your District number in hand, you can refer to the [House Roster](#) we've included with this letter to find the names of your Representatives. All phone and fax numbers listed are in the 602 area code.

If you have questions about the legislative processes or this appeal, you are encouraged to contact our lobbyist, Barry M. Aarons, or his staff members Jennifer Clark and Christen DuRoss at 331 North First Avenue, Suite #250, Phoenix, Arizona 85003; phone: 602-253-1821 Fax: 602-452-2929; email: aarons1231@aol.com.

Representative Stump is moving quickly, hoping to have this bill passed into law before we are able to react. We need your help to ensure this bill gets killed before it has the chance to damage the quality of care we provide to our membership. Please help us defeat this bill.

Sincerely,

Joseph A. Waynick
CEO/President

Talking Points

HB 2637 [embalmers; funeral establishments; storing remains]

- The sunrise process was not followed, and Alcor was not notified of the stakeholder meetings even though we are the target for which the proposed legislation was drafted;
- Alcor is not necessarily opposed to regulation, but we oppose bill HB 2637, which mandates that Alcor be regulated by hostile parties with no understanding of what we do, and which does not respect the rights of Alcor members;
- Alcor does not engage in the practice of embalming. The protocols and solutions used have no relevant similarities to the procedures and solutions used in the funeral industry. To the contrary, the protocols and solutions used for cryopreservation are similar to those used in medicine and organ transplant procedures;
- We employ a highly skilled neurosurgeon to perform our surgery, and the use of an embalmer would represent a significant reduction in the quality of care we dispense to our members;
- The training for embalmers does not supply them with any understanding of cryopreservation procedures or the requirements for proper storage of cryopreserved patients. Cryopreservation procedures are much more complex than embalming procedures, and many of the requirements are incompatible;
- Our cryopreservation procedures are an application of experimental research protocols that are held to high medical standards, rather than cosmetic preservation the likes of which are carried out by funerary establishments;
- Our doors have always been wide open. In addition, multiple authorities regularly scrutinize our legal, health and safety standards. Our practices, protocols and procedures are described in great detail on our website, in the printed literature we provide to our members and to the public, and have been publicly discussed on numerous occasions to audiences worldwide for the past 32 years;
- All members of the legislature are invited to visit our facility in Scottsdale for a tour of our operations at any time that is convenient to them. We also conduct tours for the general public four times each week, on Tuesdays and Fridays at 10:00 am and 2:00 pm;
- The five year storage time limit imposed by this bill will not only impact cryonics organizations, but can also be applied to museums, medical schools, organ banks, fertility centers, universities or even a skeleton kept for more than five years in a high school classroom;
- To regulate a scientific process like cryonics, you need to suppose that a set of standards exists; that regulatory officials will have access to experts familiar with those standards; and that those standards have been communicated to all related organizations;

- Alcor is engaged in progressive scientific and medical research under the guidance of scientific and medical advisory boards composed of highly skilled licensed Medical Doctors, PhD's and renowned research scientists. No such skill level exists on the Funeral Board;
- Revoking our access to the Uniform Anatomical Gift Act (UAGA) will severely compromise our ability to rescue our patients outside the state of Arizona in a timely fashion, thereby rendering our procedures nearly useless;
- The Funeral Board feels it is necessary to revoke Alcor's access to the UAGA. Amending the Uniform Anatomical Gift Act (UAGA) in this non-uniform way removes the right of citizens in Arizona to designate a particular hospital, physician, or surgeon to carry out appropriate procedures in accordance with their wishes as specified by the UAGA. This is not just a regulation issue. It is a human rights issue involving the right of human beings to self-determination regarding their own fate in a matter that many people (and certainly our members) consider of prime personal importance;
- Oversight should not be undertaken by an agency that is openly hostile to our mission, objectives and operations. Arizona Funeral Board Director Rudy Thomas was quoted by author Richard Sandomir as saying, "These companies need to be regulated or deregulated out of business." (New York Times, 14 Oct 2003);
- Alcor members are willing volunteers for an experimental procedure for which they make an informed decision years or many times decades in advance of when our services are needed. We make no guarantees that the procedure will work. No government agency should have the right to interfere with the self-determination rights of an individual to choose to donate their body to a research organization for the purpose of cryopreservation;
- There have been no consumer complaints about our procedures in our 32-year history. The only contention about our operation since our inception has been, on two occasions, squabbles between family members over the concept of cryonics;
- Alcor Life Extension Foundation is an asset to the State of Arizona as a responsible organization engaged in progressive medical and scientific research. Unlike the mission of the Funeral Board, our mission is the preservation of individual human life;
- There is no prohibition in Arizona statutes against an organization receiving reasonable payment for the removal, processing, disposal, preservation, quality control, storage and transportation of an anatomical donation for the purposes of scientific research;
- We object to the faulty reasoning for introducing such hasty regulation. Regulation requires the demonstration of public need; protection of the public from health and safety hazards; consumer protection from unfair competition, and consumer protection from predatory pricing. Furthermore, to regulate an scientific process like cryonics, you need to suppose that a set of standards exists; that regulatory officials will have access to experts familiar with those standards; and that those standards have been communicated to all related organizations. None of these criteria have been suggested to exist;
- It is the desire to make cryonics work that has motivated some of the most innovative work in the field of organ preservation. It has also been a factor (lesser, but perhaps significant) in the financing and research in nanotechnology. Alcor is contributing to the world in several significant ways;
- The Uniform Anatomical Gift Act was created as a mechanism for people who wish to donate their bodies or organs for transplant or research. For the first time in history, the Arizona legislature is being asked to restrict this fundamental human right of terminal patients. This would set an extremely serious precedent, which is contrary to the intentions of the Uniform Anatomical Gift Act and could result in Arizona being portrayed as a state which may not honor the wishes of people who are terminally ill. Research and educational institutions, which rely on the UAGA, may wonder if "they are next" and may feel tempted to relocate out of state. Medical institutions will have to study complex legislation in an effort to determine how it may apply to them;
- None of this is necessary. The supposed problem which the bill addresses does not exist. Alcor Foundation uses procedures that are intended for optimal preservation of the human brain. These procedures have been mischaracterized and sensationalized in the press, because of actions by a disgruntled employee. Nevertheless, all details of the procedures themselves are thoroughly documented and freely available.

EXHIBIT R

[See [Chronology of Attempted 2004 Cryonics Legislation in Arizona](#)]

Cooperation Not Confrontation Defines Future of Cryonics in Arizona

February 26, 2004

To All Alcor Members,

I am happy and proud to say that Alcor, its members, and the state of Arizona have won a great victory today!

Early Wednesday morning, Barry Aarons, Tanya Jones, and I met with Representative Stump and several of his advisors for nearly forty-five minutes to discuss HB 2637. We were very pleasantly surprised at the openness and flexibility demonstrated by Mr. Stump in our sometimes frank discussions. During that meeting, we were able to successfully communicate to him the sincere concerns we had with his bill as originally proposed and why our membership was so strongly opposed to its passage.

It is our opinion that prior to this meeting, Mr. Stump sincerely did not understand the unintended negative consequences his bill would have on Alcor, its members, and on the science of cryopreservation as a whole.

After patiently listening to our concerns Mr. Stump expressed a willingness to modify several key provisions of the bill as a show of good faith to the constituents of this legislation in exchange for a commitment from us to continue dialogue for appropriate oversight of cryonics as practiced in the state of Arizona.

Since representation at the negotiation table is what we've been requesting from the day Alcor first became engaged in the legislative process, we were of course elated at the opportunity to sit with representatives of the legislature and their advisors in a spirit of cooperation and craft legislation that will provide the level of oversight legitimately required by the state while simultaneously securing protection for patient privacy, guaranteeing the constitutional right of self-determination of our members, and establishment once and for all the legislative legitimacy of cryonics.

At the conclusion of that meeting, Representative Stump demonstrated outstanding leadership and courage by agreeing in principle to consider amendments to his bill that would eliminate some of the most serious concerns of Alcor and its membership in a show of good faith. We were most impressed.

Today, literally an hour before the hearing was to begin, we received word that amendments had been filed and that Representative Stump was receptive to hearing the balance of our concerns that blocked agreement to a bill. After reviewing the amendments and exchanging negotiating points with Representative Stump that outlined some of our remaining issues we were able to secure the following understanding:

1. Alcor's ability to utilize the UAGA was restored via amendment;
2. The requirement for an embalmer to store our patients or participate in our procedures was struck from the bill via amendment;

3. In addition, we committed to meet with all interested parties and seek agreement upon the following:
- a. Expand the Funeral Board by up to two members to include experts in the field of cryopreservation or change the composition of the existing board to include up to two experts in the field of cryopreservation;
 - b. Require a cryopreservation expert on the staff of the Funeral Board to execute oversight;
 - c. To establish the statutory legitimacy of cryonics through a legislated definition of cryopreservation;
 - d. Define the scope of the oversight through legislation and not left singularly up to a rules committee;
 - e. To extend the effective date of the bill to September 1, 2005 to leave open our option of legislative redress in the unlikely event that appropriate rules cannot be agreed upon between Alcor and the Funeral Board.

Due to the good faith agreements obtained prior to the committee hearing in conjunction with the proposed amendments, Alcor reduced its opposition to passage of HB 2637 on the condition that agreement can be reached on the verbal understandings listed above.

It should be noted that several members of the Health Committee expressed reservations about having Alcor overseen by the Funeral Board, but conceded that if legislation were necessary, oversight would be placed there but the right would be reserved to find a more appropriate place to house cryonics oversight in the future. Moreover, many of the committee members reserved the right to change their vote when the bill is presented on the House floor if agreements cannot be reached on the aforementioned items. Our heartfelt gratitude, respect and admiration go out to the courageous Representatives who agreed to support our cause.

After the hearing, I had the opportunity to have some very constructive dialogue with Funeral Board representatives Randy Bunker and Rudy Thomas who both enthusiastically looked forward to engaging Alcor and finalizing the framework of the proposed oversight.

The progress of today's hearing would not have been possible without the tireless efforts of a number of good people, including Barry Aarons, David Brandt-Erichsen, Saul Kent, Tanya Jones, Aubrey de Grey, and Steve Rude. In addition, we must thank all the brave souls who traveled to Phoenix to testify but were unable to do so due to legislative time constraints including Steve Harris, Mark and Judy Muhlestein, Ted and Bobby Kraver, Jim Lewis, and two organ preservation scientists who wish to remain anonymous.

We must also thank those members who attended the hearing as a public show of support for Alcor. Lastly, but certainly not least, we must thank all of the members who took time away from their busy schedules to email, fax, and call Arizona state legislators, urging them to oppose this bill. When they revealed to us that they were receiving from 150-200 emails per day, we realized that you all really made a difference! Thank you!!!

Joe Waynick
CEO/President
Alcor Life Extension Foundation

EXHIBIT S

July 6, 2013 | 07:49 pm

Welcome! [Login](#) | [Signup](#)

Few Clouds 107°



[Home](#) [News](#) [Opinion](#) [Sports](#) [VarsityXtra](#) [Money](#) [Life](#) [Get Out](#) [Blogs](#) [Jobs](#) [Classifieds](#) [Obits](#) [Public Notices](#)

Home

Scottsdale cryonics firm won't face state oversight

Story

[Share](#) [Print](#) [Font Size:](#)

[Tweet](#) 0 [Like](#) 0

Posted: Saturday, April 3, 2004 5:33 am | Updated: 5:20 pm, Thu Oct 6, 2011.

Le Templar | 0 comments

The Scottsdale -based Alcor Life Extension Foundation won't face direct state oversight this year as a lawmaker has stopped his push for new legislation.

Rep. Bob Stump, R-Peoria, said Friday he became concerned that proposed changes to HB2637 would unintentionally protect Alcor from a lawsuit filed by some family members of legendary baseball player Ted Williams. The body and severed head of Williams are believed to be stored in liquid nitrogen at Alcor's facility at Scottsdale Airpark.

Williams' eldest daughter — Bobby-Jo Williams Ferrell — and two of the Hall of Famer's nephews are asking a judge to force Alcor to reveal whether the organization obtained legal permission, known as a "document of gift," to store the body.

Attorney John Heer claims that Alcor is required to disclose the document under the Arizona Anatomical Gift Act.

Stump said Friday a proposed bill amendment supported by Alcor might validate the foundation's claim that it doesn't have to share that information, or affect future steps by Williams' family members.

"I didn't want to cut the legs out from any pending civil action," Stump said.

But Joseph Waynick, Alcor's president and CEO, said he believes Stump withdrew the bill because everyone needs more time to explore how state regulation of the cryonics industry should be established.

"I think it was the right decision to do," Waynick said. "We just kept running into unintended consequences with the language of the bill and the speed it was moving through the Legislature."

Alcor is the only facility in Arizona that stores frozen human bodies and heads in the hope that scientific advances will one day bring the dead to life. Waynick has told the Tribune that all bodies at Alcor are stored there legally and with written consent.

HB2637 would have required Alcor to obtain an operating license from the state Board of Funeral Directors and Embalmers, and provide ongoing oversight by that agency.

Stump had moved the bill through the House, but encountered problems in the Senate. Two meetings were held this week in an effort to reach compromises that would lead to a successful vote before the Senate Commerce Committee.

Alcor officials have publicly said they welcome "reasonable" state regulation, but several times organized a campaign of e-mails and phone calls to lawmakers seeking to defeat the bill.

Waynick said Friday he has invited staff from the funeral directors board to tour the facility and review its procedures.

"We don't need legislation to let any agency of the state to come in here and look us over," Waynick said.

Heer said he couldn't envision a scenario whereby HB2637 would affect the Williams family's lawsuit against Alcor. He said he hopes Stump is simply awaiting a decision by the court so that the lawmaker can tailor a future bill that would address any loopholes, such as allowing Alcor to keep confidential the identities of bodies in its care.

"I certainly hope that's the case and he has not given up his idea of regulating the cryonics enterprises that are



Multimedia



[More Multimedia](#)

[Most popular](#) [Commented](#) [Shared](#)

Stories

Frontier, Allegiant ending routes from Gateway

'Dark day' as flags lowered and 19 dead firefighters' names released

Celebrate Fourth of July around the East Valley

Steve's Espresso shifts coffee shop model, Tempe owner says business has double-digit growth

EV Weather: Fire danger high statewide; Valley temps near 107 Friday

[More](#)

out there, especially Alcor," Heer said.

Stump said he wants to consider legislation again in 2005, but he doesn't expect it to require Alcor to change any promises to clients about protecting their identities.

Tweet 0 **Like** 0

Discuss Share Print

Posted in News, Local on *Saturday, April 3, 2004 5:33 am. Updated: 5:20 pm.*

More From This Site

- **Letter: Reaction to Paula Deen reprehensible**
- **Massive I-10 traffic back-up after woman killed near Phoenix**
- **Mesa bridge collapse kills 1, injures 2nd at Loop 202 site (updated, w/ video)**
- **Investigation of possible human error underway in Yarnell**
- **Motorcyclist dies after collision in Mesa Wednesday**

From Around The Web

- **Confessions of Hotel Housekeepers (AARP)**
- **Princess Diana's 'Revenge Dress' Was the Best Way to Get Even With Prince Charles (CafeMom)**
- **Smokin' Jennifer Aniston Struts on the Beach (Hollyscoop)**
- **Model Addicted to Plastic Surgery Does Irreversible Damage (Bossip)**
- **Julianne Hough Wore An Unfortunate Peplum Jumpsuit To The Lone Ranger premiere (TheGloss)**

Recommended by

Welcome to the discussion.

Screen Name or Email

Password

[Forgot?](#)

Polls

POLL: While it is legal to sell and possess fireworks in most EV cities, it often illegal to use them. Do you feel the laws need to be changed?

- Yes, people should be allowed to use their fireworks
- Yes, fireworks should not be sold in fire-prone Arizona
- No, the law seems to be working as it is

[More polls](#)

Print Edition Online



[More e-Editions](#)

Today's Calendar

Saturday	Jul 6
Everclear	<input type="button" value="▲"/>
The Marquee- Tempe	8:00 pm
Psychobilly Rodeo Band	
Rusty Spur Saloon	8:00 pm
Halo	
Club Red	8:00 pm <input type="button" value="▼"/>
Sunday	Jul 7
Monday	Jul 8

SUBMIT A CALENDAR EVENT

[View Full Events Calendar](#)

East Valley Voices



Ducey: Recalls.gov a gold mine of consumer information

By Joe Ducey, ABC15



Johnson: Flake, McCain show courage on immigration reform

house must display similar leadership

Guest Commentary by Tyler Johnson



Hutchings: Nearby outlet malls offer bargains, much more

Commentary by Linda Hutchings, Special to Tribune



Prepping for the football hurricane

By Mark Heller, Tribune



Crosby: San Tan Valley Think Tank tackles tough community, national issues

Commentary by Bridgette Crosby, Special to Tribune

Sections

Local
Arizona
Nation/World
Sports
Varsity Xtra
Money
Get Out
Opinion
Blogs
Classifieds
Obits

Services

About Us
Career Opportunities
Advertising Info
Contact Us
E-Editions
Find a Rack Location
Local Businesses
Privacy Policy
Site Map
User Agreement
ANA Legal Notices

Affiliates

Ahwatukee Foothills News
AZ Interactive Media Group
Daily News-Sun (Sun City)
Glendale Today
Peoria Today
Surprise Today
Explorer (Tucson)
PhoenixBrides365.com
Nerdvana

Contact us

East Valley Tribune
Phone number: 480-TRIBUNE
Address: 1620 W. Fountainhead Parkway, Ste. 219
Tempe, AZ 85282

[More Contact Information...](#)

Share Your News

We're always interested in hearing about news in our community. Let us know what's going on!

Share your news

EXHIBIT T

Weather History for Scottsdale, AZ

Sunday, March 2, 2003

Sunday, March 2, 2003

« Previous Day

March 2 2003

View

Next Day »

Daily

Weekly

Monthly

Custom

	Actual	Average	Record
Temperature			
Mean Temperature	52 °F	-	
Max Temperature	60 °F	66 °F	86 °F (2009)
Min Temperature	43 °F	45 °F	39 °F (1997)
Degree Days			
Heating Degree Days	14		
Growing Degree Days	2 (Base 50)		
Moisture			
Dew Point	40 °F		
Average Humidity	69		
Maximum Humidity	100		
Minimum Humidity	39		
Precipitation			
Precipitation	0.00 in	-	- ()
Sea Level Pressure			
Sea Level Pressure	29.98 in		
Wind			
Wind Speed	2 mph (NNW)		
Max Wind Speed	6 mph		
Max Gust Speed	-		
Visibility	9 miles		
Events			

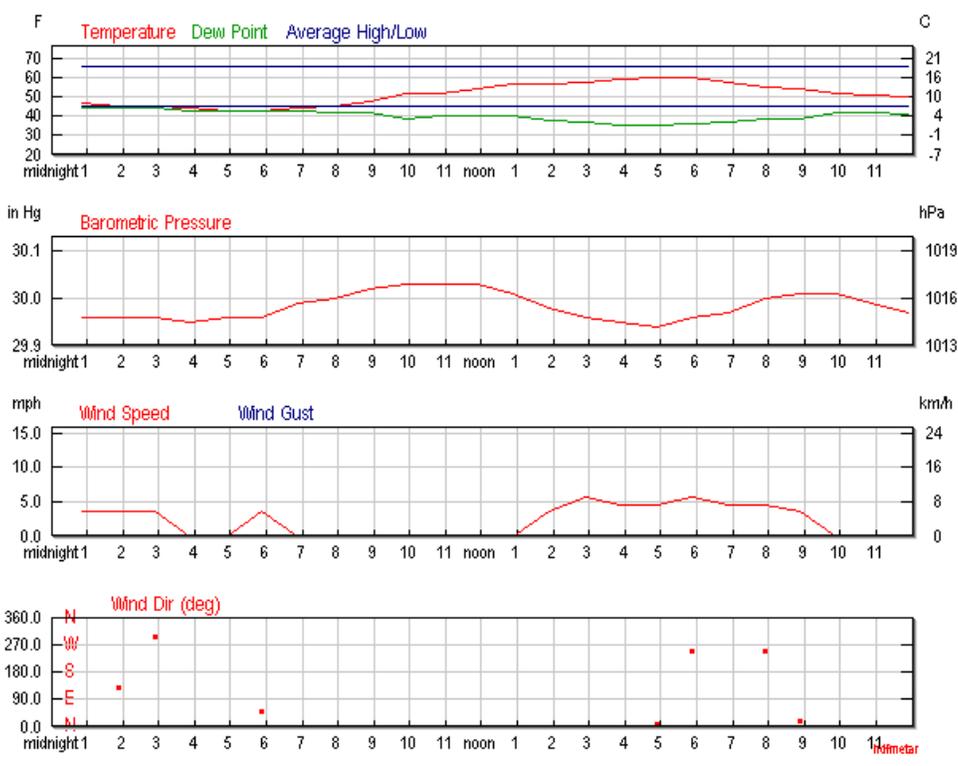
Averages and records for this station are not official NWS values.

[Click here for data from the nearest station with official NWS data \(KPHX\).](#)

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

[Seasonal Weather Averages](#)



[Certify This Report](#)

Hourly Weather History & Observations

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:53 AM	46.9 °F	-	44.1 °F	90%	29.96 in	10.0 mi	NW	3.5 mph	-	N/A		Scattered Clouds
1:53 AM	45.0 °F	43.5 °F	44.1 °F	97%	29.96 in	9.0 mi	SE	3.5 mph	-	N/A		Partly Cloudy
2:53 AM	45.0 °F	43.5 °F	44.1 °F	97%	29.96 in	7.0 mi	WNW	3.5 mph	-	N/A		Scattered Clouds
3:53 AM	44.1 °F	-	43.0 °F	96%	29.95 in	7.0 mi	Calm	Calm	-	N/A		Clear
4:53 AM	43.0 °F	-	43.0 °F	100%	29.96 in	5.0 mi	Calm	Calm	-	N/A		Scattered Clouds
5:53 AM	43.0 °F	41.3 °F	43.0 °F	100%	29.96 in	5.0 mi	NE	3.5 mph	-	N/A		Clear
6:53 AM	44.1 °F	-	43.0 °F	96%	29.99 in	5.0 mi	Calm	Calm	-	N/A		Mostly Cloudy
7:53 AM	45.0 °F	-	42.1 °F	90%	30.00 in	7.0 mi	Calm	Calm	-	N/A		Clear
8:53 AM	48.0 °F	-	42.1 °F	80%	30.02 in	10.0 mi	Calm	Calm	-	N/A		Clear
9:53 AM	52.0 °F	-	39.0 °F	61%	30.03 in	10.0 mi	Calm	Calm	-	N/A		Clear
10:53 AM	52.0 °F	-	39.9 °F	63%	30.03 in	10.0 mi	Calm	Calm	-	N/A		Mostly Cloudy
11:53 AM	54.0 °F	-	39.9 °F	59%	30.03 in	10.0 mi	Calm	Calm	-	N/A		Partly Cloudy
12:53 PM	57.0 °F	-	39.9 °F	53%	30.01 in	10.0 mi	Calm	Calm	-	N/A		Scattered Clouds
1:53 PM	57.0 °F	-	37.9 °F	49%	29.98 in	10.0 mi	Variable	3.5 mph	-	N/A		Clear
2:53 PM	57.9 °F	-	37.0 °F	46%	29.96 in	10.0 mi	Variable	5.8 mph	-	N/A		Clear

[Show full METARS](#) | [METAR FAQ](#) | [Comma Delimited File](#)

Time (MST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
3:53 PM	59.0 °F	-	35.1 °F	41%	29.95 in	10.0 mi	Variable	4.6 mph	-	N/A		Partly Cloudy
4:53 PM	60.1 °F	-	35.1 °F	39%	29.94 in	10.0 mi	North	4.6 mph	-	0.00 in		Clear
5:53 PM	60.1 °F	-	36.0 °F	41%	29.96 in	10.0 mi	WSW	5.8 mph	-	N/A		Clear
6:53 PM	57.9 °F	-	37.0 °F	46%	29.97 in	10.0 mi	Variable	4.6 mph	-	N/A		Clear
7:53 PM	55.0 °F	-	39.0 °F	55%	30.00 in	10.0 mi	WSW	4.6 mph	-	N/A		Clear
8:53 PM	54.0 °F	-	39.0 °F	57%	30.01 in	10.0 mi	NNE	3.5 mph	-	N/A		Clear
9:53 PM	52.0 °F	-	42.1 °F	69%	30.01 in	10.0 mi	Calm	Calm	-	N/A		Clear
10:53 PM	51.1 °F	-	42.1 °F	71%	29.99 in	10.0 mi	Calm	Calm	-	N/A		Clear
11:53 PM	50.0 °F	-	41.0 °F	71%	29.97 in	10.0 mi	Calm	Calm	-	N/A		Clear

[Show full METARS](#) | [METAR FAQ](#) | [Comma Delimited File](#)

EXHIBIT U

From Alcor News Number 11, March 23rd, 2003

Case Summary: Patient A-1234

by Charles Platt

At the end of February this year we initiated a brief standby for A-1234, an elderly woman in Southern California (whose signup documents requested confidentiality). Although she was suffering from severe circulatory problems and had been admitted to an ICU with pneumonia, she managed to recover, and we discontinued our standby. Subsequently she relocated in a nursing home in Hollywood.

On Saturday March 22nd at 8:02 AM Mountain Standard Time a staff member at the nursing home found that A-1234 had suffered cardiac arrest. Attempts to revive the patient were unsuccessful, and the nurse called Alcor's emergency number at approximately 8:15 AM. (All times in this report are in MST, which is one hour later than Pacific time during the winter months.)

Dr. Jerry Lemler contacted me at my home in northern Arizona around 8:20 AM and said he would coordinate activities in Scottsdale while I would organize the Southern California response. I telephoned one of our California coordinators, Bobby June, who was not entirely happy to be woken since he had been up partying for most of the night. Still, he tackled the task of finding a van that we could rent to transport the patient to Arizona. I was worried that renting the vehicle might be the most time-consuming task in the transport operation. This concern turned out to be correct.

I called our other Southern California coordinator, Todd Huffman, who had been planning to go snowboarding with a friend and had already started driving out of Los Angeles. He promptly changed his plans and returned home to grab a backup meds kit. Next I checked my map of Southern California volunteers and found that Peter Voss was located closest to the nursing home. Peter was awake and ready to respond. He left his house to retrieve our primary standby equipment from its storage location before continuing to the nursing home.

Alcor's paramedic Larry Johnson, in Phoenix, tried unsuccessfully to contact A-1234's son, an Alcor member possessing durable power of attorney for health care for the patient. Under California law the nursing home could refuse to release the patient without signed consent from the next of kin, and the son was the only person who could provide this. Since he was probably 60 miles away and is legally blind, I didn't know if it would be physically possible for him to reach the nursing home and sign a release within a short time. However, after I asked our California mortician Joe Klockgether to discuss this situation with staff at the nursing home, they agreed to waive the requirement for a signed release. Mr. Klockgether also had a copy of the death certificate which we had prepared in advance when we arranged the standby for the same patient at the end of February.

In the meantime the nurse who had discovered A-1234 had injected heparin, had administered chest compressions, and had placed ice around the patient. Peter Voss had collected our kit and was on his way, and Todd Huffman would soon be joining him.

The patient's son received our messages and called me, and I told him the news about his mother. He seemed

calm but said that the death had come as a surprise, since his mother's health had been improving during the past couple of weeks.

By 10 AM our team members were at the nursing home and I asked Larry Johnson to give instructions via the phone to Todd Huffman regarding medications. (Larry had considered flying to Los Angeles himself, but clearly he would have been unable to get there in time.) Larry described to Todd the technique for putting the patient in the Trendelenburg position, which causes the external jugular veins to become distended. This enabled Todd to place an IV line. It was then relatively easy to push the various medications that we use to mitigate ischemic injury.

I checked back with Bobby June, who was having difficulty finding a truck that we could rent. Trucks often tend to be in short supply for last-minute rentals on a weekend, because this is when many people move personal possessions. Finally Bobby found a truck that was available reasonably close to the nursing home. Peter went to collect it while I conferred with our medical advisor, Dr. Steve Harris, regarding the option of doing a washout before the patient was moved to Arizona.

Intravenous cooling is many times faster than cooling by external application of ice or icewater, and for each 10-degree (Celsius) reduction of temperature, we halve the metabolic rate. If a patient's temperature is reduced from 35 (close to normal) to 5 (our terminal target value), theoretically we reduce the rate of ischemic injury by a factor of eight.

On the other hand, I realized that in order to perform the washout our transport team would have to leave the Interstate highway, find the lab where our surgical team consisting of Steve Harris, Sandra Russell, and Joan O'Farrell were located, wait for the procedure to be completed, and then drive back to the Interstate and continue to Arizona. Depending on how much difficulty our surgeons might have in obtaining vascular access, I estimated that the detour could cost us three hours. Since the patient's temperature was already down to 21 degrees (measured via a nasopharyngeal probe which had been placed by team members at the nursing home), we were already halfway from normal body temperature to the target terminal temperature. With concurrence from Steve Harris I decided that it would make better sense for the patient to go straight to Arizona, packed in ice, with occasional chest compressions along the way.

I called Alcor Central and told Jerry Lemler that the patient's probable arrival time would be between 6 PM and 7 PM. He suggested that I didn't need to come to the operating room myself, since he had assembled adequate staff for the procedure.

The patient entered the facility at 7:02 PM with a probe temperature of 4.1 degrees Celsius. When I called Alcor at 8:30 PM I was told that neuroseparation was complete and perfusion had begun. I was very relieved to learn that no one could find any evidence of blood clotting. Todd Huffman can take much of the credit for this by having managed to place the IV and administer heparin and streptokinase, in response to the valuable instructions from Larry Johnson. Another fortuitous factor is that the patient had been taking Coumadin, an anticoagulant medication, before she died.

No edema was visible, and despite a moderate flow rate, by 11:30 PM the patient exceeded the concentration of cryoprotectant necessary to vitrify. We can regard this as a successful case, especially since it occurred with no prior warning. Less than eleven hours elapsed from the moment when we received the emergency call to the time when the patient arrived at our facility. Our only concern is that the time of death remains unknown, since nursing

homes typically do not monitor patients constantly. It is possible that A-1234 arrested several hours before she was found at 7:02 AM.

The question of whether to take time for washout and intravascular cooling of California patients during the transport phase remains unresolved. Clearly the procedure is necessary when a patient is located farther away and we want to achieve rapid initial cooling prior to a relatively lengthy transport. Washout is also advisable if the patient has a higher initial temperature, has been collected by a mortuary service, or is close to the location where the procedure can be done. But when our own team members have collected the patient without any paperwork problems and can reach Alcor from Los Angeles in less than seven hours, the simplicity of this option is attractive.

Once again we thank our Southern California team for performing outstandingly at short notice. We regret the loss of A-1234, a longtime Alcor member who would have been 83 next month and showed great courage and tenacity in dealing with her health problems. We're thankful that she opted for cryopreservation, and hope that her decision will be justly rewarded in a future world where death and aging are no longer regarded as inevitabilities.

EXHIBIT V

An Interview with Larry Johnson

During his employment with Alcor as Director of Clinical Services, Larry Johnson gave an interview on March 20, 2003, that was published in the [1st Quarter 2003 issue of Cryonics magazine](#). Excerpts are below.

LJ: I really enjoy how close-knit everyone is. It's kind of like a small family. I had the opportunity to meet the folks out in southern California — a bunch of really nice individuals out there. I also got to meet several people from around the world at the recent training we had up at Creekside Lodge. It was very friendly, and seems to be a very close-knit family.

...

LJ: I really can't think of anything disappointing as far as my work is concerned right now, as far as Alcor. So far I've been very pleased with what I've seen and with what has been going on. And as you stated, with the exception of having my Harley-Davidson stolen here in north Scottsdale, I feel like everything else has been okay.

...

LJ: Well it's actually something (Alcor membership) that's kind of been in the back of my mind for some time even before I came to work for Alcor. I've always been interested, and I've actually done a lot of reading on the subject of cryonics and of nanotechnology, so I was somewhat knowledgeable of that when I walked in the door here. Actually, I just turned in today my membership application to Jennifer. I regret that I didn't get it turned in earlier, but as you stated earlier, as busy as we got a few weeks ago, I never really had time. However, my application is in, and I'm very excited about that, and again my wife is very supportive of my decision.

Click [here](#) for the full issue of *Cryonics* magazine (PDF format — the interview is on page 14).

EXHIBIT W

Alcor News Bulletin

Number 16: September 1st 2003

After the Media Blitz

As reported in the previous Alcor News, our former Director of Clinical Services, Larry Johnson, provided confidential information to a journalist at Sports Illustrated, which published a seven-page feature about Alcor around August 13th. (The cover date of the issue was August 18th.) We have moved quickly in response to the negative nationwide publicity which followed.

Former Alcor president Carlos Mondragon flew to Scottsdale to help manage the media blitz while our current President and CEO, Jerry Lemler, was in a local hospital receiving chemotherapy. Carlos has been active in cryonics for more than twenty years. He originally signed up with the Cryonics Institute of Michigan in 1978 but became an Alcor member in 1982. He joined the Alcor board of directors as Treasurer in April 1987 and took over as President in December of that year. He is often credited with playing a very significant role helping to defend Alcor against legal allegations from the coroner's office in Riverside, California during 1988. At the end of that case all charges were dismissed, the legality of cryonics was affirmed by the court, and California became the only state where cryonics is listed as an official option on death certificates.

Soon after arriving in Scottsdale on August 11th 2003, Carlos gave a press conference and we issued a press release to counter the ways in which Alcor had been mischaracterized. Excerpts were circulated by Associated Press.

Since we had lost our Director of Clinical Services, contingency plans were made in the event that any of our members experienced a health emergency. "I reviewed the transport protocol, went over our equipment, and talked to all the people involved, so that I could deal with an emergency," Carlos comments.

On Saturday August 23rd Alcor served a law suit against Larry Johnson and his wife alleging breach of contract, breach of fiduciary duty, and conversion of property, meaning that Alcor believes he took company property with the intention of converting it to his own use. (Johnson's wife is named in the suit because married couples own property jointly under Arizona law.) Local police subsequently have returned some items to Alcor which they obtained from Johnson, but other items are still missing, including a laptop computer.

Johnson must respond to the law suit by September 20th. If he fails to do so, Alcor may win a default judgment. If he does respond, the discovery process will begin, and after it is complete a court date will be set. This can take a substantial period of time.

Separately from Alcor's civil suit, another investigation has been initiated. Since this has not resulted in formal charges yet, we can't provide any information about it at this time.

The flow of calls from journalists to Alcor has now ceased. A Good Morning America segment is pending and is expected to include footage shot at the facility, but the segment has already been delayed by a week and may never be aired.

Alcor has found a replacement for Larry Johnson who has substantial experience in cryonics standby/transport work and in the operating room, but this person will not be available until the end of September. Carlos Mondragon will return home to Oregon on Sunday September 7th but will continue to be available for phone consultations during the remainder of that month. We are extremely indebted to him for the large amount of time that he has donated to Alcor during this stressful period, and for his decisiveness and fairness during his temporary management role.

Alcor's other emergency team members remain on-call as usual.

Cryonics Institute Faces Regulatory Action

According to a news item that appeared on August 26th in about a dozen newspapers around the nation, the Cryonics Institute of Michigan has been prohibited from performing procedures at its facility until it conforms with regulations intended for mortuaries and cemeteries. We have no additional information at this time, but naturally we hope that the management at CI is successful in resolving this serious situation. It is in the best interests of all cryonics organizations for human cryopreservation to be a legitimate legal procedure in every county of every state. Also there is an obvious need to avoid any legal precedent for applying mortuary or cemetery regulations to cryonics.

In the past, Alcor has successfully and correctly argued that since we are a research institution receiving anatomical donations under the Uniform Anatomical Gift Act, we should not be subject to mortuary regulations that enforce procedures such as embalming. Similarly, a sperm bank or a laboratory storing tissue samples would be unable to do its work if it were classified as a mortuary.

Cemetery regulations are equally inappropriate. To take just one example, we cannot maintain patients in hermetically sealed containers (as specified by Arizona mortuary law) since venting is necessary to allow liquid nitrogen vapor to escape.

If any readers of Alcor News have academic credentials or other status which might be respected in a court of law, CI asks them please to contact David Ettinger at the Cryonics Institute in case they may be willing to make a statement defending or explaining cryonics. David Ettinger's email address is

dae@honigman.com

Some Alcor members have expressed concern that we may be vulnerable to the same kind of legislative initiative that has been aimed at CI. Fortunately former president Steve Bridge and former vice president David Pizer obtained preapproval from local zoning officials before Alcor moved to Scottsdale from its previous location in California. Alcor also received formal preapproval from the local Health Department and other agencies.

Alcor has undergone several regulatory inspections during the past month, including a visit from the Fire Department and the Department of Environmental Quality. The only concern expressed by DEQ was that some cement left over from a floor-tiling procedure was found in the parking lot behind the facility. We are waiting for instructions on the correct way to dispose of this waste. The fire department made eight requests for minor changes, all of which have been completed.

Alcor has now requested an inspection from the Occupational Safety and Health Administration (OSHA). By initiating this assessment Alcor avoids the possibility of being fined for previous regulatory noncompliance, but naturally if any violations are found we will have to rectify them within a period that will be specified by the agency.

Facility manager Cindy Felix has had valuable experience dealing with OSHA at a previous place of employment, and is going through every section of Alcor's facility prior to the inspection. In a related activity, Director of Suspension Readiness Mathew Sullivan has been working for two weeks to update a book of handling procedures for every chemical that is used at Alcor.

We expected to be scrutinized after the Sports Illustrated article appeared. So far, Alcor has not suffered any significant consequences.

Facility Expansion Update

As reported in previous issues of Alcor News, we are midway through an ambitious facility expansion plan. Earlier this

year a committee comprised of former Alcor president Steve Bridge, director Steve Van Sickle, and then-C.O.O. Charles Platt established a floor plan which was accepted by board members and Alcor staff after protracted negotiations. A new conference room has been created, new office cubicles were built in the lobby, and plans were established for a new operating room after consultation with one of our surgeons, Jose Kanshepolksy, and our surgical technician, Jeff Kelling.

At the request of Carlos Mondragon, the facility expansion committee has been disbanded, having completed its most important work. Cindy Felix, our highly capable facility manager, has been given the primary responsibility of implementing the remaining tasks that were itemized by the committee. An engineer has visited Alcor and has advised that an upper storage level above our new operating room could be prohibitively expensive if it conforms with local building codes. Discussion is also in progress regarding the best way to enable Dewar-to-Dewar patient transfers, which require sufficient headroom to lift a wholebody pod from one Dewar and lower it into another.

At each stage in the renovations, Alcor will be in compliance with local codes and regulations.

From Alcor's Board of Directors

The Resignation of Alcor's President and CEO

On August 10th 2003 Jerry B. Lemler MD tendered to the Alcor Board of Directors his intention to resign as the foundation's CEO at the expiration of his current yearly agreement, on December 31st of this year. The Board has accepted Dr. Lemler's resignation. It is the expectation and intention of all parties that Dr. Lemler be retained as Alcor's Medical Director and chief spokesperson.

As many of you know, Dr. Lemler continues to undergo intensive and extended chemotherapy and other treatments for a recently diagnosed widespread lymphoma. During this transition period he will be actively supporting and participating in the company's search for new executive management, and he will assist in the transition.

Alcor's Directors wish to thank Dr. Lemler for his contributions and they look forward to his continued association with them and his future work in the furtherance of our mission. Dr. Lemler wishes to thank the Board of Directors and Alcor's staff for their support of his efforts, and to reaffirm his commitment to Alcor.

From Michael Riskin

An Appreciation of Jerry Lemler

The Alcor Board of Directors has accepted the resignation of Jerry B. Lemler MD as its CEO and President for reasons related to his personal health and welfare. Dr. Lemler was diagnosed with widespread lymphoma earlier this year and has completed approximately half of an eight-month intensive chemotherapy program. The results to date of this treatment are quite promising. It is anticipated that he will experience a 100% cure with no further complications or symptoms. Starting on January 1st 2004 he will be assuming new duties as Alcor's medical director and chief spokesperson.

During the rest of this year Jerry will be participating in a search for his replacement while transferring his management responsibilities on a timely and effective basis. In addition he plans to fulfill his commitment to deliver a speech on September 22nd during the Tenth Congress of the International Association of Biomedical Gerontology at Queens College in Cambridge, England. This PowerPoint presentation, entitled "Medical Time Travel as a Bridge to Negligible Senescence," has been cowritten by a prominent team representing cryobiology and research medicine with assistance from science writer Charles Platt. The speech will be published subsequently in the Annals of the New York Academy of

Sciences, marking the first time that the scientific basis of cryonics will be presented and published in mainstream medical venues.

Jerry's tenure with Alcor will be remembered as one of "inclusiveness". It has been a time when diverse institutions and people were drawn together, working as a team to significantly raise the overall readiness, quality, and efficiency of Alcor's cryotransport services from rescue to cooldown. Further, it is widely acknowledged that he developed into one of the most effective spokespersons for Alcor and cryonics generally.

On behalf of the Alcor Board of Directors, I wish to thank Jerry for those efforts he has already made on behalf of the Foundation...and we look forward to more of the same as he assumes his new responsibilities in the coming year.

Michael Riskin, PhD, CPA Chairman of The Board Alcor Life Extension Foundation

Finding a New President and CEO

Although Jerry Lemler's resignation does not take effect until the end of the year, we have begun the process of looking for a successor. Some Alcor members who have been recommended as possible candidates have been invited to send resumes. Alcor also invites resumes from anyone else who has a serious interest in the position of President/CEO. The organization may also use an executive placement agency, but has not determined whether this is appropriate. We have three months in which to find and hire a successor, and another month in which an orderly transition can occur.

Annual Elections at September Board Meeting

Alcor's next board meeting will be on Saturday September 6th at the Scottsdale facility, commencing at 10 AM local time. The annual election of Alcor directors will occur in this meeting, which is open to the public.

Alcor News is written primarily by Charles Platt. Contents are copyright 2003 by Alcor Foundation but permission is granted to reprint any whole news item, so long as Alcor is credited as the source and the reprint includes our URL at <http://www.alcornews.org>.

EXHIBIT X

X-Message-Number: 22461
Date: Thu, 4 Sep 2003 00:18:25 -0400 (EDT)
From: Charles Platt <other@platt.us>
Subject: Alcor News

A new edition of Alcor News has been sent to subscribers and is freely available to anyone who visits the archives at www.alcornews.org. This edition of the newsletter contains information about Dr. Jerry Lemler's decision to resign as President and CEO at the end of 2003. The newsletter also contains more information about events following the publication of a story in Sports Illustrated largely based on material supplied Alcor's former Director of Clinical Services, Larry Johnson, who attempted to sell photographs of cryonics cases online before Alcor took steps to prevent this.

Alcor served a law suit on Johnson and his wife on August 23rd, according to Alcor director Carlos Mondragon.

Meanwhile we finally have some good news, from the Arizona Republic:

<http://www.azcentral.com/arizonarepublic/local/articles/0903nealcor03.html>

Cryonics facility clears inspection

Sept. 3, 2003

SCOTTSDALE - A Scottsdale cryonics facility where baseball great Ted Williams' body is stored has passed recent inspections stemming from allegations by a former executive.

Rural/Metro Fire Department found no violation during an annual inspection last week of Alcor Life Extension Foundation, Rural/Metro spokesman Mike Clark said. Inspectors evaluated Alcor's storage of hazardous materials and documentation for handling those materials, Clark said.

Scottsdale did not find any illegal discharge into the city's sewage system or storm drains, said Larry Person, the city's senior environmental coordinator.

Last month, former Alcor executive Larry Johnson, who quit the cryonics foundation three weeks ago, alleged that Alcor illegally dumped biomedical waste into the city's sewage treatment system and into drains behind its storage warehouse. Alcor is storing the remains of 58 people who have paid as much as \$120,000 each with hope that advances in science will allow them to come back to life.

Johnson's allegations, particularly those about the handling of Williams' decapitated head and torso, sparked renewed media attention of Alcor and a family dispute over the former slugger's final wishes.

Alcor spokeswoman Paula Lemler said the foundation passed all of its recent inspections, including another by the Arizona

Department of Environmental Quality.

Johnson, who has moved from Scottsdale, was unavailable for comment.

Rate This Message: <http://www.cryonet.org/cgi-bin/rate.cgi?msg=22461>

EXHIBIT Y

**Tiffany & Bosco
Robert A. Royal
2525 E. Camelback
3rd Floor
Phoenix, AZ 85016
Attn: Barbara Garcia**

**Alcor Life Extension Foundation, Inc. V. Larry and Beverly
Johnson**

ORDER NUMBER: 012073 AZ002

FILE:

CLAIM #:

Records of:

Location: Arizona Department of Environment Quality

Volume: 1

Records

! **CONFIDENTIAL**

DocuTrak
11 West Jefferson, Suite 17
Phoenix, AZ 85003
602.258.0008 tel 602.258.0007 fax

! **CONFIDENTIAL**

ALCOR00578

Ex 25

AFFIDAVIT OF CUSTODIAN OF RECORDS

Patient:
Date of Birth:
Social Security Number:

I am duly authorized custodian of the records and I have authority to certify the records for:

Arizona Department of Environment Quality
3033 N. Central Ave
Phoenix, AZ

The records pertain to the above patient. The records submitted are true and complete copies of all the records requested. No documents have been withheld in order to avoid their being copied. To the best of my knowledge, all such records were prepared or compiled by personnel of our office or given to be copied to personnel of DocuTraK in the ordinary course of business, at or near the time of the acts, conditions or events recorded. **I declare under penalty of perjury that the foregoing is true and correct.**

Custodian Name(Print)

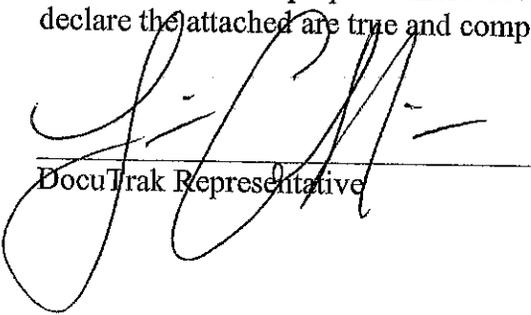
Signature of Custodian of Records

Subscribed and sworn to before me this _____ day of _____, 2003

Notary Public

My commission expires

On this date I have prepared these documents as a representative of DocuTrak and declare the attached are true and complete copies of the documents provided.



DocuTrak Representative



Date



CONFIDENTIAL

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Subscribed and sworn (or affirmed) before me this 7th day of January, 2004.



DENEEN. WOODARD
Notary Public - Arizona
Maricopa County
Expires 12/30/05 (Seal)

Denee N. Woodard

Notary Signature

CONFIDENTIAL

affidav3

Name: Robert A. Royal
Address: 1850 N. Central Ave
Suite 500
City, State, Zip: Phoenix, AZ 85004
Telephone: 602-255-6069
State Bar Code: 010434
Representing: Alcor and Carlos Mondragon

Arizona Superior Court, County of Maricopa

Alcor Life Extension Foundation, Inc.

Plaintiff

V

Larry and Beverly Johnson

Defendant

ACTION NO: CV 2003-016139

AFFIDAVIT OF SERVICE

Assigned to the Honorable
Robert L. Gottsfield

AFFIDAVIT OF SERVICE

THE AFFIANT states: I am a disinterested party in the foregoing case and over the age of 18 years old being qualified to serve subpoenas.

I received from: Tiffany & Bosco

By: Robert A. Royal

The following document(s)

CIVIL SUBPOENA DUCES TECUM
NOTICE OF DEPOSITION

and in each instance I personally served a copy of each document listed above upon:

CUSTODIAN OF RECORDS FOR: Arizona Department of Environment Quality

ADDRESS: 3033 N. Central Ave, Phoenix, AZ

By leaving a true copy of the document(s) with: REBECCA REED
on: 12/12/03 at 4123



CONFIDENTIAL

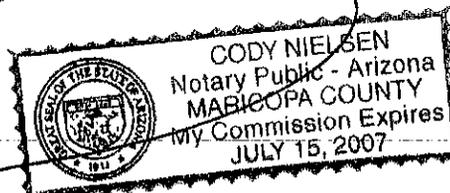
Tendered fees in the amount of :\$ _____

Luis Remantes

AFFIANT

Subscribed and sworn to before me: 12/12/03

Notary



My Commission Expires: _____

Name: Robert A. Royal
Address: 1850 N. Central Ave
Suite 500
City, State, Zip: Phoenix, AZ 85004
Telephone: 602-255-6069
State Bar Code: 010434
Representing: Alcor and Carlos Mondragon

Arizona Superior Court, County of Maricopa

Alcor Life Extension Foundation, Inc.

Plaintiff

V

Larry and Beverly Johnson

Defendant

ACTION NO: CV 2003-016139

SUBPOENA DUCES TECUM

Assigned to the Honorable
Robert L. Gottsfield

THE STATE OF ARIZONA TO: CUSTODIAN OF RECORDS OF:

SEE ATTACHMENT A

YOU ARE COMMANDED to allow inspection and copying of designated records specified below or appear:

BEFORE WHOM APPEARANCE TO BE MADE: DEPOSITION OFFICER, DOCUTRAK

DATE AND TIME OF APPEARANCE: SEE ATTACHMENT A

PLACE OF APPEARANCE: DocuTraK 11 W. Jefferson, Suite 17, Phoenix, AZ 85003

YOU ARE ALSO COMANDED to bring with you and produce these books, papers, documents, or tangible things:

SEE ATTACHMENT A

Attached as Exhibit "1" to this Subpoena is your "Bill of Rights" detailing your rights and obligations regarding this Subpoena.

You have been subpoenaed by: Tiffany & Bosco whose attorney's name, address and telephone number is shown above. Requests for reasonable accommodation for persons with disabilities must be made to the division assigned to the case by parties at least 3 judicial days in advance of a scheduled court proceeding.

YOU ARE HEREBY NOTIFIED THAT ANY FAILURE TO OBEY THIS SUBPOENA WITHOUT ADEQUATE EXCUSE MAY BE DEEMED IN CONTEMPT OF THIS COURT, AND A CIVIL ARREST WARRANT MAY BE ISSUED. A CIVIL ARREST IS AN ORDER DIRECTING ANY POLICE OFFICER IN ARIZONA TO ARREST YOU AND BRING YOU BEFORE THIS COURT FOR FUTURE PROCEEDINGS.

 **CONFIDENTIAL**

SIGNED AND SEALED this date

COPY

DEC - 8 2003



MICHAEL K. JEANES, CLERK
O. CARDENAS
DEPUTY CLERK

SUBPOENA DUCES TECUM

YOU HAVE FULLY COMPLIED WITH THIS SUBPOENA IF YOU CONTACT DOCUTRAK TO ARRANGE TO HAVE THESE RECORDS COPIED. PLEASE CALL 602-258-4230 AND REFERENCE THIS NUMBER:

012073

ALCOR00583



Memorandum

Date: January 6, 2004

To: Records Center; file

From: Martha L. Seaman, Office of Special Counsel

A handwritten signature in black ink, appearing to read "Martha L. Seaman", is written over the printed name in the "From:" field.

Subject: Confidential Information in files for Alcor Life Extension Foundation

ADEQ has received a Subpoena Duces Tecum in the matter of Alcor Life Extension Foundation v. Johnson for records regarding Alcor. The subject files contain pages that are identified by Alcor as their property which they are characterizing as "Confidential." The two pages in question describe the formula and methods used by Alcor in their process. It appears that the information on these two pages appears to meet the test of being a trade secret, as defined in ARS 49-201(38), and, therefore, should be regarded as confidential and withheld from the documents provided in response to the subpoena under the authority of ARS 49-928(A)(1). Upon consultation with Greg Workman, I conclude that this material is typical of material withheld as confidential trade secrets.

Please note that the material that should be withheld appears in both the files originating with Hazardous Waste Section and Solid Waste Section.

A rectangular stamp with a thick border. Inside the border is a large exclamation mark. To the right of the exclamation mark, the word "CONFIDENTIAL" is printed in a bold, sans-serif font.

From: Gregory Workman
To: Cunningham, Patrick; smd
Date: Fri, Aug 15, 2003 4:55 PM
Subject: Fwd: Alcor

I've attached a summary of today's inspection at Alcor. No violations were discovered and the complaint was unsubstantiated. A report will be written and this case will be considered closed by us. Please let me know if you need any further information.

Greg

CC: as3; Boles, Juli; Guichard-Watters, Peggy; Malone, Laura; McDaniel, Kimberly; Neuberg, Karen

 **CONFIDENTIAL**

From: Carol Hibbard
To: Workman, Gregory
Date: Fri, Aug 15, 2003 4:35 PM
Subject: Alcor

ADEQ representatives conducted a compliance inspection at the Alcor Life Extension Foundation on August 15, 2003. Present during the inspection were Patrick Gibbons, ADEQ Media Relations; Carol Hibbard, HWICU Team Leader and Randall Ballard, SWICU Compliance Officer. Alcor representatives included Carlos Mondragon, Member, Board of Directors and Matthew Sullivan, Director of Suspension Readiness.

ADEQ was led on a tour through the facility, which included the patient suspension area, the lab and the storage area. Chemicals are stored mainly in refrigerators and freezers; there were no waste chemicals at the time of the inspection. Facility representatives stated they have not disposed of any chemicals - all are used during the suspension process.

Alcor representatives explained that bodily fluids removed from patients are diluted with 10% bleach and poured down the drain. The only liquid poured into the storm drain, according to Mr. Mondragon, is regular ice from holding patients during transport. The ice is contained in Ziploc bags and does not come into contact with the patient.

White staining just outside of the bay door at the back of the facility led to the storm drain. Facility representatives indicated it was from mop water, due much in part to recent construction activities. The pH of the water puddled outside of the storm drain was 7.

No soil staining indicating a release or illegal dumping was observed. There was no evidence of recent soil tilling to imply any clean-up activities.

Medical waste is red-bagged and handled by Heathcare Medical Waste Services. There was no medical waste on site at the time of the inspection.

The HWICU and SWICU did not observe any violations during the inspection.

CC: Malone, Laura

 **CONFIDENTIAL**



CONFIDENTIAL

ALCOR00587

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Jerry B. Lemler, M.D.
 President/CEO
 Alcor Life Extension Found.
 7895 E. Acoma Dr., Ste. 110
 Scottsdale, AZ 85260-6916

104403-434 RBH

2. Article Number (Copy from service label)

7000 0520 0025 1873 5787

PS Form 3811, July 1999

Domestic Return Receipt

102595-00-M-0952

COMPLETE THIS SECTION ON DELIVERY

A. Received by (Please Print Clearly) B. Date of Delivery

Lemler, Jerry B. 10/1/03

C. Signature

[Handwritten Signature]

Agent
 Addressee

D. Is delivery address different from item 1? Yes
if YES, enter delivery address below: No

3. Service Type

- Certified Mail
- Registered
- Insured Mail
- Express Mail
- Return Receipt for Merchandise
- C.O.D.

4. Restricted Delivery? (Extra Fee) Yes No



Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-4673 • www.adeq.state.az.us



Stephen A. Owens
Director

September 29, 2003
REF: ICU03-434

CERTIFIED LETTER
RETURN RECEIPT REQUESTED

Dr. Jerry B. Lemler, MD, President/CEO
Alcor Life Extension Foundation
7895 East Acoma Drive, Suite 110
Scottsdale, AZ 85260-6916

RE: Complaint inspection of Alcor Life Extension Foundation, located at 7895 E. Acoma Road, Ste. 110, Scottsdale, AZ.

Dear Dr. Lemler:

On August 15, 2003, the Arizona Department of Environmental Quality (ADEQ) Solid Waste Inspection and Compliance Unit (ICU) conducted a complaint inspection of Alcor Life Extension Foundation. The above-referenced facility was found to be in compliance with Solid Waste statutes at the time of inspection.

Enclosed are copies of photographs taken at the time of the inspection and the inspection report to apprise you of the conditions observed during the ICU inspection. If you have any questions concerning this matter, please contact me at (602) 771-4703.

Sincerely,


Randy Ballard, Solid Waste Inspector
Solid Waste Inspection and Compliance Unit
Waste Programs Division

RB:rb

Enc: August 15, 2003, Complaint Inspection Report.

cc: Roman Diaz, Water Quality Field Service Unit

 **CONFIDENTIAL**

ALCOR00588

Northern Regional Office
1515 East Cedar Avenue • Suite F • Flagstaff, AZ 86004
(520) 779-0313

Southern Regional Office
400 West Congress Street • Suite 433 • Tucson, AZ 85701
(520) 528-6733

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
SOLID WASTE SECTION/INSPECTION & COMPLIANCE UNIT

COMPLAINT INSPECTION REPORT

Inspection Case Number: ICU(C)03-156

Date: September 29, 2003

Inspection ID: 40252

Name of Facility: Alcor Life Extension Foundation

County: Maricopa

Inspection Date: August 15, 2003

Inspector: Randy Ballard

Nature of Complaint: The complainant, Mr. Larry Johnson, is a former employee of Alcor Life Extension Foundation (Alcor). Alcor uses cryogenics to preserve clinically dead "patients," as whole bodies, or as heads only, with the hope that one day technology will progress to the point that the frozen deceased may be revived. According to Mr. Johnson, Alcor uses the chemicals formamide, ethylene glycol, and glycerol to preserve the bodies. Mr. Johnson has stated that he witnessed Alcor employees dumping chemicals, which contain human blood, into a storm drain behind the facility, and at other times, down the drain of a large, stainless steel sink within the lab. Mr. Johnson said that employees told him that the chemical wastes mixed with blood have been dumped onto shrubs behind the facility and down a toilet located near the operating room.

Mr. Johnson said that he wrote a letter to the President/CEO, Mr. Jerry Lemler, in which Mr. Johnson stated his belief that the dumping of the fluids might be illegal and he recommended that Alcor contact an environmental consultant or ADEQ as to the proper protocol for disposal of the liquid waste. Mr. Johnson stated that Mr. Lemler showed the letter to an Alcor board member who instructed Mr. Johnson to shred the letter and remove it from his hard drive. Mr. Johnson complied with the board member's instruction, but kept a copy of the letter for his records and provided a copy to ADEQ.

Findings: Solid Waste ICU (ICU) conducted a complaint investigation of Alcor on August 15, 2003. Accompanying ICU were Ms. Carol Hibbard of Hazardous Waste ICU and Mr. Patrick Gibbons, ADEQ Public Information Officer. Representing Alcor and accompanying ICU during this inspection were Mr. Carlos Mondragon, a self-described volunteer and acting Director for the facility, and Mr. Mathew Sullivan, Director of Suspension Readiness.

Messrs. Mondragon and Sullivan conducted ICU on a tour of the facility. Mr. Mondragon told inspectors that when patients first arrive, they do so packed in ice contained within Ziploc bags. Alcor refers to the deceased clients that are delivered to be cryogenically preserved as "patients." The ice never comes into contact with the patient. When no longer needed, according to Mr. Mondragon, the ice is poured into the storm drain in the parking lot behind the facility. Mr.



CONFIDENTIAL

ALCOR00589

Sullivan explained that "cryo-protectant fluids," purchased from a company called Twenty-First Century Medicine, are flushed through the bodies of newly delivered patients to remove body fluids. The cryo-protectant fluids, with accompanying blood, feces and urine, are removed from the patient and, according to Alcor biochemist, Mr. Hugh Hixon, mixed with 10% bleach and poured down the laboratory sink drain. This material is not defined as a biohazardous medical waste pursuant to R18-13-1401 (5). There is no prohibition in A.A.C. Title 18, Chapter 13, Article 14, of dumping blood, feces and urine from deceased humans down a drain connected to a city waste water treatment system.

ICU noted a white staining leading from a door at the rear of the facility to a circular drain in the middle of the parking lot. Mr. Mondragon told ICU that the staining was from a mop bucket that the facility cleaning crew had dumped onto the parking lot. ICU saw no evidence of the dumping of liquid waste around or on nearby shrubbery.

Compliance Recommendations: Solid Waste ICU has referred to Maricopa County, the questions as to whether dumping materials down the outdoor circular drain is a violation of County ordinances. Solid Waste ICU noted no solid waste violations at this facility.

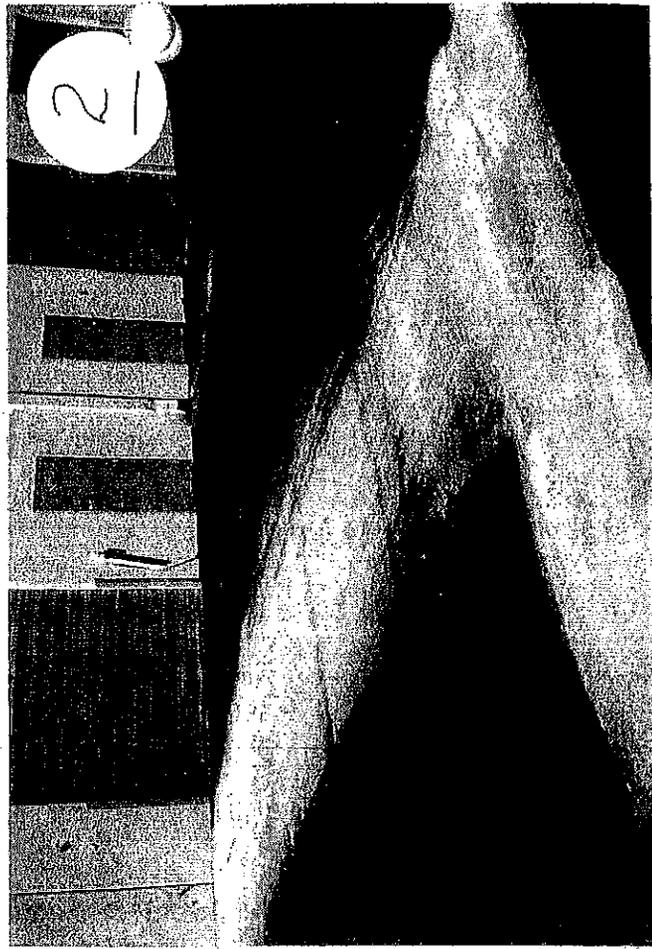
Compliance Status: CC

Closure Date: 9/29/03

Compliance Status:
CC = Closed Complaint
OC = Open Complaint

 **CONFIDENTIAL**

ALCOR00590



! CONFIDENTIAL



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY NOTICE OF INSPECTION RIGHTS

FACILITY INFORMATION	ADEQ INFORMATION
Facility Name (Customer): Alcor Life Extension Foundation Facility Location (Place): 7895 E. Acoma Drive Ste. 110, Scottsdale, 85260 Mailing Address: Same Responsible Party: Alcor Life Extension Foundation Telephone: 480-922-9013 On-Site Representative: Title: Telephone:	Date of Inspection: <u>8/15/03</u> County: Maricopa Inspector: Randy Ballard Telephone: 602-771-4703 Accompanied by: Carol Hibbard, HWICU ADEQ Follow-up Contact: Title: Telephone:

The ADEQ representative(s) identified above were present at the above address on the above listed date and time. Upon entry to the premises, the ADEQ representative(s) met with me, presented photo identification indicating that they are ADEQ employees and explained:

That the purpose of the inspection is to determine:

Compliance with Title 49 of the Arizona Revised Statutes, Title 18 of the Arizona Administrative Code* and/or:

Arizona Revised Statutes: Title 49, Chapter 4, Article 1 (solid waste disposal)

Arizona Administrative Code: Title 18, Chapter 13, Article 14 (biohazardous medical waste)

Permit/Agreement Number: NA

Qualification for a license issued pursuant to:

Arizona Revised Statutes: § _____

Arizona Administrative Code: R _____

! **CONFIDENTIAL**

That this inspection is conducted pursuant to the authority granted in Arizona Revised Statutes § 49-104(B)(8) and/or:

Arizona Revised Statutes: § Title 49, Chapter 4, Article 1 (solid waste disposal)

Arizona Administrative Code: R _____

Permit/Agreement Number: NA

That the fee for this inspection is: NA

*The Arizona Revised Statutes (A.R.S.) can be found on the internet at www.azleg.state.az.us/ars/ars.htm while the Arizona Administrative Code (A.A.C.) can be found at www.sosaz.com/public_services/Table_of_Contents.htm

While I have the right to refuse to sign this form, the ADEQ representatives may still proceed with the inspection

I have read both sides of this notice and discussed any questions or concerns with the ADEQ representatives.

[Signature]
Signature of Regulated Person or Authorized On-Site Representative

8-15-03
Date

The regulated person or authorized on-site representative refused to sign.

Name of Regulated Person or Authorized On-Site Representative

Title

The regulated person or an authorized on-site representative was not present at the facility.

[Signature]
Signature of ADEQ Representative

8-15-03
Date

ALCOR00593



**ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
COMPLAINT RECEIPT FORM**

Date:	Taken By:
Complaint#: 03-156	
Priority Code:	
Assigned to:	Date: 8/14/03

Site/Operator/Source Name: Alcor Life Extension Foundation	Address: 7895 E. Acoma Drive Suite 110 Scottsdale 85260 Behind Scottsdale Airport
Phone: 480-922-9013 (from Qwestdex)	Type of Operation: Cryogenics
Major Cross Streets:	County: Maricopa

Description of Complaint: Larry Johnson is an ex-employee of Alcor and a paramedic of 25 years. Alcor uses cryogenics with the intent of reviving the deceased once the technology becomes available. According to Larry, Alcor uses the chemicals formamide, ethylene glycol, and glycerol to preserve human tissue. Larry has witnessed Alcor dumping these chemicals, which are diluted with human blood, into a storm drain behind the facility (near Acoma Dr) and down a large, stainless steel tank within the "wet lab." Larry said other employees told him that the chemical/blood wastes have been dumped onto shrubs behind the facility and down a toilet located off of the operating room.

Larry said he wrote a letter to the President/CEO, Jerry Lemler, which told Jerry that the dumping is illegal and instructing him to consult with an environmental consultant or ADEQ regarding proper waste management. According to Larry, Jerry showed the letter to a board member who then instructed Larry to shred the letter and erase it from his computer. Larry kept a copy of the letter for his records however. Larry said he recorded phone conversations with Jerry and the board member which were incriminating.

Larry has notified OSHA of work related violations. He is working with an attorney who instructed him to call ADEQ. He said that Sports Illustrated will publish an article on Wednesday of this week that will include an article which covers Larry's story. Larry explained that there has been a lot of publicity regarding a famous baseball player who was cryogenically frozen. Larry said the Sport's Illustrated article will indicate that he reported the alleged violations to OSHA and ADEQ.

Date of Occurrence: Since about 1991-92 when the facility began operating	Substance Involved: Preserving chemicals diluted with human blood
Quantity of Substance: 40-50 Liters about 6-7 times per year	Medium Affected: SOIL x WATER x AIR
Best Time to Witness: N/A	Verifying Documentation: Eye witness account, letter to President, audio files of recorded, incriminating conversations

"Arizona law requires you to provide your name during the course of reporting an alleged violation of law or rule. Under the law, your name will be placed in the public file unless the release of your name may result in substantial harm to any person, including yourself, or to the public health or safety. However, if you insist on remaining anonymous, ADEQ can not force you to identify yourself." A.R.S. § 41-1010

Complainant Name: Larry Johnson
Phone: Provided Attorney's contact info: John Heer, 216-928-2911 (Ohio, 3-hr time difference)
E-Mail: N/A
Address: N/A

Referring Agency: N/A
Agent's Name: N/A
Phone: N/A



CONFIDENTIAL

"Have you been referred to ADEQ?" YES NOx
By Whom:

Follow-up Requested: YES NOx (I gave him my name and phone number in order to follow-up)

"Do you feel that release of your name may result in substantial harm to any person, including yourself, or to the public health or safety?" YES NOx (Larry said he is concerned about his and his wife's safety but stated that once the Sport's Illustrated article is published, his name will be public anyway)

If YES, describe:

Case Referred: YES x NO	If YES, to whom: SWICU	Date Referred: 8-11-03
Date Inspected:	Status: REPORT	CLOSED
Inspector's Comments:		

! CONFIDENTIAL

Telephone conversation transcripts - provided
to ADEQ, Solid Waste by John Hear (attorney
for Larry Johnson)

Telephone rings

Person #1: Hey, Jerry. This is Larry. Sorry to bother you at home. I got back as quick as I could from lunch and wanted to chat with you real quick, and Paula said you had already gone home. Do you have a couple of minutes?

Person #2: Yeah, sure.

#1: Hey, I just wanted to tell you, earlier when we had our talk with Charles, about the OSHA thing, I didn't mean to, like, set him off or anything regarding that memo that I gave you.

#2: Oh, okay. I didn't know anything about it. I didn't know whether he knew about it or not.

#1: Yeah, yeah, he did. But I think he, in a way, took offense, when he told you to shred the document and for me to get rid of it off my hard drive. I just wanted to say that I didn't think it would make him angry like that.

#2: No, I wouldn't have expected that either.

#1: Yeah, so it just kinda surprised me. So I was basically just wanting to call your attention to it.

#2: Sure.

#1: To the conversations Charles and I had. You know he did tell me that it was common practice that they dump human waste behind the buildings.

#2: Maybe I shouldn't have brought it up in the context of what I did. I was just trying to clear the deck of as many unfinished items as I possibly could.

#1: Yeah, yeah. So I'm going to try to come up with some suggestions to Charles about dumping blood and all that other in our back yard. (#2: OK) I just, ummm, I just didn't know that that, because it's just kinda common practice, I only saw that one time. So anyways, I just wanted to tell you that that wasn't my intention.

#2: OK, sure, I understand that and I appreciate your clearing that up for me.

#1: Do you have any thoughts on anything?

#2: Not right at the moment. Right now I'm just gonna lie down. I'm kinda beat. But if I do, I'll formulate it.

#1: OK, Dr. Lemler. Well, take care of yourself and we'll talk to you in a little bit.

 **CONFIDENTIAL**

#2: Thank you, Larry.

#1: All righty. Bye.

#2: Bye-bye.

End

 **CONFIDENTIAL**

Person 1: Hey, a couple of things that I remembered that I wanted to talk to you about. Did you ever talk to Todd about the intermediate storage thing?

Person 2: Yeah. He reminded me that Brian Waltann (?) had given me a whole bunch of instruction booklets which I have at home. So, I'll have to mail them.

#1: Oh, OK. I knew there was something I was trying to think of because I had sat down with Todd earlier and he mentioned that you hadn't said anything to him so he said he was going to call you. So, did he already call you?

#2: He did.

#1: OK, great. Did you know that you left your little book on my desk? Your ledger.

#2: It's empty. The purpose of that book is to log people into the operating room when there's a case.

#1: OK

#2: It's a new system which never got started because we hadn't had any cases since we established the system.

#1: OK, all right. Another thing – I was thinking over lunch and I didn't have a chance to talk to you because there was just too many people around you – but earlier when we had the meeting with Dr. Lemler and he showed you that memo that I wrote about that OSHA stuff, I didn't mean for that to upset you.

#2: No, it only upset me in that it was written down.

#1: Yeah, I went ahead and did as you requested. Wiped it off the hard drive and I just carried(?), I just shredded it. But it was just an issue that I wanted to talk to Jerry about because you and I had talked about it in the past, and just wanted to make sure that he knew that eventually we have to do something because we can't hook up human waste in the backyard (*chuckles*).

#2: No, no. Everytime it happens, it makes me very nervous because there could be some *National Inquirer* photographer waiting for it to fill(?) or something. Who knows?

#1: Yeah, yeah. It's just one of those things that, umm

#2: should be better

#1: Yeah

 **CONFIDENTIAL**

#2: I don't know what the correct procedures could be – whether you could filter or what.

#1: I'm just familiar with the systems that hospitals use, utilizing containment tanks that are buried in the ground. And then they contract with a service every now and then to come pump that stuff out.

#2: I guess we could have a containment tank that is not buried in the ground.

#1: Yeah, so I don't know as far as human waste and stuff, but you know that dumping it in the back is just a matter of time before (#2: *Yeah, I agree*) somebody sees that.

#2: So Judy Millstein is real friendly with the present class(?). She's taking OSHA training courses. She's familiar with all the regs(?) (*This response was pretty unintelligible.*)

#1: OK. Well, I just wanted to make sure you were okay. I didn't want to upset you or anything over it. It wasn't my intention.

#2: No, it didn't bother me. No, I feel pretty messed up about leaving because I didn't finish what I set out to do and that's – I don't like that.

#1: Well, yeah. I understand. You and I talked about that and you already sound like a new man, just

#2: Yeah, I'm pretty relieved not to be battling those battles anymore (#1, *Yeah*) But I don't know if you noticed when we were going down the list “would you do this, would you do that” – but Jerry was doing it again. He was still trying to find other people to do his work.

#1: Oh, yeah, yeah. I noticed that.

#2: I mean, even after that e-mail which I sent inadvertently where it specifically said he was trying to find other people to do his work, he was still doing it.

#1: Yeah (*heh, heh*). I know what you mean, I just don't know what to think of him.

#2: No, there's nothing to be done about it. Then Tim Carney came in and I had a little talk with Jerry and Tim and I said, “Now, Tim, I understand you don't want any kind of a management job. You don't want to have to tell people what to do.” He said, “Oh, I don't mind telling them what to do as long as I have been given the proper authority to do that.”

#1: Yeah, he just has to have the muscle behind him.

#2: And Jerry said, “Oh, great,” (*Both laugh*) and delegated all of that to Tim. Like in a flash it was done.

 **CONFIDENTIAL**

#1: That's interesting. Well, I just wanted to touch base with you. I wanted to talk to you about

#2: Hold on a second Larry. *(Pause - unintelligible to me)*

#1: Yeah, I just wanted to call you real quick because I didn't want you to be upset over that other issue.

#2: Oh, I appreciate it. Thanks.

#1: All right. And you know we've got enough to contend with. You know what's coming up here pretty soon in the next couple of weeks.

#2: What?

#1: Well, it's the Ted Williams anniversary thing. I saw something on TV the other night about that.

#2: Oh yeah?

#1: Yeah, I wonder if they're gonna show up here at the facility.

#2: Umm, there was some talk of somebody doing an interview on something. I don't know.

#1: Yeah, I know HBO was here when we were in California filming, but I'm just wondering if there's gonna be media action come anniversary day.

#2: It's possible.

#1: Oh, well. All right, Charles, I'll let you go.

#2: OK

End

 **CONFIDENTIAL**

A non-profit,
Tax-exempt, 501(c)(3)
California Corporation

President/CEO:
Jerry B. Lemler, MD

Vice President:
Michael Riskin, CPA, PhD

Treasurer:
Joseph Hovey

Secretary:
Joseph Hovey

**Medical
Advisory Board:**
Terry Grossman, MD
Steven B. Harris, MD
G. Mario Isidron, MD
Ravin Jain, MD
Robert R. Newport, MD
Anthony Pizarro, MD

**Scientific
Advisory Board:**
Antonei Csoka, PhD
K. Eric Drexler, PhD
Bart Kosko, PhD
James B. Lewis, PhD
Ralph Merkle, PhD
Marvin Minsky, PhD
Michael West, PhD

Patient Care Trustees:
David Brandt-Erichsen
David Kekich
Carlos Mondragon
Warren Robertson, CPA
Robert A. Schwarz

Board of Directors:
Hugh Hixon
Saul Kent
Ralph Merkle, PhD
Carlos Mondragon
Michael Riskin, CPA, PhD
Michael R. Seidl, PhD, JD
Stephen Van Sickle

Board Advisors:
Steve Bridge
Jennifer Chapman
Russell Cheney
Andrew Clifford
Bruce Cohen
David Greenstein, OD
Steven B. Harris, MD
Joseph Hovey
Tanya Jones
Lisa Lock
Robert R. Newport, MD
Charles Platt
Mathew Sullivan
Natasha Vita-More
Peter Voss
Michael West, PhD

ALCOR LIFE EXTENSION FOUNDATION

7895 E. Acoma Dr. #110, Scottsdale, AZ 85260-6916

(480) 905-1906 or (877) 462-5267 (877-GO ALCOR) • Fax (480) 922-9027 • www.alcor.org



Alcor's Mission: The Preservation of Individual Lives

Date: June 18, 2003
To: Jerry Lemler, CEO
From: Larry Johnson, Director of Clinical Services
Ref: Potential OSHA and Other Regulatory Violations

This is to reference past conversations with Charles Platt, COO, concerning potential OSHA and other regulatory violations. There are a fair number of issues that should be addressed regarding laboratory safety as well as the potential risks involving exposure to body fluids and blood born pathogens. These issues could be violations of federal and Arizona laws, including occupational safety and health laws and environmental regulations.

As it stands today there really are no guidelines that employees at Alcor can follow regarding lab safety. There is currently no Personal Protective Equipment (PPE) readily available in the lab area. My greatest concern regarding the lab is that there is no access to an emergency eye wash station, which is an OSHA requirement for laboratories. See generally 29 C.F.R. Part 1910.

An incident occurred during the last suspension that resulted in the dumping of waste water on the ground behind the Alcor facility that contained human blood. I have mentioned in the past to Mr. Platt that such disposal of biohazardous medical waste is a violation of federal and Arizona law and cannot be allowed to continue. See Ariz. Admin. Code Sections R18-13-1401 through R18-13-1420.

I would like to suggest that Alcor actively seek advisement on applicable OSHA rules and other environmental regulations that pertain to clinical laboratories, as well as provide in-service training for those actively involved in patient care who are at risk of body fluid exposure.

Please come see me, should you have any question regarding these issues. I am more than willing to help Alcor comply with OSHA and EPA regulations.

! CONFIDENTIAL

ALCOR00601

18

Hazardous Waste Inspection and Compliance Unit

Facility Name: ALCOR LIFE EXTENSION FOUNDATION

EPA ID #: NONE

Inspection Date: AUGUST 15, 2003

 **CONFIDENTIAL**

ALCOR00602

FILE NAME ALCOR LIFE EXTENSION FOUNDATION

CONFIDENTIALITY REVIEW FORM

This file has been reviewed and all reasonable efforts have been taken to ensure that all confidential documents have been removed from this file as provided for by A.R.S. §39-121 and A.R.S. §49-928, and in accordance with ADEQ policy.

ATTENTION: Confidential files may exist that are not available for public viewing. In addition, other files may exist within ADEQ for this facility in other ADEQ programs. Please contact other programs (Water, Air Quality, Remedial Projects, etc.) directly to request those files.

Reviewed by: AL Date: 9-8-03

Reviewed by: _____ Date: _____

 **CONFIDENTIAL**

**HAZARDOUS WASTE INSPECTIONS AND COMPLIANCE UNIT
INSPECTIONS - COMPLIANCE - ENFORCEMENT
DATA ENTRY FORM**

RSAH Rec'd: 8/19/03 Input: JE

Facility: Alcor Life Extension Foundation EPA ID No: none
 Place ID #: 19758 RP/Contact ID #'s: 23507/23508 Complaint #: 04013
 Lead Inspector: Carol Hubbard Inspection Date: 8-15-03
 Inspection Type: Routine OR **Complaint**

(PLEASE Circle All That Apply) MUST CHOOSE FROM THE LIST BELOW

TSD • LQG • SQG • Transporter (Portable) • Transfer Facility (Non Portable) • Transportation Co. • CEG • **Non-Handler**

Inspection ID #: 40091 Case ID #: None

CREATE CASE: Yes ___ No Approval: _____ Date: _____
 CASE DISMISSED: Yes ___ No ___ Approval: _____ Date: _____ Reason: _____

Enforcement Action:

<u>8-26</u>	CE104 IR Sent - No Violations, No Response Req'd	RSAH Rec'd: <u>8/24/03</u>	Input: <u>JE</u>
_____	CE105 IR Written or Summary of Inspection (Not Sent to RP)	_____	CE115 NOC - Sent
_____	CE106 IR Sent - No Violations, Response Req'd	_____	CE120 NOV - Sent

ARIS Violations: _____
 ICE Violations: _____

Other Actions:

_____	CE102 Compliance Correspondence 15 Day/280 Ltr	RSAH Rec'd: _____	Input: _____
_____	CE121 TA Summary Letter Sent	_____	CE161 Rec'd Facility Submittals

CLOSE NOV OR NOC: (This DOES NOT close out the Case)

_____	CE171 Documentation Sufficient to Close the NOV or NOC	RSAH Rec'd: _____	Input: _____
_____	Closure Letter Sent to RP	_____	(NO Case Closed) _____ Managers Initials

Escalated Enforcement Actions:

_____	CE097 Attorney Assigned	RSAH Rec'd: _____	Input: _____
_____	CE209 Draft Consent Order	_____	CE409 Request for AG Assignment
_____	CE309 Final Consent Order	_____	CE410 Referral to AG (CDM)
_____	CE310 Final Compliance Order - 3008(a)	_____	CE510 Civil Action for Compliance
_____	CE408 Referral to another ADEQ Program	_____	CE610 Consent Decrees/Judgement
_____		_____	CE620 Judicial Orders



CASE CLOSURE: (Submit form w/Closure Letter for Signature) RSAH Rec'd: _____ Input: _____

_____ Closure Letter Sent (Case Closed NO Further Action)

Final Closure Approval: _____
 HWICU Manager _____ DATE: _____

ALCOR00604



Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.adeq.state.az.us



Stephen A. Owens
Director

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

August 26, 2003
REF: HWICU03-540

Dr. Jerry B. Lemler, MD, President/CEO
Alcor Life Extension Foundation
7895 E. Acoma Dr., Suite 110
Scottsdale, Arizona 85260

RE: Alcor Life Extension Foundation (Alcor) located at 7895 E. Acoma Road, Suite 110, Scottsdale, Arizona

Dear Dr. Lemler:

On August 15, 2003, a Hazardous Waste Inspection was conducted at the above referenced facility by representatives of the Arizona Department of Environmental Quality (ADEQ), Waste Programs Division. The inspection was conducted in accordance with the Arizona Revised Statutes §49-921 *et seq.*

The inspection, including any in-office record review, was done to evaluate your compliance with the Arizona Administrative Codes R18-8-201 *et seq.* A copy of the Inspection Report has been included with this letter to apprise you of conditions observed during the inspection. This letter shall not be construed as a determination by the Hazardous Waste Inspections and Compliance Unit of your compliance with any other applicable regulations.

While no hazardous waste violations were noted during the inspection, ADEQ is concerned with the mop water discharge to the dry well behind the Alcor facility. Please contact the ADEQ Water Permits Section, Industrial and Dry Well Unit at (602) 771-4385 to register the dry well and determine whether an Aquifer Protection Permit is necessary.

Thank you for your efforts to comply with Arizona's environmental requirements. Should you have any comments or questions regarding the enclosed information, please contact Carol Hibbard of my staff at (602) 771-4114.

Sincerely,

Laura Malone, Manager
Hazardous Waste Inspections & Compliance Unit
Waste Programs Division

! **CONFIDENTIAL**

Enclosure: August 15, 2003, inspection report

ALCOR00605



**ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE INSPECTIONS AND COMPLIANCE UNIT**

HAZARDOUS WASTE INSPECTION REPORT

FACILITY NAME: Alcor Life Extension Foundation

EPA ID NUMBER: none

STREET ADDRESS: 7895 E. Acoma Dr., Suite 110

CITY/STATE/ZIP: Scottsdale, Arizona 85260

TELEPHONE NUMBER: (480) 905-1906

MAILING ADDRESS: same

INSPECTION DATE: August 15, 2003

FACILITY REPRESENTATIVE(S) AND TITLE(S):

1. Carlos Mondragon, Member, Board of Directors
2. Matthew Sullivan, Director of Suspension Readiness

ADEQ REPRESENTATIVE(S):

1. Carol Hibbard, Team Leader, Hazardous Waste Inspections and Compliance Unit
2. Randy Ballard, Compliance Officer, Solid Waste Inspections and Compliance Unit
3. Patrick Gibbons, Media Relations Director, Communications Office

OTHER PARTICIPANTS/AGENCIES:

None

NOTE: Any omissions in this report and any accompanying notices shall not be construed as a determination of compliance with applicable regulations. Any regulatory citations to 40 CFR are as adopted by the Arizona Administrative Code, A.A.C. R18-8-201 *et seq.*

! **CONFIDENTIAL**

ALCOR00606

1. BACKGROUND INFORMATION

ADEQ representatives conducted a complaint inspection of Alcor Extended Life Foundation (Alcor) on August 15, 2003. The complaint alleged Alcor was dumping human blood contaminated with chemicals onto shrubs and into a storm drain located in the back of the facility.

2. GENERAL INFORMATION

Alcor provides cryonics suspension services to individuals seeking to continue life should medical treatment for a disease become available. Under cryonics suspension, a body which has been declared legally dead is chilled to -79°F in dry ice, then drained of its fluids. The bodily fluids are replaced with chemicals that don't expand or cause tissue damage upon freezing. Following fluid replacement the body is cooled to -320°F using liquid nitrogen. The body is then placed into a dewar for storage.

3. PHYSICAL INSPECTION

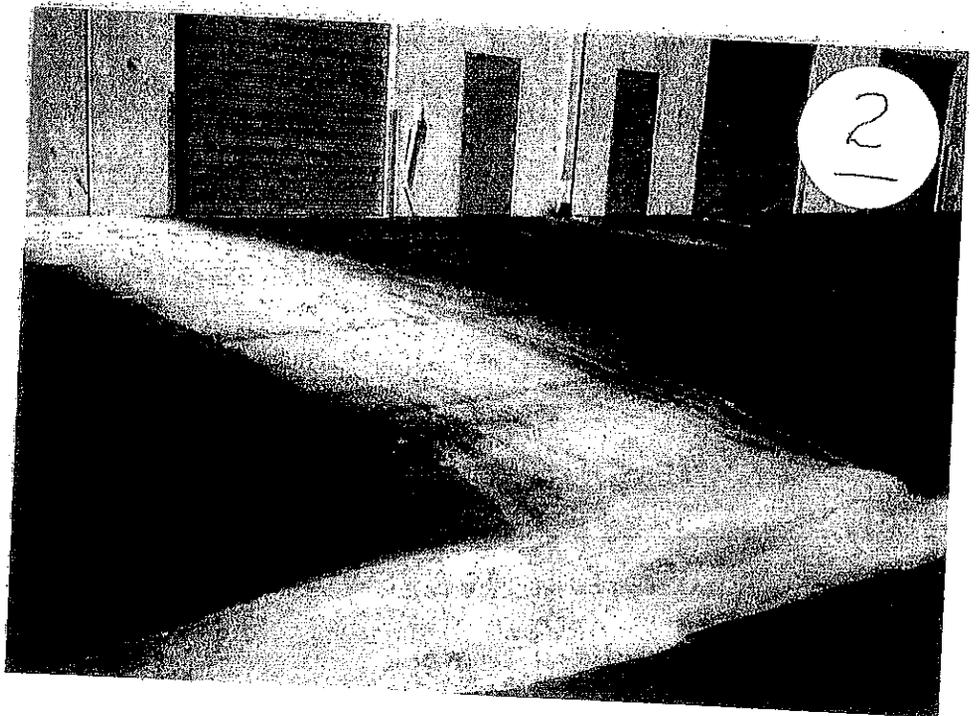
ADEQ representatives were led on a tour through the facility, which included the patient suspension area, the lab and the storage area. Chemicals are stored mainly in refrigerators and freezers; there were no waste chemicals at the time of the inspection. Facility representatives stated they have not disposed of any chemicals because all are used during the suspension process. Medical waste is red-bagged and handled by Heathcare Medical Waste Services. There was no medical waste on site at the time of the inspection.

Alcor representatives explained that bodily fluids removed from patients are diluted with 10% bleach and poured down the drain. The only liquid poured into the storm drain, according to Mr. Mondragon, is regular ice from holding patients during transport. The ice is contained in Ziploc bags and does not come into contact with the patient.

White staining just outside of the bay door at the back of the facility led to the storm drain. Facility representatives indicated it was from mop water, due much in part to recent construction activities. The pH of the water puddled outside of the storm drain was 7.

No soil staining indicating a release or illegal dumping was observed. There was no evidence of recent soil tilling to imply any clean-up activities.

 **CONFIDENTIAL**



! CONFIDENTIAL

ATTACHMENTS

1. HAZARDOUS WASTE INSPECTION FIELD FORMS
2. COMPLAINT-RELATED DOCUMENTS

! **CONFIDENTIAL**

Arizona Department of Environmental Quality
Hazardous Waste Inspections and Compliance Unit

ATTACHMENT 1

 **CONFIDENTIAL**



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY NOTICE OF INSPECTION RIGHTS

FACILITY INFORMATION	ADEQ INFORMATION
Facility Name (Customer): <u>ALCOR LIFE EXTENSION FOUNDATION</u>	Date of Inspection: <u>8 / 15 / 03</u>
Facility Location (Place): <u>7895 E ACOMA DR STE 110</u>	County: <u>MARICOPA</u>
Mailing Address: <u>SAME</u>	Inspector: <u>CAROL HIBBARD</u>
Responsible Party: <u>JERRY BLEMLER ALCOR</u>	Telephone: <u>602 771 4114</u>
Telephone: <u>480 905 1906</u>	Accompanied by: <u>RANDY BALLARD,</u> <u>PAT GIBBONS</u>
On-Site	ADEQ Follow-up Contact: _____
Representative: <u>CARLOS MONDRAGON</u>	<u>CAROL HIBBARD</u>
Title: <u>DIRECTOR</u>	Title: <u>HWICU TEAM LEADER</u>
Telephone: <u>480 905 1906</u>	Telephone: <u>602 771-4114</u>

The ADEQ representative(s) identified above were present at the above address on the above listed date and time. Upon entry to the premises, the ADEQ representative(s) met with me, presented photo identification indicating that they are ADEQ employees and explained:

That the purpose of the inspection is to determine:

[] Compliance with Title 49 of the Arizona Revised Statutes, Title 18 of the Arizona Administrative Code* and/or:

Arizona Revised Statutes: Title _____, Chapter _____, Article _____

Arizona Administrative Code: Title _____, Chapter _____, Article _____

Permit/Agreement Number: _____

[] Qualification for a license issued pursuant to:

Arizona Revised Statutes: § _____

Arizona Administrative Code: R _____

That this inspection is conducted pursuant to the authority granted in Arizona Revised Statutes § 49-104(B)(8) and/or:

Arizona Revised Statutes: § _____

Arizona Administrative Code: R _____

Permit/Agreement Number: _____

That the fee for this inspection is: _____

*The Arizona Revised Statutes (A.R.S.) can be found on the internet at www.azleg.state.az.us/ars/ars.htm while the Arizona Administrative Code (A.A.C.) can be found at www.sosaz.com/public_services/Table_of_Contents.htm

While I have the right to refuse to sign this form, the ADEQ representatives may still proceed with the inspection

I have read both sides of this notice and discussed any questions or concerns with the ADEQ representatives.

[Signature] 8-15-03
Date

[] The regulated person or authorized on-site representative refused to sign.

Name of Regulated Person or Authorized On-Site Representative _____ Title _____

[] The regulated person or an authorized on-site representative was not present at the facility.

[Signature] 8-15-03
Date

ALCOR00612

CONFIDENTIAL

INSPECTION RIGHTS

- I understand that I can accompany the ADEQ representative(s) on the premises, except during confidential interviews.

- I understand that I have right to:
 - Copies of any original documents taken during the inspection, and that ADEQ will provide copies of those documents at ADEQ's expense.
 - A split of any samples taken during the inspection, if the split of the samples would not prohibit an analysis from being conducted or render an analysis inconclusive.
 - Copies of any analysis performed on samples taken during the inspection and that ADEQ would provide copies of this analysis at ADEQ's expense.

- I also understand that:
 - Each person interviewed during the inspection must be informed that statements made by the person may be included in the inspection report.
 - Each person whose conversation is tape recorded during the inspection must be informed that the conversation is being tape recorded.
 - If an administrative order is issued or a permit decision is made based on the results of the inspection, I have the right to appeal that administrative order or permit decision. I understand that my administrative hearing rights are set forth in Arizona Revised Statutes § 41-1092 *et seq.* and my rights relating to an appeal of a final agency decision are found in Arizona Revised Statutes § 12-901 *et seq.*
 - If I have any questions or concerns about this inspection, I may contact the person listed as the ADEQ Follow-up Contact on the front of this form; or I may contact the Arizona Ombudsman-Citizens' Aid office at (602) 277-7292 or toll free at (800) 872-2879.
 - If I have any questions concerning my rights to appeal an administrative order or permit decision, I may contact ADEQ's Office of Special Counsel at (602) 771-2212 or toll free inside Arizona at (800) 234-5677, extension 2212.



CONFIDENTIAL

ALCOR00613

Arizona Department of Environmental Quality
Hazardous Waste Inspections and Compliance Unit

ATTACHMENT 2

 **CONFIDENTIAL**

Ha

ALCOR00614



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

COMPLAINT RECEIPT FORM

Date: August 11, 2003	Taken By: Carrie Ames
Complaint#:	
Priority Code:	
Assigned to:	Date:

Site/Operator/Source Name: Alcor Life Extension Foundation	Address: 7895 E. Acoma Drive Suite 110 Scottsdale 85260 Behind Scottsdale Airport
Phone: 480-922-9013 (from Qwestdex)	Type of Operation: Cryogenics
Major Cross Streets:	County: Maricopa

Description of Complaint: Larry Johnson is an ex-employee of Alcor and a paramedic of 25 years. Alcor uses cryogenics with the intent of reviving the deceased once the technology becomes available. According to Larry, Alcor uses the chemicals formamide, ethylene glycol, and glycerol to preserve human tissue. Larry has witnessed Alcor dumping these chemicals, which are diluted with human blood, into a storm drain behind the facility (near Acoma Dr) and down a large, stainless steel tank within the "wet lab." Larry said other employees told him that the chemical/blood wastes have been dumped onto shrubs behind the facility and down a toilet located off of the operating room.

Larry said he wrote a letter to the President/CEO, Jerry Lemler, which told Jerry that the dumping is illegal and instructing him to consult with an environmental consultant or ADEQ regarding proper waste management. According to Larry, Jerry showed the letter to a board member who then instructed Larry to shred the letter and erase it from his computer. Larry kept a copy of the letter for his records however. Larry said he recorded phone conversations with Jerry and the board member which were incriminating.

Larry has notified OSHA of work related violations. He is working with an attorney who instructed him to call ADEQ. He said that Sports Illustrated will publish an article on Wednesday of this week that will include an article which covers Larry's story. Larry explained that there has been a lot of publicity regarding a famous baseball player who was cryogenically frozen. Larry said the Sport's Illustrated article will indicate that he reported the alleged violations to OSHA and ADEQ.

Date of Occurrence: Since about 1991-92 when the facility began operating	Substance Involved: Preserving chemicals diluted with human blood
Quantity of Substance: 40-50 Liters about 6-7 times per year	Medium Affected: SOIL x WATER x AIR
Best Time to Witness: N/A	Verifying Documentation: Eye witness account, letter to President, audio files of recorded, incriminating conversations

"Arizona law requires you to provide your name during the course of reporting an alleged violation of law or rule. Under the law, your name will be placed in the public file unless the release of your name may result in substantial harm to any person, including yourself, or to the public health or safety. However, if you insist on remaining anonymous, ADEQ can not force you to identify yourself." A.R.S. § 41-1010

Complainant Name: Larry Johnson
Phone: Provided Attorney's contact info: John Heer, 216-928-2911 (Ohio, 3-hr time difference)
E-Mail: N/A
Address: N/A

Referring Agency: N/A
Agent's Name: N/A
Phone: N/A

CONFIDENTIAL

"Have you been referred to ADEQ?" YES NOx
 By Whom:

Follow-up Requested: YES NOx (I gave him my name and phone number in order to follow-up)

"Do you feel that release of your name may result in substantial harm to any person, including yourself, or to the public health or safety?" YES NOx (Larry said he is concerned about his and his wife's safety but stated that once the Sport's Illustrated article is published, his name will be public anyway)

If YES, describe:

Case Referred: YES x NO	If YES, to whom: SWICU	Date Referred: 8-11-03
Date Inspected:	Status: REPORT	CLOSED
Inspector's Comments:		

! CONFIDENTIAL

A non-profit,
Tax-exempt, 501(c)(3)
California Corporation

President/CEO:

Jerry B. Lemler, MD

Vice President:

Michael Riskin, CPA, PhD

Treasurer:

Joseph Hovey

Secretary:

Joseph Hovey

Medical

Advisory Board:

Terry Grossman, MD
Steven B. Harris, MD
G. Mario Isidron, MD
Ravin Jain, MD
Robert R. Newport, MD
Anthony Plzarro, MD

Scientific

Advisory Board:

Antonei Csoka, PhD
K. Eric Drexler, PhD
Bart Kosko, PhD
James B. Lewis, PhD
Ralph Merkle, PhD
Marvin Minsky, PhD
Michael West, PhD

Patient Care Trustees:

David Brandt-Erichsen
David Kekich
Carlos Mondragon
Warren Robertson, CPA
Robert A. Schwarz

Board of Directors:

Hugh Hixon
Saul Kent
Ralph Merkle, PhD
Carlos Mondragon
Michael Riskin, CPA, PhD
Michael R. Seidl, PhD, JD
Stephen Van Sickle

Board Advisors:

Steve Bridge
Jennifer Chapman
Russell Cheney
Andrew Clifford
Bruce Cohen
David Greenstein, OD
Steven B. Harris, MD
Joseph Hovey
Tanya Jones
Lisa Lock
Robert R. Newport, MD
Charles Platt
Mathew Sullivan
Natasha Vita-More
Peter Voss
Michael West, PhD

ALCOR LIFE EXTENSION FOUNDATION

7895 E. Acoma Dr. #110, Scottsdale, AZ 85260-6916

(480) 905-1906 or (877) 462-5267 (877-GO ALCOR) • Fax (480) 922-9027 • www.alcor.org



Alcor's Mission: The Preservation of Individual Lives

Date: June 18, 2003

To: Jerry Lemler, CEO

From: Larry Johnson, Director of Clinical Services

Ref: Potential OSHA and Other Regulatory Violations

This is to reference past conversations with Charles Platt, COO, concerning potential OSHA and other regulatory violations. There are a fair number of issues that should be addressed regarding laboratory safety as well as the potential risks involving exposure to body fluids and blood born pathogens. These issues could be violations of federal and Arizona laws, including occupational safety and health laws and environmental regulations.

As it stands today there really are no guidelines that employees at Alcor can follow regarding lab safety. There is currently no Personal Protective Equipment (PPE) readily available in the lab area. My greatest concern regarding the lab is that there is no access to an emergency eye wash station, which is an OSHA requirement for laboratories. See generally 29 C.F.R. Part 1910.

An incident occurred during the last suspension that resulted in the dumping of waste water on the ground behind the Alcor facility that contained human blood. I have mentioned in the past to Mr. Platt that such disposal of biohazardous medical waste is a violation of federal and Arizona law and cannot be allowed to continue. See Ariz. Admin. Code Sections R18-13-1401 through R18-13-1420.

I would like to suggest that Alcor actively seek advisement on applicable OSHA rules and other environmental regulations that pertain to clinical laboratories, as well as provide in-service training for those actively involved in patient care who are at risk of body fluid exposure.

Please come see me, should you have any question regarding these issues. I am more than willing to help Alcor comply with OSHA and EPA regulations.

! CONFIDENTIAL

EXHIBIT Z

Alcor at Work Photo Gallery: Procedures

Other photo gallery pages: [Field Equipment](#) | [Facility Equipment](#)
See also: [Video Tour of Alcor Facility](#)



The operating room at Alcor's Scottsdale, Arizona, facility.

The operating room becomes very busy during a cryonics case. As many as a dozen technicians and support staff can be required. Procedures are performed by physician or veterinary surgeons with extensive cryonics experience, and technicians with knowledge of the process of cryoprotectant perfusion.



Contract surgeons work to gain access to major blood vessels. At this point, the patient is typically at a temperature of 60°F or lower. This permits blood circulation to be stopped for a limited time without harming the brain. Sterile technique is utilized.

Once vascular access is established, the patient will be connected to a perfusion machine that replaces blood with a chemical solution that prevents ice formation.





A technician prepares the cryoprotectant solution perfusion circuit. The wires behind the plastic tubing are used for electronic monitoring and data collection.

A bank of heart-lung machine roller pumps (below) circulate cryoprotectant solution into the patient in gradually increasing concentration. A computer system (above) monitors and collects temperature, pressure, and cryoprotectant concentration data during this four hour procedure.



A technician checks lines connected to electronic devices that measure cryoprotectant concentration (refractometers).

A final manual check of the refractive index of the cryoprotectant solution verifies that the concentration is sufficient for vitrification (deep cooling without freezing).





The patient is now transferred from the operating room to the cooldown facility, where cooling to -130°C takes place under computer control. The result of this process is "vitrification" (solidification without freezing).

Following vitrification, neuropatients are placed in individual aluminum containers.



Containers are finally immersed in liquid nitrogen at a temperature of -196°C for long-term care.



For more information see [Alcor Procedures](#)

Other photo gallery pages: [Field Equipment](#) | [Facility Equipment](#)

Also: [High resolution photos for media use](#)

EXHIBIT AA

[AERO MANUFACTURING COMPANY](#)

Design and build with accuracy

Aero enables architects and consultants to discover, preview, and download BIM models, drawings, and specifications on a broad line of product families. Revit software eliminates collisions.

- [HOME](#)
- [PRODUCTS](#)
- [REVIT CAD Library](#)
- [ABOUT US](#)
- [CONTACT US](#)

PRODUCTS

- [Stainless Steel Kitchen Sinks](#)
- [Stainless Steel Medical Instrument Tables](#)
- [NSF Stainless Steel Sinks](#)
- [Non-NSF Stainless Steel Sinks](#)
- [Stainless Specialty Sinks](#)
- [Stainless Steel Work / Prep Tables](#)
- [Stainless Steel Work Tables](#)
- [Stainless Steel Shelves & Pot Racks](#)
- [Stainless Steel Dish Tables](#)
- [Sink / Table / Accessories](#)

INDUSTRY

- [Plumbing](#)
- [Food Services](#)
- [Material Handling](#)
- [Hospital & Healthcare Equipment](#)
- [For The Home](#)
- [Stainless Steel Custom Fabrication](#)

APPLICATIONS

- [Garage Applications](#)

EDUCATION

- [Caring for Stainless](#)
- [Stainless FAQ](#)

[Home](#) > [Non-NSF Stainless Steel Sinks](#) > S2

S2 Series, 2 Compartment Sink

DOWNLOAD:

[PDF SPEC SHEET](#)

Our S2 Series 2 Compartment Sink is made of quality stainless steel. This two compartment sink is perfect for your restaurant kitchen, business, or lab.



Material

Body

4S - 16 gauge 430 stainless steel

3S - 16 gauge 304 stainless steel

2S - 14 gauge 304 stainless steel

Legs

1 5/8" O.D 16 gauge stainless steel legs complete with 1" adjustable, impact resistant, plastic feet

Design Features

All stainless steel gussets are machine welded 360 degrees to stainless steel triangular plates

Gusset plates are fully welded directly underneath the sink

sink is hemmed on the roll and backsplash to eliminate cuts from rough edges

Construction

Sink is polished to a #4 mill finish

Heliarc welded construction creates a uniform, rock-solid unit

All sinks shipped K.D.

Plumbing

* water supply is 1/2" hot and cold * faucet holes are 8" o.c. (faucets not included)

Model Numbers/ Dimensions

BOWL	Unit		Model Numbers				Ship			
Width	Length	Width	Length	Economy	List Price	Delux	List Price	Premium	List Price	Wt. (lbs)
18" WIDE										
18	18	39	21.5	4S2-1818	\$1259.00	3S2-1818	\$1445.00	2S2-1818	\$1541.00	28
18	24	51	21.5	4S2-1824	\$1384.00	3S2-1824	\$1556.00	2S2-1824	\$1606.00	34
18	30	63	21.5	4S2-1830	\$1640.00	3S2-1830	\$1754.00	2S2-1830	\$1865.00	40
18	36	75	21.5	4S2-1836	\$1713.00	3S2-1836	\$1855.00	2S2-1836	\$1975.00	46
18	42	87	21.5	4S2-1842	\$1780.00	3S2-1842	\$2151.00	2S2-1842	\$2294.00	52
18	48	99	21.5	4S2-1848	\$2017.00	3S2-1848	\$2439.00	2S2-1848	\$2597.00	58
21" WIDE										
21	18	39	24.5	4S2-2118	\$1289.00	3S2-2118	\$1455.00	2S2-2118	\$1664.00	30
21	24	51	24.5	4S2-2124	\$1405.00	3S2-2124	\$1600.00	2S2-2124	\$1833.00	36
21	30	63	24.5	4S2-2130	\$1789.00	3S2-2130	\$1850.00	2S2-2130	\$2117.00	42
21	36	75	24.5	4S2-2136	\$1947.00	3S2-2136	\$2076.00	2S2-2136	\$2229.00	48
21	42	87	24.5	4S2-2142	\$1959.00	3S2-2142	\$2370.00	2S2-2142	\$2701.00	55
21	48	99	24.5	4S2-2148	\$2189.00	3S2-2148	\$2649.00	2S2-2148	\$3020.00	61
24" WIDE										
24	18	39	27.5	4S2-2418	\$1428.00	3S2-2418	\$1573.00	2S2-2418	\$1791.00	31
24	24	51	27.5	4S2-2424	\$1461.00	3S2-2424	\$1669.00	2S2-2424	\$1966.00	37
24	30	63	27.5	4S2-2430	\$1847.00	3S2-2430	\$2085.00	2S2-2430	\$2388.00	44
24	36	75	27.5	4S2-2436	\$2063.00	3S2-2436	\$2293.00	2S2-2436	\$2613.00	50
24	42	87	27.5	4S2-2442	\$2090.00	3S2-2442	\$2529.00	2S2-2442	\$2882.00	57
24	48	99	27.5	4S2-2448	\$2303.00	3S2-2448	\$2784.00	2S2-2448	\$3172.00	63
30" WIDE										
30	18	39	33.5	4S2-3018	\$1930.00	3S2-3018	\$2102.00	2S2-3018	\$2392.00	35
30	24	51	33.5	4S2-3024	\$1994.00	3S2-3024	\$2171.00	2S2-3024	\$2472.00	41
30	30	63	33.5	4S2-3030	\$2290.00	3S2-3030	\$2476.00	2S2-3030	\$2821.00	48

30	36	75	33.5	4S2-3036	\$2383.00	3S2-3036	\$2659.00	2S2-3036	\$3033.00	55
30	42	87	33.5	4S2-3042	\$2462.00	3S2-3042	\$2972.00	2S2-3042	\$3384.00	62
30	48	99	33.5	4S2-3048	\$2696.00	3S2-3048	\$3263.00	2S2-3048	\$3716.00	67

Our CompanyCustomer Service

- [About Us](#)
- [Contact Us](#)

- [CAD Library](#)
- [Green Policy](#)

- [Caring for Stainless](#)
- [Terms & Conditions](#)

[Visit us on Facebook](#)

- Toll Free: 800.631.8378
- Phone: 973.473.5300

- Fax: 973.473.3794
- sales@aeromfg.com

© Aero Manufacturing. All rights reserved. Privacy Policy.

EXHIBIT BB

Alcor 1997 Stabilization and Transport Manual

[Table of Contents](#)

Chapter 9: Blood Substitution

Most patients will be transported to Alcor Headquarters from distances of more than a few hours' drive away, and transport preparations will include washing out the patient's blood and replacing it with an organ preservation solution. Any mortician will be able to carry out a blood washout using a solution provided by Alcor. Only the most experienced transport team members will have the necessary training and experience to execute this step independently. However, local team members may be responsible for setting up a site for the washout, and a rudimentary understanding of the reasons for this step is necessary to explain it to a mortician.

During ischemia, many components of the blood will settle, making it more difficult to circulate fluids once external cardiopulmonary support is initiated. Further, some of the things which settle on the blood vessels walls will eventually break through the wall, leaving holes in the vessel. One example of cells which do this is leukocytes.

Leukocytes are white blood cells which scavenge for bacteria and combat infection. There are trillions in the body. During ischemia, 80% of them will be damaged. If these leukocytes aren't removed from the blood, they will hinder attempts to restore metabolic stability after a short period of oxygen deprivation.

In the case of cryonic suspension patients, it becomes easier to restore the semblance of balance by completely replacing the degrading blood with a fresh solution that closely mimics the healthy composition of blood. Cryonic suspension patients will not be going home after the application of the cryonic suspension procedure, and therefore somewhat more extreme (and effective) measures may be taken in their care which are not available to conventional emergency medical personnel.

Washing out the patient's blood will serve to remove many of the damaged cells and cellular components and replace them with robust counterparts.

For patients whose death involved massive bleeding, it may not be possible to perform a washout. Contact Alcor Headquarters if there is any doubt.

Mechanics

Basically, this part of the transport preparations requires performing surgery to expose the femoral arteries and veins, opening those vessels, inserting tubes into the channels, displacing the blood with another fluid on one side, and letting the blood drain on the other. This may be done by a mortician, if the organ preservation solution is on-hand.

If trained Alcor personnel and equipment are available, a more complex washout may be attempted. The blood replacement may then also be used to cool the patient quickly through the introduction of a heat exchanger into the washout circuit. Alcor's Remote Emergency Response Kit ("remote kit") and the ambulance (with the MRC III) are both equipped for this level of washout.

The remote kit contains a surgical kit, a blood pump, a pressure monitor, a heat exchanger, and a tubing pack which allows for the venting of air from the lines. In addition, it contains various drapes which enable the transport team to create a sterile environment which duplicates that of an operating room. It also carries a few devices which, if the team is allowed to use them, may help predict the time of death.

Footnote: One example of a device which may be useful in predicting time of death is the pulse oximeter. The pulse oximeter measures the oxygen-carrying capacity of arterial blood. A sensor is secured (the sensor has been designed to grip, but may also be taped as needed) to the patient's earlobe, fingertip, or other well-vascularized area. The monitor will register the patient's pulse and a percentage. Normal percentages are between 95%-98%. Anything below 80% is cause for serious alarm. Most people will not survive this for long. A consistently dropping oximetry reading will allow the transport team to be prepared before the reading reaches 80%. Alcor currently has one pulse oximeter, and it is kept in the central remote kit. Pulse oximeters are used before the patient is pronounced, therefore it may only be used in cases where the patient and physician agree to its use.

If appropriately trained team members and equipment are available, the remote kit will be used during the blood washout. If they are not available, a cooperating mortician will be needed to implement this part of the stabilization.

Mortician Assistance

A mortician won't have the necessary equipment to both remove the patient's blood and circulate the substitute down to 3-5°C (the desired transport temperature). This is unfortunate, but does not prevent the goal of this aspect of the protocol — to remove the patient's blood and its damaging elements. The mortician does have the personnel and equipment to do this.

Any mortician who agrees to assist with this step will be properly compensated. Any expenses incurred should either be invoiced or paid-in-full prior to departure, depending on the mortician's preference.

In order to carry out this step, the mortician or transport team members must have a replacement solution, which Alcor will supply. Either DuPont's Viaspan or Alcor's MHP-1 will be used. A mortician will generally assist with the surgery for circulatory system access. Femoral vessels will usually be used to provide access to the circulatory system, since they are large and near the surface. Morticians have a great deal of experience in accessing vessels, and can usually cannulate the femoral arteries and veins in little time.

These professionals are capable of providing support in excess of simply filling out paperwork. If they offer their assistance, accept.

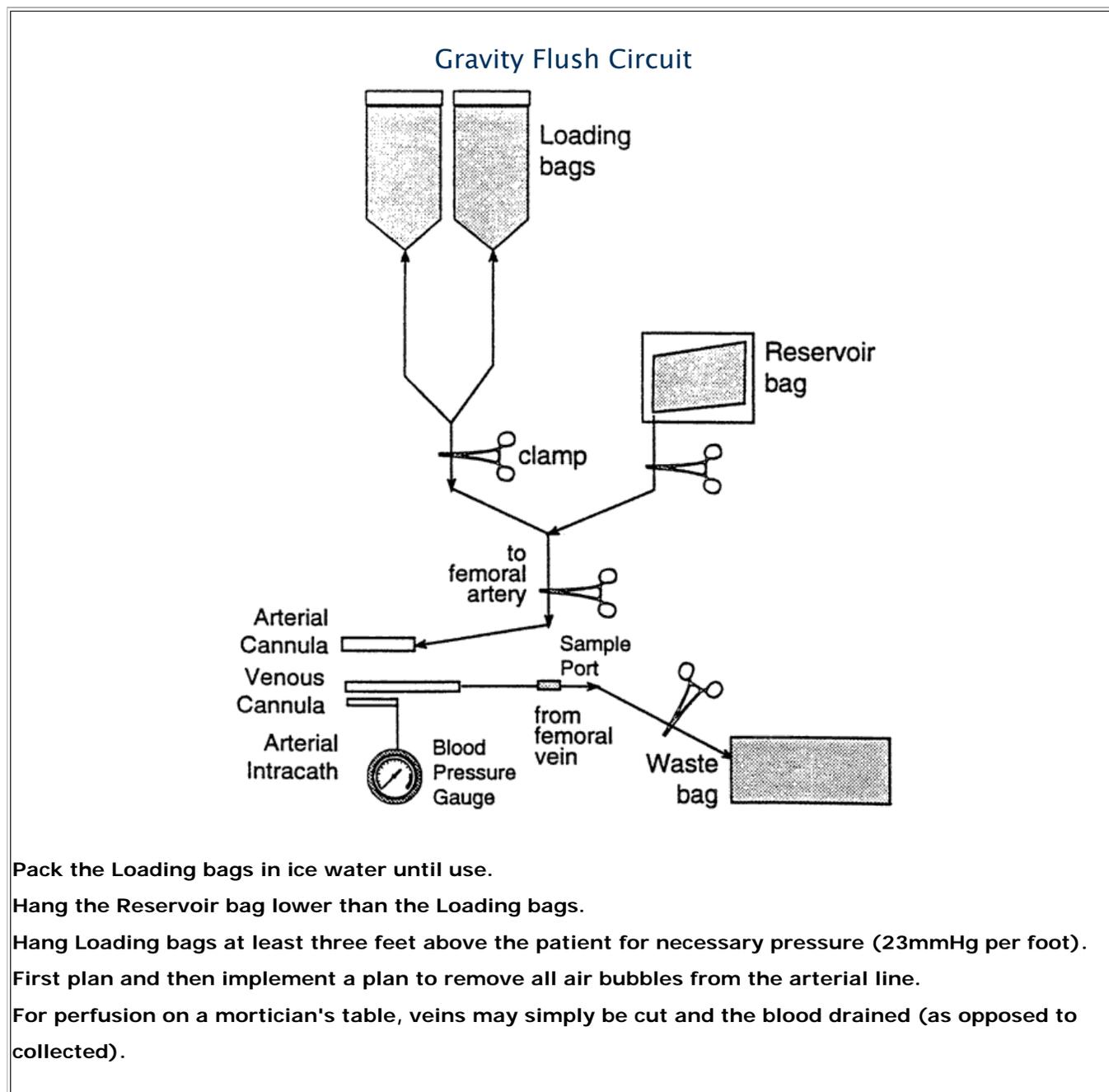
Gravity Flush

The "gravity flush" is the simplest of all forms of blood washout. It involves no pumps and little tubing. It involves cannulating a femoral artery, pushing fluid into the patient, and draining blood from a small hole in the femoral veins. Gravity provides the necessary pressure to flush the circulatory system.

Gravity provides less pressure than either a conventional medical pump or an embalmer's pump. It will be less

effective at overcoming the problem of sludging and clotting than the alternatives. A gravity flush is only to be used if there are no pumps available, as would be the case only if the remote kit or ambulance wasn't on-site and the mortician was uncooperative.

Pressure may be calculated at 23mmHg per foot of height that the solution bladders are raised above the patient.



Embalming Method

This method does not refer to the fluid perfused into the patient, as that won't change. It refers instead to the pump used in the blood wash-out. It is to be used only if the ambulance and remote kit are unavailable.

The embalmer's pump is connected to the inlet end of the tubing, and the blood still drains out the opposing side. These pumps usually have knobs which allow for some control of the pressures exerted on the blood substitute.

Generally, these pumps are calibrated in terms of pounds per square inch. Normal metabolic pressures range from 116-144mmHg mean arterial pressure (MAP). Use the patient's normal blood pressures to determine the rate of flow for the embalming pump, if they are known. Typical washout pressures are usually at the low end of the normal range.

Several cautions must be emphasized:

- Using perfusion pressures significantly higher than are advised may result in the capillaries exploding. Without a complete vascular bed, there will be no chance of the patient receiving an adequate cryoprotective perfusion in Scottsdale.
- The mortician's embalming pump will almost invariably be dirty. Transport team members must examine the pump and tubing, clean, and rinse them before allowing them to be used on the patient. Every attempt must be made to duplicate a medical environment, and this demands cleanliness of the highest standards possible.

Caution: If a mortician's embalming pump is used during washout, it must be thoroughly cleaned and rinsed before use.

Pressure must be adjustable to within 1-3 pounds per square inch.

Do not allow the mortician to perfuse the blood substitute through any vessels other than the femorals. For example, if the carotids are used, the vessels must be repaired prior to the start of cryoprotective perfusion. Currently, cryoprotective perfusion begins once cannula (basically, the medical-grade tubes which are inserted into the circulatory system for perfusion) have been inserted into the heart and connected to the perfusion solution. Since the heart is used, the carotids (the primary vessels feeding the brain) must be intact for perfusion if the brain is to receive flow. Repairing damaged blood vessels is a delicate task, at best. Have the mortician use the femorals, and make certain that these vessels are securely tied off once the blood washout is complete. In the past, these vessels have occasionally been left open, and during the subsequent cryoprotective perfusion, much of the cryoprotectant was lost through these breaches in the circuit.

Because the fluid cannot be recirculated to thoroughly cool the patient (as is the case with cardiopulmonary bypass), the blood substitute must be as cool as possible prior to beginning the washout. Keep the solution on ice until it is needed. These solutions do not cool quickly, so holding up the washout for a few more minutes' cooling time usually won't make a significant difference. In these cases, it is best to replace the blood as quickly as possible and get the patient, on ice, to Scottsdale.

It may be possible to gather samples of the patient's blood at the point where it drains. (At a mortuary, blood generally drains into the sink.) If so, be careful to gather the samples before they become contaminated by the sink or drain. If non-sterile tubing is used, there will be no hope of collecting uncontaminated samples. Keep any samples gathered on ice, and then tape them to the patient's forearm and surround them with ice for shipment.

All samples should be labeled with the patient's Alcor number and time, as a minimum.

One final caution. Using an embalming pump will increase the possibility of introducing air into the circulatory system. Many embalming pumps contain a rotor at the bottom which stirs the solution prior to introduction. If the fluid level gets sufficiently low, a vortex will form in the bottom of the fluid container. There is little that can be done for microbubbles, but introducing the large bubbles of a vortex can be avoided. Stop the perfusion before

any of these bubbles enter the tubing.

Cardiopulmonary Bypass

This is the most effective and controllable type of blood washout available to Alcor personnel. It requires a complex array of tubing which is carried primarily in the ambulance and remote kit.

During a transport, the ambulance, specifically the Mobile Rescue Cart (MRC III), provides the most efficient arrangement for implementing cardiopulmonary bypass. All of the equipment needed is contained within or is part of the MRC III. The MRC series was initially designed by Jerry Leaf, Hugh Hixon, and Mike Darwin and was a tremendous advance in emergency medical care. The MRC enabled a transport team to initiate cardiopulmonary by-pass and then move a patient to the Alcor facility for cryoprotective perfusion while still maintaining circulatory flow and cooling.

Both the ambulance and the remote kit contain the necessary equipment to cool the patient effectively to 3-5°C, and are used for that purpose.

For the purpose of illustration, the MRC III will be used in this description of cardiopulmonary bypass. The remote kit contains identical elements, and the equipment must be assembled to specifications which match those of the MRC.

The Mobile Rescue Cart, Past and Present

Alcor's local response capability hinges on the ambulance and the mobile rescue cart (formerly referred to as the "mobile advanced life support system"). The primary purpose of the mobile rescue cart (MRC) is to allow for field cardiopulmonary support through mechanical means and through extracorporeal perfusion. It was first discussed in Cryonics magazine (March, 1987):

Early in 1985, a decision was made by Cryovita Laboratories with support from the Akor Life Extension Foundation to develop an easily transportable, fully self-contained extracorporeal perfusion and cooling unit for use in the transport of biostasis patients. The objectives to be met in the design of this unit were that it be readily transportable, relatively straightforward to operate, fully self-contained in terms of power requirements and supporting supplies (disposables, surgical instruments, medications, etc.), and that it be capable of meeting the normothermic demands of the average adult.

Jerry Leaf, then Alcor's suspension team leader and President of Cryovita, initiated the project after seeing professional perfusionist literature discussing custom perfusion carts. Estimates for the prototype ranged from \$150,000 to \$250,000 and were well beyond what Alcor and Cryovita were able to spend on this project. Jerry, Mike Darwin, and Hugh Hixon decided to build one independently.

Jerry and Mike found a Travenol Life Support Litter, a folding, aluminum gurney which accommodated a Brunswick HLR "Thumper", a cardiac monitor-defibrillator, two small oxygen cylinders, and three storage drawers.

These acquisitions were turned over to Hugh, who then remounted the drawers and built support frames for the tubing pump, two 12-volt batteries, a battery charger, a tubing (roller) pump, a noisy vacuum pump, a water pump, and vacuum distribution pump. Once struts were added to mount an oxygenator and monitoring instruments, the gurney no longer folded and was bowed in the middle. Jerry replaced the bottom struts with steel tubing, and brought the weight to about 450 pounds. At this weight, the original design specification of "easily transportable" eluded the team, and ultimately resulted in a lift gate being installed on the ambulance (much to the delight of the transport team members).

Over the years, the Brunswick HLR was replaced with a Michigan Instruments HLR, which was both more reliable and more effective, the cardiac monitor was removed, a portable ice bath was mounted on top, and a circuit for circulating ice water was added. Modification to the perfusion circuit was also required, especially after the suspension of Jerry Leaf in 1991.

Original tubing packs for the MRC I consisted of assorted tubing components, which were assembled by Jerry in the field. He was an experienced perfusionist and fully capable of stringing a pump on the fly and often raided other sources for missing pieces, but this meant that no one else (unless they were also a perfusionist) would be able to string the pump. After Jerry's suspension, responsibility for the perfusion circuits fell to Hugh Hixon, who has implemented a simpler system. Hugh's system includes all necessary circuit components, an assembly diagram, and tubing labeled for assembly. There are also training packs available for practice.

Alcor separated from Cryovita in 1991, after Jerry's suspension, but continued to lease the MRC I. The circumstances were such that this relationship was considered unstable and Alcor began to investigate the construction of a new MRC.

Keith Henson accepted the challenge of designing the MRC II and began fabrication with a gas welder and steel tubing. Although the MRC II was never completed, it demonstrated the utility of steel framing. When Keith's project was delayed, Hugh picked up the ball and ran with it.

After purchasing enough equipment to furnish a small welding shop, Hugh built the MRC III. This one weighs 625 pounds and cost about \$6,500 to construct. It took about four months and has incorporated many improvements over the original design.

- It's steel frame is stronger and more durable than the original's aluminum, steel and PVC frame.
- The frame has been constructed so that the ice bath may be shortened from its 7'1" extension to about 6' (which means that it will fit into almost any elevator).
- The ice bath has larger interior dimensions within the same exterior size.
- All components are secured to the frame and fall within the profile of the cart, including the perfusion circuit.
- The roller pump has been repositioned for easier access.
- Oxygen carrying capacity has increased from 1,256 liters of oxygen to about 7,000 liters.
- The 12/24/110-volt power system has been replaced with a more conventional 12/110 volt power system.
- Patient orientation has been reversed to make ambulance support easier.

Hugh Hixon was the prime force behind the improvements to this critical aspect of Alcor's emergency response infrastructure. He did most of the work himself, with assistance from Tanya Jones, Scott Herman, and Keith Henson. He advanced Alcor the funds to complete the project and purchased all of the necessary welding equipment, and he was able (even happy) to apply knowledge he'd gained in an adult education class in welding to significantly Advance Alcor's emergency response capability at a time when Alcor's options were limited.

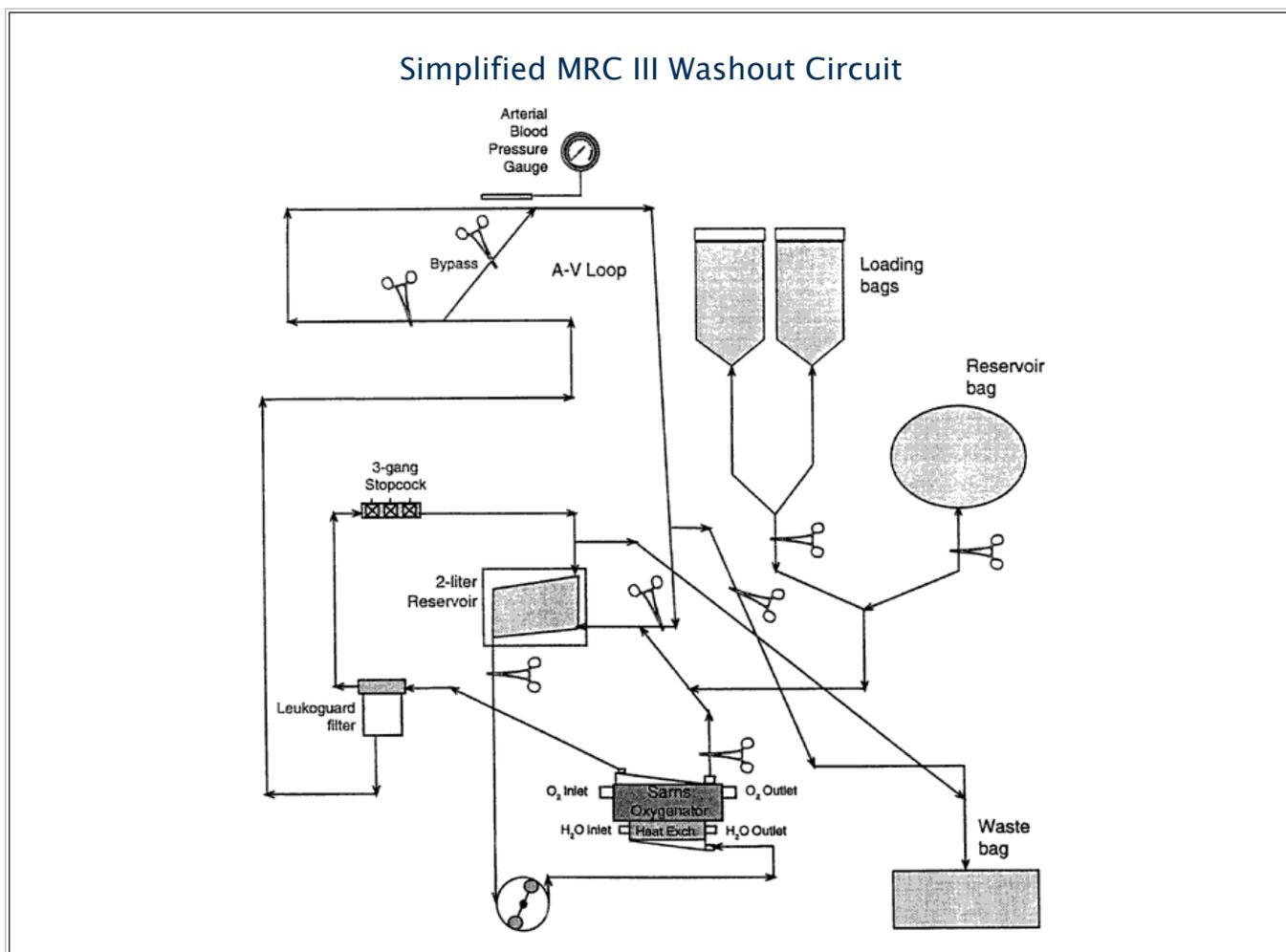
Circuits

To obtain perfusion results near to the metabolic norm, some information is needed about the bypass circuit. Perfusion pressures are critical, and a pressure monitor is connected to gather this information. Flow rates will affect perfusion pressures, and the medical-grade pumps have a display with this data.

Ideally, the blood substitute is oxygenated before it is introduced to the circulatory system, and a device to do this is part of the circuit. This device actually serves a dual purpose. It is a heat-exchanger and oxygenator, and will simultaneously cool and oxygenate the blood substitute. A gas flow meter is included to provide information on the oxygen flow rate.

Medical-grade tubing, cannula, and filters are combined into an array that provides a sterile path between the blood substitute and the patient's circulatory system. It also is configured to allow sterile samples to be taken easily.

Both the remote kit and the MRC III also contain surgical equipment and protective garments for the transport team. An independent source of oxygen is carried in the ambulance, but there is none in the remote kit. It is illegal to transport oxygen cylinders by commercial airline, and so, oxygen must invariably be acquired locally. (If in an unfamiliar town, check the phone book under Welding Supplies, Medical Equipment and Supplies, or Gas Cylinders.) If medical-grade oxygen is unavailable, use welding oxygen.



Surgery

Surgery is something that only trained personnel may initiate, and in the absence of a trained transport team member, is done by a mortician with the assistance and direction of the untrained team member.

Current Alcor protocol is that the femoral veins are both cannulated for perfusion, one femoral artery is cannulated for perfusion, and the other for pressure monitoring. Cannulating vessels requires incising the skin, and proceeding to dissect away all intervening fat, tissue, and muscle which pre-vent the placement of the cannula and pressure monitoring line. The vessels are then cleared of the external sheath which binds them. Once cleanly exposed, sutures are placed around the extreme ends of each artery and vein. The distal ends are tied off with suture, and the proximal ends are double-looped and left loose.

A clamp is then placed as high up on the proximal end as possible. An atraumatic clamp is best, as it will not injure the delicate tissue. Once clamped, the vessels may be raised slightly and carefully cut open for the placement of the cannula.

The cannula should be clamped at the far end and completely filled with heparinized saline. All air bubbles should be tapped out of the cannula prior to the end being clamped. Once the vessel is cut and the cannula ready, insert the cannula as far into the vessel as it will go. Then, the proximal clamp can be removed to allow full insertion of the cannula. Be certain that the pump is off and the perfusion lines are clamped. Use the suture to secure the cannula in place.

Once everything is in place and secure, the washout can begin.

Caution: Wear gloves, face masks, and hair covers! For individuals handling sharp objects, like needles or scalpels, puncture-resistant nitrile gloves should be worn underneath the exam gloves. For the surgeon, perfusionist, and their assistants, face shields or goggles are also required.

Circuit Volume

The volume of fluid perfused into the patient is important. Approximately two liters of fluid are used to prime the circuit, and around twelve liters of organ preservation will be introduced. Once that volume has been introduced into the circulatory system, the fluid introduction ports are clamped, as is the drain line, and the remaining fluid in the patient and the circuit is allowed to recirculate until the patient's temperature drops to 3-5°C.

If the circuit appears to be losing volume once the fluid introduction ports have been clamped be certain to check the surgical area for leakage. If there are no obvious breaches in the circuit, there may be a leak inside the patient. Evidence of this may surface prior to the loss of volume during re-circulation. If the patient's abdomen appears to be expanding, there may be a tear in the gastric (stomach) lining. If bloody, frothy fluid begins coming out of the patient's mouth, the capillary beds of the lungs may have burst. There is little which can be done to repair these forms of damage, and in the past, each have been sufficiently severe to halt perfusion.

Safety Precautions

Alcor is often told when a patient harbors an infectious disease, and in fact, such diseases are usually contributing factors in the dying processes. Infectious diseases pose a serious health risk for transport team members if suitable precautions are not taken during the stabilization. However, there are few quick tests for determining whether or not a person has been infected with a virus, and some diseases have incubation times extending years before any symptoms of infection surface. Basic precautions, like those below, are very effective and easily implemented and should be used for every patient. The surgeon and the perfusionist should be especially careful to observe these guidelines.

Any transport team member coming into contact with a patient's body fluids must wear latex exam gloves. Face masks and hair covers are also required. For individuals handling sharp objects, like needles or scalpels, puncture-resistant nitrile gloves should be donned underneath the exam gloves. For the surgeon and perfusionist, or anyone assisting them, face shield or goggles are also required.

Quality Control

Quality control is primarily accomplished during the perfusion by means of maintaining pressures and flow rates near the metabolic norms, and after the perfusion by means of sample analysis and ease of cryoprotective perfusion. Observation of the patient during the blood washout will also provide valuable information.

A patient who is perfusing well will undergo some observable changes. Skin color will change toward a more healthy color. Bruises may form on the patient's limbs. The color of the fluid coming out of the patient will begin to lighten from a dark maroon and become increasingly transparent. The patient's core temperature, as evidenced by esophageal and rectal temperature readings, will begin to drop quickly. (Rectal temperatures will drop more slowly than the esophageal readings, as the rectal probe is deep within a muscle mass, and might be imbedded in feces.)

If all these changes occur, the pressures and flow rates are properly maintained, and the patient is cooled to the appropriate temperatures, the patient will be in good shape for the cryoprotective perfusion.

Samples should be taken at fifteen minute intervals, beginning from the initiation of cardiopulmonary bypass. Begin sample collection as soon as possible (before bypass would be unusual but highly desirable). Samples will provide data which may be analyzed long after the cryonic suspension of the patient to help evaluate the quality of the transport.

Conclusion

A successful blood washout and cooling will provide a window of metabolic stabilization of about twelve hours. Within this time, the patient may be transported to Scottsdale, Arizona. Once the washout is complete, the patient should be packed in ice and transported by the fastest means possible to Alcor Headquarters.

Go to [Chapter 10](#) or [Table of Contents](#)

EXHIBIT CC

New Cryopreservation Technology

October 2005

(see also "M22 Implementation" from [Alcor News, Oct. 13, 2005](#))

Overview

Reversible suspended animation requires successful preservation and recovery of structure and function of an organism, especially the brain. Historically cryonics has focused on preservation of cell structure as revealed by electron microscopy. It was reasoned that if at least structure was well preserved, nanotechnology could reverse chemical changes that caused loss of function. This led Alcor to increase the concentration of glycerol used for freezing during the 1990s, and ultimately to switch to cryoprotectant mixtures capable of vitrification (ice-free preservation) after the turn of the century.

Alcor first implemented vitrification for neuropreservation cases using B2C cryoprotectant solution. It was not possible to immediately extend this technology to whole bodies because B2C could not be perfused into whole bodies without causing tissue swelling, and because the physical apparatus for cooling whole bodies quickly to the required temperature of -120°C did not exist. Whole body cases therefore continued to be treated with either conventional glycerol cryoprotection and freezing, or by separation of the head for better brain preservation by neurovitrification, and separate freezing of the body. This combination procedure caused much media misunderstanding.

In 2005, Alcor completed construction of a cold nitrogen gas cooling system for attempting vitrification of whole bodies. Also, another cryoprotectant solution suitable for large system vitrification had been validated in brain and whole animal studies. This solution, called M22, did not permit vitrification of all parts of the body because some tissues absorb cryoprotectant too slowly. However it seemed adequate for vitrification of tissues with a rich supply of blood vessels, such as the brain. Therefore it should be possible to vitrify the brain during cryopreservation of the entire body, not just the head. The rest of the body would experience varying degrees of vitrification and freezing during the process, with freezing injury reduced by presence of M22 solution.

This "M22 procedure" is Alcor's new cryopreservation technology. M22 solution will now be used for both whole body and neuropreservation cases, making B2C obsolete. It also marks an important technology transition as Alcor begins to move beyond just structure preservation toward better preservation of biochemistry and functional capacity. The advantages of M22 over B2C are discussed below.

Solution Comparison

In 2001 Alcor switched from high concentration glycerol to B2C vitrification solution for cryoprotection of neuropatients. B2C is a more concentrated variant of the VM3 vitrification solution used in mainstream cryobiology for vitrification of mouse ova and kidney slices [1]. B2C was designed as a "hyperstable" vitrification solution, meaning that it's so concentrated that it's virtually impossible to freeze. This was done to help ensure that Alcor's

first attempts at brain vitrification would be successful, with the understanding the cellular viability by conventional spontaneous recovery criteria would be low to non-existent. Thus the purpose of B2C was to eliminate structural damage from ice under good conditions, not preserve viability by conventional measures.

The composition of B2C is:

Dimethyl sulfoxide	24.765% w/v
Formamide	17.836%
Ethylene glycol	17.401%
Polyvinyl pyrrolidone K12	2%
Polyvinyl pyrrolidone K30	2%
X-1000 ice blocker	1%
Z-1000 ice blocker	1%

The solution was prepared in a carrier solution of non-penetrating solutes called B1, similar in composition to the published vitrification carrier solution LM5 [2].

Figures 1 and 2 show electron micrographs prepared from rabbit brains after perfusion with B2C solution in a manner that replicates Alcor's neurovitrification protocol prior to deep cooling. The micrographs therefore represent the state of the brain immediately prior to deep cooling for vitrification. The second figure is more representative of human cases since the peak concentration phase of perfusions are more likely to last two or more hours rather than the one hour of Fig. 1. Both figures show disturbing structural alterations.

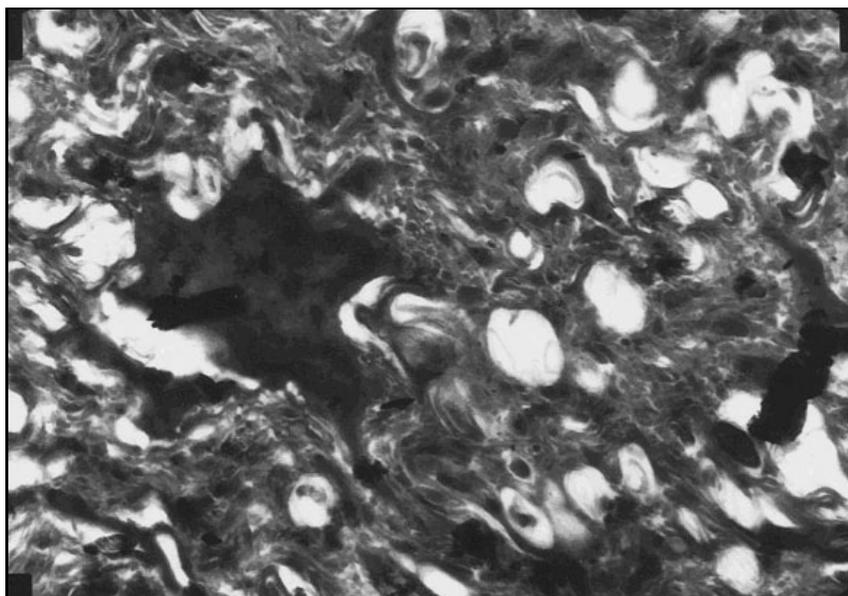


Figure 1. B2C perfusion for one hour at -4°C (no further cooling). Rabbit hippocampus at 6700x magnification. White holes appear to be shrinkage spaces caused by extreme cellular dehydration. While less damaging than ice, such artifacts are still undesirable. Two opaque black particles on the micrograph are preparation artifacts.

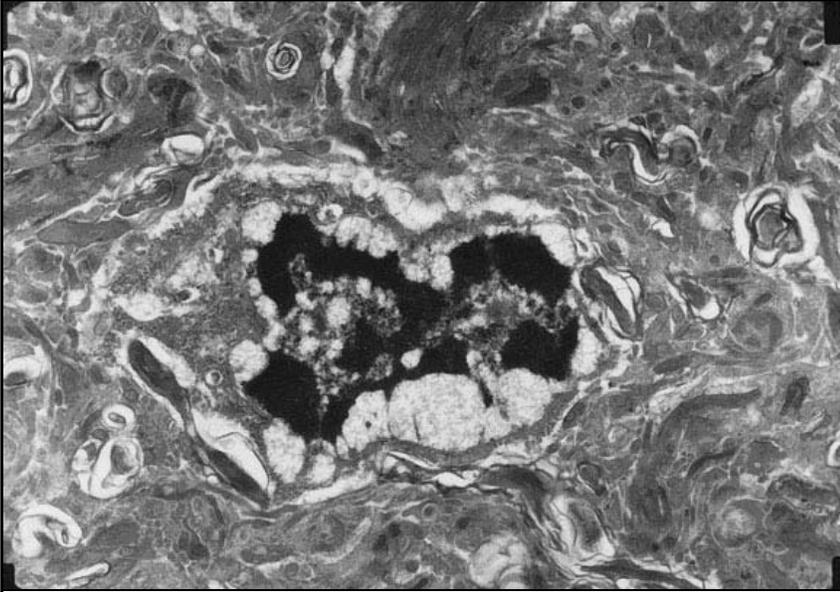


Figure 2. B2C perfusion for two hours at -4°C (no further cooling). Rabbit cerebral cortex at 8000x magnification. There is less dehydration space than in Fig. 1, but unusually pale cytoplasm and dark chromatin clumping in the central cell. With the exception of the unusual appearance of this cell, other structures appear intact. This type of cell was seen infrequently.

More recent developments in cryobiology offer a better alternative. A new vitrification solution called M22 has been developed by mainstream tissue banking researchers [2]. The published composition is as follows:

Dimethyl sulfoxide	22.305% w/v
Formamide	12.858%
Ethylene glycol	16.837%
N-methylformamide	3%
3-methoxy-1,2-propanediol	4%
Polyvinyl pyrrolidone K12	2.8%
X-1000 ice blocker	1%
Z-1000 ice blocker	2%

The solution must also contain non-penetrating solutes of a suitable carrier solution, such as LM5 [2], at isotonic concentration brought to a final pH of 8.

M22 has a critical cooling rate of approximately 0.1°C per minute, and a critical warming rate of 0.4°C per minute after rapid cooling. The critical warming rate is approximately 1°C per minute after slow cooling. This is more than sufficient for structural vitrification of an object the size of the human brain, which can be cooled at 0.4°C per minute with no near-term need for warming. Figure 3 shows a two liter volume of M22 vitrified by standing in unstirred cold nitrogen for 18 hours.



Figure 3. Two liters (5 pounds) of M22 solution cooled at 0.14°C/minute (18 hours) until vitrified at a temperature of -124°C.

Alcor has previously published the results of rabbit brain vitrification with M22 [3]. These results have now been extended to confirm that vitrification still occurs even when cooling at human neuropatient rates. Figures 4 and 5 show electron micrographs of M22-perfused rabbit brains that were cooled at the same rate as the core of an Alcor neuropatient, and subsequently rewarmed as rapidly as possible by forced convection. Both brains successfully vitrified, showing no signs of ice formation. This is very remarkable in the case of Fig 5, for which only 81% of normal M22 solute concentration was used. That concentration of M22 would not remain vitrified if tested as a bare solution, indicating that brain tissue can be more stable against ice formation than the solution it is perfused with (perhaps because of dehydration effects). This is consistent with other studies that show large ice-free areas in brains treated with high concentration glycerol, even though such concentrations of glycerol would not vitrify under ordinary circumstances.

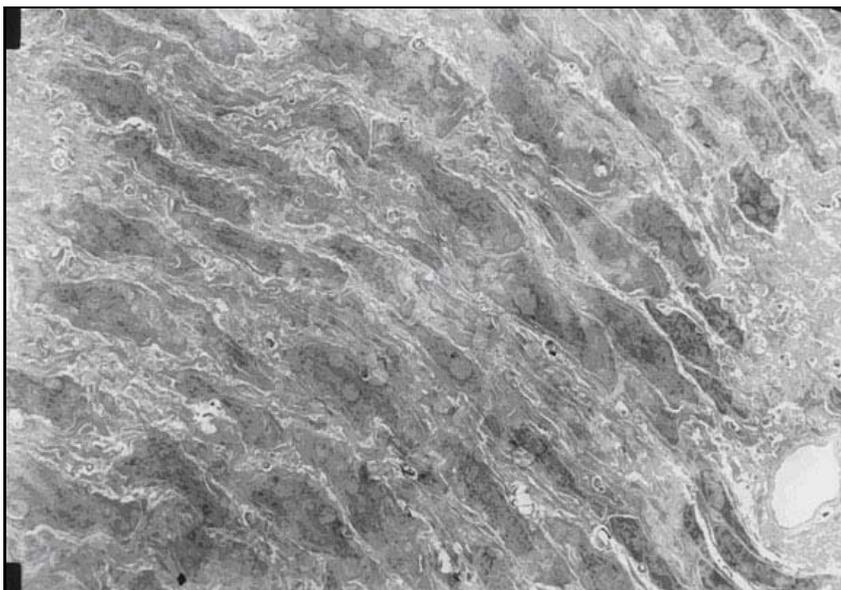


Figure 4. M22 perfusion for one hour at -3°C followed by vitrification at -125°C and rewarming. Rabbit

hippocampus at 1400x magnification. Structural preservation is good, with greatly reduced dehydration artifacts compared to B2C. The hole at the bottom right is a capillary. Circular mottling is a film processing artifact.

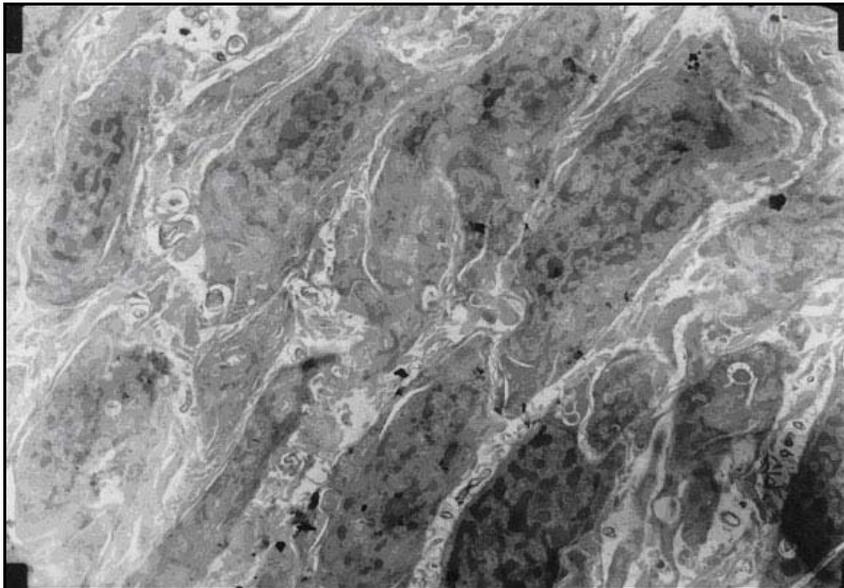


Figure 5. M22 at only 81% full concentration perfused for one hour at -3°C followed by vitrification at -125°C and rewarming. Rabbit hippocampus at 1400x magnification. Remarkably, no ice damage was seen anywhere in the brain despite the reduced cryoprotectant concentration. Mottling is chromatin clumping.

The results of Figs. 4 and 5 are also notable because these studies included a proprietary additive to the carrier solution that reduces edema (tissue swelling) in whole body patients. The results of Figs. 4 and 5 can therefore be obtained in both neuro and whole body patients, permitting in-situ brain vitrification of whole body patients without neuroseparation. This was impossible with B2C, which could not be used for whole body perfusions.

Figure 6 shows that perfusion with M22 is compatible with preservation of brain cells even on the synapse level. Similar results were previously obtained with glycerol and cooling in Fig. 3 of [this study](#), but unlike M22, glycerol could not be perfused at concentrations sufficient to prevent ice formation through the entire brain volume.

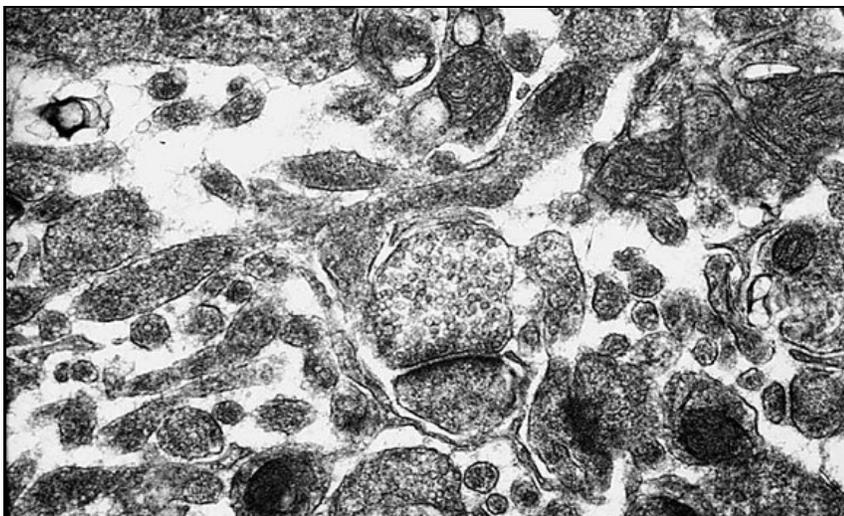


Figure 6. M22 perfusion for one hour at -3°C (no further cooling). Rabbit brain synapse at high magnification. The synapse and neurotransmitter vesicles remain intact. White spaces are due to dehydration induced by the cryoprotectant.



Figure 7. Suprahippocampal white matter after perfusion with M22 for 60 min at -3°C , cooling to below the glass transition temperature, rewarming, and perfusion fixation. The myelinated fibers are shrunken but intact; lighter spaces are believed to be benign shrinkage spaces. No debris resulting from lysed structures is present. Magnification approximately 5000X on original film.

M22 will be the first solution used in cryonics that preserves both structure and tissue viability under certain circumstances in published studies. In particular, M22 has been used to successfully recover and then transplant whole kidneys after cooling to a temperature of -45°C [2]. This success required perfusing M22 at a temperature of -22°C for only 25 minutes, which is colder and shorter than currently required to prepare a brain for vitrification. So while the same tissue viability seen in published kidney studies cannot be expected in cryonics patients, the use of a solution with such favorable toxicity properties will be less damaging to cell biochemistry than previous solutions used in cryonics.

M22 is less viscous than B2C. Shortened perfusion times will be another advantage of using the solution.

In summary, M22 offers the following advantages:

- Solution of published composition.
- Published success recovering kidneys from -45°C .
- Published success at structural brain vitrification.
- Low toxicity per published studies.
- Low viscosity for faster perfusions.
- Compatible with additives permitting whole body perfusion.

References

1. G.M. Fahy, B. Wowk, J. Wu, S. Paynter, [Improved vitrification solutions based on the predictability of](#)

[vitrification solution toxicity](#), Cryobiology 48 (2004) 22-35. [FULL ARTICLE HERE \[PDF format\]](#).

2. G.M. Fahy, B. Wowk, J. Wu, J. Phan, C. Rasch, A. Chang, E. Zendejas, [Cryopreservation of organs by vitrification: perspectives and recent advances](#), Cryobiology 48 (2004) 157-178. [FULL ARTICLE HERE \[PDF format\]](#).

3. J. Lemler, S.B. Harris, C. Platt, T.M. Huffman, [The arrest of biological time as a bridge to engineered negligible senescence](#), Annals of the New York Academy of Sciences 1019 (2004) 559-563. [FULL ARTICLE HERE \[PDF format\]](#) or [\[HTML format\]](#).

EXHIBIT DD

EFFECT OF HUMAN CRYOPRESERVATION PROTOCOL ON THE ULTRASTRUCTURE OF THE CANINE BRAIN

[Introduction](#)

[Brief lay summary of results](#)

[Summarized extracts from the paper](#)

[Electron micrographs](#)

[Original paper](#)

The electron micrographs on this page are also available in a high resolution [PDF file](#) for production of hardcopies. Right Click the link and choose "Save Target As" to download this 5-megabyte file.

Introduction:

New Brain Study Shows Reduced Tissue Damage

From *CryoCare Report #4*

Online Edition, July 1995

by Charles Platt

New evidence shows that when human cryopreservation is carried out under favorable conditions, it causes minimal damage that we can reasonably expect to be reversible at some time in the future using molecular nanotechnology.

A month ago, I would not have been able to write that sentence. I would have felt compelled to qualify it in some way – because no study of human cryopreservation protocol had ever shown freezing damage that could genuinely be described as "minimal."

Now, however, research by Michael Darwin, Sandra Russell, Paul Wakfer, Larry Wood, Candy Wood, and Steven B. Harris MD has given us new reason to believe that modern cryopreservation techniques are doing what they're supposed to do: minimizing freezing damage more successfully than simpler perfusion protocols that were used in the past.

First let me recap some basic background. In the 1950s, experiments showed that when the cells of a mammal are frozen, they experience less damage if they have been soaked previously in a solution of glycerol.

Unfortunately, it's much more difficult to apply this treatment to an intact organism than to a small tissue sample. Glycerol is capable of causing excessive tissue shrinkage and damage to cells if it's administered too rapidly in too high a concentration. Using proper introduction and monitoring equipment, however, the concentration of the solution can be gradually ramped up during a prolonged period of perfusion so that a high terminal concentration can be reached with relative safety. This technique was applied to cryonics patients by Leaf, Darwin, and others during the 1980s.

While there were good reasons to believe that this protocol was giving patients an improved level of protection,

the supposition was never properly verified, mainly because there was insufficient time, money, and personnel to support the research. But in 1993, when BioPreservation moved into its new home in the building owned by Twenty-First Century Medicine, there was an opportunity to catch up on this overdue verification.

Several dogs were anesthetized and were put into cardiac arrest while they were unconscious. After a short waiting period (equivalent to the wait that a cryonics patient might experience before receiving attention from a transport team), the dogs were given cardio-pulmonary support using a "Thumper" mechanical CPR device, medications were administered, and blood washout and perfusion with glycerol were carried out, in exactly the same way as if the BioPreservation team was dealing with a human cryonics case. The dogs were cooled and maintained for 12 to 18 months at -90 C, then rewarmed. Brain samples were examined using light and electron microscopy, and damage was found to be minimal.

A second set of dogs was treated with a simpler protocol, similar to the type used previously in cryonics and still favored by some cryonicists who prefer simpler, less costly perfusion. The period of perfusion was briefer, and the terminal concentration of glycerol was lower. Brain tissue from these animals showed much higher levels of damage.

The bad news, of course, is that in the real world, random factors frequently interfere with cryonics procedures, and a patient may be subjected to longer periods of warm ischemia or CPR than were allowed in this study. As a result, the brain may sustain injury before perfusion even begins. Studies conducted on cats in the mid-1980s tend to confirm this. Where the animal was packed in ice for 24 hours after death, before cryoprotective perfusion and freezing, substantially worse brain damage was observed.

Also, even though the new study shows good preservation of fine brain-cell structures, with uniformly intact contents of synapses and their membranes, considerable damage did still occur. Ice holes were observed around brain capillaries, cells were dehydrated and shrunken, and some cells lost their cell membranes (although this did not seem to happen to neurons, only to their supportive glial cells). Perhaps most worrisome was the presence of large tears, although they were much less frequent than we have seen in tissue samples prepared using other protocols.

A Brief Lay-Level Summary of Results

by Charles Platt

In the 1950s, experiments showed that the damage caused when the cells of a mammal are frozen can be reduced if the cells are first treated with a solution of glycerol.

More recently, work by Leaf, Darwin, et. al. suggested that damage to cryonics patients might be further minimized if perfusion with glycerol was carefully monitored and controlled, using a solution whose concentration gradually increased during the perfusion process to a very high concentration where much less ice will form than is the case when no cryoprotectant or lower levels of cryoprotectant are used.

Until now, there has been no systematic study to verify that this kind of controlled perfusion of cryonics patients

really does result in less freezing damage than a simpler protocol. In particular, no one ever treated lab animals with the exact same protocol that is currently used on human cryonics patients by BioPreservation or the Alcor Foundation. (Note: ACS may use a different protocol in future, since it is no longer employing BioPreservation to handle its cases, and The Cryonics Institute (CI) has a long-standing policy of minimizing all medical procedures on its patients. CI does do some glycerolization, but it is typically applied by a mortician with non-medical equipment, and the concentration is not ramped up and monitored using equipment of the type employed by BioPreservation and Alcor.)

More than a year ago, we decided to take several dogs through our cryonics protocol, keep them frozen for 12 to 18 months at relatively high temperatures (dry ice which is -79°C), rewarm them, and then look for brain damage using light and electron microscopy. The dogs were anesthetized and cardiac arrest was induced during unconsciousness.

The animals were then given a short period of warm ischemia (lack of blood flow) at normal body temperature (37°C) simulating the "waiting time" that a cryonics patient might experience after death is pronounced, before cryonics protocols are applied. The dogs were then given cardio-pulmonary support using a "thumper" of the same type that we employ on cryonics patients, and our usual medications were administered. Blood washout and perfusion with glycerol were identical to the procedures that we use on human patients.

After freezing, storage for a year or more, and thawing, we sent out samples of brain tissue for examination. The following paper reports our results, which were much more encouraging than we had hoped. In every case, damage was greatly reduced compared with either our prior results in the mid 1980's using 3-4M glycerol cryoprotection) or than results that were obtained (based on our examination of the CI light and electron microscope pictures) last year by the Cryonics Institute, which funded experiments where sheep brains were subjected to CI's simpler perfusion protocol.

Our results have been examined by a leading cryobiologist, and we now firmly believe that our perfusion protocol does minimize damage that would otherwise occur.

We note however that in our model, we assumed that a cryonics patient can receive care just five minutes after death is pronounced. There have been many cases where this was not possible (for example, where patients died suddenly and unexpectedly), and we believe that longer periods of ischemic time in such cases probably cause much greater damage to the integrity of tissues in the brain.

**Summarized extracts from the paper by
Michael Darwin, Sandra Russell, Paul Wakfer,
Larry Wood, Candy Wood, and Steven B. Harris MD.**

[See full paper here](#)

Research in which cat and sheep brains were perfused with a moderate level of glycerol (4M to 5M), frozen, and rewarmed has been previously reported. These studies showed ultrastructural-level tearing and fraying of the ripped ends of nerve tracts, separation of capillaries from surrounding brain tissue, physical disruption of the

capillaries, lysis of the endothelial cells with occasional adherent endothelial cell nuclei, separation of the endothelial cells from capillary basement membrane, separation of myelin from axons, formation of gaps between the axon membrane and the myelin, unravelling of the myelin, extensive disruption of the neuropil and of the plasma membrane of both neuronal and glial cells, and conversion of intracellular and synaptic membrane structure into amorphous debris or empty and/or debris-containing vesicles. The purpose of our study was to see whether comparable damage would be suffered by a dog brain that was treated with protocols similar to those previously used, and to find out whether BioPreservation perfusion/freezing protocol would reduce this damage.

Five adult dogs weighing between 24 and 28 kg were used in our study. All animals received humane care in compliance with the "Principles of Laboratory Animal Care" formulated by the National Society for Medical Research and the "Guide for the Care and Use of Laboratory Animals" prepared by the National Institutes of Health (NIH Publication No. 80-23, revised 1978).

Three animals constituted the experimental group and were subjected to simulated transport, total body washout, cryoprotective perfusion, freezing-thawing, and fixation.

In addition, two control animals were prepared. One of them was subjected to fixation at normothermic (normal body) temperature, to demonstrate that fixation and microscopy would yield normal-appearing tissue. The second control animal was subjected to cryoprotective perfusion and was then subjected to fixation without being taken down to temperatures below freezing.

Introduction of glycerol was by constant rate addition of base perfusate containing 65 v/v glycerol to a recirculating reservoir containing approximately 15 liters of 5% v/v glycerol in MHP-2 base perfusate. The target terminal tissue glycerol concentration was 7.4M in the venous effluent and the target time course for completion of the cryoprotectant ramp was 2 hours.

Cooling to -79 C was carried out by placing the animals within a 6 mil polyethylene bag from which air was evacuated with a shop-type vacuum cleaner and then submerging them in an n-propanol bath which had been precooled to -40 C. Bath temperature was slowly reduced to -79 C by the periodic addition of dry ice. Cooling was at a rate (averaged) of approximately 4 C per hour.

Following cooling to -79 C, the animals (now placed inside nylon sleeping bags) were positioned atop three 6"x12" styrofoam blocks inside a two-stage Rheem Ultra Low, -90 C mechanical freezer. Cooling to -90 C from -77 C was complete in approximately 6 hours. After twelve to eighteen months, the animals were placed in a well stirred n-propanol bath which had been precooled to 0C. Rewarming was at an average rate of 10C per hour. When the animals' core temperatures reached -6C they were removed from the alcohol bath. The animals were reconnected to a simplified extracorporeal circuit for perfusion of fixative.

Perhaps most striking was the excellent reperfusion of virtually every organ system in the animals with the exception of the spleen, which failed to perfuse almost completely. Venous return was excellent.

There was no evidence of cracking or fracturing, even though these animals were rewarmed by transfer from -90C to a 0C liquid bath. Particularly striking was uniform fixative perfusion of the brain. An advantage of carbon particle marker over dye is that it is possible to demonstrate not only filling of large vessels, but of perfusion of the capillaries as well, as evidenced by uniform darkening of the tissue to black or charcoal gray.

In sharp contrast to all of the previously cited studies, the high degree of ultrastructural preservation observed in this series of animals is unprecedented.

The most striking difference between this work and previous brain cryopreservation studies is the overall recognizability, inferrability, and even "normality" which is present in the micrographs. Examination of neuropil, individual synapses and axons at magnifications from 40,000x to 80,000x reveal excellent preservation of fine structure. Synapse morphology is normal in appearance and synaptic vesicles, membrane structure and general appearance are almost indistinguishable from unglycerolized, nonfrozen control, and are virtually indistinguishable from glycerolized-fixed non-frozen controls.

At the same time, however, there is evidence of considerable damage. Particularly disturbing are the continued presence of large (5 to 15 micron diameter in cross section) tears of unknown "depth" in both the grey and white matter. Dehydration of structures and the presence of what appear to be free nuclei and lysed glial cells are also disturbing.

Another important caveat to consider is that this study confirms the poverty of circulatory support provided by closed-chest cardiopulmonary resuscitation. Thumper support after cardiac arrest was grossly inadequate as indicated by low CO, EtCO₂ aMAP, and SaO₂ readings. Clearly, more effective means of circulatory support are needed to bridge the gap between pronouncement (cardiac arrest) and vascular access and the beginning of extracorporeal circulatory support.

While this study demonstrates substantial preservation of brain ultrastructure and histology, it also points out that much remains to be done before reversible brain cryopreservation can be achieved or there can be a high degree of confidence that the structures responsible for memory and personality remain sufficiently intact to allow recovery of cryopreserved patients on a reasonable time scale (50 to 150 years).

Electron Micrographs: Comparison of Canine Brain Cryoprotection using Differing Glycerol-Based Protocols

In June 1995 a paper evaluating the cryoprotection of canine brains was published on the sci.cryonics newsgroup (an archive of which is available at www.cryonet.org).

The paper by Michael Darwin, Sandra Russell, Paul Wakfer, Larry Wood, Candy Wood, and Steven B. Harris MD was subsequently summarized and excerpted in CryoCare Report issue number 4, dated July 1995. Electron micrographs which provided the primary data for the paper were included with explanatory captions and overlays identifying features of interest.

The captioned micrographs are reproduced here in two versions: 72 dpi for the web (this page), and 200 dpi in a [PDF file](#) (RIGHT CLICK and choose SAVE TARGET AS to download this 5 megabyte file). The PDF version is useful for printing or screen viewing up to 277% magnification. The higher-res images reveal considerably more detail.

Note that the versions published in CryoCare Report were scaled and cropped to fit the magazine layout. The versions here are reproduced at a uniform scale without any cropping, providing the closest possible fidelity to the

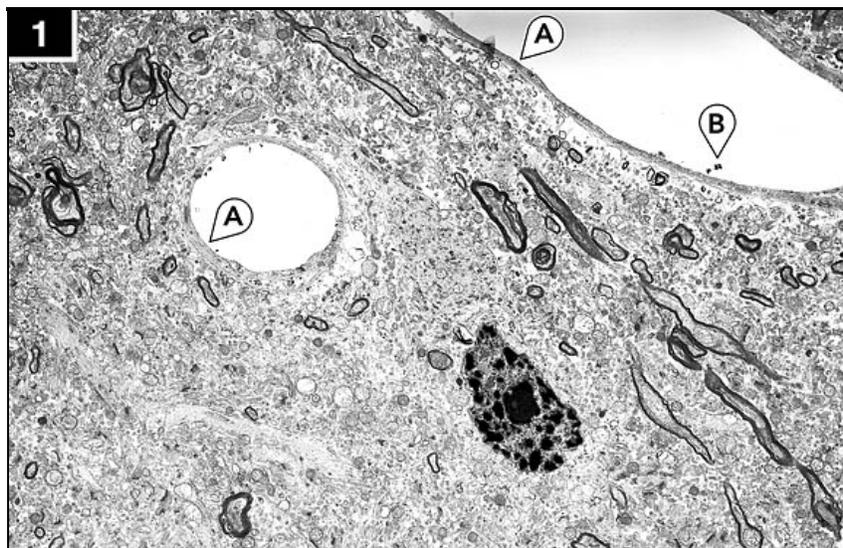
original electron micrographs, which were supplied as photographic prints.

The electron micrographs on these pages are from samples treated in three different ways.

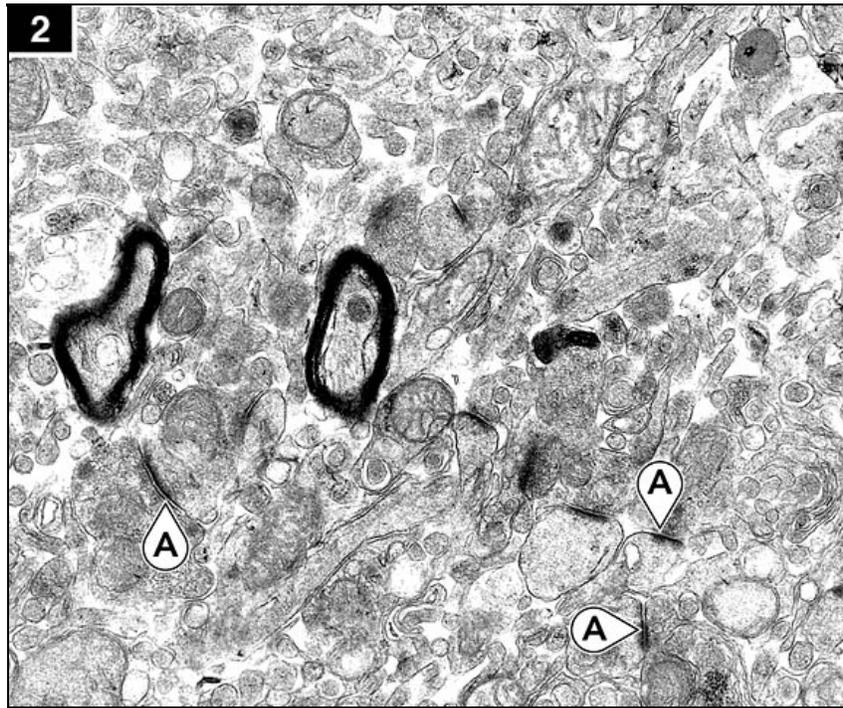
BioPreservation protocol. The canine brain was glycerolized to 7.4M, frozen to -90°C , maintained at this temperature for one year, then thawed and reperfused with glycerol containing fixative solution. The initial phase of this procedure is identical to that used by BioPreservation on human patients.

Simplified protocol. The brain was glycerolized to a lower level (4M) at a faster rate (700 mM/minute) before being frozen to -77°C for one week, thawed and reperfused with fixative. This simplified perfusion is NOT used by Bio-Preservation on its human patients but is similar to practices which were typical in cryonics up to the 1980s.

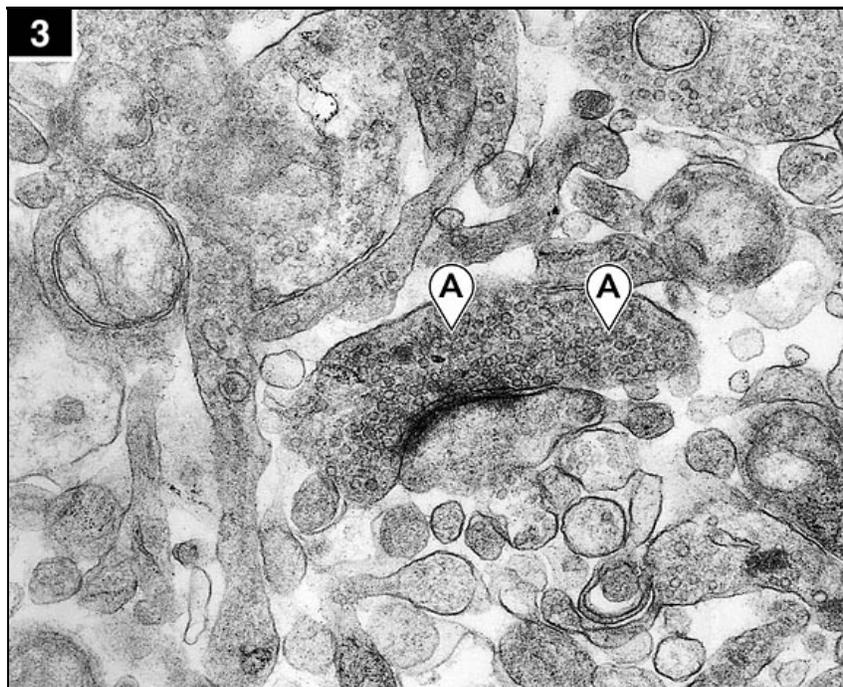
No perfusion or freezing. To provide control data, these samples were taken from anesthetized dogs that were perfused with fixative, not glycerol, and were not cooled at all.



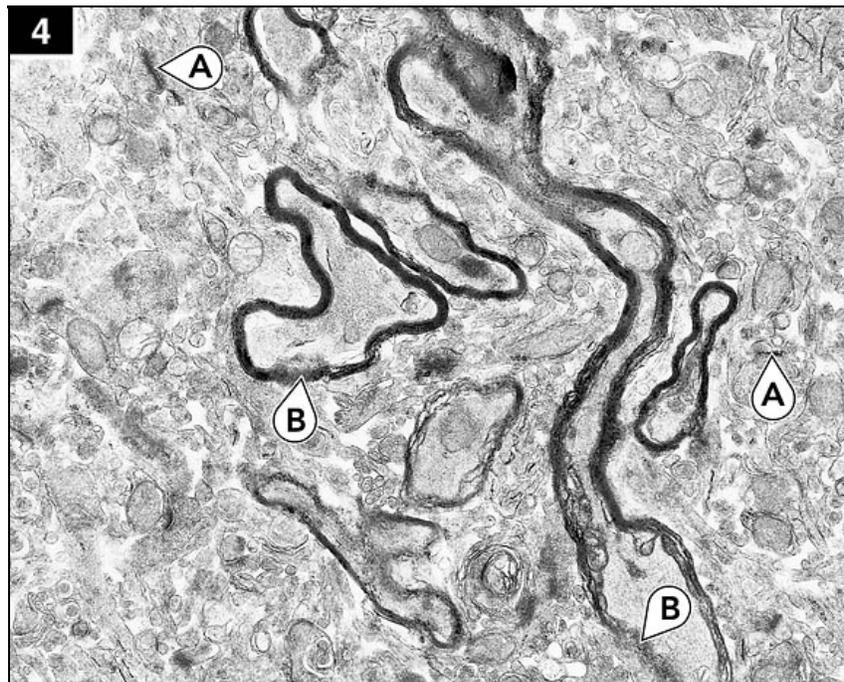
1. BioPreservation protocol. Typical appearance of gray matter at 6700x magnification. Note intact capillary endothelial cells (A) and particles of carbon (B) in the capillary lumens. The overall appearance of the neuropil and of the axons and neurons is excellent.



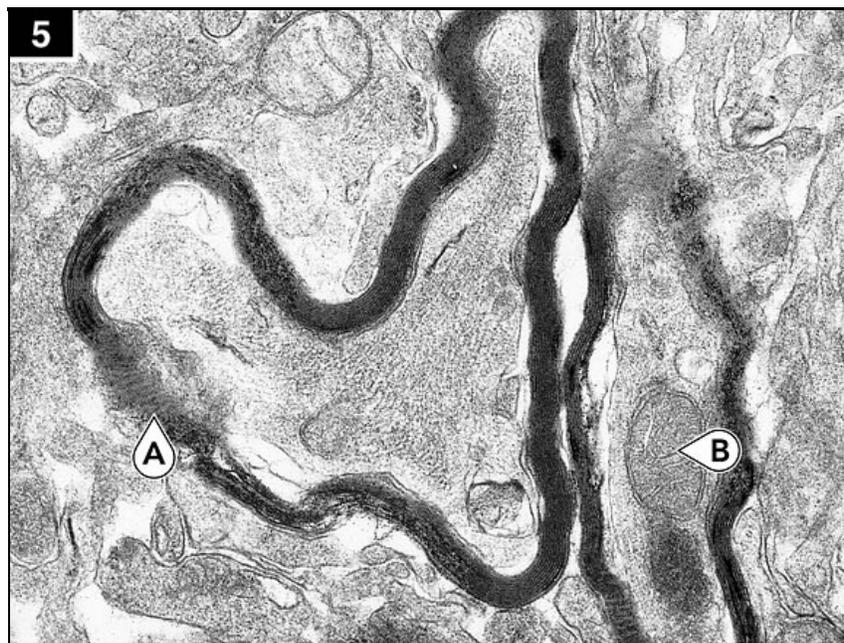
2. BioPreservation protocol. Neuropil in gray matter from the hippocampus at 35,500x magnification. Architecture of intracellular components, synapses (A), and neuronal membrane integrity are excellent.



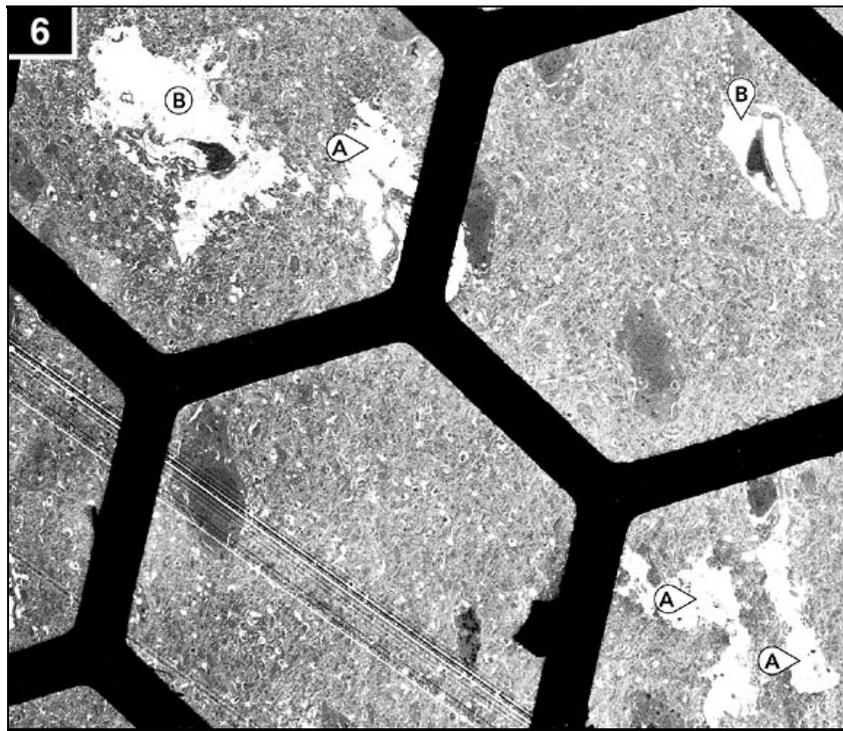
3. BioPreservation protocol. A synapse in gray matter from the hippocampus at 40,200x magnification. The presynaptic junction contains small packets of neurotransmitter (A) visible as granules. Note the overall crisp appearance of both the synaptic membranes and adjacent structures of the neuropil. This degree of preservation at the synaptic level was uniformly observed in all samples examined.



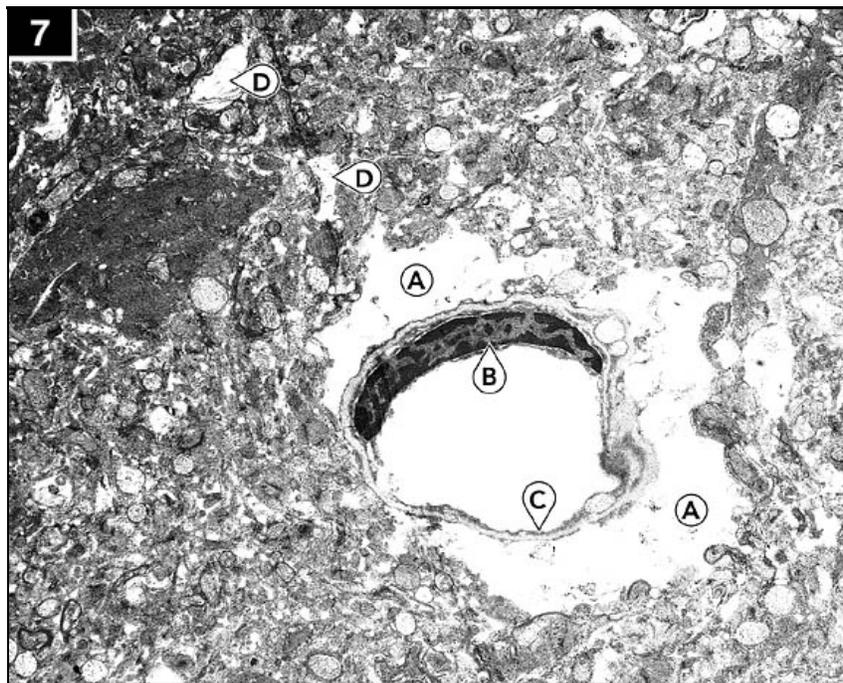
4. BioPreservation protocol. Gray matter from the hippocampus at 6700x magnification showing two of many synapses (A) and some defects in myelin (B). The axoplasm is intact, with good internal structure and overall high-quality appearance of the neuropil (weave of brain connections) by comparison with similar samples using the simplified protocol. The heavy, wiggly lines across the center of the picture are myelinated axons.



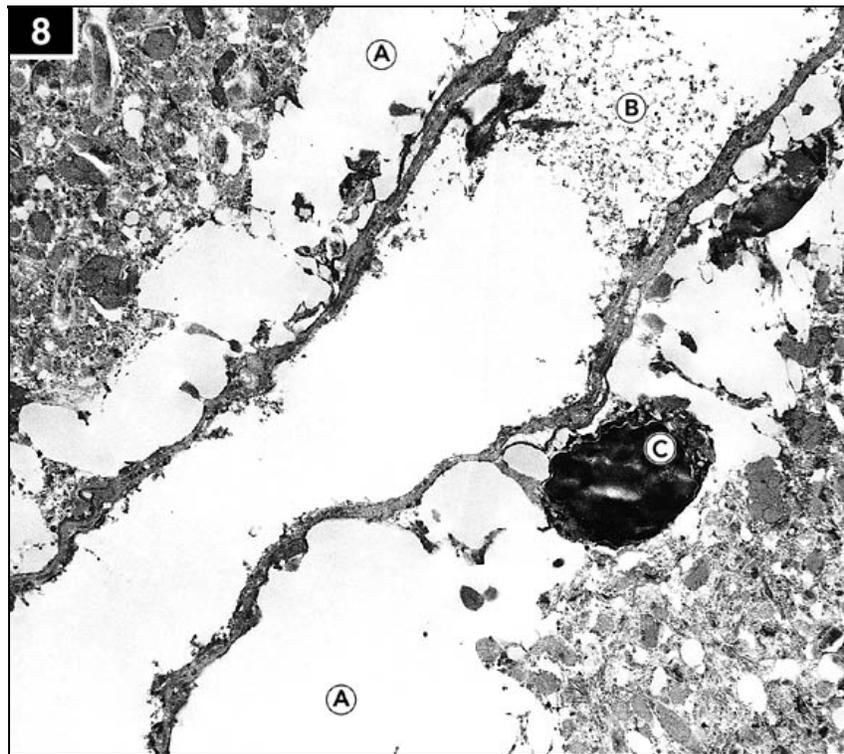
5. BioPreservation protocol. Closeup of the same area of gray matter at 40,200x magnification. Note that while myelin is injured (A), the axoplasm within the myelin exhibits excellent structural preservation and the membranous structure of the neuropil is intact as are intracellular organelle membranes. A mitochondrion (B) is visible.



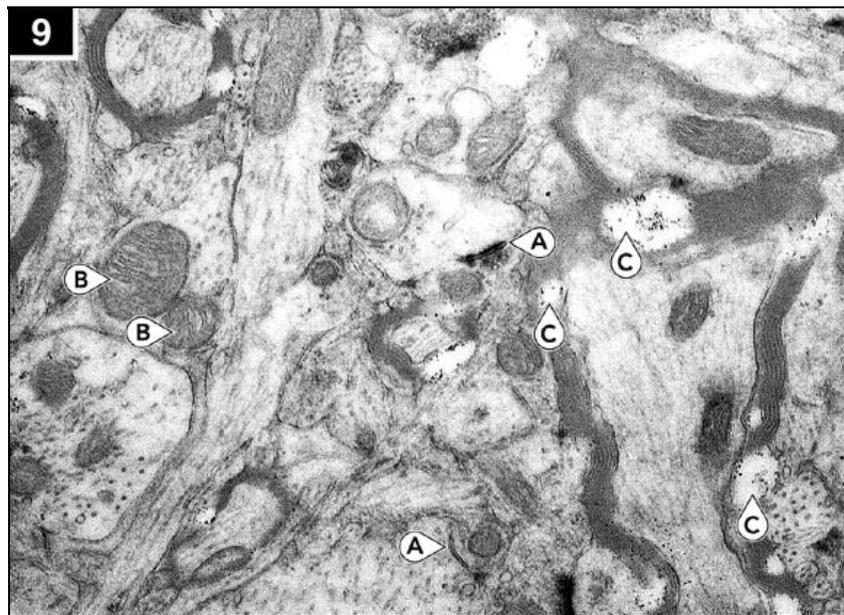
6. Simplified protocol. Hippocampus at 2000x magnification. The black hexagons are the copper grid on which the specimen rests in the electron microscope. Note the frequency of large ice holes or "tears" (A) in the neuropil and the uniform presence of pericapillary ice holes (B).



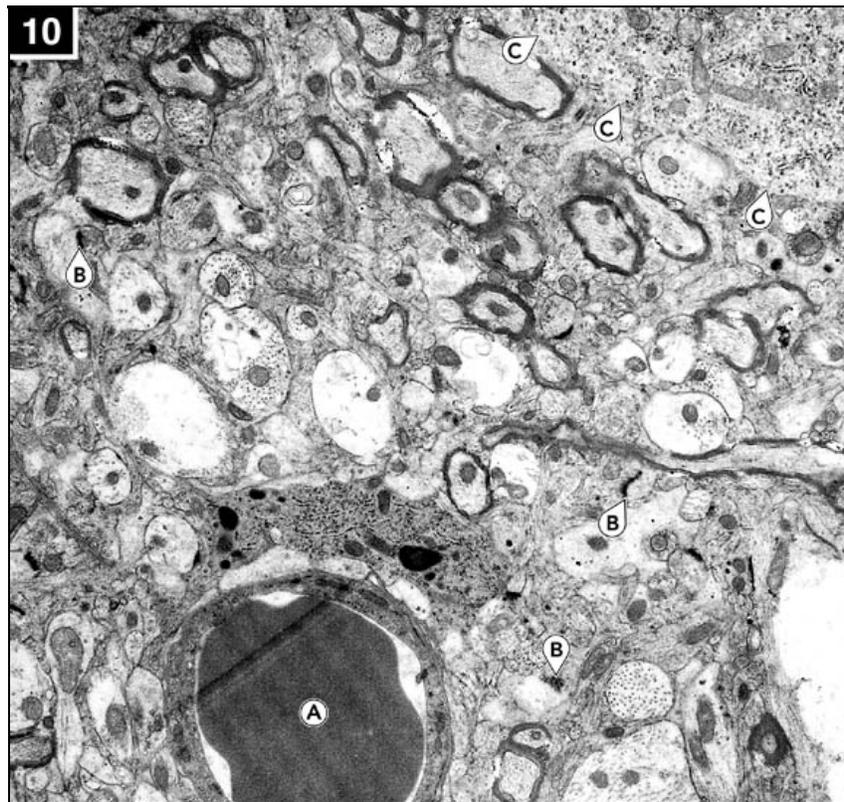
7. Simplified protocol. Gray matter from the hippocampus showing very poor reperfusion. A large pericapillary ice hole almost completely severs the capillary from the neuropil (A). The nucleus is denuded of cytoplasm (B) and the endothelial cell has lost its plasma membrane with only bits of cytoplasm clinging to the basement membrane (C). There are also ice holes (D) and a generalized loss of membranous structure with apparent reorganization into vacuoles. This kind of injury is typical of 4M brains prepared in this way.



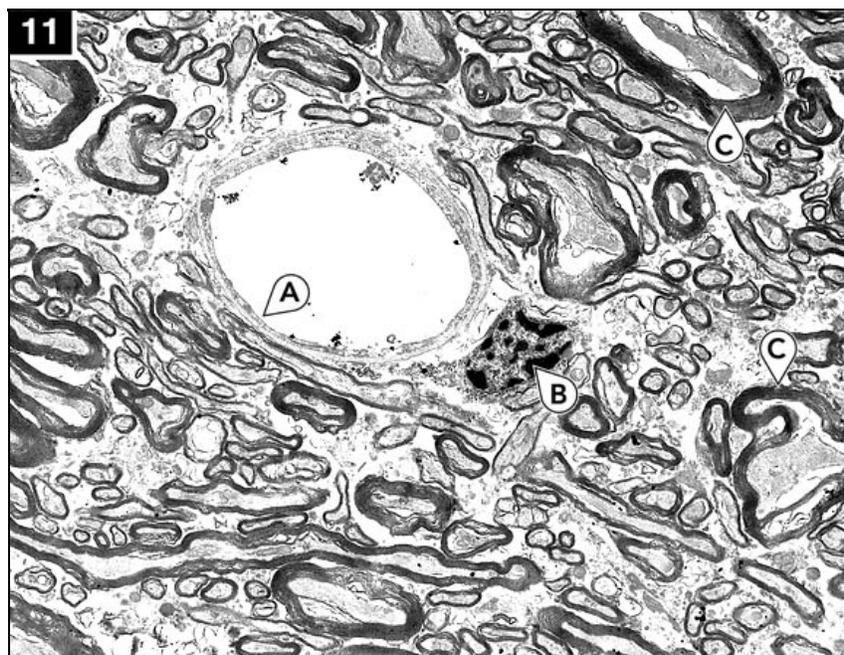
8. Simplified protocol. A badly damaged capillary at 9700x magnification. Two large tears (A) are visible, with debris scattered in the capillary (B). There is a naked nucleus (C) with no nuclear membrane, from a lysed cell.



9. No perfusion or freezing. Gray matter from the hippocampus at 40,000x magnification. Synapses are present (A) as are mitochondria (B). Interestingly, there are defects in the myelin of several axons even in this specimen from a control dog that was not frozen (C).

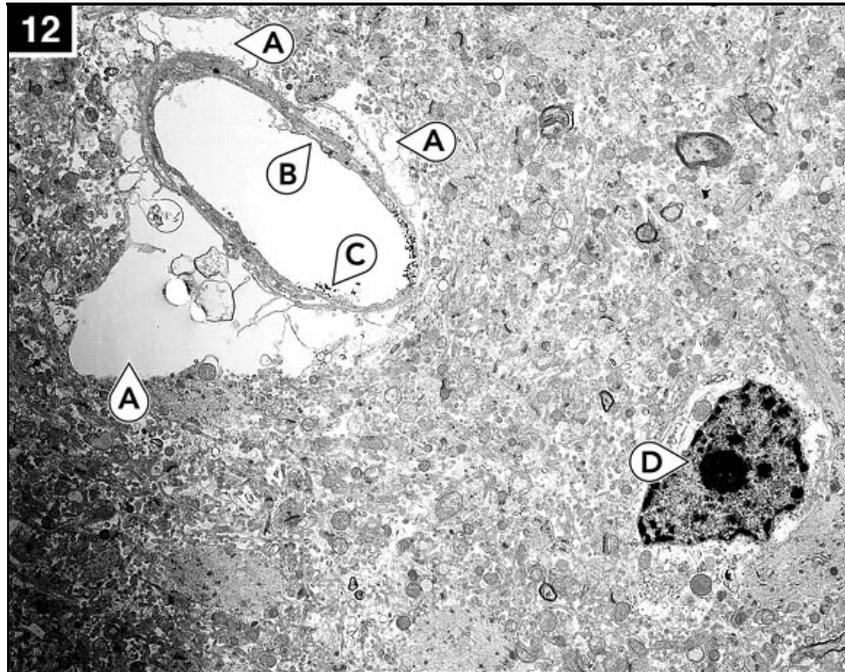


10. No perfusion or freezing. Gray matter at 15,000x magnification. Note the red cell (A) in the capillary. Lack of dehydration is evidenced by more fine structure in the neuropil and within the axons, lack of shrinkage of the axoplasm, and a more homogeneous character of the myelin. Many synapses are present (B). The boundary of a neuron is visible (C).



11. BioPreservation protocol. White matter from the corpus callosum at 6700x magnification. Note the excellent preservation of the capillary (A) and its endothelial cell plasma membranes. The nucleus (B) shows typical loss or reorganization of nucleoplasm; this is seen more frequently in frozen-thawed brains than in brains

just perfused with glycerol and fixed without freezing. Several axons (C) exhibit typical shrinkage of axoplasm and alteration in myelin structure. The increase in free space between axons and other structures is the result of glycerol-induced dehydration.



12. BioPreservation Protocol. The injury visible here was seen rarely in these samples. Note the presence of what appear to be pericapillary ice holes (A). The endothelial cell membranes of the capillary appear indistinct in several places (B) and there seem to be a few small "blebs" or vesicles of cell membrane material in the capillary lumen. The dark black specks (C) near the endothelial cells are carbon particles which were present in the fixative. Note also the peculiar pattern of injury to the cell nucleus (D) wherein it appears that nuclear material has been lost or rearranged. The nucleolus is also very shrunken.

EXHIBIT EE

PubMed

Display Settings: AbstractAnn N Y Acad Sci. 2004 Jun;1019:559-63.

The arrest of biological time as a bridge to engineered negligible senescence.

Lemler J, Harris SB, Platt C, Huffman TM.

Alcor Life Extension Foundation, 7895 E. Acoma Drive, Scottsdale, AZ 85260, USA. jlemler@alcor.org

Abstract

Biological systems can remain unchanged for several hundred years at cryogenic temperatures. In several hundred years, current rapid scientific and technical progress should lead to the ability to reverse any biological damage whose reversal is not forbidden by physical law. We therefore explore whether contemporary people facing terminal conditions might be preserved well enough today for their eventual recovery to be compatible with physical law. The ultrastructure of the brain can now be excellently preserved by vitrification, and solutions needed for vitrification can now be distributed through organs with retention of organ viability after transplantation. Current law requires a few minutes of cardiac arrest before cryopreservation of terminal patients, but dogs and cats have recovered excellent brain function after 16-60 min of complete cerebral ischemia. The arrest of biological time as a bridge to engineered negligible senescence, therefore, appears consistent with current scientific and medical knowledge.

PMID: 15247086 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms

Publication Types

Review

MeSH Terms

Aging*AnimalsBrain/pathologyBrain IschemiaCatsCold TemperatureCryopreservation/methods*DogsHumansMicroscopy, Electron, ScanningRabbitsSpecimen Handling*Temperature

Time Factors

LinkOut - more resources



Full Text Sources

Blackwell Publishing

Ovid Technologies, Inc.

Other Literature Sources

Labome Researcher Resource - ExactAntigen/Labome

Medical

Seniors' Health - MedlinePlus Health Information

EXHIBIT FF

PubMed **Display Settings:** AbstractCryobiology. 2004 Apr;48(2):157-78.**Cryopreservation of organs by vitrification: perspectives and recent advances.**Fahy GM, Wowk B, Wu J, Phan J, Rasch C, Chang A, Zendejas E.

21st Century Medicine, Inc., 10844 Edison Court, Rancho Cucamonga, CA 91730, USA. gfahy@21cm.com

Erratum inCryobiology. 2005 Jun;50(3):344.**Abstract**

The cryopreservation of organs became an active area of research in the 1950s as a result of the rediscovery of the cryoprotective properties of glycerol by Polge, Smith, and Parkes in 1949. Over the ensuing four decades of research in this area, the advantages of vitrification, or ice-free cryopreservation, have become apparent. To date, experimental attempts to apply vitrification methods to vascularized whole organs have been confined almost entirely to the rabbit kidney. Using techniques available as of 1997, it was possible to vitrify blood vessels and smaller systems with reasonable success, but not whole organs. Beginning in 1998, a series of novel advances involving the control of cryoprotectant toxicity, nucleation, crystal growth, and chilling injury began to provide the tools needed to achieve success. Based on these new findings, we were first able to show that an 8.4M solution (VMP) designed to prevent chilling injury at -22 degrees C was entirely non-toxic to rabbit kidneys when perfused at -3 degrees C and permitted perfusion-cooling to -22 degrees C with only mild additional damage. We next investigated the ability of the kidney to tolerate a 9.3M solution known as M22, which does not devitrify when warmed from below -150 degrees C at 1 degrees C/min. When M22 was added and removed at -22 degrees C, it was sometimes [corrected] fatal, but when it was perfused for 25min at -22 degrees C and washed out simultaneously with warming, postoperative renal function recovered fully. When kidneys loaded with M22 at -22 degrees C were further cooled to an average intrarenal temperature of about -45 degrees C (about halfway through the putative temperature zone of increasing vulnerability to chilling injury), all kidneys supported life after transplantation and returned creatinine values to baseline, though after a higher transient creatinine peak. However, medullary, papillary, and pelvic biopsies taken from kidneys perfused with M22 for 25min at -22 degrees C were found to devitrify when vitrified and rewarmed at 20 degrees C/min in a differential scanning calorimeter. It remains to be determined whether this devitrification is seriously damaging and whether it can be suppressed by improving cryoprotectant distribution to more weakly perfused regions of the kidney or by rewarming at higher rates. In conclusion, although the goal of organ vitrification remains elusive, the prospects for success have never been more promising.

PMID: 15094092 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances **Publication Types**

[Historical Article](#)

[Research Support, Non-U.S. Gov't](#)

MeSH Terms

[Animals](#)

[Cryopreservation/history](#)

[Cryopreservation/methods*](#)

[Cryopreservation/trends](#)

[Cryoprotective Agents*](#)

[History, 20th Century](#)

[Kidney*](#)

[Kidney Transplantation](#)

[Organ Preservation/methods*](#)

[Organ Preservation/trends](#)

[Perfusion](#)

[Rabbits](#)

[Temperature](#)

[Time Factors](#)

[Tissue Survival*](#)

Substances

[Cryoprotective Agents](#)

LinkOut - more resources

Full Text Sources

[Elsevier Science](#)

Other Literature Sources

[Labome Researcher Resource - ExactAntigen/Labome](#)

EXHIBIT GG

From Alcor News Number 11, March 23rd, 2003

Case Summary: Patient A-1234

by Charles Platt

At the end of February this year we initiated a brief standby for A-1234, an elderly woman in Southern California (whose signup documents requested confidentiality). Although she was suffering from severe circulatory problems and had been admitted to an ICU with pneumonia, she managed to recover, and we discontinued our standby. Subsequently she relocated in a nursing home in Hollywood.

On Saturday March 22nd at 8:02 AM Mountain Standard Time a staff member at the nursing home found that A-1234 had suffered cardiac arrest. Attempts to revive the patient were unsuccessful, and the nurse called Alcor's emergency number at approximately 8:15 AM. (All times in this report are in MST, which is one hour later than Pacific time during the winter months.)

Dr. Jerry Lemler contacted me at my home in northern Arizona around 8:20 AM and said he would coordinate activities in Scottsdale while I would organize the Southern California response. I telephoned one of our California coordinators, Bobby June, who was not entirely happy to be woken since he had been up partying for most of the night. Still, he tackled the task of finding a van that we could rent to transport the patient to Arizona. I was worried that renting the vehicle might be the most time-consuming task in the transport operation. This concern turned out to be correct.

I called our other Southern California coordinator, Todd Huffman, who had been planning to go snowboarding with a friend and had already started driving out of Los Angeles. He promptly changed his plans and returned home to grab a backup meds kit. Next I checked my map of Southern California volunteers and found that Peter Voss was located closest to the nursing home. Peter was awake and ready to respond. He left his house to retrieve our primary standby equipment from its storage location before continuing to the nursing home.

Alcor's paramedic Larry Johnson, in Phoenix, tried unsuccessfully to contact A-1234's son, an Alcor member possessing durable power of attorney for health care for the patient. Under California law the nursing home could refuse to release the patient without signed consent from the next of kin, and the son was the only person who could provide this. Since he was probably 60 miles away and is legally blind, I didn't know if it would be physically possible for him to reach the nursing home and sign a release within a short time. However, after I asked our California mortician Joe Klockgether to discuss this situation with staff at the nursing home, they agreed to waive the requirement for a signed release. Mr. Klockgether also had a copy of the death certificate which we had prepared in advance when we arranged the standby for the same patient at the end of February.

In the meantime the nurse who had discovered A-1234 had injected heparin, had administered chest compressions, and had placed ice around the patient. Peter Voss had collected our kit and was on his way, and Todd Huffman would soon be joining him.

The patient's son received our messages and called me, and I told him the news about his mother. He seemed

calm but said that the death had come as a surprise, since his mother's health had been improving during the past couple of weeks.

By 10 AM our team members were at the nursing home and I asked Larry Johnson to give instructions via the phone to Todd Huffman regarding medications. (Larry had considered flying to Los Angeles himself, but clearly he would have been unable to get there in time.) Larry described to Todd the technique for putting the patient in the Trendelenburg position, which causes the external jugular veins to become distended. This enabled Todd to place an IV line. It was then relatively easy to push the various medications that we use to mitigate ischemic injury.

I checked back with Bobby June, who was having difficulty finding a truck that we could rent. Trucks often tend to be in short supply for last-minute rentals on a weekend, because this is when many people move personal possessions. Finally Bobby found a truck that was available reasonably close to the nursing home. Peter went to collect it while I conferred with our medical advisor, Dr. Steve Harris, regarding the option of doing a washout before the patient was moved to Arizona.

Intravenous cooling is many times faster than cooling by external application of ice or icewater, and for each 10-degree (Celsius) reduction of temperature, we halve the metabolic rate. If a patient's temperature is reduced from 35 (close to normal) to 5 (our terminal target value), theoretically we reduce the rate of ischemic injury by a factor of eight.

On the other hand, I realized that in order to perform the washout our transport team would have to leave the Interstate highway, find the lab where our surgical team consisting of Steve Harris, Sandra Russell, and Joan O'Farrell were located, wait for the procedure to be completed, and then drive back to the Interstate and continue to Arizona. Depending on how much difficulty our surgeons might have in obtaining vascular access, I estimated that the detour could cost us three hours. Since the patient's temperature was already down to 21 degrees (measured via a nasopharyngeal probe which had been placed by team members at the nursing home), we were already halfway from normal body temperature to the target terminal temperature. With concurrence from Steve Harris I decided that it would make better sense for the patient to go straight to Arizona, packed in ice, with occasional chest compressions along the way.

I called Alcor Central and told Jerry Lemler that the patient's probable arrival time would be between 6 PM and 7 PM. He suggested that I didn't need to come to the operating room myself, since he had assembled adequate staff for the procedure.

The patient entered the facility at 7:02 PM with a probe temperature of 4.1 degrees Celsius. When I called Alcor at 8:30 PM I was told that neuroseparation was complete and perfusion had begun. I was very relieved to learn that no one could find any evidence of blood clotting. Todd Huffman can take much of the credit for this by having managed to place the IV and administer heparin and streptokinase, in response to the valuable instructions from Larry Johnson. Another fortuitous factor is that the patient had been taking Coumadin, an anticoagulant medication, before she died.

No edema was visible, and despite a moderate flow rate, by 11:30 PM the patient exceeded the concentration of cryoprotectant necessary to vitrify. We can regard this as a successful case, especially since it occurred with no prior warning. Less than eleven hours elapsed from the moment when we received the emergency call to the time when the patient arrived at our facility. Our only concern is that the time of death remains unknown, since nursing

homes typically do not monitor patients constantly. It is possible that A-1234 arrested several hours before she was found at 7:02 AM.

The question of whether to take time for washout and intravascular cooling of California patients during the transport phase remains unresolved. Clearly the procedure is necessary when a patient is located farther away and we want to achieve rapid initial cooling prior to a relatively lengthy transport. Washout is also advisable if the patient has a higher initial temperature, has been collected by a mortuary service, or is close to the location where the procedure can be done. But when our own team members have collected the patient without any paperwork problems and can reach Alcor from Los Angeles in less than seven hours, the simplicity of this option is attractive.

Once again we thank our Southern California team for performing outstandingly at short notice. We regret the loss of A-1234, a longtime Alcor member who would have been 83 next month and showed great courage and tenacity in dealing with her health problems. We're thankful that she opted for cryopreservation, and hope that her decision will be justly rewarded in a future world where death and aging are no longer regarded as inevitabilities.

EXHIBIT HH



Former Alcor Employee Makes Harsh Allegations Against Cryonics Foundation

Alcor Life Extension Foundation Denies Claims, Calls Accusations 'Exaggerations and Misrepresentations'

By **BOB WOODRUFF, JAMES HILL and SARAH HODD**

Oct. 7, 2009—

It's a practice that appeals to some people but disturbs many others: freezing the deceased in the hope that science and medicine will progress to the point where it's possible to raise them from the dead. It's called cryonics, and the Alcor Life Extension Foundation is the world leader in the field, according to its Web site.

Larry Johnson worked at Alcor for eight months. Afterward, Johnson revealed to the world some rather unsettling news about the late, great U.S. icon Ted Williams, primarily about the preservation of his corpse, in two parts -- his body and his decapitated head.

Now, after six years of silence, Johnson has emerged with more accusations about the singularly strange world of cryonics at Alcor in his book, "Frozen: My Journey Into the World of Cryonics, Deception and Death." These accusations, Johnson claims, make him "cryonics enemy No. 1."

And for the last three months of his employment at Alcor, Johnson said, he secretly wore a wire to record his conversations, took photographs and collected scores of internal documents not only about Williams but also what he claims is evidence of careless and highly questionable behavior regarding cryonics at Alcor.

"This stuff was so weird, so outlandish, so unbelievable, and it's like, I wanted to know more. I got addicted to it," he said. "People need to know what the hell is going on there."

'They Know I've Got Them on Tape'

Alcor has declined to respond to specific questions for this story but, in a statement released this week, accused Johnson of "exaggerations and misrepresentations," and the company has twice gone to court in an attempt to silence Johnson, calling him a "profiteer in the most heinous sense" in papers filed this week.

UPDATE: Alcor's written response to last night's Nightline report can be found here:

<http://www.alcor.org/press/response.html>

Johnson said, "They know I've got them on tape. What they don't know is what I have on tape. ... I am a threat to their future. I am a person that they need to get out of the way."

For more than 30 years, the Alcor Life Extension Foundation of Scottsdale, Ariz., has been freezing the dead, preserving the bodies (or often just the heads of its members) at ultra-cold temperatures -- 321 degrees below

zero. Someday, it believes, medical science will be able to cure what killed them, and they can be thawed and brought back to life. Throughout its history, the nonprofit company has largely been shunned by the medical community.

Johnson, a certified paramedic who claims more than two decades experience, said that as part of the medical community, "I was ... someone who could speak the lingo, so when they go into some of these hospitals to get some of their members out of there, they didn't come across as so odd."

He took a job at Alcor in 2003 -- six months earlier, the company had come under intense scrutiny during the public battle over the remains of Williams, the baseball Hall of Famer.

Within hours of Williams' death, his body was to be flown to Alcor's facility in Arizona to be frozen at the request of Williams' son, and over the objection of his oldest daughter, Barbara Joyce Ferrell.

When a body is brought into Alcor's facility, the patient's blood is pumped out and replaced with a chemical concoction to minimize freezing damage. In many cases, the head is separated from the body with the member's prior consent. Johnson said he began to grow uneasy about his new employer once he saw what went on in Alcor's operating room, where he witnessed three suspensions.

"It was barbaric ... the third suspension that I witnessed, they actually used a hammer and a chisel," he said. "I actually witnessed them remove her head with a chisel and a hammer."

Johnson Claims One Client Helped to Death

Johnson said his concern grew when he was told about an incident that took place in the hills above Los Angeles in 1992. Alcor had received word that Alcor member A-1260, a 39-year-old man suffering from AIDS, was very near death and stopped all his medications. According to a lengthy summary of the case on Alcor's Web site, a response team was assembled at the home of the man and his partner, a makeshift operating room was constructed in the home's garage and the team waited two days for the man to die.

Johnson claimed he was told that an experienced Alcor-contract employee had grown impatient, and allegedly injected the dying man with a potent muscle-relaxant that stopped his breathing and may have hastened his death.

It was at that point, Johnson said, that he "went into whistle-blower mode" and started to wear a wire and record conversations at the company.

Johnson gave ABC News a recording of a conversation he claims is with a longtime Alcor employee who had been present at the home of the patient.

Johnson: Yeah, [---] was telling me the other day about an incident involving [an Alcor employee] where I guess he kind of helped someone along a little bit.

Alcor employee: Yeah.

Johnson: What, who was the patient?

Alcor employee: You'll excuse me if I don't name names.

Johnson: That's OK.

Alcor employee: We had to carry him. Got him onto a gurney and took him up the street to the garage and got him tucked in. And we waited. And we waited quite a while. He was not very far from dying.

Johnson: So did [a longtime Alcor employee] just get impatient and --

Alcor employee: Well, it's a little hard to determine what the hell [his] reasons were. There's the real reasons and then there's reasons he gave ... Plus there were other considerations, too. Traffic was a problem. ... Anyway, so [he] asked [another party] for some metubine iodide.

Alcor employee: Some what?

Alcor employee: Metubine iodide.

Johnson said, "I knew exactly what that drug was and what it did. I wanted to hear him identify the drug."

Alcor employee: And [the Alcor employee] gave it, and after about seven or eight minutes he quit breathing, which was entirely to be expected. ... It wasn't anything that wasn't going to happen, but -- and we did beat the traffic.

Johnson also provided ABC News with another recording, which, he said, is with a company executive, indicating the allegation seemed to be well-known at the highest levels of Alcor.

Alcor executive: We just can't do stuff like that. That would absolutely destroy us. That could kill us.

Johnson: Yeah.

Alcor executive: We're pretty secure in all this stuff because even though a lot of people nowadays know about it, nobody can really prove anything and if it came down to a court issue, you know, who's going to say anything? Who's going to admit anything?

Johnson: Yeah.

Alcor executive: And it's deniable.

"Nightline" received a call Tuesday from a man who identified himself as Ron Hennes. Hennes said he was the nurse caring for the patient in question at the time of his death. He said he had never worked for Alcor, and that the patient's death occurred in the man's bedroom with only Hennes and the patient's partner present at the bedside.

He told "Nightline" that nobody injected the patient with anything that hastened his death.

But Alcor's CEO at the time, Carlos Mondragon, told ABC News that the allegation that the patient's death was hastened was brought directly to him, and that his response was to cut Alcor's ties with the employee accused of administering the injection.

Ted Williams, Alcor Member A-1949

Johnson also set out to reconstruct the story of Alcor's most famous frozen resident -- and Johnson's admitted childhood hero -- Ted Williams. By the time Johnson began work at Alcor, "Teddy Ballgame" had been on ice for half a year.

"They put his head into a vessel called the Cryo-star, which is really not meant for freezing human heads, OK? It was faulty, they didn't know how to use it ... it was having very dramatic temperature swings."

Johnson said Williams' head remained in a malfunctioning machine for more than a year, and claimed he recorded this conversation about the Cryo-star:

Alcor official: ... We're not actually supposed to use that to put any human heads in it because they never really had time to test it very much.

Johnson: Right.

Alcor official: We're supposed to be doing some testing on it.

In one of the most potent allegations in Johnson's book, he said Alcor cut off Williams' head without prior approval from his family.

"He was supposed to be a whole-body suspension," Johnson said. "He was supposed to be in one piece. They got him to the O.R. at Alcor and proceeded to cut through his neck."

But, in this instance at least, Johnson's version seemed to be incorrect. ABC News found notarized agreements, signed by Williams' oldest son and youngest daughter allowing Alcor the option of removing their father's head. The papers were signed in Florida just after 9 p.m. ET -- at least an hour before the operation began in Arizona, according to the log Johnson cites in his book.

Johnson said he was going by what he had been told.

In a statement posted to its Web site, Alcor says: "Ted Williams was cryopreserved with the care and scientific rigor that Alcor devotes to all its patients," and that "it is absurd for Johnson to make these allegations because he had yet to be hired when Williams was cryopreserved."

But Johnson said he was there in July of 2003 when Alcor determined it was time to move William's head into its permanent home.

"They put him in another vessel called the LR-40. ... They take a tuna can, a Bumble Bee tuna can, they set it down on the bottom of the LR-40. ... They put his head into the LR-40, set it on the tuna can. Without that tuna can, the head would just topple over."

The next day, Johnson said, he watched in horror as an Alcor employee moved the head into the silver pot that would store it for years to come.

"They actually carry the heads around on hooks to move them from one point to another," he said. "Well, the tuna can is frozen to the top of his head. The only way to get that off is with a hammer or a wrench ... gets a wrench, cocks his arm back to strike that can to knock it off, misses, and hits the side of Ted Williams' head. Then he cocks back, takes another strike, hits the can square on. It goes flying across the room."

Johnson gave ABC News an e-mail he said was sent to the Alcor staff later that afternoon, announcing matter-of-factly that "A-1949 is now in permanent storage."

In yet another statement posted to its Web site, Alcor denied "mistreating the remains of Ted Williams." Johnson said, "that incident was the turning point for me. I had to get out of there."

'Scared Beyond Belief'

Johnson left Alcor in August of 2003, and took his story to Sports Illustrated, which spread the lurid tale across seven pages. But he also took to the Web with a site called Freeted.com, seriously damaging his own reputation by briefly offering viewers a "pay-per-view" pass to see gruesome photos of Alcor's procedures.

Johnson said he charged \$20 to see the photos, and "it was a very bad decision. I was freaked out. I was scared beyond belief."

Johnson took his allegations about the suspicious 1992 death to the Los Angeles Police. He said they "played the tapes, they shook their heads, they couldn't believe it."

An investigation was launched but no charges were filed.

Johnson took the evidence he collected about Williams to his daughter, Barbara Joyce Ferrell, who had opposed the freezing of her father -- but it was too late. Ferrell had long since settled the dispute.

"I have done what I believe is the right thing," Johnson said. "I have exposed them to the authorities. Nothing has been done. The general public needs to know what is going on in that facility. People who are considering their services, probably ought to read this book first."

And, while the Alcor members frozen here hope to meet again, perhaps in hundreds of years, one thing seems sure: Larry Johnson and Alcor seem destined to meet again much sooner than that -- in court.

Official statement by the Alcor Life Extension Foundation in regard to the publication of "Frozen: My Journey into Cryonics, Deception and Death":

This book is the worst kind of scandalous tabloid muckraking. In the interests of the members of Alcor and the community of scientists with whom we work, we cannot respond regarding the many lurid and fictitious assertions in this book while we are at the inception of serious legal action to protect the future of our work and the privacy of our members. Information about our actual procedures and why we do them is available on our comprehensive website at www.alcor.org.

More detail on Alcor's response can be found here: <http://www.alcornews.org/weblog/>

Copyright © 2013 ABC News Internet Ventures

EXHIBIT II

Thermo Scientific Harris Cryostar® Cryogenic Series

> *Using a unique single compressor refrigeration system, our Cryostar storage freezers maintain uniform -140°C or -150°C temperatures without the expense or inconvenience of liquid nitrogen.*



Alarm System Highlights

- Adjustable safety alarm with automatic, continuous-charge battery backup provides full alarm function in case of power failure
- Exterior alarm contacts connect to remote monitoring system

Control System Highlights

- All setpoints adjustable in 1°C increments
- CryoLogic microprocessor control system features touch-pad data entry and digital display of all functions

Construction Highlights

- Insulated sub-lids on chest models minimize exposure during lid openings
- Minimum 5" (128mm) high density, foamed-in-place urethane insulation is closed-cell and CFC-free

Uniformity Comparison

Our Cryostar freezers maintain a uniform -140°C or -150°C temperature at all levels of the cabinet. All samples are maintained below the critical -130°C glass transition temperature of water. By comparison, storage temperatures in liquid nitrogen vapor exhibit a temperature gradient related to elevation above the liquid source; cell viability may be effected by storage location.

Typical Applications

- Fungi (Hyphae)
- Hybridomas
- Yeast
- Infected Cells
- Protozoa
- Plasmids
- Algae
- Phage Libraries
- Plant Cells
- Stem Cells

Cryostar® Series -140°C Chest Freezers

Model No.	Capacity Cu Ft (L)	Electrical	Amps/ Breaker (Plug)	Interior Dimensions HxWxD inches (mm)	Exterior Dimensions HxWxD inches (mm)	Shipping Weight lbs (kg)
QCX-10140-D	10.3 (292)	208-230V/60Hz 1Ø	20/30 (PG)	35.5 x 19.0 x 26.5 (890 x 480 x 670)	69.0 x 29.0 x 42.75 (1760 x 740 x 1090)	1065 (483)
QCX-10140-E		208-230V/60Hz 3Ø	16/20 HW*			

Cryostar® Series -150°C Chest Freezers

Model No.	Capacity Cu Ft (L)	Electrical	Amps/ Breaker (Plug)	Interior Dimensions HxWxD inches (mm)	Exterior Dimensions HxWxD inches (mm)	Shipping Weight lbs (kg)
QCX-7150-D	6.9 (195)	208-230V/60Hz 1Ø	20/30 (PG)	23.5 x 19.0 x 26.5 (590 x 480 x 670)	57.25 x 29.0 x 42.75 (1550 x 740 x 1090)	825 (374)
QCX-7150-E		208-230V/60Hz 3Ø	16/20 HW*			

* No plug provided; requires hard wire connection by customer.



Temperature Recorders

All 6" (150mm) circular chart, 7-day temperature recorders use pressure-sensitive chart paper; one box of 50 charts included.

- No inking is required
- Built-in, panel-mounted recorders are factory installed (specify when ordering)
- Free-standing recorders are customer installed

Temperature Recorder - 6 chart, 7-day chart drive

6183-5	Built-in, factory installed (<i>specify when ordering</i>)
6183-6	Built-in, factory installed (<i>specify when ordering</i>)
6283-5	Built-in, field installed
6283-6	Built-in, field installed
6383-5*	Free-standing, customer installed
6383-6*	Free-standing, customer installed
6185**	Chart paper, temperature range +50°C to -115°C
7289**	Chart paper, temperature range 0°C to -200°C

Freezer

-140°C and -150°C Freezers
-86°C and -40° C Freezers
-140°C and -150°C Freezers
-86°C and -40° C Freezers
-140°C and -150°C Freezers
-86°C and -40° C Freezers
-86°C and -40° C Freezers
-140°C and -150°C Freezers

* Customer must indicate voltage **Package of 50

Backup Systems

Backup Systems inject liquid CO₂ or LN₂ on demand when cabinet temperature warms to a pre-set level

- Built-in backup systems are available on HLT, DLT and SLT models only
- All ELT models require a free-standing backup system
- Liquid flow is shut off automatically when the freezer door or lid is opened
- Activation setpoints are adjustable in 1°C increments, to -75°C for CO₂ and -150°C for LN₂
- The control module digital display shows actual temperature when button is pushed
- An indicator light glows when activated
- The system operates on a continually recharged battery and includes all hardware except the supply cylinder

Backup Systems

6594*	CO ₂ backup system (<i>built-in factory installed, specify when ordering</i>)	-86°C and -40°C Freezers Only
6595*	LN ₂ backup system (<i>built-in factory installed, specify when ordering</i>)	-86°C and -40°C Freezers -140°C and -150°C Freezers
6593**	CO ₂ backup system, free-standing (<i>customer installed; specify when ordering</i>)	-86°C and -40°C Freezers Only
6214**	LN ₂ backup system, free-standing (<i>customer installed; specify when ordering</i>)	-86°C and -40°C Freezers -140°C and -150°C Freezers

* Not available on 3.1 cu.ft. (88 liter) chest models. ** Customer must indicate voltage

6402 Surge Suppressor

Protects refrigeration system and controls against voltage surge. Freezer model number and voltage must be specified when ordering. Requires field installation by a qualified electrician or factory authorized service center.

6903 Alarm Delay Module

The alarm delay eliminates nuisance alarms due to intermittent or transitory conditions such as lightning or brief power outages. The adjustable delay requires an alarm condition to exist continuously for a pre-determined time (adjustable) before a signal is released to a central alarm/monitoring system or telephone dialer.

6224* Deluxe Electronic Remote Alarm

The Thermo Scientific Harris Deluxe electronic remote alarm can be programmed to sound an alarm in the event of a temperature increase or power failure.

- The alarm can dial up to four telephone numbers
- Advises of an alarm condition across any telephone system which accepts pulse dialing
- One system can monitor up to four individual freezers or up to three groups of freezers.

Integrated alarm is not available on the 13 cu. ft. ELT freezer; factory installation only.



To place an order call 1-866-984-3766

Digital Temperature Monitor

Simple, accurate and cost-effective, our Harris digital temperature and power monitor provides both alarm/monitoring and digital temperature display in a single, self-contained unit. Standard features include high alarm, alarm mute and chirp, audio delay timer, remote alarm contacts (SPDT), nicad battery backup, and low voltage AC power supply, 120V, AC.

Digital Temperature Monitor Specifications

Catalog No.	Digital		Microprocessor-Based		
	6898	6899	6900	6901	6902
Input Channels	1	1	2	3	4
Temperature Range	← 100°C to +25°C →				
Display and Setpoint Resolution	1°C	1°C	0.1°C	0.1°C	
Temperature Alarm	high only		high and low		
LCD Alphanumeric Display			8-character, back-lit, adjustable		
Visual Alarm			green=normal; red=deviation		
Solid-state Probe Lead Wire	8 foot Teflon®	8 foot 24 gauge	20' Teflon®, color-coded		
Relay Delay	n/a		programmable, 0-30 minutes		
Alarm/battery Test Switch	n/a		standard		
Mounting Method	Velcro®		Bracket		
Case Dimensions	5" L x 4.5" W x 2" D 130 mm x 110 mm x 50 mm		6.25" L x 3.25" W x 2" D 160 mm x 80 mm x 50 mm		

6405 RS-232 Data Port and Software

For microprocessor-based SLT freezers only, standard on DLT models. Allows computer monitoring of freezer performance.

4706 4-20 Milliamp Output

6105 Cabinet Pass-Thru Port

Each Thermo Scientific Harris ultra-low and Cryostar freezer includes two 1" diameter (25.4mm) pass-thru ports as standard equipment. Additional ports for probes, cables, leads or measuring instruments may be added. Additional ports are 1" diameter (25.4mm).

Stainless Steel Interior

An optional stainless steel interior may be substituted for the standard powder painted interior; (excludes Super Insulation models) *specify when ordering.*

Cabinet Size, cu.ft. (liters)

6121	3.1 (88) chest	6126	20.5 (581) chest
6122	6.8 (193) chest	6179	13.4 (379) upright
6123	10.3 (292) chest	6180	17.2 (487) upright
6124	13.7 (388) chest	6181	20.2 (572) upright
6125	17.1 (484) chest	6145	24.4 (691) upright

Thermo Scientific LabCooler™ Cryopreservation Modules

Modules are useful in providing nominal control over pulldown during initial freeze cycles and maintaining temperature stability of stored samples in vials during handling.

- LabCooler and LabCooler Lite preservation modules are designed to freeze mammalian and insect cells with greater control over pulldown freezing prior to storage in an ultra-low freezer

6742	LabCooler Cryopreservation Module	Holds 32 standard vials
6743	LabCooler Lite Cryopreservation Module	Holds 7 standard vials; includes a clear, interlocking top to allow viewing of contents
6745	LabCooler Lite Benchtop Cooler	Holds 7 standard vials; includes a clear, interlocking top to allow viewing of contents

Cryo Gloves

Suitable for use with ultra-cold surfaces, Cryo Gloves protect hands and arms when inserting or removing inventory.

- Layered material is specially selected for high insulation value with ample dexterity
- Mid-arm style is available in sizes medium or large

4425	Medium	4426	Large
-------------	--------	-------------	-------



EXHIBIT JJ

Alcor Life Extension Foundation Delivers Williams Documents

PHOENIX, Ariz. (December 20, 2004)...Joe Waynick, Chief Executive Officer of Alcor Life Extension Foundation announced today that the Foundation has delivered all documents pertaining to Ted Williams, in accordance with a recent order of a Maricopa Superior Court, to the plaintiffs, Ted and Sam Williams. The final order of the Court was handed down on November 30 and, according to Waynick, the Foundation met with legal counsel to assess its options, ultimately deciding not to appeal the Court's decision.

"Alcor is dedicated to preserving the confidentiality of our patients if they so request, or if requested by family members," said Waynick. "Our goal in this matter was to respect the wishes of Mr. Williams, his children, and his personal representative. We realize, however, that the publicity associated with this case has already affected the privacy wishes of the family such that we now believe the family will not be able to enjoy privacy again until the documents are released and the matter put to rest."

Waynick stressed that the Court's decision applies only to the Williams matter and the Foundation will continue to work to protect the privacy concerns of its members and their families.

For the sake of clarification, the documentation mentioned in the above press release was delivered to plaintiff's attorney in Phoenix, Arizona.

About Alcor Life Extension Inc.

The Alcor Life Extension Foundation, a nonprofit organization founded in 1972, is the world leader in cryonics, and cryonics research and technology. Cryonics is the science of using ultra-cold temperatures to suspend and preserve human life. The intent is that technologically advanced scientific procedures will one day be available to revive cryopreserved humans and restore them to good health.

The promise of cryopreservation has taken a quantum leap forward with the ongoing development of molecular nanotechnology and the introduction of vitrification to Alcor's protocols.

One use of nanotechnology is the expectation that cell-sized machines will be developed to repair damage or cure disease at the cellular level, including any potential damage that results from the cryopreservation processes.

Alcor performed its first human cryopreservation in 1976. Since then, Alcor has engaged in long-term patient care as well as cryopreservation procedures. Among Alcor's scientific achievements is the use of advanced cryoprotectant formulas capable of achieving ice-free preservation, known as vitrification.

Today, Alcor is the only full-service cryonics organization in existence. Alcor has more than 697 members from around the world and 67 patients in cryostasis. For more information about Alcor and cryonics, visit

www.alcor.org.

#

EXHIBIT KK

CRYONICS

The Alcor CryoTransport Program

3rd Qtr. 2000 A PUBLICATION OF THE ALCOR LIFE EXTENSION FOUNDATION Volume 21:3

BioTransport, Inc.3
*Cell storage
coming soon!*

New Column.....6
*"You Only Go
Around Twice"*

First Thoughts.....8
*The Place of Proselytization
in the Cryonics Movement*

Insurance Info.....10
*"Why Fund Your Suspension
with Life Insurance?"*

Alcor Update.....11
*New equipment and
Membership Growth*

Alcor Conference.....14
*Report on Asilomar
Conference*

Donaldson Perspective....23
Why Memory?

TechNews.....25
*Exciting progress
on many fronts*

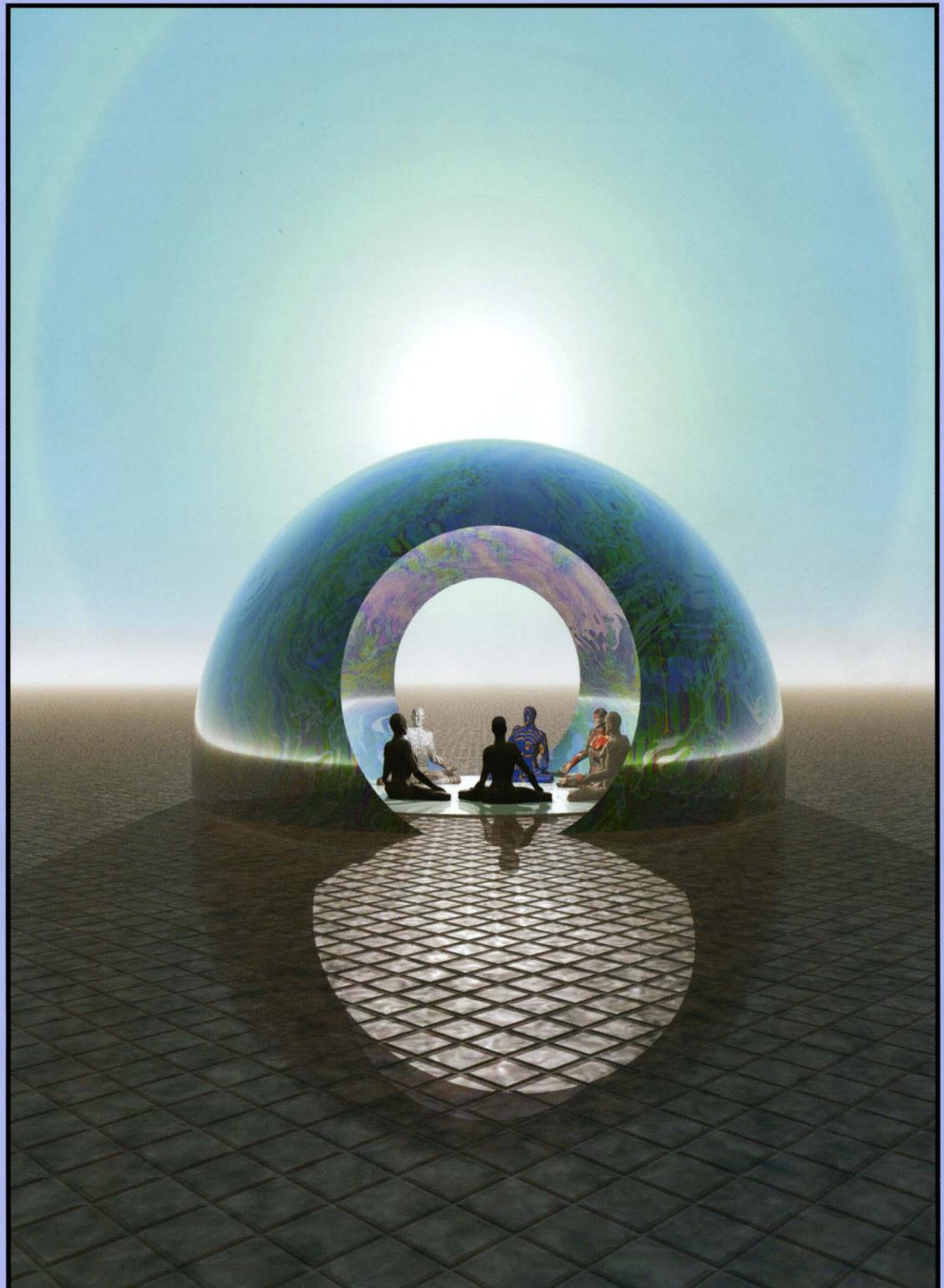
Book Reviews.....29
*The Feeling of What
Happens and The Baby
Boomers' Guide*

LifeQuest.....32
*Tales of future
possibilities*

Member Profile.....44
Klaus Reinhard

ISSN 1054-4305

\$7.50



SOURCE	FEATURES	PAGE
Fred Chamberlain	Special BioTransport Announcement	3
Jerry B. Lemler	You Only Go Around Twice	6
Michael R. Seidl	First Thoughts on Last Matters	8
Fred Chamberlain	Asilomar Conference	14
Thomas Donaldson	Why Memory?	23
Mike Perry	TechNews	25

Miller Family donation	2
<i>The Baby Boomers' Guide</i> on sale at a discount	5
“Why Fund Your Suspension with Life Insurance?”	10
Book Review: <i>The Feeling of What Happens</i>	29
Book Review: <i>The Baby Boomers' Guide</i>	30
Member Profile: Klaus Reinhard	44

Alcor update - 11

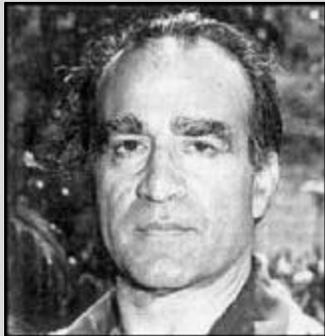
BioTransport Purchases CryoStar Freezer ...	11
Alcor Membership Growth	12
Alcor Membership Status	13

lifequest - 32

BLUE	
by Anthony Dunn.....	32
RE-CREATION	
by Fred Chamberlain.....	40

FM2030 in Cryostasis

(excerpted from the Associated Press article "Waiting for the Thaw")



NEW YORK—A nationally known futurist and philosopher who was convinced he would live to be 100 died of pancreatic cancer Friday, July 7, in New York at the age of 69. But he plans to come back to life in Scottsdale Airpark. He had his brain cryonically frozen Saturday night at Alcor Life Extension Foundation, which is located at the airpark.

A teacher, author, and corporate consultant who lived in Miami, Fla., FM2030 was launched—his word for born—in Belgium to an Iranian diplomat. He lived in 17 countries by the time he was 11, fostering self-proclaimed identity as a citizen of the universe. He considered nationality an anachronism and often said, "There are no illegal immigrants, only irrelevant borders."

Tributes to FM2030, written by his friends and colleagues, will be published in the next issue of Cryonics.

You Asked for Greater Membership Growth ... Here Is Your Opportunity to Help "Make It So!"



The Robert Miller family, Alcor members who live in Canada, recently made a generous donation of \$100,000 for the extraordinarily important purpose of developing a marketing program that will increase Alcor's membership.

Now, we are asking you to join the Millers' gesture of support and their confidence in our future by adding your own contribution to this important membership-building campaign. Your dollars will enable us to communicate our story in a positive and compelling manner, develop marketing materials that will reflect Alcor's professionalism, and create a presence at important meetings where we can exchange information with scientists from around the world.

We have set our goal at the \$200,000 level for the year 2000. With your help, we will quickly reach this important milestone. If you agree that we need to build the Alcor membership, for greater strength and safety, now is the time to give a contribution that will truly make a difference.

Donations of more than \$1,000 will receive honorable mention in the pages of this publication. We ask you to help support what the Miller family has started by adding your own contribution.

If you need tax deductions for the year 2000, this is the time to take such a deduction and make a major contribution toward your own long-term survival at the same time!

eryonics is a quarterly publication of the Alcor Life Extension Foundation

Editor

Lisa L. Lock
llock@winterthur.org

Associate Editors

Fred & Linda Chamberlain
fred@alcor.org
linda@alcor.org

Volume 21:3

3rd Qtr. 2000

ISSN 1054-4305

Contents copyright © 2000 by the Alcor Life Extension Foundation, except where otherwise noted. All rights reserved. The opinions expressed herein are not necessarily those of the Alcor Life Extension Foundation, its Board of Directors, or its management.

Submissions may be sent via e-mail (fred@alcor.org or linda@alcor.org or llock@winterthur.org) in ASCII, Word, or PageMaker format. Mailed submissions should include a PC diskette with the file in any previously mentioned format (although printed text alone will be considered). All submitted media become property of the Alcor Life Extension Foundation unless accompanied by a self-addressed stamped envelope. The Alcor Life Extension Foundation assumes no responsibility for unsolicited manuscripts, photographs, or art. Send all correspondence and submissions to:

Cryonics Magazine
Alcor Life Extension Foundation
7895 E. Acoma Dr., Suite 110
Scottsdale, AZ 85260

about the cover

CGI art by Tim Hubble

About That Special BioTransport Announcement dated 26 July 2000!...

(which was sent to all Alcor Members and subscribers of Cryonics)

by Fred Chamberlain

An announcement you recently received said, "BioTransport is Developing an Extraordinary New Program for Viable Cell Cryogenic Storage." The flyer also indicated that the service would be made available exclusively to fully signed-up Alcor Members at a substantial discount, prior to advertising to the public. It said that more information regarding pricing and procedures would be available to Alcor Members by early September. So, it's early September!

What's this all about?

Just in case you missed it, here are the essentials. The cells stored (human or animal) will be fully viable, able to grow in culture (make copies of themselves) both before and after cryogenic storage. This means that they should be suitable for therapeutic cloning in humans (growing organs), reproductive cloning of pets, diagnostic purposes such as genetic analysis, gene therapy applications, and reanimation tissue engineering.

What about reproductive cloning? Will the cells stored be

suitable for this? Yes, they should be fully suitable. Use for this purpose will be promoted to the public, for pets. Legal prohibitions, ethical questions, and technical concerns may delay cloning in humans, but pets appear to be a perfect proving ground. Many of the technical concerns with human cloning may in fact be resolved by widespread pet cloning. As pet cloning becomes commonplace, the idea of human reproductive cloning should become more widely accepted also. This will be an evolutionary process.

The announcement said soon (after availability to Alcor Members) BioTransport would "open its doors" to the public. Service fees and quality levels are expected to

be highly competitive. What's available right now? Companies providing this service are as yet still tiny and appear to rely on collection techniques that may not preserve true viability.

Prices available now through other firms are \$300 to \$500 or more, for limited periods of time. Negotiations with Alcor may provide for reciprocal "backups," with the samples at Alcor having no time limits whatever, and no additional charges either.

Alcor will get excellent visibility. In addition to being acknowledged as a "time without limits" backup, Alcor can offer its members highly discounted prices, since BioTransport can contract to serve Alcor Members at "cost." The service could even

be a "fringe benefit" of BioTransport's cryotransport service role for Alcor. BioTransport can also engage in public service related programs funded by donations to Alcor, with Alcor as the primary storage site and BioTransport providing the backup storage. Along with this would go wide-



Left to right: Fred Chamberlain; Linda Chamberlain; Terry Grossman, M.D.; Dale Howell; Karla Steen; and Ron Wise.

spread public recognition of BioTransport's role in the cryotransport rescue of Alcor Members. All of these factors should accelerate Alcor's membership growth.

As the announcement said, if you had been contemplating the storage of your cells for any of these purposes, you might wish to wait a short while longer, to see what BioTransport is about to offer. The higher reliability and quality BioTransport will provide, at very substantial discounts for Alcor Members, may more than make up for the short delay in your being able to take advantage of the service. With that in mind, your next question may be "So how far along are we toward this goal?"

BioTransport's team includes Terry Grossman, M.D., as Supervising Physician. Dale Howell, a cell biologist, is now working full time at Alcor (for BioTransport), setting up a cell culture and preservation laboratory and conducting market surveys and analyses. An Alcor Member with a Ph.D. in cell biology presently serves as our Science Advisor-Consultant and may later be named as "Chief Scientist" for the company; his name is withheld pending that announcement. Ron Wise, VP for Corporate Communications and Marketing for a major

medical services firm, guides the development of our PR and marketing plans. Karla Steen, Alcor's Legal Assistant, is in charge of contract formulation and legal risk assessment as well as our future offerings of shares to investors. Linda Chamberlain, Alcor's Executive Director and (also) a Director of BioTransport, will guide the development of our administrative systems for close control of cell samples and will implement most of the early marketing activity. My job is to make sure that nobody gets in their way.

Equipment is being ordered and installed. Cell culture experimentation to trade off collection approaches began even before the lab at Alcor was set up, at other locations. Marketing strategies are coming into sharp focus. The question on your minds, of course, is "How soon are we going to begin offering services to Alcor Members?"

The answer to that question may be in your hands already. This article, of necessity, had to be written for publication earlier, weeks earlier. Check the separate BioTransport mailer for details. Still more information will follow as the program develops.

This is a brief synopsis of what BioTransport will be doing to gain

strength and improve the public visibility of Alcor. Thanks to all of you who invested in BioTransport and donated to Alcor. Many of you, as Life Members, paid dues on an accelerated basis, which directly enabled Alcor to support the launch of BioTransport. All of you Alcor Members deserve the best services that BioTransport can provide, at the lowest prices possible, and you're going to get them. 1



In the last issue, Vol. 21:2, on page 27, is printed the statement that all Alcor members must have changed their life insurance policies to name Alcor as owner and beneficiary by January 1, 2001.

Actually, Alcor requires that you make this change and send an updated "schedule" of your policy to Alcor by

January 1, 2002.

We apologize for any confusion this may have caused.

letters to the Editors

Letters to the editors are most welcome on all topics, including counterpoint on previously published materials and suggestions as to future content. We especially invite questions about cryotransport (cryonics) that are original and far-reaching.

If you are seeking information

about Alcor, please consult our web site, at www.alcor.org. If you have questions about developmental programs within Alcor, you may stir us into talking about them even sooner than we might have otherwise.

If your letter is lengthy and involved, we may use it as a sepa-

rate article and may ask you to expand it. We need your ideas, your personal visions. This is the place to start.

Please send letters and/or articles to:

fred@alcor.org,
linda@alcor.org, or
llock@winterthur.org.

The Baby Boomers' Guide to Living Forever

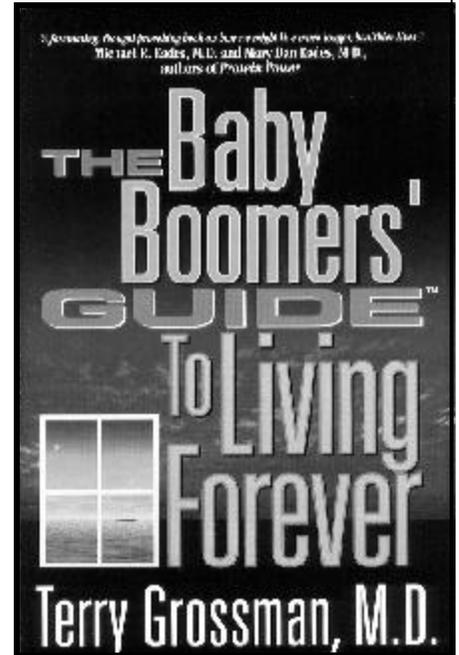
The Promise and the Future Impact of Trying to Live Forever

by Terry Grossman, M.D.

This book presents the thesis that radical extensions of human life span are only a few decades away. The problem is many baby boomers may not live long enough to avail themselves of these breakthrough technologies—but they will be close! This book offers a way to live a healthier life now, so that anyone can maximize his or her chances of being alive when this new wave of life extension and rejuvenation really begins to take hold.

“A must read for anyone who wants to live to see (and enjoy!) the remarkable century ahead. Grossman has brilliantly synthesized an immense array of insight and scientific knowledge.... This beautifully written book provides a very walkable bridge to vastly enhanced longevity and fulfillment.” **Ray Kurzweil, author of *The Age of Spiritual Machines***

“I’ve long known Terry Grossman as a gifted lecturer and teacher of doctors...this marvelous new book makes his wealth of innovative medical knowledge clearly accessible to the public...a must for ‘boomers’ aspiring to maximal health and longevity.” **Ronald L. Hoffman, M.D., author of *Intelligent Medicine: A Guide to Optimizing Health and Preventing Illness for the Baby Boomer Generation***



About the Author:

Terry Grossman, M.D., is the founder and medical director of Frontier Medical Institute. Prior to moving to the Denver metro area, he spent 15 years as a community family doctor in the Colorado mountains, during which he delivered almost 1,000 babies. Dr. Grossman is a licensed homeopathic medical doctor and devotes most of his professional time to running a busy nutritional medicine practice. Dr. Grossman has written numerous articles for health-related magazines and lectures frequently on topics related to alternative medicine.

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

email: _____

phone: (_____) _____ Alcor # _____

Regular price: \$19.95

Cost to Alcor Members: \$17.95 (10% discount)

Cost to Alcor Life Members: \$15.95 (20% discount)

Number of books _____ x price _____ = \$ _____

Plus \$4.00/book handling and shipping (US only) \$ _____

Add 20% for shipping overseas \$ _____

Total \$ _____

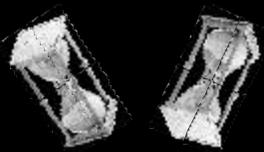
Use your VISA or MasterCard to purchase online on our secure server (www.alcor.org) or fax (480-922-9027) or mail this form to: Alcor, 7895 E. Acoma Dr. #110, Scottsdale, AZ 85260

Name as it appears on credit card: _____

VISA or MasterCard Number: _____

Expiration Date (Month/Year): _____

Signature: _____



You Only Go Around Twice

by Jerry B. Lemler, M.D.

“Are you the two newest Alcor members?” my wife and I were recently asked at Asilomar, as we unabashedly flaunted our barely 10-day-old shiny stainless steel bracelets for all to admire.

“I would think so,” I instinctively replied, “though I rather hope not.”

“So, how did you get interested in cryonics?” ensued the inevitable follow-up query.

“Let me give you the *Reader’s Digest* version,” I countered, not wishing to drive my new acquaintance into R.E.M. spindles on the spot. “I was browsing in the science section of Barnes and Noble a few months ago, and I picked up a copy of Eric Drexler’s *Engines of Creation*. Two days later, I had finished the book, and I felt distinctly privileged to have an entire new universe open up before my eyes.

“I tried to call Alcor using the phone number Drexler listed in *Engines*, but since the book was published back in ’86, they had moved. I finally was able to track them down over the Internet, and here I am!” brandishing my right wrist while shaking the flap-pable bracelet in tambourine fashion.

* * *

I am positively delighted to offer my thoughts, feelings, and general musings on a quarterly basis in a standard column form, here in *Cryonics*. I would be remiss if I didn’t thank our new editor, Lisa Lock, along with two new (yet not-so-very old) friends,

Linda and Fred Chamberlain, for suggesting I do so. Thusly, “You Only Go Around Twice” has its inception with this issue.

Now then, since you are obviously free at your own discretion to turn the page, casting me aside without any discernable adverse recriminations, permit me to embellish just a bit, as to how I was so dendritically receptive to Drexler’s stunning propositions.

I was sitting on a damp, soiled blanket between my wife and 15-year-old son, and wedged amongst what later would be estimated as 299,997 others when the light went on. And, it wasn’t good. Just the night before, I’d gotten a restless 4 hours sleep in a makeshift, self-assembled pup tent, after being forcibly tossed against a mesh wire fence, and herded like a sheep onto an overcrowded creaky school bus, for a none-too-comfortable 90-minute ride, all for the “privilege” of being stuffed into a massive, crowded field.

I sensed a growing desire to urinate, but after all I’d gone through to secure a prime location for our blanket, I dared not risk losing my position at the mere expense of a potentially disobedient bladder. It would have to wait. I was noticeably perspiring in the copiously muggy early afternoon air of mid August, while my mouth was ablaze with the aroma of several halitotic ingredients.

Joe Cocker, aged almost beyond recognition from 25 years before, was

about to complete another animated performance, while the much-anticipated Shannon Hoon and Blind Melon waited in the wings.

“See you at Woodstock III in 2019!” Joe pronounced with a farewell wave, as he exited the colossal Saugerties stage.

It was at that precise moment, assimilating the premonitory words of “Cocker the Rocker” that I was blindsided into acknowledging my own inevitable mortality; or so I imagined back in August of ’94. Turning 30, and coming to grips with the end of boundless youth some 14 years previously, had only been the opening jab. In response, I’d rearranged my early middle years and, accordingly, managed to weather the storm’s leading squall. Now, though, after nearly a decade and a half of quiescence, came the penetrating impact of a solid right hook to the chin, triggered by an unlikely pugilistic prophet, dressed not in a coat of many colors but in the form of an aging rock star.

I flunked algebra twice in high school, but being married to a former math teacher for nearly a quarter century enabled me to compensatingly calculate with alacrity that I’d be 69 years old should Joe’s vision be accurate. I surmised he and I both would require more than just “a little help from our friends” to make it so.

Shannon Hoon performed with typical reckless abandon, and then tragically died of an accidental drug

overdose a scant year later. After the soaking rain and the good-natured frolicking of the mud people, Crosby, Stills, and Nash graced the Woodstock stage for the second time in 25 years and, as customary, highlighted the festival. Try as I did, though, I couldn't make myself recall ever having been "here before." Then, David Crosby nearly died shortly after Woodstock, his life thankfully prolonged by receipt of a transplanted liver.

"Weren't we all teetering on the brink?" I asked myself, not wishing to upset my son, Russell, who at age 15, I judged, would be upset by participating in such a morbid father and son dialogue. In fact, perhaps the pervasive impact of the Woodstock moment was inescapably augmented on account of my parentally imposed limited acquaintance with the grave. In my youth I had largely been sequestered from the sting of death; arguably to excess. When I was a lad of 12, I returned home from a sleep-away summer camp when I noticed a different bird was occupying my pet parakeet's perch. I literally had spent hours upon hours with Cookie, vainly trying to teach him to talk, as we both mindlessly (and silently) listened to the annoying lady's instructions emanating from the portable record player, coercing the bird without success to say, "Hello." In any event, when I inquired of my parents what had happened to Cookie, I was reluctantly informed he had died while I was away.

"I spent a whole morning at the pet store," my mother complained, "watching all those birds flying around, trying to find one that looked just like Cookie. I didn't think you'd notice the difference. Oh," she added, "I made a pot roast for your first supper back at home." So much for the encouragement of grieving, and I never attempted to cajole Cookie II into discourse.

The very next summer my favorite grandfather died, secondary to multiple metastases, prolifically seeded from a cancerous prostate. I went off to camp having been told he was merely

"not feeling well." When I returned, fully three weeks after his burial in a Long Island cemetery, I was nonchalantly given the essential veneer of information. My parents never asked how I felt about the loss, though thankfully they hadn't tried to deceive me a second time by procuring a replacement "Grandpa Harry."

Even if we don't purposefully whitewash the issue, like my misguided parents, we humans have a way, as perhaps most vividly demonstrated in our commonality of language, of sanitizing ourselves from the gripping reality of the termination of our earthly existence. Let's take a casual glance at the many euphemistic synonyms for "dead" we consistently construct. It's a virtual struggle to say to another person that someone they know well is actually "dead." Instead, what we usually hear is how they are: "no longer with us," "resting in peace," "in heaven," "gone to their eternal reward," "with Jesus," "gone," "passed away," "met his/her demise," "the late," "in a better place," or "come home." We physicians offer little more comfort in this quagmire, as we're prone to saying the patient is "deceased," or "expired."

In my time, I too have distanced myself from the word "dead," to the point where I truly wonder if dancing around such a periphery has been of useful validity—for any of us. It certainly had been counterproductive for me, and promised to remain so, when fortuitously the daring world of cryonics came along and put a dead certain end to it!

* * *

This writer's pen is going to see plenty of action in the coming months. Perhaps the most significant long-range project is already under way as this column is being written. *Reaching for Tomorrow* has served Alcor faithfully as its introductory manual to cryonics. Nonetheless, it is understandably somewhat outdated, especially in consideration of the interest and progress in nanotechnology and related disciplines over the last seven years. The new in-

troductory text is tentatively titled "Immortality for Beginners," and builds upon *Reaching for Tomorrow* with state-of-the-art updates and the inclusion of a newly scripted "De-Animation Ceremony." Further details will be forthcoming in this column, and the projected completion date is December of this year.

On the subject of books, I'd like to recommend *The Baby Boomers' Guide to Living Forever* by Dr. Terry Grossman. As a fellow physician, I read Dr. Grossman's new publication with an eye focused on detail. He makes a most compelling case for cryonics and offers an in-depth rationale with concomitant strategies for staying alive as long as possible, in a decidedly easy-to-read format.

At the Asilomar conference, I glanced through a copy of Mike Perry's monumental work *Forever for All*, which is due for imminent release. I have also read excerpts from this text, as published in the latest two issues of *The Venturist*. It's on the high-brow side, and you assuredly need to be smarter than the average bear to meaningfully comprehend it. If you qualify, though, I anticipate it being a "must read," and I am most eager to get my hands on a first edition. I wouldn't wait for the movie on this one.

* * *

Succinctly put, Asilomar was especially invigorating and, on balance, worth the 15 hours of travel time and missed connections we endured (that's one way, courtesy of TWA), in addition to the loss of luggage on the return. We met so many fascinating people, made some new and refreshing friends, and it was a genuine privilege to converse with the likes of Eric Drexler, Ralph Merkle, Linda and Fred Chamberlain, Robert Newport, Lisa Lock, Dave Pizer, and Steve Bridge.

I dare say by now you've probably heard enough from me. I know I have. So, I'll be seeing you, sooner and later! 1



The Place of Proselytization in the Cryonics Movement

by Michael R. Seidl

My office overlooks Rodney Square in Wilmington, Delaware. Several times a year, religious fundamentalists congregate on the square, setting up a podium and loudspeakers. They take turns testifying to their faith, and in between the testifying they play Christian rock music to pull in the younger crowd. What is probably not very loud at ground level apparently bounces off the buildings in just the wrong way so as to make them sound like they are broadcasting from my windowsill. I hate this. I am not simply annoyed by the fact that they interrupt my work—I resent people who are in-your-face about their beliefs, who think that they have the truth-market cornered, who touch religious symbols they wear around their necks when they want to express their sincerity. The people I associate with mostly seem to feel the same way; we all agree that people ought to be allowed to believe pretty much what they want as long as they are not acting out their beliefs in a way that is destructive to others or forcing those beliefs on others. But we do not want to hear about it. For whatever reason, testifying, preaching one's beliefs, seems to me to be illiberal, un-American.

So imagine my discomfort at being an Alcor member. I think that I have information regarding a profound truth—bodily “death” does not have to mean final death. Nevertheless, because of my liberal beliefs, I find it exceedingly difficult to muster the proselytizing spirit sufficiently to proselytize on behalf of cryotransport. I am torn between my liberal ideology of non-proselytization and the terrifying facts that (a) all around me people are dying their final death while I sit silent fearing to offend and (b) the movement that might help to save me remains nascent and sputtering for lack of broad interest.

Make no mistake—pushing cryotransport is pushing “beliefs,” and it does offend, in exactly the same way the people preaching in the square offend. I know of no polite way to reconcile my beliefs about cryotransport with the beliefs of others, just as there is no polite way to reconcile a belief in medical treatment with the belief of a Jehovah's Witness that such treatment should be refused. Either we try to compel others to take up the principles associated with cryotransport or we sit silent and watch them die, just as we either try to compel a Jehovah's Witness to

seek treatment or watch him or her die. There is no middle ground (there is, of course, a more extreme ground—the compelling force of the State, but that is subject for another discussion).

Having sneered so long at proselytization, I am slowly, by almost imperceptible increments, coming to the conclusion that I can no longer sit silent. As distasteful as I find it, I will, at last, have to begin “preaching” cryotransport. I think all members of the cryonics movement will have to as well, regardless of the moral/ethical system each of you inhabits, for one of two reasons:

First, you may wish to proselytize because you find it morally uncomfortable to sit silent when you know of an alternative “treatment” to recommend, just as you might recommend chemo/radiation to a friend treating his cancer with herbal teas. Personally, I do not believe I have an obligation to tell anyone anything; although I may choose to share cryotransport information with some people, it is not incumbent upon me to enlighten the world. But that's just me.

Second, you may wish to proselytize because of self-interest—

there are tremendous economies of scale that we can all profit from if cryotransport becomes more widespread. I do not mean merely in cryostasis and long-term storage; I mean in hundreds of ways we cannot begin yet to imagine. For instance, right now, when I get on an airplane, I risk my successful cryopreservation—if the plane crashes and burns or crashes over water, there is unlikely to be anything of my head to freeze. But planes are not designed with cryostasis in mind today; at some point, their designers concluded, “well, everyone on board will die when the plane slams into the ground at 500 miles an hour regardless of what we do, so let’s direct our attention elsewhere.” A generation of aeronautical engineers aware of the possibility of cryotransport might think differently, designing a fuselage to survive impact and extinguish fires, knowing that everyone inside is dead from the force of the impact but wishing to preserve the fuselage intact to protect the bodies within for cryopreservation. One day, all airplanes may have super-strong fuselages, passenger restraint systems to keep us from flying around on impact, and under-the-seat crash helmets for cranial preservation. But we will not see these benefits—or others that we cannot imagine—with only a few hundred active cryonicists.

So I conclude that, for my own benefit and perhaps for the benefits of others, I have to preach cryotransport. Going about this will be hard, and the purpose of this foray is to seek ideas for successful proselytization. Here are several initial observations:

As I see it, three significant beliefs deploy in cryotransport: (1) cryostasis works—it freezes people; (2) given sufficient time, our technology will develop to the point where restoration of previously frozen people will be technologically and economically possible; and (3) if I am properly cryotransported, I have a good chance of coming back from the “dead” personally, and I want to come back.

Selling point (1) requires only that people change their mortuary practices; some people want to be buried, some want to be burned, some want to be shot into space, and some want to be frozen. We should approach the funeral home industry and the public health industry with cryonics as an alternative to interment or immolation. We need to get the cost of cryotransport to the point where it is, at least, less than interment even if more than immolation, and it needs to be put forth with the same everyday approach. Just as the funeral home industry now helps to market burial plots and insurance to cover funeral costs, we need to push an active plan of cryotransport as an alternative to traditional disposal.

Selling point (2) requires a systematic education of people in the basics of a scientific world-view (i.e., technology works, it solves problems, it develops along a predictable continuum, and saying it “will” be able to restore people is a semantically and scientifically more reliable statement than horse x “will” win the Triple Crown or Jesus “will” return). We need a program of public lectures to private and governmental groups at all levels, from the Rotary Club to the Senate. We need to prepare set lectures with audiovisual support

that we can make available to our members, to offer lists of standard organizations that might be interested with contact people, and to provide minimal training to lecturers. We need people to write editorials to their newspapers and to magazines they read. We need to make the views associated with cryotransport as ubiquitous in everyday life as the proponents of the various religions have made their beliefs.

Selling point (3) is the hardest because it requires (a) people to take a gamble (I’ll be properly frozen, will not die in a crash over water or from a degenerative brain disease that liquefies my cortex) and (b) people to take a leap of faith in themselves and the world. However, I suggest that the successful traversing of points (1) and (2) will add a significant number of people to the cryonics movement. Point (3) is and will continue to be somewhat intractable, and some people, for whatever reason, will still balk at that last step. I propose that, for the moment, we put aside (3) and focus on (1) and (2)—surely there is a vast mass of middle-of-the-road people out there waiting for conversion, waiting for the freezers of men and women to take the place of the fishers of men.

The Gideons put a New Testament in every hotel in America. Let us put a cryotransport brochure in every mailbox, an editorial in every paper, a lecturer before every group willing to hear us. Let us take our Alcor medallions out from under our shirts, or, better yet, find a new symbol, one that transcends particular cryotransport groups and that stands for the idea itself, and wear it proudly, and be ready, when someone asks, “what’s that,” to testify about life eternal.

Why Fund Your Suspension with Life Insurance?

by Rudi Hoffman
Certified Financial Planner



"I expect to have the money to fund my suspension in cash eventually. Mr. Hoffman, why should I take out a life insurance policy to fund my suspension?"

This question in some form comes up often in discussions with people with an interest in cryopreservation. The good news is that there are answers that are mathematically valid (i.e., not merely opinions) and that make sense to most people.

The purpose of this article is to answer this question in a clear, concise, understandable manner. Additionally, we will see that there is an empirical way of determining the optimum funding that will appeal to most rationally minded cryonicists.

Let's personalize this with a discussion of a hypothetical individual "Jack," who is a 45-year-old software developer.

Okay, Jack, so you want to be cryogenically frozen with the possibility of future reanimation. You have thought about it for some time, but you are of a skeptical and questioning nature, and you have a constituency in the form of a wife and family who are not at all sure if you have not gone off the deep end and do not share your enthusiasm for the possibilities of technology.

You want to create \$120,000 for a full-body suspension with Alcor. You are excited because your mutual funds have been growing well, your career is taking off, and you expect to be seriously wealthy in the future. You want to do the best thing to assure your funding. You have negotiated with

your wife, and you and she have decided that you can spend \$1,000 per year toward cryonics funding.

Here is the key question. Is it better for Jack to spend his \$80 per month in a mutual fund, or a life insurance policy, to fund his suspension?

Here are the facts. Jack, a healthy nonsmoker, can create an *instant* \$120,000 to fund his suspension in a permanent Universal Life policy. Once he pays 80 bucks and qualifies, there is an *immediate* and *sure* payment to his cryonics organization to assure his suspension. The money does not go to the cryonics organization at the expense of the survivors. This \$120,000 does not have to come out of the estate Jack is leaving for his wife, Mary, and the children. Nor do they have the opportunity of second-guessing Jack's choice and delaying or litigating Jack's wishes.

On the other hand, let's say Jack puts his \$80 per month into a mutual fund. Even if he averages a great return, it will take decades to generate the required \$120,000.* What happens if Jack is struck by a truck on the way to work tomorrow? There is no full funding, and Jack will not be suspended.

What if Jack lives long enough to have adequate funding in his account? When Jack "dies," there is \$120,000 that Jack has earmarked for his suspension. But this \$120,000 is a much clearer target for any of Jack's potential heirs to contest.

Jack's kids all turned out great. Except for the youngest, Leroy, who felt the world owed him a living. Jack had

left each of his children \$200,000 in his will. But Leroy wanted at least part of the \$120,000 Jack had earmarked for suspension! Do you think Leroy could find an attorney who would take this case? Could the money be tied up in a legal battle? Do will and estate contests occur over far less controversial issues than funding cryostasis? Absolutely! And these funding controversies *shave* and *will continue* to occur.

There are other issues. If Jack is not insurable due to health reasons, he will not be able to obtain life insurance to fund his suspension, and he would be forced to fund his suspension from his estate.

Most people become uninsurable at some point in their lives. It therefore makes sense to find out how affordable it can be to fund your suspension with the incredible financial leverage that only life insurance provides. In the case of cryonicists, the policy can truly become *life* insurance—not *death* insurance.

Cryonicists tend to be life extensionists who take great care of themselves and thereby can usually qualify for the best possible insurance rates. (I spend a good deal of time explaining this information to insurance companies!)

In conclusion, for most people it makes sense to use life insurance to fund the exciting possibilities of cryonic suspension. 1

* \$80 per month = \$960 per year
\$960 annual payment
12 % after tax compound yield
25 years to grow to \$128,001
(22 years at 15% after tax yield)

*A non-profit,
tax-exempt 501(c)(3)
California Corporation*

*Alcor's Mission:
The Preservation
of Individual Lives*

Medical Director:
Thomas Munson, MD

**Medical
Advisory Board:**
Terry Grossman, MD
G. Mario Isidron, MD
Ravin Jain, MD
Jerry Lemler, MD
Robert R. Newport, MD
Anthony Pizzaro, MD

**Scientific
Advisory Board:**
K. Eric Drexler, PhD
Bart Kosko, PhD
James B. Lewis, PhD
Ralph Merkle, PhD
Marvin Minsky, PhD

Patient Care Trustees:
David Brandt-Erichsen
Gary S. Meade, Esq
Carlos Mondragon
Warren L. Robertson
Robert A. Schwarz

**Alcor Board of
Directors:**
Stephen Bridge
Linda Chamberlain
Hugh Hixon
Gary S. Meade, Esq
Ralph Merkle, PhD
Michael Riskin, CPA, PhD

**Advisors to the
Alcor Board:**
Kathleen Cotter, DC
David Greenstein, OD
Joe Hovey
Carlos Mondragon
Judy Muhlestein
Mark Muhlestein
Stephen Van Sickle

Alcor Officers:
Fred Chamberlain, Pres.
Stephen Bridge, V. Pres.
Michael Riskin, Treas.
Linda Chamberlain, Secy.

Alcor Update



BioTransport Purchases CryoStar Freezer

In late July 2000, Alcor's Patient Care Bay received a new piece of equipment purchased by BioTransport, Inc. The freezer shown could accommodate up to 12 (more likely only 6) neuropatients in a vitrified state at between -130°C and -140°C . At this temperature, the patient's brain would be expected to be in a "glasslike" state rather than containing a very large number of tiny ice crystals, which present-day thinking suggests could only be restored to normal function by nanotechnology.

BioTransport has also purchased all of the constituents for improved base perfusates and very advanced cryoprotectants, paying an additional \$10,000 license fee for use of these formulations. Both varieties of "freeze blocker" from Twenty First Century Medicine, Inc. (21CM) have also been purchased, as needed with this approach to combat crystallization. Immersion fluids for very rapid cooldown have been procured, as advised by 21CM, and Alcor's cooldown apparatus is being modified (at BioTransport's expense) for this procedure.

In a recent Alcor suspension, surgery was pioneered for making use of this "vitrification" approach with neuros. One Alcor Member has consented to have this procedure applied in the event of need, instead of the more standard approaches. Interestingly, the member is signed up for a "whole body" procedure, but this



approach can only be applied at the "neuro" level presently. In order to make use of this procedure, the member has conditionally consented to the switch of options, in the interests of better brain protection.

Alcor is still studying how to price this advanced neuro option, termed "neuro-plus" by some of those who are developing the procedure. The option may require a level of funding comparable to "whole body." Also, the CryoStar freezer is only the first step along the road of studying how to eventually provide neuro-plus storage at costs that are equivalent to those for today's neuro option. If that can be achieved, then it is possible that the vitrification option may be opened for existing members with neuro arrangements, without a need for increased funding.

ALCOR'S MEMBERSHIP GROWTH

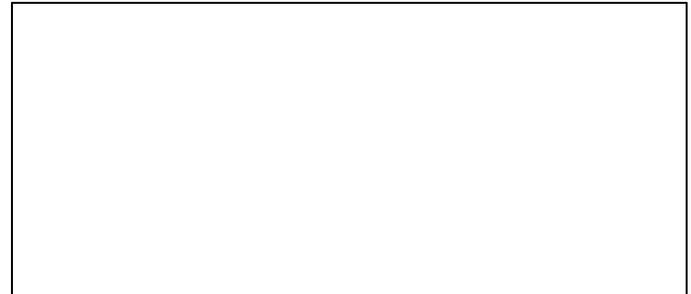


by **Mathew Sullivan**
Facility Operations Manager

I've noticed in recent conversations and through various media that most people are a little confused about membership growth and growth rates. 1) Having a high growth rate is relatively easy when you don't have many members to begin with. 2) The definition of "membership" can vary widely, making cursory comparisons difficult. Some organizations include in this definition such categories as those already in cryostasis, associate members, subscribers to ancillary services, etc. Alcor is much more restrictive in defining members, including only those who have full cryotransport arrangements.



To illustrate point 1), the best way to look at Alcor's long-term growth is to imagine an empty swimming pool that is being filled with a hose. Initially, the percentage of filling (growth) is very high. Liquid levels double in a matter of seconds, but then doubling quickly stretches out from seconds to hours.



Looking at the details, 1985 was a banner year in Alcor's membership with a growth rate of 61.4%, a net increase of 27 new members, which was largely due to the absorption of the Cryonics Society of South Florida. But if we were to add 27 new members to Alcor's current membership of 504 (as of July), that would be equal to a growth of 5.3%. Alcor's growth rate in 1999 was 8.2%.

1991 was also an important year with a net increase of 90 members, which was an increase of 45% (larger actual number than in 1985, but a smaller percentage of the total). Many have argued, however, that high growth in the late 80s and through the early 90s was a combination of the publicity from the Dora Kent crisis and that Alcor raised its suspension minimums. The increase in suspension minimums helped to create a burst of new members who wanted to be grandfathered into the previous pricing structure.



Between the early and mid 90s there was a dramatic drop in our growth rate, culminating in 1994 with a net loss of 14 members. Many believe this was primarily due to the split that led to the formation of CryoCare, in the same year that Alcor moved to Arizona.

Others have countered this argument and stated the decline in growth was due to the increase of suspension minimums and that our current pricing structure is too high. If this were the case, that price is more important than quality, our largest competitor would have a membership base in the thousands. You would not expect to see Alcor's membership base larger than all the other organizations combined. If Alcor and/or the entire industry were making money hand over fist, you would expect to see new venture capitalists entering the market in an effort to capture a share of the profit. This certainly is not the case.

By March 1995, according to Joe Hovey's notes (Alcor's bookkeeper), Alcor had a total of 89 ex-members since about 1990. 52 members had switched to CryoCare, 17 were cancelled for non-payment of dues, and 20 were lost for miscellaneous or unknown reasons.

Alcor's average growth rate per year since the split has been 6.3%, or a net growth of 25.6 new members per year. Not nearly as high as we would like, but we are steadily growing.

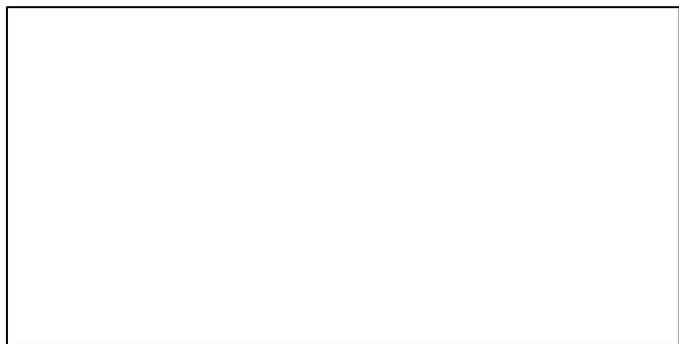
With the recent influx of ex-CryoCare members, you might expect to see a spike in membership growth. In fact, net growth in the first half of 2000 has dropped slightly due to the fact that Alcor's staff have performed an exhaustive overhaul of the membership files and have found a number of members whose financial arrangements were inadequate. Many of these situations are being resolved, but a number of others have resulted in cancellation of membership.

Although secure funding is important for Alcor's long-term viability (see article by Linda Chamberlain in the 2nd quarter *Cryonics*) it is always a serious matter to see a membership cancelled, and it does have a long-term effect on the growth rate.

The graph below is useful to the extent of predicting possible growth trends, but it certainly does not guarantee them. When an individual starts the sign-up process, it does not necessarily mean he or she will become a member.



The value of the above graph increases by cross-referencing when the applicant started the sign-up process (see next column). If most applicants had been in the sign-up process for many years, one might consider conducting a review to find out if there was a problem.



As you can see, most of those who are in the sign-up process have been there no more than a few years. The remainder have been in the sign-up process for 8 or more years—a result of an old policy that allowed individuals to begin the sign-up process with a one-time payment. This was later changed for obvious reasons.

More recently, our membership has surged upward to 504 members, an increase of 21 members in two months, or a net increase (minus losses due to non-payment of dues, funding inadequacies, etc.) of 16 for this year so far. In spite of more productive follow-up and an improved marketing approach since 1998, this was a surprise in light of all the cleanup of funding inadequacies that resulted in lost memberships. We had expected overall membership growth to be largely stagnant for the year as a tradeoff, to strengthen Alcor's long-term stability.

So, if you hear someone preaching that the sky is falling, that our movement is dying, ignore them because the evidence clearly states otherwise. 1

Alcor Membership Status

Alcor has 504 Suspension Members (including 109 Life Members), and 39 patients in suspension. These numbers are broken down by country below.

Country	Membership Status		
	Members	Applicants	Subscribers
Argentina	0	0	1
Australia	12	3	6
Austria	1	0	2
Brazil	1	0	0
Canada	12	3	11
France	0	0	1
Germany	3	1	2
Ireland	0	0	1
Italy	0	2	2
Japan	2	0	2
Netherlands	2	3	1
Russia	0	0	4
South Africa	0	0	1
Sri Lanka	0	0	1
Switzerland	0	0	2
Taiwan	0	0	1
U.K.	26	6	8
U.S.A.	445	72	226
TOTALS	504	90	273

No. of Countries: 18

Asilomar Conference

by Fred Chamberlain
President/CEO, Alcor



“I think on a technical front, we really need to gain acceptance for two ideas: one, that there is very little damage, or that we can preserve physical structure with very little damage, and second, that we can restore damaged structure, that we can in fact restore extensive structure.”



Strongly emphasizing the implications of nanotechnology for cryotransport with words like this, Ralph Merkle introduced Eric Drexler as the Keynote Speaker at Alcor’s Fourth Conference on Life Extension Technologies at Asilomar, California, on June 17th, 2000.

About two hundred persons, many of them scientists and physicians and about half of them Alcor Members, had gathered at scenic conference grounds by the Pacific Ocean, just north of the Pebble

Beach golf course in Northern California. The next two days were filled with presentations and informal discussions on extending life spans, with no thought of simply giving in to near-term mortality.

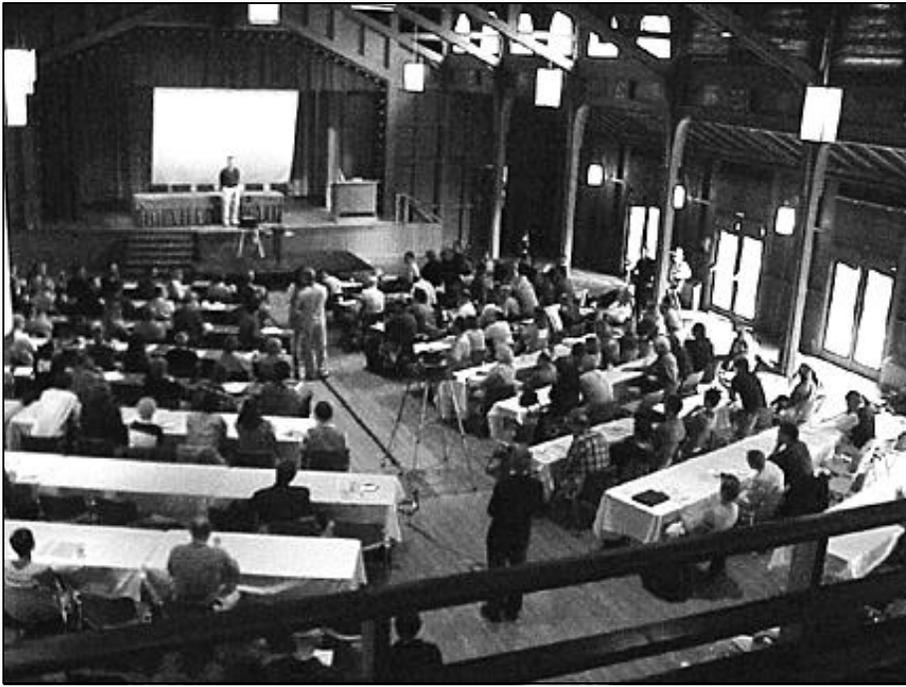
Modern and restored rustic lodges were sprinkled along a hillside of tall pines, interspersed with conference halls of all sizes. An extensive dining hall filled with large circular tables permitted the attendees to share meals with one another on a convenient basis, no ordering or waiting. Theoretically,

Asilomar can handle conferences of up to 1,000 persons, but the Alcor Conference attendees accounted for about half of the tables at each meal. We were clearly the largest event in progress, at the same conference center that hosted the historic debates on control of genetic engineering in the early 1970s.

In each of the lodges, gathering areas with couches and other seating, along with pianos, provided a way for special interest groups to explore ideas informally.



Left to right: James Swaze, Rob Frietas, and Ralph Merkle



Late Saturday afternoon, in a reserved area by paths to the beach, an outdoor meal (BarBQ) brought everyone together at picnic tables, for what has to be the largest such event so far attended almost exclusively by those who envision themselves as prospective star travelers, centuries hence. (Remember, this was no science fiction convention. It was a purposeful gathering by a very high-tech community in which the members are creating and using practical means for life extension.)

One event, among all the others, highlighted the conference. Just before the Saturday evening presentation and panel discussion, one of the attendees briefly lost consciousness and fell, striking his head. Inside the conference hall, as the news of this came to me, the first question (naturally) was “Does that person have an Alcor bracelet on his wrist?”

The answer was “Yes!” In the next few minutes, over a dozen certified Alcor rescue team members were gathered and coordi-

nated. In the Sunnyvale area, a few hours away, other Alcor rescue team members were alerted and preparations were made to deploy a set of transport equipment, if needed. The partner of the “downed” member was a certified team member herself, having been part of the group that performed a standby and cryotransport operation less than a year before. Even the downed member was trained and certified as a rescue team member. As the member and his partner were being loaded into the ambulance, an Alcor physician and I were already on our way to the hospital to set the stage for a standby if needed. It turned out that there was no need for that, and the member was fine, but it was reassuring to know that so many hands were there, ready to help if the situation had become critical.

The synopses of talks that follow are brief and cannot begin to capture the full content of the presentations, but they may give you at least a glimmer of the scope and quality of the speakers and their subjects. In time, vid-eotapes of selected talks will be made available, and these summaries may help you decide which you will want to obtain.



**K. Eric Drexler, Ph.D.,
Foresight Institute**



**“The Conservative Treatment of
Transient Inviability; or, Your
Computer Crashed—Shall I
Throw It Out?”**

Keynote Speaker Eric Drexler challenged anyone to offer proof that “freezing erases the brain.”

Many in the audience suggested mechanisms of freezing that might erase the brain, but none could offer evidence that in fact this does happen. The point that Eric set out to establish, and relentlessly argued, was that we cannot dispute the possibility that our “minds” are conserved by preserving our brains, though he admitted the uncertainty of recovery.

In leading up to his challenge, Eric contrasted the preservation of brains for future recovery by cryobiologists vs. molecular scientists. He observed that early attempts at manned flight were guided by ornithologists, prior to the emergence of aeronautical engineers, and that success in manned flight was only achieved when birds were abandoned as the best models. In like manner, Eric asserted, the recovery of persons preserved by present technologies will require technologies far beyond those entertained in our present thinking in terms of medications and the preservation of biological viability.

Arguments from the audience

asserted that the brain might be rendered irreparable by ischemia, freezing, and many other hypothesized mechanisms. Eric acknowledged that such damage was irreversible by present technologies, but he repeatedly returned to the question of whether or not, in any way that could be convincingly demonstrated, information essential to the reconstruction of the brain and restoration of memory and identity was “erased” by freezing.



The advice Eric gave, at the end of his talk and after considerable interaction with the audience, was that in order to reach the future, if one could not stay alive to do so with the help of current medical technology, one should at least stay “intact” (through cryostasis)!

**James Hughes, Ph.D.,
Trinity College, Hartford,
Conn. (also Webmaster for the
Medical Ethics Center, Dept. of
Medicine, Univ. of Chicago)**



**“Our Evolving Definitions of
Death: Looking Ahead”**

“Treating someone who is dead as if they were alive is almost as odd as treating someone alive as if they were dead! Given the gravity of these two potential errors, it’s a wonder that there isn’t more public debate about the lines we draw between life and death!”

James Hughes, Ph.D., a sociologist and bioethicist, thus introduced the difficulty of the blurred distinctions emerging in the context of cryostasis, and then moved into a number of principles that lie beneath our current civil behavior and related the life-death distinction to the increasingly controversial perceptions of levels of consciousness in animals, a central issue in animal rights activities. Dr. Hughes then turned the focus of his discussion to topics related to cryostasis, connecting this with various evolving definitions of the word “death.”

“Whole brain death” was an earlier standard, for example. It had many flaws, gray areas in which an unending controversy now exists. Dr. Hughes noted a protocol now in use leading to a “non heart-beating cadaver,” for permanently unconscious coma victims. This supposedly converts an ambiguous state of death (acknowledged irreversible coma) into a less ambiguous state of death (cessation of heartbeat) by the removal of the respirator and waiting two minutes beyond cardiac arrest. Then organs are harvested. Consent of the family is required. In effect, he said, “Who is kidding whom?” He pointed out that many of the leading pioneers in this field are fed up with interminable debating of nebulous issues like this.

Dr. Hughes stated that it should be of interest to cryonicists that organ transplant teams are per-

mitted to insert cannula and administer anticoagulants while the patient is still alive, prior to conversion of coma victims to “non heart-



beating cadavers,” even though these procedures have nothing to do with prolonging life. Proposals are now being made to eliminate the necessity of going through the ritual of removing the respirator before taking the organs. (It is important to remember that these protocols are considered ethical only with long-term coma patients, where even brain-stem functions may have been supplanted by ICU technologies for keeping patients’ bodies alive.)

In terms of fundamentals, Dr. Hughes said he thought many of these arguments would spread upward into distinctions of biofundamentalism vs. transhumanism. Then he suggested that cryostasis bring about an even further broadening of definitions. Will the degree of damage upon cryotransport lead to a number of levels of “death? What about the prospects for reanimation? Will a person be treated as “dead or alive” in terms of changing probabilities of eventual recovery? How does this intersect with assisted suicide?

The complexities can only grow. Dr. Hughes pointed out that at some level of loss of memory and identity, a line will have to be drawn between a repaired cryonaut and a virtual clone. How to do this?

Will there be subjective criteria? Continuity of consciousness will be sure to figure, he said, but how?

Finally Dr. Hughes examined where all of this was going. In a slide titled “Threats to Liberal Individualism,” he itemized the dilemmas to include (1) Consciousness Desaggregation; (2) Memory & Personality Malleability; (3) Identity Cloning; (4) Identity Sharing; (5) Distributed Identity; and (6) Group Identity. He also pointed out that at major bioethics conferences, many issues of emerging technologies are simply not addressed. He invited the attendees to get involved in these discussions at an early stage, so as to influence decisionmaking that could easily affect them.

Gregory Stock, Ph.D., UCLA School of Medicine



“Who’s Afraid of Freezer Burn?”

“Freeze the head, but donate the organs! If the head is not frozen, no organs!”

This was, in essence, one of the suggestions Greg Stock had for getting the cooperation and acceptance of the medical community. “If you let medicine do whatever it wants with the parts that are really not going to be any use to cryo-

nicists, or can be easily replaced, then suddenly you have the entire medical profession allied with you, and very strong interests because of the shortage of organs for organ donations.”

“Cryonics could be simply viewed as a donation to medical science, where you specify that you really don’t want to be part of the control group, but part of the experimental group” (following from Ralph Merkle’s description of what cryonics in essence is). “It would be extremely low cost, in fact I would think that hospitals might foot the bill for a large part of it.”

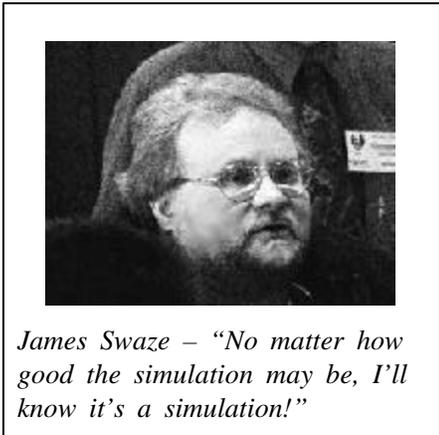
Dr. Stock’s basic approach is to bypass the step of organic reconstruction entirely and rely on “strong nanotechnology” to recover sufficient information to fully emulate the behavior of the brain before final loss of conscious, thus (from the standpoint of identity being a dynamic process) restoring the person concerned to consciousness and the experience of “life.”

Would it even be practical to achieve biological reconstruction, by comparison with the relative ease of uploading? This was a key question for Gregory Stock.

“Before you reach that point, the line between biology and technology has to be very blurred, if not having disappeared almost entirely; and in fact I think that pure biology is going to seem extraordinarily primitive and that there are all sorts of limitations to purely biological structures. And it’s not clear to me, from the vantage point of that changed environment, that one would even really want to be a biological creature. I think much of this would be the case for the possibility of uploading, and the technologies required for that, but it would definitely be the case for the requirement of biological recon

struction; and you know, there's a question of what the status of purely biological creatures, humans, would be relative to a far more advanced machine realm, if you postulate those kinds of developments."

The audience, while expressing various levels of skepticism and concerns that improved cryoprotection might answer the problem, seemed open to the idea that we have to be prepared for a future in which our current views of "human" will be progressively outdated. Accepting the possibility of uploading while the person concerned was still alive, questions arose as to "who is the real person?" Dr. Stock, in some interactions with the audience, found himself having to take the conservative position, probably a different situation than with most audiences to whom he speaks.



James Swaze – "No matter how good the simulation may be, I'll know it's a simulation!"

Conversely, some in the audience could not relate emulations of mental states to the identities of humans and questioned the validity of "simulations" as substitutes for biologically sentient entities. One of the speakers on cryobiology pointed out that approaches immediately on the horizon might permit recovery without the need for strong nanotechnology, and Dr. Stock's

response was, "If you can do that, of course, that changes the whole ball game!"

**Robert T. Newport, M.D.,
BioTransport, Inc.**



**"The Fear of Death and Its
Impact on the Rational Process"**

"The age of immortality looms," began Dr. Newport. Then, he addressed the question of why most do not sign up for cryonics, or drop out. "The fear of death provides polluted data which interferes with our ability to be fully alive, and prevents our making rational decision about our own lives!" In compact form, this introduced a wide range of topics exploring motivations, rationality, and values affecting decisionmaking about life extension.

"Most of us, most of the time, believe that we know what we mean when we say I, myself, me. That is to say, most of us believe that we know who we are." By reference to the difficulties of this, including a summary of many personality models, Dr. Newport pointed out that confidence that we "know ourselves" is highly illusory. "Content of awareness" we can know. But the full extent of "what we are" will be far more difficult to define, if at all. Emotions, he

pointed out, are common to animals as well as (possibly) forms of plant life. They become part of our "self definition," and our "self definition" is a fiction of our own creation, interfering with our moment-to-moment perceptions that (with those distractions and limitations) are the only source of our self definition.

In extended discussion, Dr. Newport pursued the question of self perception and all of the things that might stand between reality and how we in fact perceive ourselves. There is no good way to summarize the content of this presentation, but there is one area in which quotes may be helpful—dealing with Dr. Newport's hypothesis that birth trauma is instrumental in our reluctance to pursue life extension. (The excerpt below is from Dr. Newport's talk. The text is available in its entirety at <http://www.alcor.org/Fear.htm>.)

"The vast majority of all of us, 95% by some estimates, are almost completely irrational when it comes to ourselves, and live within the confines of the synthetic ego, limited by our own self definitions, our own self story, attentive to mostly the sound of our own thoughts, and thereby disconnected from the incredible machine that is the body and from the fabulous computer that is our own brain. Unhappy, full of existential angst, low grade misery, anxiety, depression, missing out on the full joyous experience of being alive, unaware of the origin of our misery, but, most likely willing to talk about it and explain it all day long. Why?"

"Stanislav Grof, a Czechoslovakian psychoanalyst, working abroad in the 1960s, induced altered states of consciousness in a large number of psychiatric patients and found that the patients had

access to memories and symbolic experiences that had heretofore been entirely unconscious, many dating to the first few weeks of neonatal life and including long forgotten (or repressed) physical traumas. Very many, included intra-uterine experiences of a close encounter with death.



“These experiences Dr. Grof constellated and called Basic Perinatal Matrices and classified them into four stages. BPM I through IV, which corresponded to the four main categories of experiences of every human being’s early life. E.g. BPM I: Intra-uterine peace, support, and nurturance. BPM II: The beginning of the birth process when the earlier peace is rudely disturbed by uncomfortable contractions about the head along with a change in the chemical composition of maternally supplied blood due to the rapid hormonal shifts which bring about the labor, and emotional changes in the mother (who is understandably aroused). BPM III: The progressive agony of being squeezed into the birthing canal. Squeezed to the point of death, Squeezed, slowly crushed, to the very point of death. (Sounds like some medieval torture.) And BPM IV: The shot of adrenaline and the release from the vagina into a very novel and harsh light of day.

“In all cases, the experiences were remembered as traumatic and the arousal was experienced as terrifying. Known to all, now, simply as the Birth Trauma, in most cases this constitutes the first conscious content involving pain-and-adrenaline-prompted arousal, which in our later years we come to know as fear and rage. This is the first experience of the FEAR OF DEATH!”

This fear is extremely uncomfortable, Dr. Newport explains. When parents see this in the many forms it takes, they shut down our expressions of it through shame or humiliation, which just makes matters worse. What are the consequences? Quoting Dr. Newport:

“The chronic illnesses, hypertension, gastritis, ileitis, colitis, auto-immune disorders of all kinds, anxiety disorders, depression, (depression is diagnosable in 10 to 25% of the adult population at any one time), hormonal disorders, and cancer. Have I covered everybody in the country yet? Not quite, well let’s add ten million alcoholics and substance abusers.”

Methodically, and with a sense of compassion for those caught in these many traps, Dr. Newport continued to explore the underpinnings of resistance to the idea of “living on indefinitely.” He concluded with the following two paragraphs:

“People are moved to cryonics one of two ways: by the LOVE of life, or by the FEAR of death. I suspect, and I will shortly be conducting a study to either affirm or disabuse myself of this notion, that those who drop out once signed up were motivated by the fear of death (conscious or unconscious) and have finally gotten tired of living an unhappy, fear-driven life. Having had no hope in BPM

III, they cannot maintain hope in their own future.

“Many of you might say ‘I came to cryonics because it’s the only rational course of action, it has nothing to do with fear or love.’ To which I would respond, ‘Your thinking rational mind outlined the course, but it was your emotion that moved you. Joy has the potential to make it worth staying the course. Fear—conscious, subconscious or unconscious—does not. It will only kill you in the end.’”

**Glenna Burmer, M.D.,
Ph.D., LifeSpan
BioSciences, Inc.**



**“Identifying Aging Genes by
Using DNA Microarrays”**

Founder and Chief Scientific Officer of LifeSpan BioSciences, Dr. Burmer started by talking about “discovery”—in particular, the first inklings that microorganisms existed in the early days of the microscope. Now, the search is for genes that have to do with aging, and how to control them, to keep us young.

Of the 100,000 genes in the human genome, only about 10,000 have been classified as functional and the rest are as yet a mystery. Dr. Burmer pointed out that although she has “twenty top-notch bioinformaticians analyzing” genes,

they are barely scratching the surface.

Decoding the genome is what BioSciences is all about, Dr. Burmer said. This is true whether it's for big pharmaceutical companies as clients for near-term drug development, or for themselves, where aging is the arena of study. However, even though the genes are becoming accessible, they must be mapped into the body. To quote Dr. Burmer:

"The simple fact of the matter is that the human body has over 1,500 cell types; we have over 200 organs; the brain itself is probably 50 organs, minimally; and in addition to that, each cell of those cell types is expressing 20,000 to 50,000 different genes. So, decoding 100,000 genes into the blueprint of the human body is really the complexity of the task we have to work with.

"What do you do with numbers like 100,000? Well, the easiest thing to do is put them on some kind of chip. And so what we do is clone these genes, put them on a chip, and then we take pieces of diseased tissue, pieces of normal tissue, grind it up, make a probe out of it, and then look to see what genes are turned on or off in a disease. We thought this was the Holy Grail about three years ago, when we started down the path of DNA chip technology, and what I'm going to explain is that it's not the Holy Grail, it's "step one." And step two is decoding it.

"What we are doing is what we think is the next step, after DNA chip technology, which is really what we call molecular pathology. And that is actually identifying genes we think are up- or down-regulated in a disease process, we then take that and then go directly into human tissues, and I'll show

you how this is done. And then we map it. We map exactly what cell type has that gene turned on. We map whether or not that gene is turned on in disease, and whether it is not present in normal. You can identify cancer genes this way, rheumatoid arthritis genes this way, Alzheimer's genes this way. And I will talk about how this is done."

This should give you an idea of where Dr. Burmer's talk started! The rest of it was a detailed analysis of how her tools could be applied to the problem of aging. Gene expression vs. aging in various cell types raises fascinating and tantalizing possibilities, yet this also opens up new questions and enigmas. Trends show up and beg to be explored. Strong up-regulation of specific genes in aging suggests that therapies could be designed to reverse aging, but hundreds of genes show this kind of behavior.

Near the end of her talk, Dr. Burmer showed four genes whose expression seems highly correlated with aging, in over 140 different tissue types. The genes are not related to mutual biochemical pathways, based on current knowledge, yet they all seem to have something important to do with aging. "Why these genes are related, we don't have a clue!" Dr. Burmer said.

In other cases, she pointed out that there are strong correlations between multiple genes that are biochemically related and implicated in the aging of specific tissues. But still, this is only one piece of an enormous puzzle. Is there any hope of addressing these problems in a time scale compatible with near-term solutions in aging? Dr. Burmer put it this way:

"What we are in the process of doing is building high throughput tissue chip robotics, and using these

robots our target is really 500 to 1000 genes a day, which means that in the period of about a year, we will have localized all the genes in the human body, to all the tissue types in the human body." That gave the audience a clue as how it might be possible to tackle the problem. While the complexity of the problem boggles the imagination, the speed with which Dr. Burmer is plowing into this investigation is equally awesome.

An audience survey rated Glenna Burner's talk at the very top of the list. All of the quotes in this review probably account for no more than one minute of actual speaking time, and of course it's not practical to include any of the many colored visuals she used in her talk. (Get the video, when Alcor makes it available, if you want the full picture.)

Michael West, Ph.D., Advanced Cell Technologies



"Human Therapeutic Cloning"

Drawing parallels from ancient Egyptian history, Michael West first foreshadowed the recognition of germ lines as immortal colonies. Then, he observed that the somatic cells by comparison have almost no such potential. Clearly, the differences had to be matters of gene expression, he pointed out, and this

pointed to some very fundamental differences that should be subject to discovery.

Telomere shortening was a distinctive difference between the two classes, and it soon became clear that this was a universal characteristic of somatic cells. When telomerase, which causes telomere length to be maintained, was added to lines of somatic cells, their capacities to maintain the colony were similar to those of true germ lines. Was this the answer?

As a founder of Geron Corporation, Dr. West pursued this line of investigation with the goal of anti-aging applications. The results were encouraging, and he now is continuing this work through a new corporation, Advanced Cell Technology (ACT) in the Boston area. The present focus is on medical therapeutics vs. direct intervention in aging, but the issue of cellular aging remains a critical factor. No one would want an “old” organ as a transplant, and early observations of Dolly (the first cloned sheep) indicated that there might be a problem—shorter telomeres. Would there be a way around that?

ACT, Dr. West said, had indeed found a way around the problem. Cows cloned by his present method do not exhibit shortened telomeres. Their telomeres are actually longer than a normal newborn’s. Exactly how the cloning process is handled so as to achieve this was not discussed. The comparative telomere length data, however, was shown. It is not necessary to create entirely new organisms or individuals. By the correct guidance, the new tissues can be guided into forming the replacement tissues or organs needed for therapy. Quoting Dr. West:

“These cells are, in a sense, magical cells, in the sense that they

can do things we’ve never been able to coax cells into doing before. The exciting thing is, of course, think of the combination of being able to make even a complex tissue that you might need, that’s your own, won’t be rejected, won’t need to take immunosuppressants the rest of your life, and that are young. That have been taken back in time and had their whole life span back again. There are a lot of steps necessary to make all this happen.

“We’ve been working hard on the de-differentiation step, the therapeutic cloning step, the nuclear transfer step. There’s many other steps involved. Selecting out the cells, genetically modifying them in some cases, growing the stem cells, and then selecting out the lineages of cells you need and making the particular cells and tissues that you want. We’re hard at work in all these areas.



“It’s important to remember, though, you know, there’s many applications to these new technologies. One, for instance, you could also make besides somatic cells, you could make a reproductive cell. On the bottom (referring to the slide) you could potentially make an oocyte. For a woman of any age. Essentially, you can get around menopause.

“Now, when we start talking about the germ line, genetically

engineering the germ line, a lot of people get nervous, including me. Where are we headed with all these technologies? Now, first, I’d like to point out that I believe this is an ethical use of these technologies. We’d have to talk longer than we have today on the ethics. The reason I think it’s ethical is evidence from nature.

“Nature teaches us that at the stage of the blastocyst, this little ball of cells that I showed you a couple of times, that individuation, a person, a human being, has not formed. How do we know that? If you take that little ball of cells and divide it into two, you get identical twins, and that’s how identical twins form. As you know, about one in three hundred live births are identical twins. Happens all the time.

“It’s also possible that two separate fertilized eggs can bump together in the fallopian tube and merge together, and then you get unnatural chimera. Two human beings in one body. If that happens at this stage, they’re a normal human being. You wouldn’t even notice it, could be one eye’s green, one’s blue, but you could look in their cells and see that there are two persons, two different people in that one person.”

This above quote is a “flash-sample” of what Dr. West’s talk was like. He explored many ethical and technological enigmas, in a fascinating way, in terms of both human therapeutic cloning and other emerging genetic possibilities that will be far more controversial. “Where to draw the line?” will be the question in many of these areas, but one I think Dr. West made clear. The use of human therapeutic cloning will not only be an extremely potent tool for improving our well being, but it will be far less controversial, far less likely to be

slowed down, than many other areas which will soon be open to application in human reproduction.

Brian Wowk, Ph.D., 21st Century Medicine Inc.



“Molecular Control of Ice Formation”

“We may be able to stop freezing cryonics patients right now!”

Dr. Wowk woke up the audience with that statement, but he did not mean that members of cryo-transport organizations should cancel their arrangements. Rather, he quickly stated that better methods than freezing were not just on the horizon but, figuratively speaking, “approaching the pier.”

Recently it has become practical, through research at Dr. Wowk’s laboratory, to use advanced materials to virtually eliminate ice during cooldown to cryogenic temperatures. He showed comparisons of biological materials protected in this way versus earlier methods and illustrated the arrangements of molecules that made the better methods possible.

Ordinary cryoprotection combats freezing by lowering the freezing point, but Dr. Wowk pointed out that sophisticated proteins can be included in small quantities, akin to natural “freeze-blocking” compounds that protect arctic fish and insects. This further

restrains ice formation. With sufficiently rapid cooling, he showed that a glasslike or “vitreous” state could be produced, with custom molecules developed in his laboratory.

Dr. Wowk described the approach developed in his laboratory by which ice formation can be bypassed entirely. He also pointed out that an even more difficult problem exists in rewarming, where the glasslike state has the tendency to be replaced by a crystalline or “ice-like” state as it is heated, “devitrifying” with destructive effects on the cells. Using dynamic molecular computer models, he showed in animated analysis how his well-designed, protective freeze-blockers could help with rewarming.

The talk was highly illustrated but very complex. On the other hand, it dealt with the crux of what was on the minds of many of the attendees: What are the possibilities that a procedure can be done so well, that most scientists and physicians of today can see the potential of this approach and endorse it? Dr. Wowk’s presentation was evidence that hard science was addressing the challenge of true suspended animation.

Gregory Fahy, Ph.D., 21st Century Medicine, Inc.



“Cryobiological Research at 21st Century Medicine”

Dr. Fahy, backed by more than thirty years of active interest and study of cryobiology, began with the statement:

“The central focus of research at 21st Century Medicine is to cryopreserve large, complicated systems, the larger and the more complicated, the better. But we’re going to be starting with something relatively practical—namely, whole organs. This would also include artificial organs, engineered tissues, if Mike West is successful, perhaps cloned organs that are prepared in advance of need and have to be stored. In any case, it’s a finite problem and potentially could chase after a very huge medical market. But we’re the only group in the world, as far as I know, that’s actively pursuing this, and this requires that we try to do some things that other people don’t have to face and deal with.”

Brain preservation was the focus of Dr. Fahy’s talk. In contrast to the broader market suggested by the quotation above, it was evident that the driving motives behind the research and the long-range goals were dedicated to the challenge of protecting something not normally thought of as a transplantable organ.

Hippocampal brain slices were the initial model discussed, where the task was to find optimal cryoprotective agents. Dr. Fahy commented that chilling injury was investigated, and one important finding was that perfusion at 10° C eliminates chilling injury, and is yet significantly better than results at 15° C.

Mannitol concentration was optimized, and kidney preservation perfusates were evaluated in the work Dr. Fahy reported. Excellent results were obtained at 50%

continued on page 46



Why Memory?

by Thomas Donaldson, Ph.D.

I have spoken at Cryonics conferences and in writing about the importance of memory to us: how it really works and what memories cryonic suspension may preserve... or not preserve. Partly because I was not able to attend the latest Conference at Asilomar, I will here discuss memory and its importance once more. Moreover, simply supposing some kind of computer uploading totally fails to solve our problem, as I shall explain later.

The easiest way to see memory's importance comes from realizing that virtually all neuroscientists would now agree that memory is shown in the connections between neurons. Neural net computers basically operate in similar ways: their learning consists of marking some connections between neurons as particularly important and others less important. (Our brains either grow new connections or they do not: an important and critical difference). Clearly, for neural net *computers*, destruction of enough of these connections will wipe out any learning they've done, i.e., destroy their memory. This issue becomes even more important because we know that in brains, the great majority of people have identical *major* connections between brain regions: it is the new connections for their individual

memories that differ... and that just might end up destroyed either by events prior to suspension or suspension itself. Some other factors may help us keep our memories: unlike electrical circuits, neurons often have many connections with one another rather than just one. For a memory to survive, it may not need all connections. Yet if our memories consist only of *special* connections between our neurons (not those present in everyone) then those memories might well become seriously disrupted. Suspension may change the number of connections between two neurons and their locations on the axons and dendrites enough to disrupt any memories those neurons may hold collectively.

In terms of revival I see no difficulty in preserving *consciousness*, even though we don't yet understand the brain circuits involved. Yet if suspension wipes out *all* your memories, will you remain the same person? Suspensions may even disrupt memories rather than destroy them, so that your memories turn out not just to be totally false (and remember that you will think them true) but even fantastic and absurd. Nor does uploading into computers help at all: we still need to recover our memories, which requires much more under-

standing of those wet messy biochemical devices we call brains.

So what do we do here? And what reasons for hope might exist?

The easiest path for *future* suspension consists of working out some form of suspension that clearly preserves memories. Because brains of all mammals work much the same, if we can suspend rats (say) and have them remember training that they had before, then we'll have means to preserve memories on suspension. (Freezing *parts* of brains isn't enough: We may well have to go as far as freezing whole brains to verify preservation of memory.) Such an achievement, at least in Dr. Greg Fahy's opinion, is not so far away (Greg is a major cryobiologist, not just a cryonicist). It won't totally solve our suspension problems, but it is certainly an important step.

However, we clearly do not have that ability at present. Just how long it will take to acquire such methods remains unknown, if only because the cost and time required to develop them unfortunately are high, and the issue has not gotten as much attention from cryonicists as it should. Moreover, cryonic suspension can often occur as an emergency operation, in which the equipment (whatever it will turn out to be) isn't there or is

only half there. So there will *always* be cases of people suspended by older and less ideal methods. Sure, such cases will grow less and less frequent, but they will still continue. Furthermore, what about all those suspended *before* we have such suspension methods?

Given the beliefs of virtually all neuroscientists, recovering memories for suspended patients will require individual attention. Individual connections between neurons may be able to be recovered by using a much deeper understanding of brain anatomy and chemistry than we now have. It's not that such understanding will give automatic recovery, but that the connections between two *particular* neurons might be recovered by knowing their special geometric and chemical relations to one another. Since we need not just the connections between two neurons but those between millions, that recovery will probably require a highly parallel computer, larger than any that now exists in terms of number of processors (but possibly only the size of a PC due to nanotechnological construction). The point to remember here is that we're never dealing with just two arbitrary neurons: each has a position in the brain, with some parts remaining and others not, and many chemical signs may survive to show that a connection existed between the two. Their geometry and chemistry will differ from any other pair ... so this problem is hardly a simple one.

And could current neuroscientists actually not have as good a handle on how memory works as most think they do? Perhaps. One neurotransmitter important to memory can also play a major role in destroying neurons: glutamate. In our brain cortex, pyramidal

neurons use glutamate, while other neurons (interneurons) do not. Could it be that those *others*, not our pyramidal neurons, play the major role in memory storage? Some neuroscientists think so, and those neurons may survive our primitive forms of suspension much better than pyramidal neurons.

Another recent series of discoveries shows not just how neurons grow new connections but even more striking, provides more instances of neurons *losing* their connections (WT Wong et al, CURRENT OPINION IN NEUROBIOLOGY 10(2000) 118ff; M Segal et al, TRENDS IN NEUROSCIENCE 29(2)(2000) 53ff). Such loses, which apparently happen quite easily, may ultimately raise questions about just how our brains store memories. Neuroscientists talking now about how memory works may ultimately turn out to be wrong, and the required experiments on living animals remain quite difficult[1]. And if other chemical factors play a necessary role in preserving special connections for a true long-term memory, that will tell us that simple preservation of connections (using embalming chemicals, as some have suggested) may ultimately fail.

Some additional words for those who envision being read off into a computer also need saying. First of all, we have no way at present of reading off memories from brains (as distinct from producing a machine that acts like you, with your memories). Second, any device which really is to be *you* requires several things computers generally lack: an ability to sense and interact with the world (including the drives you have: hunger, sex, etc.), consciousness, and most of all (for those who bring up Turing's work especially) *real-time*

computer processing. This latter means that it isn't enough for you to work out that the car speeding down the highway will hit you... after a year of processing. You must do so soon enough to react, and not only that, you must *actually react*. Whether that may someday be done by something we would call a computer remains unknown; it's easy to state how brains differ from computers: growing new neurons, forming and destroying connections. So far as I know, such devices may not even fit the requirements Turing suggested for a computer. As for any present ideas, to find out how to read someone into a computer as a functioning creature requires much more knowledge of how brains actually work.

Unless we can avoid these questions about memory by finding some suspension method that *guarantees* survival of a patient's memories, we'll inevitably have to learn more about how brains preserve memories. And even if we can (usually) use such methods, they cannot benefit former patients, and there will always be some patients suspended by primitive methods. How human brains work will remain an issue for us indefinitely. 1

[1] The earliest papers showing growth of new neurons in *adult* mice, by Altman and Das (J COMPARATIVE NEUROBIOLOGY 124(1965) 319ff). Many doubted this work, though later work has verified it. The earliest work showing changes in neuron connections over 1 month comes from Purves and Hadley (NATURE 315(1985) 404ff).

An Exciting Summer

It has been a big summer, with the announcement of the long-sought goal of mapping of the human genome and other interesting advances. Here are some highlights.

Mapping the human genome.

A major scientific milestone, the nearly complete mapping of the human genome (the chemical base-pair sequence for human DNA, which in turn determines the size, internal structure, growth processes, and much of the functioning of the human organism) was announced in the media June 27. Hailed by British Prime Minister Tony Blair as “the first great technological triumph of the 21st century,” it is expected to provide a starting point for much progress in medicine over the coming decades.

An interesting feature of the new milestone is that it was not the accomplishment of one vanguard group but, instead, two competing research teams who struggled, sometimes bitterly, for the scientific credit, then finally agreed to share it. A closer look at this suggests a most interesting tale that I expect to be chronicled in book form eventually. For now a very brief summary will have to do, based on my own impressions from reports I’ve read. Basically, first you had the multinational Human Genome Project (HGP), a publicly funded effort started in 1990. It was supposed to finish mapping the human genome sometime early in the twenty-first

century; 2005 became the settled date. The effort was plodding along far behind schedule when, about 1998, the newly formed and privately funded Celera Genomics got into the act. Celera, it turned out (the name, by the way, comes from a Latin word meaning “swift”), used a nifty new technique that HGP had overlooked, which produced more rapid results. The folks at HGP were scornful at first, then they realized just what a serious threat this posed to their own prestige and credibility, and swung into action. At the day of reckoning, June 27, HGP was claiming they had mapped 85 percent of the genome, while Celera claimed 99 percent. On the face of it, I’m inclined to think both estimates are reasonably accurate, so at this point Celera is probably leading the field, though their rival can still claim some respect. Both groups, of course, deserve credit for whatever work they did, which in either case was substantial.

The competition clearly was good for the overall result, which might have taken much longer if either side had been going it alone. As a publicly funded group, HGP is committed to making its results freely available to the public. Celera is not similarly bound, though it has promised to make most of its human genomic data available to scientists without charge.

Something is worth saying here about the method used by Celera in decoding the human genome. Called the “shotgun” approach, it exploits the power of computers to do gigantic amounts

of rather simple matching operations. The human genome, consisting of a total of about 6 billion base pairs, is divided into 46 subunits, or chromosomes, consisting of independent pieces of DNA and supporting proteins. (An individual chromosome is usually also further complicated by doubling of its DNA strand; the two strands remain physically attached.) Each chromosome thus averages around 130 million base pairs. A chunk this size is far too large to map in one operation using today’s techniques, so it must be broken down further, which is an uncertain operation because at present we lack tools to carry out controlled cutting at this scale. In the shotgun approach the whole genome, chromosomes and all, is first cloned many times over. The copies are then broken up into random fragments of a few hundred base pairs each, which is within the feasible mapping range. The fragments are mapped and compared by computer, and matching pieces fitted together to reconstruct the complete sequence. By analogy, we could imagine assembling one perfect copy of a book from many torn fragments, each of which contributes some part of the missing text, and which can be fitted into the whole by matching with other, partly overlapping text fragments. The alternate approach, used by HGP, called for insertion of numerous chemical tags or markers throughout the genome first, to establish a frame of reference for mapping. Celera’s success showed that this extra step was unnecessary.

The Human Genome Project is being conducted under the guidance of the National Human Genome Research Institute in Bethesda, Maryland. Celera Genomics is based in nearby Rockville. Both groups were expected to publish their findings together in the journal *Science* in early September.

Where to go from here: better computers.

Mapping the genome was a major scientific feat, but by itself it does little to improve the quality or duration of human life. Much more work will be needed to augment and translate the new genomic knowledge into useful applications. More generally, there are many hard problems to be confronted in mastering the secrets of biology. This is particularly true at the molecular level, where such processes as aging and illnesses must be understood if we are to obtain the degree of control we are seeking. Here we are confronted with an almost unthinkable complexity. The human body, for instance, contains about 10^{28} atoms, which means that it could be subdivided into a trillion trillion or 10^{24} pieces, each of which would consist of enough atoms—10,000—to make a fair-sized molecule. There are no easy answers, but help in various forms is on the way, one being improvements in computers, which should have many important uses in addressing this vast complexity.

Toward this end, the National Science Foundation announced August 3 that it had awarded a \$45 million grant to the Pittsburgh Supercomputing Center to buy what will be the world's most powerful, nonmilitary supercomputer. The machine is to be built by Compaq and will rate at 6

teraflops (6×10^{12} floating point operations per second). It is expected to be installed sometime in the second half of next year. It will be used by various scientific disciplines, including materials science, climate modeling, and—importantly—biological sciences. The use of supercomputers raises hopes that such advances as slowing and reversing aging will not take as long as some have predicted.

New step toward nanomachines.

Among the many anticipated applications of nanotechnology are supercomputers that would far outclass those of today—and perhaps be far smaller than pinhead size to boot and serve as the brains of tiny, mechanical robots (“nanobots”) that could perform a wide range of useful functions. Such possibilities are still a dream of the future, but progress toward nanodevices is continuing. A significant share of this progress involves the carbon nanotube, a tiny, elongated cage made of chemically bonded and interlocking carbon atoms. Nanotubes appear to have many possible uses, among them being structural components for tiny machines. In a simple way an important step toward such machines may have been taken recently. Researchers at the University of California, Berkeley, working with telescoping nanotubes of differing bore or thickness, report creating tiny bearings and springs. Initially the nanotubes are formed concentrically, one inside the other, into a multilayered tube that is closed at either end. “Peeling” or clipping the outer layers of one end yields a flask holding an inner, still intact, multilayered tube. This inner tube can then be rotated freely

within the flask or can be pushed back and forth to achieve the effect of a spring. The method holds promise not only for miniaturization of machine components but also for virtually frictionless moving parts that never wear out. A scanning tunneling microscope is used as a positioning tool to manipulate the nanotubes.

Precise, efficient insertion of genetic material into DNA.



Dr. Alan Lambowitz

Source: <<http://www.cm.utexas.edu/research/profiles/Lambowitz.html>>

A very interesting development relating to DNA insertions was reported in the July 21 issue of *Science* by a team at the University of Texas, Austin, headed by Alan Lambowitz. It involves the use of “introns”—pieces of genetic debris that litter DNA and may interrupt the coding of many genes. Some introns, though, have another interesting property, which is the ability incorporate themselves into double-stranded DNA. (Initially an intron consists of a length of single-stranded RNA together with reverse transcriptase. The incorporation of the intron into DNA transforms the intron itself into a double-stranded form, but also preserves its original “message,” or pattern of nucleotide bases.) Moreover, the self-insertion of introns can now be precisely directed to specific sites in a length of DNA or a whole genome. This clearly is nanotechnology in action, and of a sort that could soon lead to

medical applications. The introns use a sequence, or “address,” consisting of about 14 nucleotide bases to recognize the desired insertion site, which is located by a matching operation as the intron explores a length of DNA. Changing the address sequence—modifying the intron—results in insertion at a new matching site, assuming one can be found. The method holds promise in treating AIDS, among many other possibilities. The AIDS virus itself can be disabled, as has been shown in experiments with mammalian cells in culture. Genes that encode a protein the virus uses to infect cells can also be altered to lose their lethal property. More generally, the possibility is opened of genetically modifying specific sites while leaving others unchanged. Previously, precise gene targeting could only be done in one mammal, the mouse, and very inefficiently, contrary to the present method.

Quantum superposition: macroscopic states observed in parallel.

In a loop of superconducting wire, electric current flows indefinitely unless stopped from the outside. The current may flow in either direction. Based on classical physics, though, we’d be inclined to say that the current cannot flow in *both* directions at once. But here is where classical physics parts company with the newer and more comprehensive quantum theory. That in turn requires the superposition of different states of a system, and this property is essential in explaining many effects at the atomic and subatomic levels. For example, two atoms that are chemically bonded “share” one or more electrons, which are simultaneously bound to the different atoms, an

impossibility under classical physics. The superposition of states is a well-established phenomenon over small distances but had not been previously observed at the macroscopic level because then it requires an isolation of the system from surrounding effects that is very difficult to achieve. This raised the possibility that it would not occur at all at these larger scales, so that quantum theory itself would be found inadequate, like its classical rival, and some new theory must be sought. Now, however, simultaneous, macroscopic quantum states have been observed—currents flowing in opposite directions in a superconducting loop—which meet the stringent requirements of quantum coherence, in which two or more ongoing, independent processes happen in parallel. In addition to reinforcing quantum theory, the result is significant for the continuing effort to perfect a quantum computer, which requires that different computational processes execute simultaneously in a single device. The work was carried out at the State University of New York, Stony Brook, under Jonathan R. Friedman and colleagues.

Reversing presbyopia.

One effect of aging that seems universal and has usually made its appearance by age 50 is presbyopia, the inability to focus the eyes on nearby objects, such as a printed page. (Generally the ability to focus on more distant objects is retained.) Actually, presbyopia does not just strike in the 40s but may be said to start in adolescence, though its effects are usually not serious enough to impair one’s reading until decades later. Its exact cause is still in dispute. It is known that the lens of the eye becomes larger

and thicker with age, but this alone would not preclude retention of focusing ability. Conventional wisdom says the lens simply hardens, losing the flexibility that permits it to be focused by the tension of the ciliary muscle that surrounds it. But this is questioned by others, some of whom argue that the real culprit is that the progressively enlarging lens can no longer be stretched enough by the surrounding muscle to be adequately focused, though it still remains flexible. An advocate of this view is Dr. Ronald Schachar, a Texas ophthalmologist and physicist. In the early 1990s he devised a controversial procedure known as scleral expansion surgery for reversing presbyopia. The eyeball is expanded slightly to stretch and tighten the ciliary muscle so it can again focus the lens. To accomplish this, four small pieces of curved plastic are implanted in the sclera (white of the eye) surrounding the iris. To date several hundred have undergone the procedure, with generally favorable results, and clinical trials have been scheduled in the United States, where the procedure is not yet approved. One happy recipient is 60-year-old Dr. Stephan D. Plager, himself an ophthalmologist, who had the surgery done in Mexico last March. Two days later, glasses discarded, he was doing cataract surgery in his office. Eight days after that he read a newspaper aloud to a reporter and said he was seeing better than he had since age 35, despite some minor blurring that seemed to be clearing day by day.

There’s a little more to this story—another, entirely different solution to presbyopia is now being sought, which is to simply replace the lens of the eye with something better. Replacement lenses are

routinely used to treat cataracts, in which the natural lens becomes cloudy and opaque to light. But the replacement lenses currently in use, generally of hard plastic, are of fixed focus and thus can only cause, not cure, presbyopia. Happily, this may be about to change. C & C Vision of Irvine, California, has developed a flexible lens of silicone that restores vision at all distances, says president J. Andy Corley. About 200 experimental surgeries have been performed already, with reportedly good results, and clinical trials have started. FDA approval is estimated to take 2 to 3 years.

Implantable transceiver offers instant, remote patient monitoring.

A tiny, implantable transceiver offers the twin prospects of monitoring a patient's vital signs and determining the patient's location. Dubbed the Digital Angel by its owner, Applied Digital Solutions, Inc. of Palm Beach, Florida, the device is smaller than a grain of rice and equipped with a miniature antenna to track such data as heart rate and pulse. It can then broadcast the data to a ground station with an Internet connection, and can also receive data from the Global Positioning System, which would be used to determine the patient's location. (The Global Positioning System, or GPS, consists of 24 orbiting satellites that broadcast precise timing information to different points around the globe. The signals will be delayed by varying amounts depending on where they are received, so that the location of the receiver can be determined to within a few feet.) The value of this for cryonicists hardly needs comment; it would be especially useful for people living alone who might

experience life-threatening emergencies that prevent them from summoning help. Other possible uses range from tracking endangered wildlife to locating stolen property. A demonstration of the device is planned for October in

New York City. The chief scientist responsible for its development is Dr. Peter Zhou of Digital Angel.net, Inc., a subsidiary of Applied Digital. 1

SOURCES:

Mapping the genome:

Douglas Birch, "Scientists Draw Complete Map of Human DNA," *Baltimore Sun*, reprinted in *Tribune* (Scottsdale, Ariz.), 27 June 2000, A1.

Juan Velasco, "Different Routes for a Finished Map," *NY Times Online*, 27 June 2000. <<http://www.nytimes.com/library/national/science/062700sci-genome-process.A.jpg.html>>; <<http://www.nytimes.com/library/national/science/062700sci-genome-process.B.jpg.html>>.

Better computers:

John Markoff, "\$45 Million Grant Awarded to Buy Supercomputer," *NY Times Online*, 4 August 2000. <<http://www.nytimes.com/library/tech/00/08/biztech/articles/04compute.html>>; referred to by Doug Skrecky, CryoNet #14246 (5 August 2000).

Step toward nanomachines:

"Researchers Make Microscopic Parts," *Associated Press*, 27 July 2000, 9:31 p.m. (I thank Lisa Lock for sending this article—MP.)

John Cumings and A. Zettl, "Low-Friction Nanoscale Linear Bearing Realized from Multiwall Carbon Nanotubes," *Science* **289**, 602-4 (28 July 2000).

Insertion of genetic material:

Nicholas Wade, "DNA Innovation Lets Team Undermine the AIDS Virus," *NY Times Online*, 21 July 2000. <<http://www.nytimes.com/library/national/science/health/072100hth-gene-therapy.html>>.

Evelyn Strauss, "Targeting Intron Insertion into DNA," *Science* **289**, 374 (21 July 2000).

Huatao Guo et al, "Group II Introns Designed to Insert into Therapeutically Relevant DNA Target Sites in Human Cells," *Science* **289**, 452-57 (21 July 2000).

Quantum superposition:

Kenneth Chang, "Here, There and Everywhere: A Quantum State of Mind," *NY Times Online*, 11 July 2000. <<http://archives.nytimes.com>>.

Gianni Blatter, "Schrödinger's Cat Is Now Fat," *Nature* **406**, 25-26.

Jonathan R. Friedman et al., "Quantum Superposition of Distinct Macroscopic States," *Nature* **406**, 43-46.

Reversing presbyopia:

Julie Sevrens, "Surgeons Claim Reading Glasses Are Nearly Passe," <<http://www.opt.uh.edu/research/aglasser/pressreleases/SJMercuryNews.asp>>.

Peggy Townsend, "New Sight for Old Eyes," <<http://www.santacruzsentinel.com/archive/2000/May/15/top/stories/2top.htm>>.

Abigail Zuger, "Reading Glasses, as Inevitable as Death and Taxes. Or Are They?" *NY Times Online*, 8 August 2000. <<http://www.nytimes.com/library/national/science/health/080800hth-vision-glasses.html>> or <<http://archives.nytimes.com>>.

Implantable transceiver:

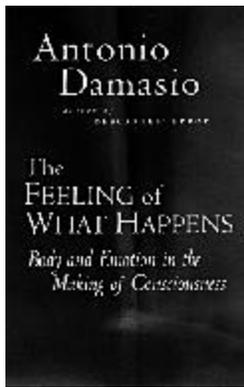
"Digital Angel™ Breakthrough Technology Goes Live!" <http://www.adxs.com/ADSX/CDA/News/news_index/0,1136,430,00.html>; referred to by Eugene Leitl, CryoNet #14267 (8 August 2000).

The Feeling of What Happens: Body and Emotion in the Making of Consciousness

By Antonio Damasio

Harcourt, Brace, 1999

Book Review by Thomas Donaldson



Damasio has written an interesting speculative book about how our consciousness works. Even to explain his major thesis I must describe his definitions

of major terms: *core consciousness* is a primitive and basic form of consciousness which uses neither memory or language. Some patients with neural problems may only have core consciousness; a significant number of animals probably also have it. *Extended consciousness* brings in such things as memory, particularly memory of one's own experiences. Patients devoid of hippocampus on both sides of their brain have core consciousness but no extended consciousness. Damasio also distinguishes emotion from feelings: *emotion* is visible to others and consists of the external signs of "emotion" as normally considered. Damasio uses *feelings* to describe the internal signs of emotion knowable only by the person who has emotion. Finally, *objects* refers broadly to virtually anything: specific pains or emotions, people, objects in the narrow sense (hammer, window).

Damasio bases his theory almost entirely on his own work with brain-damaged patients. These include not just those lacking memory, but also those lacking other brain regions. Loss of some brain regions causes coma, others cause loss of memory for particular classes of object. Other kinds of damage cause a person to lose *specific* memories: they recognize a person in general, but cannot recognize their relatives.

Most important, loss or damage to some brain regions causes loss of core consciousness, of which Damasio cites two cases: epileptic automation and akinetic mutism. In epileptic automation, patients show all signs of being awake, and may even perform actions as complex as rising from their chair and going outside. Yet they show no signs of knowing who or where they are. This automatism can go on for only a few seconds or for several minutes. Anything the patient does during it he or she will have completely forgotten when he comes out of it. Damasio suggests that such behavior gives an example of total lack of consciousness while remaining awake. One point he makes here is simple: most people would not attribute consciousness to ants or paramecia, even though they can show emotions, follow trails, and so on. Seen from that perspective, it's likely that some

kinds of brain damage might produce similar lack of consciousness in human beings.

Another feature of these states also deserves description: patients with this automatism also show no emotion during their automatic activity. Damasio suggests a simple reason for this: core consciousness, and feelings, come from very close or even identical brain areas. He goes even farther by suggesting that core consciousness *itself* constitutes a feeling, the feeling that I have feelings and knowledge. His discussion provides strong reasons for this idea. Yes, it is a feeling of which we normally fail to be aware unless we pay attention to how we feel. The book's title, *The Feeling of What Happens*, gives this point exactly. His discussion, in general, pays lots of attention to emotion, pointing out that feelings of one kind or another, strong or weak, never leave us, even when we do reasoning that may seem to lack them entirely.

His arguments with other notions of how consciousness works all proceed from careful analysis of one or another kind of brain damage, together with a deep knowledge of what we know about activities of the various regions in our brains. One nice feature of his

(continued on page 31)

The Baby Boomers' Guide to Living Forever: *The Promise and the Future Impact of Trying to Live Forever*

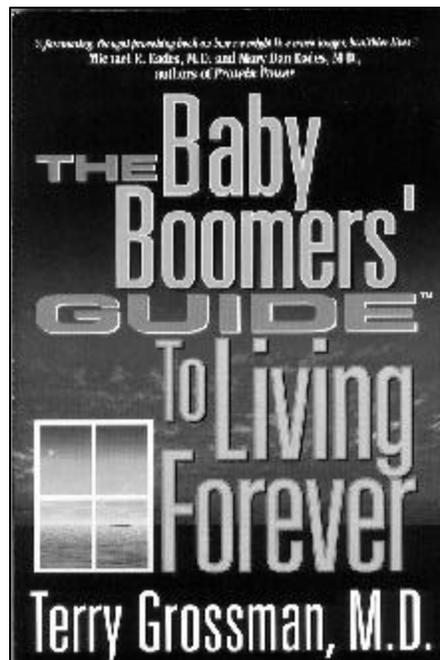
By Terry Grossman, M.D.

The Hubristic Press, 2000

Book Review by Mike Perry

This book is one of a growing number that takes seriously the proposition that immortality may be achievable, through remedies for aging and other afflictions, in the lifetimes of many of us now living. Particular focus is on those born in the years 1946–1964, the Boomer generation. Many of us in cryonics are in this group (myself included), and have seen our hopes alternately fade and brighten over the years as discoveries about aging have slowly piled up, while it and other biological killers remain at large.

“Slowly,” of course, is a relative term, and arguably does a disservice to those who are now producing astonishing discoveries in the biological fields, with the ever-present promise of indefinitely extending our lives in good health. In any case the book is fully in sympathy with the immortalist position that we want to survive to see the end of aging, or failing that, take steps through cryonics so that we can be reanimated, cured of our afflictions, and go on living. The right course to follow, then, is straightforward: do what you can to hold off aging and meanwhile, get signed up for cryonic suspension. Both approaches are advocated, though the greater part of the book is taken up with anti-aging medicine. This is to be expected for, as the author explains at the beginning, he operates clinics in Colo-



rado and California that specialize in anti-aging medicine and chelation therapy. (Here and henceforth I use “author” to refer to the principal author, Terry Grossman; actually there are ten coauthors.) The book, then, is in some degree promotional, though it is not written in an advertising style and its overall tone is reasonably dispassionate and objective.

Anti-aging medicine, though, is presently a controversial subject, and some of the approaches advocated in the book seem particularly open to criticism. The most glaring to me is homeopathic medicine, in which “very dilute” solutions of certain substances are used for

claimed beneficial purposes. The dilution factor is often so great that it is unlikely that a single molecule of the active ingredient remains in solution at all! This, I think, is going too far, though the author is enthusiastic. “The fact is that whatever its mechanism, homeopathy really *does* seem to work, and this has been proven again and again in double blind placebo controlled studies. The fact that we do not understand its mechanism relates more to our own level of scientific ignorance regarding energetics, quantum physics and subatomic medicine.”

I am not keen on “subatomic medicine,” and I have been unable to find any journal papers reporting positive results of double-blind testing of homeopathic medicine. But I did have a chance to speak to Terry Grossman at the recent Alcor conference in Asilomar, and this provided some additional perspective. He said that homeopathic remedies were not always so diluted as to exclude the original active ingredients, and that small amounts of said ingredients still present, could be responsible for the claimed effects, or some of them. However he did not come across as a strong proponent of homeopathic medicine. He said it had been offered because his clients wanted it, but that since the book was written he has discontin-

ued it.

But generally, what is now known as antiaging medicine I see as a grab bag of various substances and treatment modalities whose effectiveness, at best, is often unknown. Separating placebo from more substantial effects has not been undertaken with the care and objectivity it should have been. In any case, a fact acknowledged by the author is that there is *no* presently available strategy that can hold off the aging process very long. Interventive therapies that might be able to accomplish this, such as use of telomerase to reset the cellular aging clock, are possibilities for the future but remain undeveloped. The best bet today

for delaying senescence still seems to be calorie restriction, which is unpleasant for many but that is the way it is. Your approach, whatever it is, may gain you a few extra years, which is of greater significance with today's ongoing progress in the biological sciences, but it could still be too little, too late. So again, it makes considerable sense to also have cryonic suspension arrangements in place. The book is to be commended for taking this latter idea seriously. A major section, extending to several chapters, is on "immortality medicine" and offers details about making suspension arrangements, including funding through life insurance. (A list of cryonics

organizations is provided too.)

In other areas, such as dieting, the book offers what appears to be sound practical wisdom. Its philosophical outlook is bright and hopeful. Its weaknesses would, I think, make it an easy target for critics of the idea that substantial life extension is a serious prospect for our time, but in the long run it should not matter much. Good technological approaches will drive out the questionable, and progress continues. In the short run, the book will provoke some thoughtful consideration of the issues it addresses. The thinking person can benefit, knowing that all opinions must be weighed objectively and not simply accepted as dogmas. 1

(Donaldson, continued from page 29)

discussion consists of diagrams of those brain regions suspected to play a part in the features he discusses. For instance, some neuroscientists have suggested that even core consciousness requires language; Damasio argues against this by discussing patients who have lost all ability to speak or read and understand, but still show many signs of what he calls core consciousness. He also tells of other patients with lesser language faults. He gives other arguments, too, against any notion of language causing consciousness, all saying that core consciousness is definitely not linguistic. Later in the book, he discusses extended consciousness, again by looking at patients who lack part of it: some cannot name objects of specific kinds, others cannot remember their past. Each of these many kinds of consciousness exists on top of core con-

sciousness and cannot exist without it.

One notion of the brain areas involved in consciousness proposes that some part of the reticular activating system (an area in our lower brain which, among other functions, plays a major role in whether we're awake or asleep: damage to some parts causes permanent coma). Damasio specifically does not claim this area plays no role in consciousness, but he does claim that *other* areas must be involved also (and gives a brain diagram to show the areas and why they play such a role). Damasio also does not identify one special brain area with consciousness, suggesting instead that even core consciousness depends of operation of several brain areas.

Damasio doesn't claim he has a complete answer to the problem of consciousness. He explicitly points out that he's considering consciousness itself, not what he calls extended consciousness. Moreover

many of the more recent techniques (CT scans, MRIs) to see brain activity in undamaged people need to be used to verify his arguments. Animal experiments may also help: just as they suggest that some species have core consciousness they may specify (and perhaps strengthen) some of Damasio's proposals.

He wrote his book to be read by those interested in consciousness but not experts in neurological science. If interested, you'll find it fascinating. Most important for our own concerns, we want not *someone* to be revived, but *ourselves*. That may come only with our revival with extended consciousness (which requires survival of many memories), but core consciousness remains essential to such revivals. The book also has extensive notes with bibliographic citations, and an Appendix on relevant issues about the anatomy of human brains. 1

Visions of the Present, Visions of the Future, Visions of Unbounded Life

LifeQuest

Fictional stories reprinted from the late 1980s

The stories that follow appeared in *LifeQuest*, a semi-annual collection of life extension fiction, from May 1987 to November 1990. They ranged from practical cryotransport dilemmas to far-reaching possibilities of uploading, nanotechnology, and the deep-time aspects of living in space colonies. The contributors comprised a rapidly broadening group of authors at the time publication ceased in 1990.

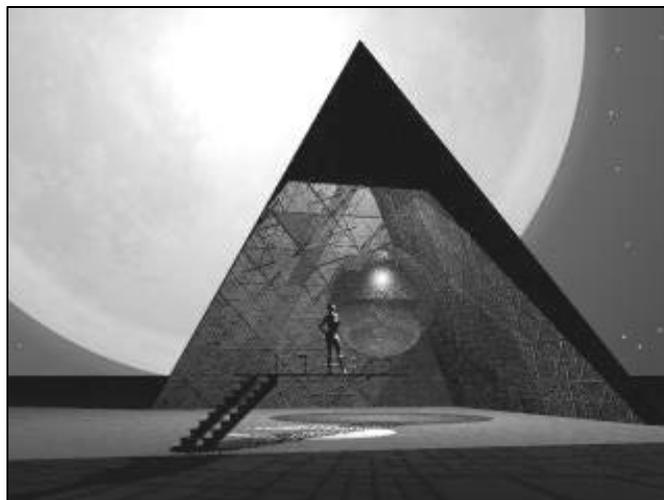
Now, in a special section of each issue of *Cryonics*, we bring you reprints from past issues of *LifeQuest*, along with new stories contributed by authors from our wide readership and other sources. If you are a professional science fiction writer, or even if you are not, we invite you to submit your stories for possible inclusion.

Table of Contents

BLUE
by Anthony Dunn
(Original Publication) 32

RE-CREATION
By Fred Chamberlain
From Issue #9, Nov. 1990 40

BACK ISSUES OF LIFEQUEST
Issues #1 & #2 are already
“On the Web” 43



Artwork by Tim Hubley

BLUE by Anthony Dunn

“We’re losing him, we’re losing him.” The soft female voice sounded frightened and distant.

The bed was firm and warm under my back. It seemed to contour itself around my body, supporting every inch, every nook and cranny of my six-foot frame perfectly. The gossamer touch of a thin fabric sheet betrayed its presence on my chest. It was taut and tight, faintly restraining.

“Cortical response weakening; he isn’t going to make it.” Panic in her voice this

time.

It was day time. At least it was light. Even with my eyes still closed it was bright enough for me to be able to see that. I didn't remember going to sleep; I didn't remember laying on this bed.

Where am I?

The thoughts seemed to crawl slowly into my mind, accompanied by a sharp stab of fear and a swaying, falling sense of disorientation.

Where am I?

The only way to find out is to open my eyes and look.

They won't open. I want them to, but they won't. Why? My arms, my hands, my legs—none of them move when I tell them to. Oh God why? Nothing moves, nothing's moving. In a stream of jumbled, panic-filled thought, one jostles to prominence. Nothing's moving, not even the slow, rhythmic rising and falling of my chest. I'm not breathing.

"He's dying, really dying" said another flat, dull, bored voice. "I told you he was too weak, waste of time; he was always going to die on us."

Dying?

I'm dying; that was why I wasn't breathing.

"Time to pull the plug; no need to waste anymore on this one." The dull voice again.

No, no, I don't want to die, not going to die, got to breathe, just got to breathe, one breath, just one deep breath. Show the dull one he's wrong. Got to breathe.

"Switching off support systems," the dull voice said.

"Wait, please." The soft female voice, pleading this time.

"He's dead, D.E.A.D.," the dull one replied.

I've got to breathe, got to breathe, don't want to die, not going to die, got to breathe.

Shards of sharp ice fill my lungs, freezing but invigorating, fresh air sucked in through painfully dry mouth and nose. It smells of clean sheets with a faint aroma of hospital waiting room.

"Yes!" The female voice, excited, happy this time.

Somewhere in the distance an alarm began to chime. It seemed to get softer and softer. I'm falling slowly in a long ever-darker descent, falling quickly into

sleep.

Where am I?

* * *

Spring was always my favorite time to fly over London. The green ocean of Richmond Park stretching out beyond the houses of Putney and Wimbledon looked at its freshest and brightest early in the year. Catching sight of it from the early morning flight home from the States was the best time to see it.

An hour later and thirty miles south and you were driving out of Gatwick Airport. At the end of the motorway approach road I was always tempted to turn south and head for Brighton and the coast. To escape back to the haunts of youth. The pebble beach, the pier, mingling with the crowds of day trippers escaping from the capital. That's how I had first met Carrie. She was down for the week with her friends from Harrow. I was only sixteen; she was older than me, by ten days. Her short dark hair, ebony skin, and graceful movements were the opposite of my pale complexion, blonde hair, and gangly clumsiness, but where we differed in appearance we were alike in mind. Space was everything. Not many people were really interested in peering at Mars through a telescope and keeping up with the latest interplanetary mission, but we were.

I knew from the first minute that I saw her that I loved Carrie; when she smiled at me it made the world a happier place, but, at first, I could never work out if she loved me or even really liked me. Our shared interests had kept us close. Then it was university that broke us up and, brought us together. She was studying at one end of the country; I was at the other. We didn't talk for three weeks. I was being strong, missing her, needing her, but too stubborn or stupid to call her.

Then one day she was there, in my room, unpacking her bags and making us tea.

"I've changed colleges, I'm here now," she said without stopping the unpacking.

"Oh," I replied.

"I missed you," she said.

"I love you," I blurted out.

She stopped for a moment.

"I know," she replied. "I just hadn't realized the feeling was mutual until now," and she leaned over to kiss me.

That was eight years ago. Eight years of setting up home together, sharing our lives together, building our careers together. We had gone from university to European Space Agency to working on the NASA Mars team together. It had been eight good years, but three months ago it had gotten even better. After years of trying, after years of not getting pregnant, of doctors and therapies and disappointment, along had come Jacob—a son for Carrie and Jack, doting parents, at last.

My four weeks at work in the States had been exciting but frustrating. A double shift—Joe's wife was sick, really sick, not going to get better sick. I had "volunteered" to cover his two weeks so that he could spend a last few days with her. All in all I had doubly missed Carrie, and missing so much time out of Jacob's young life had been almost too much to bear. He was only three months old, but the image of his smiling face, the sound of his cry, the twinkling of his blue eyes, were etched into my mind and soul.

I wanted—no, needed—to hold Jacob in my arms again and feel his head rest on my shoulder, hear him breathe, slowly, contentedly, in dad's embrace. Although he wasn't old enough to really appreciate the U.S.A. Teddy Bear I had bought him, I was sure he would learn to love it.

I had bought two bears, both the same except that one held a Stars and Stripes and one a Union Jack, but on the flight back a four-year-old sitting opposite me had seemed to fall in love with the British bear, so, amid mild protests from her parents, I had given it to her. She had looked happy and waved 'bye to me as I left the arrivals lounge. I reached over and stroked the soft, artificial fur of the remaining bear where it sat in the passenger seat and smiled as I thought of it nestling next to Jacob in his bed.

I only took my eyes off the road ahead for a moment, just a second or two, but when I looked up the lorry was hurtling toward me across the central reservation, smashing through the crash barrier. The metal of my car made a

strange, high-pitched squealing sound as it crumpled and crushed under the impact.

There was no pain. Just an instant of shock and fear and then darkness.

The bed felt warm against my back. The air smelled clean. My mind was still filled with dreams of crashing cars.

Where am I?

Hospital, yes hospital, it had the faint smell of hospital. The crash was real and now I was in the hospital. This time my eyes did open.

The bright light hurt; everything was blurred. It seemed like a hospital room, small, white, and filled with beeping machines. High on one wall was a window with something written in bold letters across it. The name of the hospital?

It was still too blurred; was it St. Agnes or Charring Cross? The blurred images coalesced into more distinct shapes. The writing became legible. ALCOR RESUSCITATION FACILITY, it read, and below it, in smaller letters, "Welcome back."

The bleep, bleep, bleep of machines pushed the images of crashing cars from my mind. ALCOR RESUSCITATION FACILITY? Suspension was cutting-edge science. Resuscitation was, at best, decades away. To be in resuscitation I would have had to be frozen. I would have had to be dead, but I wasn't dead—I was alive. The image of the lorry careening toward me flashed back. The instant of shock and the darkness. Could that have been it? Was this it?

Carrie had laughed when I first joined. She didn't believe that it could ever work. Too many problems, too many ifs and maybes was all she ever said when I tried to talk her into signing up. Had it really worked?

The wall farthest away from me held a door. It opened. A tall, thin, middle-aged man in a long white doctor's coat came in. He walked slowly, painfully, toward me and sank into a chair. His breathing was hard as if he had just run a two-hundred-meter sprint. Beads of perspiration hung on his forehead.

He wiped the sweat away from his icy blue eyes and over his bald, dark scalp.

"Too heavy," he said softly, as if to himself and then looked at me.

"Hello Mr. Roberts." He waited for a reply.

I stared silently at him as his breathing eased.

"Hello Mr. Roberts." He spoke slowly, carefully, as if he were trying his best to speak clearly in a foreign language.

"Hello Mr. Roberts." He began again.

"I can hear you," I replied, and tried to smile. The muscles in my face hurt. I winced in pain and they hurt even more.

"Try not to move; you've been gone for a long time; it will take a while for things to work normally again."

A long time. How long was a long time? The doctor sat and stared at me.

"How long?" I asked.

"I'm your resuscitation supporter. I'm here to help you recover and return, slowly," he replied.

"How long have I been . . . dead?" I asked again.

"Suspended," he corrected me. "For a long time," he answered.

"How long is a long time? Please. . ." I was in no condition to make demands; pleading was my only option.

He placed the fingers of his left hand against his temple and looked at the wall behind me. He shook his head and then nodded as if having a conversation with someone.

"You were badly injured; there was barely enough good material to store."

"How long?" I repeated.

He looked at the wall again. His lips moved rapidly but silently. Whoever he was talking to, however he was talking to them, his body language showed that they were arguing.

"It's too soon—you're not ready for it," he replied.

"Please." I tried to sound more plaintive this time.

He shrugged, glanced at the wall, and then looked at me.

"Two hundred and fifty years," he said in a matter-of-fact way.

Two hundred and fifty years. It had worked! I was alive, and it was the future already. I wanted to laugh, cheer, run around the room in celebration. Except everything hurt, and I couldn't really

move. Still it felt good to be alive, again. I couldn't wait to tell Carrie should just would not.

Two hundred and fifty years. It was a long time, too long. I was alive but Carrie would be gone, long gone. Even Jacob would be dead. I could still see his baby face in my mind. His smile . . . my baby son had grown old and died before I had ever had the chance to know him. The feeling of joy sank in an instant, and the cold touch of misery took its place.

Carrie, Jacob were both dead and gone; what was the point of me having survived? The room began to darken. In the distance an alarm began to gently bleep.

"Medical emergency!" the doctor shouted out.

It didn't matter. Everyone was gone. It didn't really matter what happened to me. The light dimmed and then everything went dark.

The morning routine always started the same way. A slow awakening from dreams of death or images of Carrie and Jacob all long gone now but still fresh in my mind and heart.

"Good morning Mr. Roberts." Doc sat in his chair.

"Call me Jack," I suggested for exactly the thirty-first time. A whole month of mornings since what I now thought of as my awakening.

"What would you like for breakfast Mr. Roberts?"

"Call me Jack."

He stifled a laugh. "We don't call anyone a Jack these days, well, not unless . . ." His voice trailed off.

He said strange things like this all the time. "Linking to the node," "imprinting information," "upgrading implant," but he would never explain what they meant.

The days had settled into a pattern. Breakfast followed by exercise in the little gym in the room next door and then two hours of catching up with the past. Two hours of watching old newsfilm of events that had happened after my suspension.

"Early Martian Colonies today," he said with an air of excitement.

I knew Mars, or least had known Mars. The imaging software on the first

sample return mission had been mine, well at least partly mine and several hundred others who had a hand in creating it. I knew Mars. I had watched the television images from the landers; I recognized its cold, harsh, desert surface. That was my Mars.

Not the new Mars, the enhanced atmosphere Mars, greening valleys and slowly filling oceans of the new world they had created using technology I just didn't understand. Why should I be interested in the Martian colonies? They didn't hold anything for me; nothing in this God-forsaken future did.

"What's your name?" I asked.

"You can call me Doc," he replied, as usual.

"Can I see someone else?" I asked.

"You're not ready." The usual reply, again.

"Can I go outside?"

"You're not ready."

"Can I find out what happened to my wife and son?"

He paused for an instant, knowing what would happen next, before giving the standard reply.

"You're not ready."

"I want to know about my child, my wife!" I shouted. "Am I a prisoner here? Tell me what's going on!"

This was all part of the morning pattern. A month of exercise had brought the strength back into my arms and legs but little knowledge of the world beyond the three rooms of my resuscitation suite. Only the little window in each chamber offered a glimpse outside, and all they revealed was a green, grassy lawn stretching uphill to meet with a usually blue and clear sky. Sometimes out of the gym window, just above the horizon, I caught glimpses of something moving, flying in the distance. Sometimes they were big enough to guess that they were silver spheres, but they travelled too fast. I could never really watch them for long enough to get any real idea of size or distance.

"Mr. Roberts." Doc looked and sounded serious. "We know what we're doing; we've been doing this for a hundred and fifty years. You're not ready." He sighed.

We had this conversation everyday.

"The consequences of giving you

information you're not ready for would be catastrophic. Emotional and intellectual overload can be fatal, believe me; people die, permanently die."

The words "permanently die" were uttered in a hushed, almost awed whisper.

"We give you information a little at a time, that way you can cope with it. That way you don't overload and die. You don't want to die, do you Jack?"

I didn't even hesitate before replying.

"I don't care; there's nothing for me here; I'd be better off dead!" I shouted back at him.

One thing, the only thing, I had come to know over the last month was that I shouldn't be here. Everything I knew was useless. What had been degree-level studies had become elementary school fodder within twenty-five years of my suspension. Fifty years on, about as far as they had let me learn, everything I had ever known was obsolete. All the skills I had developed were useless; everything had changed, even some of the bedrocks of social relationships and economic life—marriage, money, work—were different from anything anyone half a century earlier could have imagined. Now all of that was two hundred years in the past. Whatever kind of world it was out there wasn't a world for me. All I really wanted was to find out what had happened to Carrie and Jacob. To do that I had to get information either from here or from somewhere else.

"You're not ready," Doc intoned once more and walked into the gym. The morning argument always ended like this.

"When will I be ready?" I shouted.

He kept on walking. I waited a moment longer than usual before getting out of bed, quickly changing clothes and following him into the next room. I had to be sure he would be far enough away. If I acted fast enough, I wouldn't have to hurt him. I didn't want to hurt him.

"He's got it bad; worst case I ever saw." Doc was speaking softly, unguardedly, as I walked through the door. I didn't often overhear things, and even when I did they didn't make sense. He stopped talking as I entered the room, placed his right hand against his temple, and glanced at the wall at the far end of

the gym. It looked exactly like the other three walls. Tall, white, and plain but once, feigning exhaustion after a long bout on the rowing machine, I had rested against it. It was colder and smoother with the texture of glass, not concrete. I don't know if they knew what I was doing, but I was sure they were behind the glass wall. The ones who were watching, the ones who Doc talked to and somehow communicated with even when he wasn't talking. They must be the ones in charge. That was why he told me so little. He didn't know anything. They were the ones I needed to make an impression on.

That's when the plan had come together in my mind. The wall ahead, the little window on the right, and beyond that the floating spheres. Sometimes they added new machines to the gym and took away old ones. Not today. Thankfully everything was exactly where it had been yesterday, and now Doc was far enough away . . . perfect.

I walked over to the weightlifting area and took a medium weight from the bay. It felt cold and hard in my palm. With two rapid pirouettes, like a discus thrower, I launched it toward the far wall.

"No!" Doc screamed as it flew past him.

It crashed and smashed into the wall. With a loud crack the wall shattered into hundreds of shards. A woman sat behind it. She was shielding her face with her hands. She looked somehow familiar, but I didn't have time to stand and stare. I launched a second weight at the little window. It punched a hole through, not very big but maybe, just maybe, big enough for me to get through. I jumped onto the top of the chest-press machine and then dived out through the hole in the glass. Arms and head through, a sharp dagger of glass ripped the back of my clothing and cut deep into my shoulder blade. I could hear Doc running up behind me.

"No!" He sounded desperate.

Halfway out. I grabbed the short tufts of grass and pulled a few inches further forward. A stab of pain from the right knee, and then the ankle betrayed a long slashing cut down the calf. One leg out, one to go. Doc's hand grabbed and gripped my foot.

"No, you don't understand!" he shouted.

All I had to do was kick out. A quick, sharp blow would force him backwards and I would be free. I could feel the grass and taste the fresh air. Just one kick and I could be up and running.

He held tight. I stopped trying to pull away. I wasn't going to hurt him, not even for this. He must have felt me ease up and for an instant relaxed his grip. It was enough, just enough, for me to slip my foot out of the shoe he was holding and drag myself out of the window. I was out and free.

The lawn stretched upward to a crest a few dozen yards ahead. Blue sky and green grass were all I could see, but I knew that at the top of the hill there just had to be more. I glanced back, a stream of red flowed from my leg down the green grass back to the broken window. No one was following me, at least not through the window. Too dangerous. An alarm sounded, and people appeared from around the side of the building.

They ran toward me, but it was too late. I had already reached the top of the hill.

The city was away across the other side of the bay. It gleamed and shimmered in the sunlight as if it were made of crystal. Skyscrapers reached up and up, hundreds and hundreds of feet, and disappeared, unending, into the sky. Everywhere, everywhere, skimming across the clear blue water, weaving around the crystal towers, were what seemed to be people flying unaided and unencumbered, and above them the floating, flying spheres, thousands of them.

The sound of footsteps grew louder, but they were still too late. The world was already growing dark, and the pain in my chest had spread down my right arm. Breathing hurt. My legs couldn't hold me up. The grass felt warm and soft against my cheek and forehead.

"He's down!" one of them shouted as they reached me.

Five figures stood above me silhouetted against the sun.

"Medic coming through, give it space, give it space."

They parted and a silver machine floated past them and hovered over me.

"Cardiac arrest, major damage." The

words came from the machine.

"Can you do anything?" The tallest man, it was Doc, spoke to it as if it were another person. It hovered over me for a moment.

"No, nothing," it replied.

No one moved. The machine had taken the decision. Had we come to this?

The pain got worse, the world became darker. I *wasn't* ready—Doc had been right. The world was too different for me to just walk out into it. I wasn't a prisoner; they were just preparing me for a different reality.

Doc fell on his knees next to me. "Well, I'm not just going to let you die you, you Jack." At least the last few words seemed to be directed at me.

"Does anyone else know about mouth to mouth resuscitation?" he asked.

No one responded.

"Damn!" he exclaimed, and began to feel for my heartbeat as pain and darkness swept over me.

* * *

The familiar sound of the machines beeped gently in the background. I hadn't dreamed. No lorries careening toward me. No images of Jacob. Just darkness, then consciousness. I opened my eyes. The room was the same—well, almost the same. Doc stood rather than sat at the end of my bed.

"Two weeks." He intoned sternly and sighed.

I tried to speak, but my mouth was too dry. Doc gently put a glass of ice cold water to my lips.

"Why didn't you let me die?" my voice was reedy and weak.

"This all costs money, Jack." He called me by my first name and swept his arm in an arc gesturing to all the machines in the room. "And if you really want to die, you have an absolute, legal right to do so, but, you don't have to. We don't want you to. I don't want you to."

"You don't know me. What does it matter to you, to anyone, if I die?" I spat back at him.

"It matters. It matters more than you know," he replied, "but if you really want to die just pull another little stunt like the last one. We won't be growing you any new hearts again; next time you run, next time you overexpose yourself to

information and stimuli, you will die—permanent death." The last words were uttered in the same hushed tones. "If you run again Jack, no one will be running after you; no one will save you; you'll just die. It's up to you Jack."

He didn't wait for me to answer, he just turned away and walked toward the door. Halfway there he stopped, turned, and walked back. He repositioned the pillow behind my head, wiped the thin film of cold sweat from my forehead, and held the water to my lips again.

"If there's anything you want Jack, anything at all, just ask." He smiled and put the fingers of his right hand to his temple.

"Who are you talking to?" I asked.

"Talking to? I'm talking to you Jack."

"No, who are you talking to on the other side of the wall?"

He looked at the wall.

"You're not ready Jack," he replied and walked away.

The same answer, always the same answer.

* * *

Doc winked as he placed the tumbler of orange juice in front of me. I knew what he meant. This was the one with gin in it. I didn't know how he got the stuff in. It was strictly prohibited, but he knew I liked it, and somehow he got it.

For a guy who had had trouble walking three months ago, he was looking fit. Two rowing machines now rested against the far wall of the gym. One for me, one for him, and in the ten-minute race he always beat me.

"Time for some catch?" he asked.

I nodded and we ran out into the field at the front of my suite. Throwing the ball and catching it helped to redevelop hand-eye coordination. After an hour a day for the past five weeks I was almost back to normal. The ball flew toward me. It was high and wide, and without even thinking about it, I darted to my left, leapt, and caught it one-handed with ease. I stared at it nestled in the palm of my hand. Sport had never been my strong point. I could never, ever catch like this. I looked up toward Doc and caught him looking at me in an odd sort of way; a mix of relief and pride.

"I can't do this." I held the ball up in explanation.

He walked over, placed his hand on my shoulder and squeezed it gently. "You can now," he replied.

"No, no. You don't understand. I could never do this, not even before."

"You're better now, better than you've ever been." He stopped and looked at me as if he was unsure whether to say anymore. "We optimize you, rejuvenate you—biologically you're as good as you could ever be, or at least will be when you're fully recovered. As fast, as sharp, as clever as the human body can ever be, and then . . ." He stopped again, placed his fingers on his temple for a second, and then nodded slowly.

"And then we can implant—artificial implants, internal organs, whole limbs, brain chips. They make you better and stronger, and they last forever. That's forever Jack—you don't wear out. You never die Jack, never."

A medic sphere floated up and hovered next to me.

"Heart rate normal, cortical responses elevated 10 percent, nothing to worry about," it intoned softly.

Doc laughed.

"I really shouldn't have told you all of that. She didn't think you were ready," he gestured back toward the building. "But I thought you were."

I nodded and smiled back.

The last few weeks I had felt better as I got stronger and fitter. The days with Doc were good. The nights were a different story. Dreams of Carrie and Jacob, death, and waking full of fear and loneliness.

"Anything else you want to tell me?" I asked as nonchalantly as possible.

"Only that we're at the collapse of the Martian Colonies on the info reels, a hundred years after your suspension. Want to go and learn?" he turned and headed back toward the main building.

"What about Jacob, what about Carrie?" I shouted at him.

He stopped as if he had been frozen to the spot. For a second I thought he was going to give me a real answer. Then in a halting, pained voiced he replied. "You're not ready. You're not ready."

I didn't wait for anymore. I ran back toward the main building. As I raced past

him, I scowled in his direction. Tears were running down his cheeks.

"Wait just a while longer, please just a while longer," he whispered to me as we passed. I had never seen him cry before.

* * *

It was dark. Even in the future night was still night. A single machine beeped in the background. Sleeping was becoming more and more difficult. Most nights I was awake for the three or four hours before dawn. I stepped out of bed and padded into the gym and then through to the learning area. The screen was still on. Doc left it on most nights. He must know that I couldn't sleep. At least I could watch the news from a hundred years ago to keep me occupied. Doc was a good man, not that I had any other twenty-third century males to compare him to. In the sixteen weeks since my awakening Doc, and the brief encounter with the men on the hill, had been my only contact with anyone. It was the tried and tested way of doing things, Doc told me. I liked him, he seemed to like me. We understood each other. In another time, another place, another set of circumstances, we could have been friends, good friends, but here. . . . How could he really understand how I felt?

How could he feel the sense of uselessness, hopelessness, loss that I did. I would be no good in his world. A Neanderthal trying to understand relativity—that was the reality of it all. What did this place, this time, offer me?

Inferiority, poverty, at best curiosity value. "Come see the savage from the past!" I could visualize the fairground freak show advertisements already and on top of it all the loneliness. Carrie and Jacob gone forever. It was too difficult, too much to bear. Deep down inside I knew I didn't want to be here.

The view screen flickered.

"When and where's the bar?" I asked it, wanting to know which events and years were restricted.

"The bar is off," it replied.

I waited a moment. No bar meant I could view anything.

"Today's news," I ordered.

An image of a woman, golden skinned, bleached-blond hair, sat behind a desk, filled the screen. She

talked in a clipped, odd accent. The words were mainly English, but there were words and phrases from other languages—Spanish, Japanese, and some that sounded completely unintelligible thrown in. The image switched to an outside view. A blue sky but all the plant life was red. Three huge moons hung. It wasn't Earth; it didn't seem like it could be anywhere in the solar system. A figure, tall, well dressed, green, and reptilian, stepped into view of the camera and began to talk in the same mixed-up language as the woman.

The world seemed to buckle under my feet. A falling, disoriented feeling came over me.

"Stop!" I shouted, and the viewscreen went blank.

I sat and waited. The Earth stopped moving, my heart stopped trying to break out of my ribcage. I sat and waited and thought about it for a long time and then slowly gave another order to the viewscreen.

"Display all information held on Carrie and Jacob Roberts."

It answered in an instant, before I had the chance to give it dates of birth or any other search-refining information. "All information on individuals held at City Records," it replied. "Password required for access," it concluded and waited for the password.

I didn't have it.

"System will be locked in thirty seconds without password."

I was too close to finding answers to lose now, but how could I give it a password I didn't know?

"System lock in twenty seconds."

It didn't care, it would just lock. It wasn't a smart machine, just a dumb servant. Trying to reason with it wouldn't be any use.

"System lock in ten seconds." I had to do something, now.

"Where is City Records?" I shouted out. It began to tell me the address and street reference.

"Print me a map."

As the last syllable rolled off my lips, SYSTEM LOCK flashed onto the screen in big red letters. Too late, I was too late.

A soft hum issued from the reproducer next to the screen. A map, a street map, with the City Records Office

marked with an X, slid out.

* * *

I had given Doc one last chance. "Please tell me about my family," I asked. "You're not ready," he replied.

Ready or not, today I was going to find out. The collector always called at this time of day. Long, cigar-shaped, and floating silently down the roadway that headed off toward the city. It stopped just long enough to be filled with boxes and trash and then floated back to where it had come from.

It was only the second time I had asked to be left alone to walk around the garden. Doc had looked suspicious when I asked him to leave me in peace for a while. I was sure that he knew I was planning something, but his little speech about not stopping me, or helping me, if I decided to run again, seemed to mean what it said. Just to be on the safe side I was still going to slip away rather than just walk through the gates.

The collector arrived, stopped, and opened its cargo doors. Carrier spheres brought out the trash already sorted and ready for recycling. It had taken me a while to realize that not all spheres were the same. These couldn't think; they just did a job, dumb machines. As the last boxes were packed, I jumped onboard. The hatch closed behind me, and a few seconds later I felt us jerk around and back toward the city. It had been so easy, perhaps too easy. I sat back and waited. The journey could be a long one.

We stopped twice. Two more places exactly like mine. Two other resuscitation areas? After the second one we set off slowly and then picked up more speed.

The journey went on for longer, and, even before we stopped, I could hear the sounds of the city. People talking. I couldn't really understand what they were saying, but there was enough English in there for me to be able to guess. Snatches of conversation about last night's sports results, an argument between a young boy and an adult about what time he had to be home, two female-sounding voices discussing holiday plans. The world may have changed, but people still seemed the same. The collector stopped, the cargo doors

opened, and I eased my way out into the street.

It was crystal, or at least very much like it. The ground, the walls, the buildings were clear like diamond. They shimmered rainbow colors in the sunlight. It felt cool and smooth; on the corners it was almost sharp enough to cut flesh—almost, but not quite. Everywhere was clean and bright, fountains of gently bubbling water stood at each intersection, flowers and plants decorated the concourses and perfumed the air, and all of this was in three not two dimensions. Stretching up as far as I could see were gardens and landing pads, fountains, flowers, and people.

"Can I help you sir?" A blue sphere floated down from high above. It intoned the question in a clipped, difficult-to-understand accent.

"Yes, I want to go to the Hall of Records."

"Follow me sir," it suggested and quickly shot back into the air. A few seconds later it returned.

"Follow me sir," it repeated and then slowly began to drift upwards.

"I want to walk," I called after it.

"Why?" it asked, a genuine sense of puzzlement in its voice.

"Because I would," was all I could think of saying.

It didn't ask any more questions. "Follow me sir," it said again and floated, just above my head, down the street.

The wide streets were busy, not many people walked along them, but there seemed to be a preference for sitting restaurants and coffee shops outside and on terra firma. People still ate dinner, people still drank coffee, some even seemed to be reading little screens, which were probably the descendants of my morning newspaper. The only difference seemed to be that when they finished they floated up and away to wherever they had to be next. Money seemed to have completely disappeared. Thumbprints on more little screens seemed to be the method of payment for every transaction. This wasn't so different to my time. Things had changed, but in a working, eating, striving for a better tomorrow sort of way, people seemed much the same.

I followed the sphere around a corner

and stopped. A sharp intake of breath brought an all-too-familiar stabbing pain to my chest. An alien on the viewscreen had been a surprise. Meeting one in real life was jaw-droppingly unbelievable. It landed just in front of me and looked to be headed for the door behind me. It was half my size, a beak and three clawlike fingers on each hand. I stared at it and it stared at me until we were almost touching.

"Excuse me," it chirped in a high-pitched voice and side-stepped me before pushing past and through the door.

* * *

The chest pain wasn't getting any worse, but it wasn't getting any better either.

Another block and the sphere stopped at the bottom of a flight of stairs leading up to a Romanesque-style building, all columns and friezes. I stood on the bottom step and waited. Inside were the details of what had happened to Carrie and Jacob and all I had to do was wait for the pain in my chest and arm to ease a little and then I would be able to climb up and go in. The sphere had said something to me, but I was trying to concentrate on breathing slowly and calmly. After the third or fourth time that I failed to reply, it floated away. I couldn't be sure, but it sounded as if it was swearing and complaining about my lack of courtesy.

I glanced to either side of the building to see if there was a lift or ramp, but as everyone else seemed to be floating and gliding in and out and up and down, there was neither. The steps were there purely for decorative purposes. They made the building look important and civic in nature, but they also made it doubtful that I would ever get inside.

At the bottom of the steps, on the left corner stood a kiosk; small and rectangular and on its outside I recognized the emblem of the Martian Colonies.

"The Free Martian Colonies," the words on the badge now read.

I hadn't reached the part of the time line when they had gained independence from Earth, but for some reason I suddenly wanted to cheer. Slowly I shuffled over to take a closer look and see if the word "free" had a date attached.

As I stood outside examining the badge, a woman appeared. Her image shimmered and seemed blurred at the edges. I had seen holograms before but never quite as big or as clear as this one.

"Welcome to Mars," she said as three-dimensional images of that world appeared behind her. Mars seemed to be half finished. Half green and wet, half red and arid. The problems of terra-forming had been exacerbated by the changing politics and priorities of Earth-bound administrators and project leaders. The colonists had decided to go it alone, but funds were short and they needed finance and help.

"Please pledge us your credits or give us your time. Come and join us—Mars needs you." The woman disappeared from view.

It had been an interesting sales pitch, but I didn't have any credits, and the pain in my chest suggested that I didn't have much time.

The first few steps were fine. Halfway up I stopped and gasped for breath.

"Welcome to Mars," another interested somebody had activated the kiosk. I hoped they had more to offer than I could. Taking the steps one at a time and resting in between kept the pain down a little. Breathing was hard and painful. The ground moved and buckled beneath my feet. One more step and then I was at the door. If I took it carefully, slowly, I could get the information on Carrie and Jacob. I could know what had happened to them; I could find them before the pain beat me and carried me off to the long sleep, the permanent death. Just a few more minutes of life and consciousness, that's all I needed, all I wanted.

I stood at the top of the steps and looked into the records office. Out of the corner of my eye, I glimpsed the spinning, red, blue, green holograph of Mars.

"Come and join us—Mars needs you." Her words echoed around inside my head.

"Mars needs you."

Mars. Work to do, problems to solve, opportunities to seize. Why hadn't I seen it before?

I turned and staggered down the steps toward the spinning planetary image. The pain crushed my chest and

raced down my arm. The crystal steps felt hard and painful as my knees crashed into them, their cool smoothness pressed against my cheek as I slid to the floor. The pain was worse, a lot worse than ever before.

A crowd gathered and the darkness began to enfold me for the last time.

"Let me through, let me through!"

The distant voice sounded familiar. A tall, thin figure stood over me. He bent down and the accustomed feel of Doc's hand gripped my shoulder.

"I'm not going to let you die," he whispered into my ear, and then, cradling me in his arms, he lifted me from the floor and held me tight to his chest.

The world went dark

* * *

The cacophony of beeps broke my sleep. I opened my eyes. The room seemed full of machines. Doc sat on the edge of the bed watching me.

"Don't try to move, you're too weak," he said.

I nodded. It didn't hurt, but I didn't want to take any risks by trying to do more.

"Three weeks Jack, three weeks to put you back together. Do you know how much that cost, Jack? Do you know how much I had to beg and grovel to get agreement to get that done?"

I shook my head, at least the muscles in the my neck felt fine.

"But we still have a problem Jack. Do you know what that problem is?"

I shook my head again, it moved easily, painlessly from side to side, it was a good sign. I would be up and fit for action soon.

"You're the problem Jack."

I stopped moving my head and looked at Doc in amazement.

"What?!" I bellowed.

The voice sounded strong. My lungs must be okay. It was getting better all the time.

"You're the problem Jack," Doc continued. "We can't keep bringing you back like this. We can't afford it. We can't spend the time or the money on it so, it's up to you Jack, what do you want? Do you want to live? Or do you want to die? It's up to you. Want do you want to do, Jack?"

He sat on the edge of the bed and looked at me waiting for an answer.

"I want to go to Mars," I replied.

"Mars?!" It was his turn to look amazed.

"Yes, Mars," the words burst out in a stutter of excitement. "There's so much to do, so many chances to make real a difference, so many . . . opportunities."

He didn't reply, he just looked at me in that odd, almost paternally proud way he sometimes did.

"You don't understand, Doc, you couldn't understand. Coming back after so many years presents you with a whole new world of experiences and opportunities. It has so much to offer, Doc, and I have so much to offer it. I can make my dreams come true and along the way do something worthwhile. When will I be well enough, when will I be ready to leave?"

This last question seemed to take him by surprise.

"What about Carrie, what about Jacob?" he asked.

I thought for a moment.

"I miss them Doc. I always will, but life can, life has to, go on." For the first time since I had been awakened, a tear rolled down my cheek and fell gently away.

Doc put his fingers to his temple and nodded. He stood up and walked over to the machines. One by one, he turned them off.

"Doc!" I shouted in panic.

"Don't worry, you're not going to die," he said. "You're fit and healthy. We just had to be sure."

I eased myself up. It felt good—no pain, no aches, no fatigue.

"Sure of what?" I asked.

He had turned off the last machine and was headed for the door.

"It happens to us all," he said, "the resuscitation blues, only you had it bad, real bad. But now you know, like we know, the future's bright; tomorrow's always going to be better. We have so many new opportunities," he stopped at the door.

"And, I think you're ready," he said and left the room.

What did he mean we? I was the one who had been awakened, not him. Why did he say we?

I jumped up and ran after him.

The gym was empty. I caught sight of Doc as he walked through a small, new door in the glass wall at the far end of the room. I ran after him.

The next room was small, dimly lit, and empty except for a chair placed exactly in its center. A woman sat facing me. I recognized the emblem of the Free Martian Colonies emblazoned on a badge across her chest. I recognized the dark-brown depth of her eyes, her smile,

the ebony sheen of her skin.

“Carrie?” my voice cracked and broke.

If I hadn’t been ready, the shock of seeing her would have killed me, permanent death.

She stood and raced over to me, took me in her arms, and our lips met for the first time in two hundred and fifty years. Her body felt warm, soft, and familiar in my hands. Carrie was here, awakened, alive and rejuvenated. I wasn’t alone, we

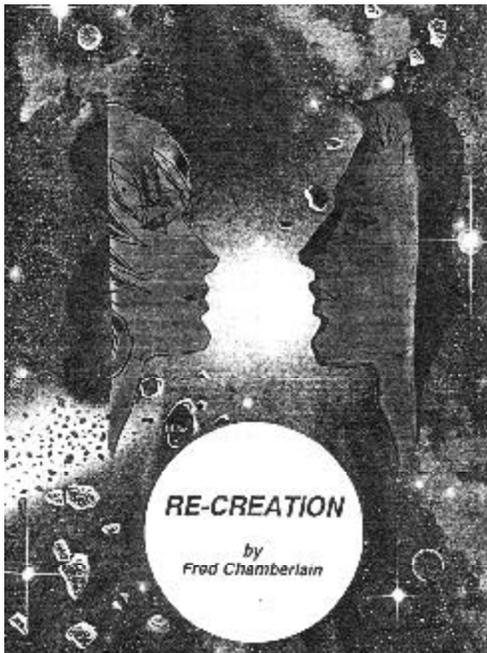
were together.

I pulled my head back and looked at her.

“Jacob, what happened to Jacob?” the words burst unexpectedly out of my mouth.

The familiar feel of Doc’s hand gripped my shoulder. “Hi Dad,” he whispered.

Carrie, Jack, and Jacob were together again, at last. 1



Re-Creation

by
Fred Chamberlain

As ODG-941 moved toward the podium, the hall silenced. 941’s great form was not that different from the others’, but the ID codes radiating from antennae at his wasplike midsection told those in attendance who he was. Leaning forward slightly as he approached the ramp to the stage, he rolled quickly to the higher level without the slightest flexing of lower appendages. His head, a spheroidal sensor assembly, swept about surveying the thousands who had attended the symposium. Finally, in the radio frequency voice of the Jankx, he spoke.

“As you have heard, it appears an alien species has taken residence on this planet,” he said. A current of low level

electronic commentary swept the hall.

The rumor was true! 941 was the world’s most eminent exobiologist, and though they had yet to discover evidence of life even on other planets of the local system, it was a passionate dream of theirs to do so. If 941 said he had discovered an alien species, here on their home planet, they were most reluctant to doubt it.

“It is the strangest thing. We find them only in the vicinity of volcanic vents in the deeps of the ocean, and they die quickly after being captured. It appears their immune systems cannot withstand the slightest contact with our microorganisms.”

941 displayed visuals, and most of the attendees captured them from video

terminals at their seats. The invaders appeared to be a very primitive sort, at best a hundred microns long, possessing no intelligence of significance.

“But how could such creatures have come through space?” came one question among many others from the audience, after he was finished. It was from ODG-123, an old friend of 941’s. 941 had no satisfactory answer, for this or for most of the other queries. The very existence of such a strange life form was sufficient reason for the conference, even though only the most preliminary results were available.

941 and 123 met for lunch. As they ingested silicon nuggets flavored with titanium and heavily salted with exotic crystals of carbon, 941 revealed private data not sufficiently analyzed for presentation in the open meeting.

“We’ve done electron microscopy of some of the creatures under cryogenic conditions,” 941 said. “The seat of their structure is a fascinating pattern of complex, carbon based molecules. Utterly indecipherable! Also, it looks as if they function by elementary oxidation, metabolically. They appear to have a queer and laborious energy conversion capable of functioning by sunlight, though these specimens were taken from an area where sunlight is totally absent.”

He paused. 123 was thoughtfully silent, then she swiveled in her seat and fixed all of her sensors on 941. “Can you tell me anything more about this pattern?” she said enticingly. Her upper appendages danced on the table in a way which would have been hypnotic to any small animal.

Even 941 was momentarily distracted. He had engaged in reproductive data mixing with 123 several times previously, and in the nuances of her question was a clear invitation. But she was an archaeologist, he could not let himself forget, and archaeologists and exobiologists were virulent rivals. She would not hesitate to exploit every kernel of information she could extract from him for her own papers, publishing them without a moment's delay.

Still, 941 could picture the two of them coiled in a reproduction sanctuary, blending data in a bridge from which would emerge a new entity. Some of their offspring were already preeminent in their own fields. Oh, what the hell! He couldn't resist. She could wind him around her slenderest appendage, and she knew it.

The first day of the symposium drew to an end. After a romantic dinner, at which they sipped frothing liquid nitrogen and downed chilled slices of dry ice coated with congealed hydrocarbons, 941 and 123 retired to the privacy of a hotel suite and began their fourth reproductive engagement. For weeks following the symposium, they would remain together in the most delicious experience a Jankx could imagine. Then the child would go to a growth center, self aware and able to supervise its own development. The days of extended parental child care were long past in the culture of the Jankx.

But there was a shocking disclosure that first night which changed everything. Teasingly, the first thing 123 wanted to probe was the information pattern that lay at the heart of the aliens. When 941 let her peek at it, she gasped and her barriers went up.

123 recoiled, as if she had been caught in the magnetic vortex of a transportation guideway. Her appendages drew in and she turned away. For a period of minutes, 941 lay beside her in frustration until 123 opened minimal communication channels. Inside, she seemed to be experiencing a kind of torment and disgust she could not express. All she would say was it was a mere hypothesis; she could not rest until she had explored it. The next morning, 123 broke her

engagement with 941 and left for her laboratory some thousands of miles away.

The remainder of the symposium was uneventful. More data was presented, but the enigmas remained. When the last words had been spoken, 941 had one thought in mind, to join 123 and find what had so violently distracted her that she had broken the engagement.

The train trip was brief, but enjoyable. The long, magnetically levitated vehicle raced over flat terrain at mach three, but when it encountered mountains it slowed to subsonic speeds and wound among the peaks and rivers. The part of the journey 941 enjoyed most was the section near the end, where the guideways ran sinuously through an enormous canyon, following the course of a river which had torn a gash nearly a mile deep in the overlying plateau.

The system designers could have taken a level route above the canyon and shaved ten minutes from the trip, but everyone agreed the longer journey was worth the extra time required. 123 had spent years in that canyon, tunneling into bedding planes in search of fossils. At the base of the canyon was one of her favorite resorts, where they planned to honeymoon in their current engagement before it was terminated. At the main continental terminal, on a hunch, 941 called the resort and sure enough, 123 was on the register. Twenty minutes later, he was back at the canyon and went in search of her.

It was in a side canyon he finally found her. Passing its entrance as he waded the main stream, he sensed 123's ID code faintly coming from the mouth of the tributary and followed it for a quarter mile until there she was, mulling over samples a quarter of the way up a rocky slope. When she saw him, she gave a joyous greeting and raced down the slope to the stream. There, her appendages wrapped around him and intertwined with his, she apologized and thanked him for coming after her.

"But why?" he said. "What's the matter?"

123 was silent for a moment. "Come with me," she said, and led the way to a high promontory overlooking the

canyon. On a ledge two thousand feet above the river, she had first shown him the site of a discovery of hers which had revolutionized the Jankx' understanding of their planet's past. Now, she withdrew into the shade of an overhang and invited 941 to join her. Then, slowly, she began a story she told him in advance she did not expect him to believe.

"Look into my thoughts, 941," she said. He let his communication appendages sink into her high bandwidth recesses and looked. "See the shapes?" 941 saw the skeletons of the ancient ones, long departed, who were the shapers of the land long before the Jankx evolved. As he watched, the pictures filled in and skeletons were covered by layer after layer of tissue and circulatory networks. Finally, an outer layer was added. 941 had seen these pictures before. Why was she showing them to him again?

"We modeled our current body designs, to the extent we could, after the evolved efficiencies of these creatures!" 123 cried. "We borrowed from their ancient machinery! We owe everything to them!"

It was a cry of agony. Why was she so upset?

"The tissue samples we reconstructed were three million years old, from the wastes of deserts in mountains south of the equatorial zone!"

The tones of her words distorted them almost to the point of incoherency. The pictures began to break down, washed with white noise, and 123's appendages began to quiver involuntarily. 941 tried, with a sense of futility, to comfort her. It was no use. He sensed her control centers driving her power supplies into overload, and there were spurious emissions of erratic transients indicating internal short circuits of kilovolt magnitudes.

"It's unforgivable! There's no way to atone for it! No decent Jankx could live with it!" 123 screamed, and with no other warning than that she moved quickly to the edge of the precipice and threw herself into space.

941 could not believe it and was momentarily immobile with horrified surprise; then he flung himself to the

brink and stared downward. Even before 123 smashed upon jagged rocks fifteen hundred feet below, the echoes of 941's cries of agonized despair reached those in the resort, and rescue groups were on the way.

The reconstruction of 123 was as good as it could be, but even the medical technology of the Jankx had its limits. Their bodies were evolved from colonies of inorganic assemblers, which multiplied and differentiated to form operative subassemblies according to designs which were encoded in such a way the Jankx scientists had yet to fully decipher many of them.

The Jankx traced their evolution back through several million years to a point known as the Great Discontinuity, when they appeared to have sprung into existence. Before that, a great profusion of other species had existed, and apparently all of them departed or vanished at the same time. A quest of the Jankx culture, a "holy grail" they sought to find, was the explanation of their origin and the fate of the earlier inhabitants of the planet.

The only things Jankx archaeologists had discovered were dried samples of countless species within which there were indecipherable patterns, patterns far too similar to the patterns 941 had shown 123 that night at the symposium. The archaeologists had been on the verge of publishing their pattern findings when the exobiologists had called their emergency meeting. The competitiveness and secrecy of the two groups defied explanation, yet it existed.

941 stayed with 123, day and night, for three full years. Within her, tiny assemblers sought to put the pieces back together. 941 warmed 123 when she cooled and drained her heat when her temperature rose. When she needed them, he supplied the purest of elements. Finally, when she began to stir with signs of consciousness, 941 held her, whispering when she softly called his name, which she had done throughout the fall to what she had expected would be her death. For a long while, it was not clear if 123 would ever truly be herself again.

One morning, as the sun rose and

light filtered into 123's recovery room, her sensors came into full focus. 941 woke immediately and held 123 as tightly as one Jankx could hold another without hurting. As she swam upward from a state of disorientation that pulsed still and seemed as if it would never end, 941 beckoned and coaxed her on. It took hours; then suddenly 123 was fully alert again. Shivers of the joy of life poured from her appendages into 941. She promised, in that moment, that she would never try to destroy herself again.

The aliens were an unspoken subject between them at first. 123 allowed herself to be drawn into an engagement with 941 again, and the two of them spent weeks away from civilization. Finally, a new offspring went to the growth center, and they were completely alone. In a hotel room near the growth center, 941 sensed it was time. He asked, "Why? What was it? That day on the ledge?"

123 trembled. Then she said, "Come with me to the Coastal Museum and I'll tell you." She would say no more.

Thus it was that one late afternoon they stood in front of portraits of the ancient ones, archives which survived the millions of years since the Great Discontinuity. 123 insisted they be seated. Hesitantly, she began to speak. As the minutes passed, she became engrossed in her subject. 941 relaxed. 123 seemed to be fully in control of herself. Perhaps this time it would go without difficulty.

"We arose from primitive assemblers, did we not?" 123 said.

941 nodded. It was an almost imperceptible movement of his head, but it served the purpose.

"And our designs, while not fully deciphered, are a rational form of an engineering systems approach?"

941 nodded again, uncertain of where this was headed.

"The culture of the ancient ones had this knowledge, and they could have designed us, but there are problems with that hypothesis."

"Why do you say that?"

123 gestured sarcastically. "Look at the early forms we took! Look at the first indications of specialization, as if the assemblers had stumbled by themselves on more efficient ways of cooperation!

Look at the first, clumsy steps toward locomotion, as if trial and error were being employed! See the interspecies competition in our predecessors, battling for survival. Would the ancient ones have designed these mutually destructive entities? Tell me!"

941's head inclined downward. It was his way of showing he was puzzled. "What are you trying to tell me?" he asked. "Why does it matter whether or not ancient ones designed us?"

123's tone was tense. "Our microorganisms, our primitive assemblers... they kill your 'aliens' at the volcanic sea floor vents. They dissolve my specimens from three million years ago if given the slightest chance. Every form of the profusion of life that was here before the Great Discontinuity suddenly vanished. Doesn't that tell you something?"

"What should it tell me?" 941 said, puzzled. His question was sincere, but in him a horror began to grow.

"The first assemblers, from which we arose, wiped out everything!" 123 practically shouted. "They dissolved everything except fossils and materials so remote they could not find them. Archaeologists' specimens, carefully preserved, and your 'aliens' from the ocean floor are all that remains of a world teeming with life. In its place we have the Jankx and a few primitive, competing species from which we arose!"

She could not go on. Jankx wept by a quivering release of pressurized gases. 123 was weeping.

941 contemplated the disaster of which she spoke. He saw primitive assemblers tearing down the huge life chain 123 had studied ever since she was old enough to have a purpose in life. The long vanished cities of the ancient ones? The trees, the animals, the sea life that once flourished? All those things which he and his fellow exobiologists sought in the void? They had been here, a few million years ago, and now they were gone, destroyed by primitive assemblers. And in their place? Jankx and a few other things made of assemblers!

A story from the literature of the ancient ones came to 941 suddenly. A little girl, Pandora, opened a box, and out came the evils of the world. 941 had a

flash of a new horror and rose in a panic. "Come with me," he shouted, and dragged 123 to her feet. He would not explain, as he rushed to his laboratory and confronted his supervisor.

"What are you upset about, 941?" 444 asked. 444 was the laboratory manager. He had never seen 941 like this. 941 stumbled through the story, assisted by 123.

"But what's the point?" asked 444. "It's project 877B," 941 said vehemently. "It's got to stop!"

"But that's your project!" "I know, but it has dangers we never considered."

"What?" "You've heard 123's hypothesis. What do you think of it?"

"Plausible!" "But then, what about 877B!" "What about it?"

"We're trying to synthesize organic life!"

123 added, "If you succeed, what you synthesize will be immune to our microorganisms."

"So?" 444 was showing signs of uneasiness.

"So if we create a form of organic life immune to our assemblers," 941 said, "perhaps it will be able to tear down assemblers. Suppose life like that were turned loose on our planet, to flourish; suppose it were able to dissolve the assemblers of which we're made. What would that mean to us?"

"It's too late," said 444.

"What do you mean?" demanded 941.

"You've been away for years, with 123," 444 reminded him. "In that time, 877B passed a major hurdle. The aliens? Your group found a way to modify the information pattern so the aliens are immune to our assemblers. They call the altered pattern XB4. It's like the original pattern with the addition of a diamond fiber web, and it replicates itself. Look out that window."

Outside the window, 941 and 123 could see little. "What's there to see?" 123 asked.

"Don't you see a faint, greenish tinge on those hills?" 941's circuits felt as if they were overloading.

"Don't tell me..."

"You were the one who always insisted life had to prove itself in the natural environment."

"But I didn't mean..."

"No matter what you meant. It's out there, now, and let's hope it doesn't have a taste for assemblers!"

"It doesn't," 123 laughed. "If it did, we wouldn't be here talking, now."

941 and 123 dined at the top of the tallest tower in the city that night. 123 could not contain her excitement.

"This is it, our chance to redeem ourselves," she said. "We can coax XB4 into patterns matching those specimens we archaeologists have preserved, thousands upon thousands of vanished life forms, safe and accounted for. These things can come to life again; the ancient ones can once more walk this Earth."

There was uncontrollable trembling as she spoke, nibbling on a sliver of icy quartz.

"941, you and your exobiologists had better get ready. Before you know it, you're going to have to deal with a truly extraordinary turn of events. We're going to recreate the all species in the life chain that created us. This time we can work together, to find ways we can protect each of us from the other." 1

BACK ISSUES OF *LifeQuest*

If you're enjoying these stories, you'll be happy to know that issues #1 and #2 of LifeQuest are already available on Alcor's website, under "links." For ease of finding them, the URLs are:

*<http://www.alcor.org/lifeqst1.htm>
and
<http://www.alcor.org/lifeqst2.htm>*

Issues #3 through #7 will, with time, be reprinted in Cryonics Magazine, but an influx of new fiction could make this a drawn-out process. If you would like to see the back issues posted to Alcor's website more quickly, let us know. We try to give first priority to projects we know will make the most Alcor Members safest and happiest.

How to Submit Stories to LifeQuest

Please send submissions to: *Cryonics* magazine, Alcor Life Extension Foundation, 7895 E. Acoma Drive #110, Scottsdale, AZ 85260, or email them to fred@alcor.org.

If in hard copy format, please also include a diskette (textfiles or one of these: Microsoft Word 97 & 6.0/95, or Pagemaker 6.5. Graphics (jpg/gif preferred) should be in color if available, as these are compatible with Alcor's web site. LifeQuest stories may be published on Alcor's web site barring agreed restrictions to the contrary.

Alcor's anticipated rights include one-time publication in *Cryonics* magazine and web site inclusion, nothing more, unless provided for in writing. Additional information on submissions may be found inside the front cover of *Cryonics*.

You *can* help others see why what Alcor does makes sense, by sharing your feelings, your deepest insights with them, in the form of LifeQuest fiction (short stories) or poems. If you have a vision, put it in writing and submit it for consideration.

Alcor Member Profile



KLAUS REINHARD

Profile Editor: Russell Cheney

With the Profile column, we wish to introduce the Alcor membership and the Cryonics Magazine readership to a wider view of itself, by communicating member ideas, beliefs and background. Alcor has hundreds of fascinating members who may now not be widely known in the cryonics community. We intend the Profile to be a relatively easy, informal medium to help provide some of these members the broader attention they deserve.

Member Name: Klaus Reinhard.

Profile Editor: Russell Cheney.

Date joined Alcor: September 16, 1991.

Place of birth: Braunschweig, Germany.

City and country of current residence: Kiel, Germany.

Date of birth: May 9, 1959.

Occupation: Computer programmer in a German bank.

Marital status: Single.

Children: None.

Educational background: Study in computer science. In high school and at the university, I had the best possible marks in the exams.

Height / Weight: 180 cm / 59 kg.

Favorite author: Arthur C. Clarke.

Favorite book: Engines of Creation by K. Eric Drexler.

Book you are currently reading: Diaspora by Greg Egan.

Favorite TV programs: Buck Rogers, Star Trek, Deep Space Nine, Babylon 5 (I recommend these only for entertainment, not because they contain any correct prognosis of the future).



Political affiliation: I agree to the positions of the Libertarians much more than to those of any other group, but unfortunately in Germany there is no Libertarian party.

Religion: In my life, cryonics plays a similar role as the religion in the life of other people. However, the reasons that I am a cryonicist (scientific evidence, logical considerations, and extrapolations of historical trends), are different from the reasons why most people believe in their religions.

Personal strengths: Logical thinking.

Personal weaknesses: My disease (juvenile-onset diabetes).

Personal philosophy: Leben und leben lassen (Live and let others live).

Short-term goal: To increase the number of cryonicists in Germany and to improve the possibilities for cryonics here.

Long-term goal: To live as long as possible, until all diseases including ageing can be cured (I do not believe that there is a high chance for me to reach this goal without cryonics, but as long as I can I will try).

Immediate goal upon reanimation: Enjoy my new body, which may be artificial or virtual, but will most likely not be handicapped by any disease.

Longer-term goals upon reanimation: 1. Help revive others; 2. Explore the universe.

Favorite subject in school: Mathematics.

Least-liked subject: Sports.

Greatest fear: Dying and not being preserved.

First became interested in life extension: I have always, even as a child, considered life as the highest value, and have never accepted an end of life. As a child and teenager I believed (without thinking too hard about it) that medicine would conquer all diseases within my life-time. Later, when I thought more about the complexity of problems in biology and medicine, I became interested in all means of life extension, including cryonics.

Most effective thing you've done to promote your own longevity (other than being an Alcor member): Consequent treatment of my disease; healthy eating (calorie restriction with adequate nutrition); not smoking; avoiding alcohol and other drugs.

Least: Not taking high doses of B-vitamins in my youth. If I had done this, I would eventually have prevented the diabetes. But at that time I did not know anything about the possible protective effect of B-vitamins against the auto-immune-reaction which destroys the insulin-producing cells.

Why you are a cryonicist: Because I see, as high probability, that future science will conquer death. I have even written a book about that. The full text is now online: <http://members.aol.com/klausrei/buch.htm>

Advice you have for other cryonicists: Despite all difficulties, do not give up. The unlimited life you can eventually win justifies all efforts.

(continued from page 22)

cryoprotective agent concentration, he said, close to the levels needed for vitrification. His work did not apply either extracellular cryoprotection nor freeze-blocking. With the addition of these measures, Dr. Fahy indicated that there is a high degree of confidence that vitrification can be obtained.

Dr. Fahy's presentation included discussion of experimental models, automated perfusion to accommodate his investigations, and descriptions of how his work would address both organ transplantation research and brain preservation studies. The complexity of

what he reported does not lend itself to even a summary as part of this review, however. Those who want those details will need to buy a copy of the videotape when it is released.

The work that Dr. Fahy reported is integral with the work of Dr. Wowk, whose talk preceded Fahy's. The same comments on Dr. Wowk are appropriate for Dr. Fahy, as to the implications of their work toward the development of what someday will be perfected human suspended animation. (It is intriguing, as well as deeply puzzling, that such work proceeds, almost invisible to the public who may soon benefit from it. Perhaps the imminent demonstration of organ

preservation in animals, with subsequent transplantation, will help to give their work more of the acknowledgement it deserves.)

This article covered only the scientific presentations of the first day of the conference. The evening event of the first day and the presentations of the final day will be the subject of a continuation article in the next issue.

1

Immortality on Ice (the video)

By the Discovery Channel.
About 60 minutes run time.
Popular introductory tape.
\$25.00 plus S&H.



Wear Alcor's Symbols!



Sweatshirts \$15.00 each (ash and white) Sizes: small, medium, large, xlarge, xxlarge

T-Shirts \$10.00 each Sizes (ash, white): small, medium, large, xlarge, xxlarge

The Official Alcor Patch!

This embroidered patch (left) is 3" in diameter, with a white background, dark blue phoenix symbol, black lettering, and a dark blue border. Price: \$4.00



The Official Alcor Pin!

This cloisonné pin (right) is 1.25" x 1", with a white background, dark blue phoenix symbol, black lettering, and a gold border. Price \$7.00

To order, call 1-480-905-1906 with your Visa/MC number, or send check / money-order to Alcor Foundation 7895 E. Acoma Dr., Ste. 110, Scottsdale, AZ 85260

Cover Art by Tim Hubley!

Over the last several years, Tim Hubley has provided *Cryonics* with some of the most beautiful and creative CGI art we've ever seen. Now Tim is selling a *limited run (only 20 copies each!)* of matted 8.5" x 11" color ink-jet prints of these images (without all the messy text added in layout) for only \$15.00, plus shipping and handling.

To order your prints, contact Tim Hubley through email at:

102647.446@compuserve.com.

MOVING?

Let us know about it!

Call
1-480-905-1906
and ask for
Joe Hovey.

Don't miss even one issue of *Cryonics!*



4th Qtr. 97



1st Qtr. 98



2nd Qtr. 98



3rd Qtr. 98



4th Qtr. 98



1st Qtr. 99



Do You Have Your Copy of *The First Immortal* Yet?

Alcor is selling a limited quantity of copies signed by the author, James Halperin.

Don't miss out—order yours *today!* **Signed Hardback: \$34.95**
Unsigned Hardback: \$24.95 Paperback (unsigned): \$6.99

Send check or money order to the Alcor Foundation, 7895 E. Acoma Dr., Suite 110, Scottsdale, AZ 85260. With Visa or Mastercard, call 1-480-905-1906.

BioTransport, Inc.

Is seeking emergency medical community professionals (EMT's, Paramedics, ER Technicians, Nurses and Physicians) for on-call contract response, to deliver cryotransport rescue services to member organizations and to the general public. For application forms and other information, contact Fred Chamberlain at 480-905-1906, or email to fred@biotransport.com, or linda@biotransport.com

Advertisements

Cryonics magazine reserves the right to accept or reject ads at our own discretion and assumes no responsibility for their content or the consequences of answering these advertisements. The rate is \$8.00 per line per issue (our lines are considered to be 66 picas wide). Tip-in rates per sheet are \$140 (printed one side) or \$180 (printed both sides), from camera-ready copy.

NanoTechnology Magazine

NanoTechnology Magazine is your window into the emerging technology whose awesome power mankind will acquire, for good or evil, very early in this new century. Everything will change radically...the industrial revolution was just a preview. Find out about the millions already spent by government and private labs on the atomic manipulation of matter. Follow monthly discoveries toward the evolution of the technology sure to dominate the 21st. century. Prepare yourself mentally with *NanoTechnology Magazine*.



1-year subscription: \$38.40
(check, M.O., or Credit Card).

NanoTechnology Magazine
4451 Sierra Dr.
Honolulu, HI 96816
(808) 737-0628 fax (808) 739-5145
<http://planet-hawaii.com/nanozine>

PERIASTRON

Publishing for immortalists since 1990
Now both a newsletter and a book!

*PERIASTRON, the bimonthly newsletter, keeps you up on scientific and technical advances bearing on cryotransport. Only \$3.00 per issue. Try it for one issue, you'll like it!

*A GUIDE TO ANTIAGING DRUGS, the book, tells you both the good and bad of each one. And it can be updated as we learn more! Send for free brochure.

PERIASTRON PUBLISHING
PO Box 208, O'Connor ACT 2602, Australia
Email: 73647.1215@compuserve.com

Fund CryoTransport Affordably with Life Insurance



Rudi Hoffman
Certified Financial Planner

Alcor member since 1994

Investments, Financial Services, Mutual Funds, Insurance, Annuities, Living Trusts
\$120,000 20 Year Level, Renewable Term

Age 35	\$16.30 per month
Age 45	\$29.26 per month
Age 55	\$60.26 per month

Leave message on 800 voice mail for quote.

P.O. Box 290549, Port Orange, FL 32127
E-mail: rudihoffma@aol.com
1-800-749-3773



CryoTransport INSURANCE SPECIALIST

For more than 12 years, Mary Naples has underwritten more insurance policies for cryotransport funding than any other insurance agent. If you're looking for fast, dependable, informative service, call Mary today!

Mary E. Naples, CLU, ChFC
2400 Kehoe Avenue
San Mateo, CA 94403
800/645-3338
E-Mail: MNaples24@AOL.com

The Venturist promotes immortalist philosophy. For free sample write: The Venturists; 15111 N. Hayden Rd., Ste. 160-169, Scottsdale, AZ 85260

ORDER FORM

All prices are in U.S. dollars. Minimum order: \$5.00. Shipping and Handling not included. Overseas orders must be paid in U.S. dollars by Traveler's Cheques or International Money Order and must include additional 20% (of total) for shipping. All orders subject to availability and all prices subject to change.

Books and Videos

- Code Blue*, by Nancy Fisher.....\$ 6.99
- Cryonics: Reaching For Tomorrow*\$ 8.95
- Engines of Creation*, by Eric Drexler.....\$ 10.95
- Nanomedicine*, by Robert A. Freitas Jr.\$ 89.00
- Chiller*, fiction by Sterling Blake.....\$ 5.95
- Becoming Immortal*, by Wes DuCharme \$10.95
- The First Immortal*, by James Halperin.....\$ 24.95
- The First Immortal*, by James Halperin (autographed)....\$ 34.95
- The First Immortal*, by James Halperin (paperback).....\$ 8.99
- Baby Boomers' Guide*, by Terry Grossman.....SEE PAGE 30

Cryonics Magazine, 1 year (4 issues) Subscription

- United States.....\$ 25.00
- Canada/Mexico.....\$ 30.00
- Outside North America.....\$ 35.00

Clothing

- Alcor T-shirts (white or ash).....\$ 10.00
- Alcor hats.....\$ 10.00

Membership

- Alcor Membership Application Package..... Free**

ARTICLES & REPRINTS

Cryobiology and the Feasibility of Cryonics

- The Molecular Repair of the Brain, *by Ralph Merkle, Ph.D.* \$ 3.00
- Will Cryonics Work? *by Steve Harris, M.D., plus Why Cryonics Probably Will Work, by Michael Perry, Ph.D.* \$ 3.50
- Freezing of Living Cells, Mechanisms and Implications, *by Peter Mazur, Ph.D.* \$ 2.50
- "Cryobiology and the Feasibility of Cryonics" Package** (all 4 of the above articles) \$ 7.50

Nanotechnology

- There's Plenty of Room at the Bottom, *by Richard P. Feynman, Ph.D.*.....\$ 1.50
- Molecular Technology and Cell Repair Machines, *by K. Eric Drexler, Ph.D.*\$ 2.00
- Nanotechnology, *by Brian Wowk*.....\$ 2.50
- Cell Repair Technology, *by Brian Wowk*.....\$ 2.50
- "Nanotechnology Package"** (all 4 of the above articles)\$ 7.00

Memory, Identity, and the Brain

- The Terminus of the Self, *by Max More*\$ 3.00
- A Commented Bibliography on Brain and Memory, *by Thomas Donaldson, Ph.D.*\$ 2.00
- Isn't That You Behind Those Foster Grants? *by David Krieger*\$ 1.50

Cryotransport Reports (the human interest side)

- Her Blue Eyes Will Sparkle, *by Linda Chamberlain*.....\$ 2.00
- A Well-Loved Man, *by Mary Margaret Glennie*.....\$ 2.00

Alcor Legal History

- Our Finest Hours: Notes on the Dora Kent Crisis, *by Michael Perry, Ph.D.*\$ 2.50
- Motion for Award of Attorneys' Fees, *by David Epstein*\$ 2.50

General

- Elements of a Cryonics Patient Transport, *by Tanya Jones*\$ 2.00
- Frozen Souls: Can a Religious Person Choose Cryonics? *by Steve Bridge*.....\$ 1.50
- Lovecraft, Scientific Horror, Alienation, and Cryonics, *by Steve Harris, M.D.*\$ 1.50
- "Why We Are Cryonicists" and "Alcor: The Origin of Our Name" Free
- Why Cryonics Can Work (brochure)\$ 0.75
- Cryonics and Christianity (brochure)\$ 0.75

- Discount Package (All of the above Articles and Reprints) \$ 35.00**

The literature above can be ordered by mailing in this form with a check or money order **SUBTOTAL:** _____
 or credit card authorization (Visa/MC), or by telephone (Visa/MC only) by calling Alcor: _____ +20% if overseas
1-480-905-1906 or by FAX: 1-480-922-9027.

NAME _____ PHONE _____

TOTAL: _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

VISA/MC# (circle one) _____ EXP _____

SIGNATURE(credit card numbers only) _____

Send your order to:
Alcor Foundation
 7895 E. Acoma Dr., #110
 Scottsdale, AZ 85260-6916

Thermo Scientific Harris Cryostar® Cryogenic Series

> *Using a unique single compressor refrigeration system, our Cryostar storage freezers maintain uniform -140°C or -150°C temperatures without the expense or inconvenience of liquid nitrogen.*



Alarm System Highlights

- Adjustable safety alarm with automatic, continuous-charge battery backup provides full alarm function in case of power failure
- Exterior alarm contacts connect to remote monitoring system

Control System Highlights

- All setpoints adjustable in 1°C increments
- CryoLogic microprocessor control system features touch-pad data entry and digital display of all functions

Construction Highlights

- Insulated sub-lids on chest models minimize exposure during lid openings
- Minimum 5" (128mm) high density, foamed-in-place urethane insulation is closed-cell and CFC-free

Uniformity Comparison

Our Cryostar freezers maintain a uniform -140°C or -150°C temperature at all levels of the cabinet. All samples are maintained below the critical -130°C glass transition temperature of water. By comparison, storage temperatures in liquid nitrogen vapor exhibit a temperature gradient related to elevation above the liquid source; cell viability may be effected by storage location.

Typical Applications

- Fungi (Hyphae)
- Hybridomas
- Yeast
- Infected Cells
- Protozoa
- Plasmids
- Algae
- Phage Libraries
- Plant Cells
- Stem Cells

Cryostar® Series -140°C Chest Freezers

Model No.	Capacity Cu Ft (L)	Electrical	Amps/ Breaker (Plug)	Interior Dimensions HxWxD inches (mm)	Exterior Dimensions HxWxD inches (mm)	Shipping Weight lbs (kg)
QCX-10140-D	10.3 (292)	208-230V/60Hz 1Ø	20/30 (PG)	35.5 x 19.0 x 26.5 (890 x 480 x 670)	69.0 x 29.0 x 42.75 (1760 x 740 x 1090)	1065 (483)
QCX-10140-E		208-230V/60Hz 3Ø	16/20 HW*			

Cryostar® Series -150°C Chest Freezers

Model No.	Capacity Cu Ft (L)	Electrical	Amps/ Breaker (Plug)	Interior Dimensions HxWxD inches (mm)	Exterior Dimensions HxWxD inches (mm)	Shipping Weight lbs (kg)
QCX-7150-D	6.9 (195)	208-230V/60Hz 1Ø	20/30 (PG)	23.5 x 19.0 x 26.5 (590 x 480 x 670)	57.25 x 29.0 x 42.75 (1550 x 740 x 1090)	825 (374)
QCX-7150-E		208-230V/60Hz 3Ø	16/20 HW*			

* No plug provided; requires hard wire connection by customer.



Temperature Recorders

All 6" (150mm) circular chart, 7-day temperature recorders use pressure-sensitive chart paper; one box of 50 charts included.

- No inking is required
- Built-in, panel-mounted recorders are factory installed (specify when ordering)
- Free-standing recorders are customer installed

Temperature Recorder - 6 chart, 7-day chart drive

6183-5	Built-in, factory installed (<i>specify when ordering</i>)
6183-6	Built-in, factory installed (<i>specify when ordering</i>)
6283-5	Built-in, field installed
6283-6	Built-in, field installed
6383-5*	Free-standing, customer installed
6383-6*	Free-standing, customer installed
6185**	Chart paper, temperature range +50°C to -115°C
7289**	Chart paper, temperature range 0°C to -200°C

Freezer

-140°C and -150°C Freezers
-86°C and -40° C Freezers
-140°C and -150°C Freezers
-86°C and -40° C Freezers
-140°C and -150°C Freezers
-86°C and -40° C Freezers
-86°C and -40° C Freezers
-140°C and -150°C Freezers

* Customer must indicate voltage **Package of 50

Backup Systems

Backup Systems inject liquid CO₂ or LN₂ on demand when cabinet temperature warms to a pre-set level

- Built-in backup systems are available on HLT, DLT and SLT models only
- All ELT models require a free-standing backup system
- Liquid flow is shut off automatically when the freezer door or lid is opened
- Activation setpoints are adjustable in 1°C increments, to -75°C for CO₂ and -150°C for LN₂
- The control module digital display shows actual temperature when button is pushed
- An indicator light glows when activated
- The system operates on a continually recharged battery and includes all hardware except the supply cylinder

Backup Systems

6594*	CO ₂ backup system (<i>built-in factory installed, specify when ordering</i>)	-86°C and -40°C Freezers Only
6595*	LN ₂ backup system (<i>built-in factory installed, specify when ordering</i>)	-86°C and -40°C Freezers -140°C and -150°C Freezers
6593**	CO ₂ backup system, free-standing (<i>customer installed; specify when ordering</i>)	-86°C and -40°C Freezers Only
6214**	LN ₂ backup system, free-standing (<i>customer installed; specify when ordering</i>)	-86°C and -40°C Freezers -140°C and -150°C Freezers

* Not available on 3.1 cu.ft. (88 liter) chest models. ** Customer must indicate voltage

6402 Surge Suppressor

Protects refrigeration system and controls against voltage surge. Freezer model number and voltage must be specified when ordering. Requires field installation by a qualified electrician or factory authorized service center.

6903 Alarm Delay Module

The alarm delay eliminates nuisance alarms due to intermittent or transitory conditions such as lightning or brief power outages. The adjustable delay requires an alarm condition to exist continuously for a pre-determined time (adjustable) before a signal is released to a central alarm/monitoring system or telephone dialer.

6224* Deluxe Electronic Remote Alarm

The Thermo Scientific Harris Deluxe electronic remote alarm can be programmed to sound an alarm in the event of a temperature increase or power failure.

- The alarm can dial up to four telephone numbers
- Advises of an alarm condition across any telephone system which accepts pulse dialing
- One system can monitor up to four individual freezers or up to three groups of freezers.

Integrated alarm is not available on the 13 cu. ft. ELT freezer; factory installation only.



To place an order call 1-866-984-3766

Digital Temperature Monitor

Simple, accurate and cost-effective, our Harris digital temperature and power monitor provides both alarm/monitoring and digital temperature display in a single, self-contained unit. Standard features include high alarm, alarm mute and chirp, audio delay timer, remote alarm contacts (SPDT), nicad battery backup, and low voltage AC power supply, 120V, AC.

Digital Temperature Monitor Specifications

Catalog No.	Digital		Microprocessor-Based		
	6898	6899	6900	6901	6902
Input Channels	1	1	2	3	4
Temperature Range	← 100°C to +25°C →				
Display and Setpoint Resolution	1°C	1°C	0.1°C	0.1°C	
Temperature Alarm	high only		high and low		
LCD Alphanumeric Display			8-character, back-lit, adjustable		
Visual Alarm			green=normal; red=deviation		
Solid-state Probe Lead Wire	8 foot Teflon®	8 foot 24 gauge	20' Teflon®, color-coded		
Relay Delay	n/a		programmable, 0-30 minutes		
Alarm/battery Test Switch	n/a		standard		
Mounting Method	Velcro®		Bracket		
Case Dimensions	5" L x 4.5" W x 2" D 130 mm x 110 mm x 50 mm		6.25" L x 3.25" W x 2" D 160 mm x 80 mm x 50 mm		

6405 RS-232 Data Port and Software

For microprocessor-based SLT freezers only, standard on DLT models. Allows computer monitoring of freezer performance.

4706 4-20 Milliamp Output

6105 Cabinet Pass-Thru Port

Each Thermo Scientific Harris ultra-low and Cryostar freezer includes two 1" diameter (25.4mm) pass-thru ports as standard equipment. Additional ports for probes, cables, leads or measuring instruments may be added. Additional ports are 1" diameter (25.4mm).

Stainless Steel Interior

An optional stainless steel interior may be substituted for the standard powder painted interior; (excludes Super Insulation models) *specify when ordering.*

Cabinet Size, cu.ft. (liters)

6121	3.1 (88) chest	6126	20.5 (581) chest
6122	6.8 (193) chest	6179	13.4 (379) upright
6123	10.3 (292) chest	6180	17.2 (487) upright
6124	13.7 (388) chest	6181	20.2 (572) upright
6125	17.1 (484) chest	6145	24.4 (691) upright

Thermo Scientific LabCooler™ Cryopreservation Modules

Modules are useful in providing nominal control over pulldown during initial freeze cycles and maintaining temperature stability of stored samples in vials during handling.

- LabCooler and LabCooler Lite preservation modules are designed to freeze mammalian and insect cells with greater control over pulldown freezing prior to storage in an ultra-low freezer

6742	LabCooler Cryopreservation Module	Holds 32 standard vials
6743	LabCooler Lite Cryopreservation Module	Holds 7 standard vials; includes a clear, interlocking top to allow viewing of contents
6745	LabCooler Lite Benchtop Cooler	Holds 7 standard vials; includes a clear, interlocking top to allow viewing of contents

Cryo Gloves

Suitable for use with ultra-cold surfaces, Cryo Gloves protect hands and arms when inserting or removing inventory.

- Layered material is specially selected for high insulation value with ample dexterity
- Mid-arm style is available in sizes medium or large

4425	Medium	4426	Large
-------------	--------	-------------	-------



EXHIBIT LL

EXHIBIT LL IS AUDIO RECORDING

EXHIBIT MM

Alcor News Bulletin

Number 13: July 1st, 2003Intermediate Temperature Storage:
A New Era at Alcor

Maintaining patients at an intermediate temperature means keeping them warmer than liquid nitrogen, but cold enough to inhibit biological decay. For years we have wanted to provide this option. On June 14th, we came much closer to our goal.

Why Intermediate Temperature Storage is Necessary

If cryoprotective perfusion is performed successfully with a high terminal concentration, residual amounts of water in solution in the brain tend to solidify instead of forming ice crystals. When we use the vitrification solution which is now standard for all Alcor neuropatients, the entire brain should become a glassy solid as its temperature drops below the "glass transition point" around -125 degrees Celsius.

Traditionally, we have maintained our cryopatients at -196 degrees, the temperature of liquid nitrogen. We use liquid nitrogen because it is cheap, nontoxic, convenient, and requires no refrigeration equipment at our facility. The liquid is "precooled" when it is delivered. Unfortunately, it is colder than we would really like it to be.

When a cryopatient makes the long journey from -125 to -196 degrees, some portions of the brain inevitably tend to cool faster than others. This creates thermal stress which can result in fracturing. We use a "crackphone" to sense and record vibrations which we believe are an accurate indication of fracturing events.

Proponents of nanotechnology believe that fracturing will be relatively easy to repair in the future compared with cellular damage, but still we would like to prevent it. The problem probably can be minimized or even eliminated if the patient isn't allowed to get so cold, and is held at a temperature just below the glass transition point. In other words, we would like our patients to be cold enough to vitrify, but not so cold that they start to fracture. Unfortunately the only easy way to achieve this has been by using an expensive laboratory freezer--until now.

A New Way to Maintain an Intermediate Temperature

On June 14th, in Rancho Cucamonga, California, biophysicist Brian Wowk of 21st Century Medicine gave a remarkable presentation attended by all Alcor board members and many staff members. Dr. Wowk has developed a simple, reliable design for an intermediate temperature storage device using a heavy-gauge metal container enclosed in a jacket of closed-cell insulating foam fitted with two 2-watt heaters. The insulating jacket is then immersed in liquid nitrogen, and the heaters are run variably by an external controller to maintain the desired temperature inside the metal liner, which conducts heat and minimizes the thermal gradient.

According to Dr. Wowk, seven of his storage devices will fit beside each other within the diameter of a typical "bigfoot" dewar of the design that Alcor uses. The initial cost of building each storage device will be around \$2,000, but a greater expense will be incurred in the long term as the heating elements will increase the total boiloff of liquid nitrogen in the enclosing Dewar. Also, because of the foam insulating jacket, each intermediate temperature storage device will occupy a greater volume compared with a standard neuro container. However, we believe that many of our members may feel that a higher payment for longterm care is a very reasonable tradeoff if Dr. Wowk's design minimizes or eliminates fracturing.

Alcor has purchased Dr. Wowk's first prototype and will be testing it for reliability and boiloff. After we have the numbers, we will be able to offer intermediate temperature

storage probably as an extra-cost option. We can't estimate the precise cost at this time, but Alcor News will provide additional updates in the future.

This is the most exciting development in cryonics since the advent of vitrification, and we're especially pleased by its simplicity. We believe there is an excellent chance that this will become the preferred method of patient care at Alcor.

=====

Charles Platt Steps Down as C.O.O.

After serving for slightly less than three months as Alcor's Chief Operating Officer, Charles Platt notified the board of directors on June 18th that he was not willing to continue his management duties. He said he had never felt very comfortable being a manager.

Platt will continue to pursue several projects for Alcor as an independent contractor. These include:

1. Editing and distributing Alcor News on a monthly basis.
2. Writing and designing a fund-raising appeal to address Alcor's current operating deficit and help pay for facility expansion.
3. Revising and producing a final version of the transport manual, of which a preliminary version was distributed to attendees at Alcor's training sessions last March.
4. Establishing a new and equitable membership discount scheme for existing Alcor Cryotransport Technicians (ACTs).
5. Managing Alcor's email service and distribution lists.
6. Participating as a member of the Alcor Facility Expansion subcommittee, which is evaluating each step of our major expansion project (to be reported in detail in the next issue of Cryonics magazine).
7. Participating in the design, development, and fabrication of a new collapsible portable ice bath, with Cindy Felix, Alcor's new facility manager and crafts person (see below).
8. Establishing a new Alcor web site with revised text.
9. In addition, Platt will be available as often as possible to assist with cryonics cases when necessary.
10. He will be available to to teach at the next training sessions.

While Charles Platt has spent most of his professional life as a freelance writer and is the author of 41 books and more than 300 magazine features, he has also involved himself in cryonics on a part-time basis for more than ten years and was a cofounder of CryoCare Foundation. His decision to serve as Director of Suspension Services at Alcor in August, 2002 was the first time he had participated in cryonics on a fulltime, paid basis. He continues to live in Northern Arizona where he will return to writing projects and real-estate ventures.

Platt left Alcor with a list of 33 unfinished tasks (in addition to the ones itemized above). Many of these tasks were described in a recent article which he wrote for Cryonics magazine. They will be shared by Jerry Lemler MD (our C.E.O.), Larry Johnson (our new C.O.O.), Todd Huffman (our new laboratory assistant), Cindy Felix (the new facility manager), Mathew Sullivan (director of suspension readiness), and Hugh Hixon (Alcor fellow).

=====

Personal From Dr. Jerry Lemler, C.E.O.

It is with sincere regret that the Alcor Foundation has accepted the resignation of its Chief Operating Officer Charles Platt. This man of tremendous action has enhanced our suspension capabilities many times over and has been able to take complex projects (documents, plans, theories) and break them down into component parts where they can be understood, addressed, and eventually formulated into action

plans. This ability will certainly be missed.

We are fortunate, however, that Charles will continue his role in several ongoing projects, and it is my hope that with the success of these he might be coaxed into some type of permanent part-time arrangement with Alcor so we all may benefit from this man's many skills. This was initially, in fact, Charles' desire when he first approached me back in September of last year, prior to my cajoling him into considering a more active role.

New Chief Operating Officer

With the resignation of Charles Platt, the vacancy in the Chief Operating Officer's position has been filled by former Director of Clinical Services Larry Johnson. Though Larry has been with the organization but a short period of time, he has demonstrated a remarkable ability to absorb much of the knowledge he needs (specifically with respect to cryonics), that when coupled with his outstanding paramedic and management of paramedic skills should bode well for him in his new position. Charles Platt, likewise, has groomed Larry to take his place, and I know will be of continuing assistance to him in his new role. I hope all of you will support Larry in his new capacity and wish him well, as we all do here in Scottsdale.

Training Exercises Scheduled for October

After the great success of the first ACT Training session at the Creekside Resort in Mayer, Arizona in March of this year, Alcor management has secured, through David Pizer, the Creekside Lodge for our second and final ACT training event to be held over the weekend of Friday, October 24 through Monday, October 27.

This will be a more compact event, and while there will be less time for socializing among ACT participants, we hope the training to be every bit as intense and robust as during the March six-day session. Coordinating this event on Alcor's behalf are Dr. Jerry Lemler and new Chief Operating Officer Larry Johnson, with logistical and tactical support (once again) from Paula Lemler. The specific modules that comprise the curriculum will be formulated within the next two to three weeks at which time a more general announcement will be made and sent to all ACT roster members. Please be aware if you are currently an ACT, and you have not participated in a cryonics case or a training session within the past two years, Alcor may review your eligibility for a continuing discount on your membership dues. We will be writing to all our ACTs about this in the near future.

October is a beautiful time of the year in Mayer, which is located approximately one hour north from the Phoenix area. If you are interested in participating in our October session, please contact Paula Lemler at paula@alcor.org.

C.E.O. Health Status

I am continuing to receive monthly in-patient chemotherapy treatments for my malignant lymphoma. Thus far he I am responding to the treatments, although at intervals still tire from being anemic and having white cell counts and platelets drop somewhat below normal. My prognosis in the longrun continues to be quite good, with a stated five year survival rate at over seventy percent.

=====

Todd Huffman Joins Alcor

On June 5th, Alcor acquired a research assistant who just completed his B.Sc. in neuroscience and made the Dean's List at California State University at Long Beach with a 3.5 grade point average. His name is Todd Huffman, and he has relocated in the Phoenix area where eventually he expects to do graduate work. At Alcor he has started providing overdue help for Hugh Hixon in our lab.

Todd has already served as co-coordinator of our Southern California transport team and participated in the rapid sequence of five California Alcor cases that began last November. His EMT training, which he received during high school, enabled him to be a particularly effective member of

the team.

At Alcor he has been learning details of perfusate composition and tubing circuits, and will be researching intermediate temperature storage while developing an inventory control system and participating in the design of our expanded lab.

Todd tells us that he became interested in Cryonics "when I was 13 and read an article in Skeptic magazine, which also mentioned the Extropians and gave the URL of their web site." He joined the Extropian mail list and eventually attended two of their conferences, the first being in 1998. He considers himself primarily a life extensionist, "with cryonics as a backup strategy in case life extension therapies are not developed soon enough." He became an Alcor member this year.

Todd remains available to participate in Southern California cases when necessary, and will be helping in our operating room.

=====

Cindy Felix Joins Alcor

After the departure of James Sikes, Alcor needed a new facility operations manager and hired Christopher Thomas for this position (as reported previously in Alcor News). Unfortunately health problems prevented Christopher from continuing with us, but in the meantime our job ad was still running at monster.com and continued to attract resumes. One of them was from a crafts person named Cindy Felix.

Cindy is now an Alcor employee, maintaining our facility and building prototypes of new equipment. Her first assignment was to create a noncollapsible ice bath with a welded steel frame, for our new California van-ambulance. After that she built a patient cooling device to be used in conjunction with the ice bath. Currently she is fabricating protective boxes for handheld DualogR units which record patient temperature during the transport phase. Cindy has also completed a major cleanup of our workshop and has supervised maintenance of our Chevy Suburban (our primary retrieval vehicle in the Phoenix area).

Cindy says that she has "a lifelong interest in figuring out how things work." She maintains her own workshop at home and is proficient with the tools that will be necessary in fabrication tasks at Alcor. "And I'm motivated," she adds. "I like working here, because Alcor appreciates its employees and shows that they are appreciated." She also enjoys having the freedom to take initiative on a diverse range of projects. Although she knew very little about cryonics before starting the job, she now feels excited by being involved in something "which seems as if it could become a part of history. I like the idea of making things that can be used in cryonics cases in the future."

We're glad that Cindy joined us, and her positive effect on the facility is already visible.

=====

Facility Expansion Report

Alcor's expanded facility ultimately will include a greatly enlarged patient storage area, a bigger operating room (with two tables and a duplicate set of pumps), a lab area that is more than double the size of our current lab, and extra office space. Although the floor plan was approved early this year, construction has been delayed by problems such as locating an affordable bulk-storage liquid-nitrogen tank. In addition we have unresolved issues regarding the ideal crane system for transfer of patients between Dewars.

While these issues were under consideration, we contracted for preliminary work on a new conference room (the old conference room will become our new operating room), a "guest room" where team members can get some rest during long overnight procedures, a storage room for remote-standby kits, a new office in the old public-relations area (which will become the principal visitor entrance to the building), and two cubicles which are taking over our existing lobby so that temporary helpers and volunteers will have desks where

they can work.

The new conference room has been completed, the guest room and storage room are almost complete, the cubicles are waiting for texturing and painting, and the new office and visitor lobby have not been started yet. The next issue of Cryonics magazine will contain a more detailed exploration of our facility plans.

=====

Update on STASIS (Standby/Transport Ambulance
for Surgical Intervention and Stabilization)

Progress completing the conversion of our truck for medical/surgical use has been slowed by the intense summer heat in Phoenix, with daytime temperatures exceeding 110 Fahrenheit. Tim Carney has been getting up at 5AM to work on finishing the interior of the vehicle, having completed the installation of insulation and power outlets. The next step will be to install medical equipment and a generator.

=====

Southern California Update

On June 16th, the Southern California team members met at Applied Effects, the special-effects company cofounded by team member Regina Pancake. The new van that was purchased for Southern California is now kept permanently at Applied Effects and has been fitted with an alarm system. Team members test-lifted the noncollapsible ice bath that had been supplied to them from Alcor and determined that the rubber mat on the floor of the van should be scrapped, along with the fiber insulation beneath it. A new floor of 3/4-inch plywood layered with linoleum of Formica may be fitted as a substitute. During the meeting, team members practiced with dummy meds supplied by Alcor, familiarized themselves with the alarm system on the van, and learned the precise storage location of meds kit, washout solution, and other essentials. Scuba tanks of compressed air are being considered as a substitute for oxygen or an active air compressor, to drive a Thumper in conjunction with the ice bath. The Southern California team is active and can always use additional assistance. Send email to mail@alcornews.info if you are interested in participating.

=====

The Unexpected Death of Paul Segall
by Charles Platt

Cryonics pioneer Paul Segall died on June 23rd, 2003 from an aortic aneurysm. He was chairman and CEO of BioTime, Inc, which owned a \$1 million life insurance policy on Dr. Segall and will be looking for a successor, according to a report in the San Francisco Business Times.

Sources in the cryonics field allege that Dr. Segall was cryopreserved by Trans Time, an almost-dormant cryonics organization located in the Bay Area. Since no formal report was issued, I attempted to verify the story. This turned out to be difficult. When I dialled the contact number listed on the Trans Time web site I reached a recording telling me to call Jackson Zinn of the "International Cryonics Foundation." At that number I reached someone who answered the phone by saying, "Office." When I asked his name, he said "Bill." While a TV played in the background and the voice of a child seemed audible, Bill told me that Zinn was unavailable. He suggested that if I wanted information, I should call Alcor Foundation!

Instead I called BioTime and spoke to Mark Voelker, a former Alcor director who now works for that company. Mark told me that no one at BioTime wishes to comment on any connection between Paul Segall and cryonics.

However, Segall's involvement with cryonics is well documented in the book Living Longer, Growing Younger which he coauthored with Carol Kahn (published by Times Books in 1989). This book contains an entire chapter on cryonics and mentions Segall's participation on behalf of the Cryonics Society of New York in the case of Steven Jay Mandell on July 29th, 1968. Subsequently he helped in other New York cases

until he relocated to Berkeley, California, in 1971. There he linked up with Art Quaife, the founder of Trans Time. Eight years later Segall was listed as a team member in the case of an anonymous patient reported in issue 16 of Cryonics magazine.

Segall pursued a variety of research projects through the 1980s. His work resuscitating hamsters from periods of hypothermia was relatively unsuccessful, but he became widely known for developing Hextend, often referred to as a "blood substitute" but more properly known as a plasma volume extender since it does not carry oxygen as a substitute for hemoglobin.

The history of Hextend remains a contentious issue in the cryonics field. Jerry Leaf, Mike Darwin, and other Alcor members pursued a series of dramatic experiments with dogs at Cryovita Laboratories in 1984, resuscitating the animals successfully after maintaining them for hours at near-freezing temperatures. Leaf and Darwin replaced blood in the dogs with a substitute that provided some metabolic support, and Alcor still uses a similar compound as its washout-transport solution.

The Cryovita work was described briefly in Cryonics magazine but was never formally published. A biochemist named Hal Sternberg, who was collaborating with Segall on the hamster resuscitation research, visited Cryovita and learned about their blood substitute. Subsequently Segall and Sternberg decided to perform dog experiments themselves using their own blood substitute, which became known as Hextend.

Their first three experiments failed, but on the fourth try they resuscitated a beagle after about 20 minutes without vital signs. Segall presented this research at the annual meeting of the Federation of American Societies for Experimental Biology and reaped a huge amount of publicity on television and in publications such as People magazine. In collaboration with his wife, Hal Sternberg, and Harry Waitz, he formed BioTime in 1990. The company did a successful IPO in 1992 and remains probably the only enterprise founded by life extensionists and cryonicists that has raised sufficient capital to navigate the arduous process of testing a product to obtain FDA approval.

Acquaintances of Segall suggest that one of his motivations in Biotime could have been to raise money for future life extension research. Whether this may still be possible remains unclear; the company is trading as BTX on Amex for a few dollars per share, and according to a report filed for the quarter ending in March 2003, its total net loss since its inception is slightly more than \$34 million. However, Hextend has been approved for use in human patients in the United States and Canada, and it may yet have a promising future.

No one will confirm that Segall has been cryopreserved, but if the site of his aneurysm was close to the aortic arch, cryoprotective perfusion could have been difficult or impossible, and a straight freeze without cryoprotectant may have been necessary. This would be a tragic fate for a cryonics pioneer who achieved exceptional business success and was one of the most effectively vocal proponents of the concepts of life extension.

Alcor News is written primarily by Charles Platt. Contents are copyright 2003 by Alcor Foundation but permission is granted to reprint any whole news item, so long as Alcor is credited as the source and the reprint includes our URL at <http://www.alcornews.org>.

EXHIBIT NN

Alcor News Bulletin

Number 14: August 1st, 2003

Alcor Upgrades its Regional Capabilities

July was a pleasantly quiet month at Alcor. None of our members required help, and we're happy to report that no one contacted us with news of any potentially serious medical condition.

Mathew Sullivan, Director of Suspension Readiness, used the welcome break in our case load as an opportunity to complete his assembly of ten new meds kits, plus additional support kits which are now required because our meds kits have grown in content and complexity. Two meds kits and two support kits have already been sent to our team in Southern California. Meds/support packages are also destined for northern California, Florida, Boston, Canada, and the UK.

The purpose of deploying these kits is to enable "first aid" for cryopatiens in an emergency, ideally with the help of local volunteers who have received basic training at Alcor.

When paramedic Larry Johnson joined Alcor as Director of Clinical Services earlier this year, one of his first decisions was to change the way we package our medications. Formerly each set of meds was contained in numbered Zip-Loc bags inside a rigid plastic Pelican-brand suitcase of the type that is often used to transport photographic equipment. Larry recommended that we switch to "Thomas packs," which are padded backpacks specifically designed to hold pharmaceutical supplies in color-coded compartments. These packs are widely used by paramedics, and we adopted them earlier this year as our new standard.

The medications in our kits include anticoagulants and specially compounded drugs that help to minimize ischemic injury to the brain. Critical Care Research, a California laboratory specializing in resuscitation medicine, revamped our medications based on their unique and unmatched success in reviving dogs after substantial periods of warm ischemia (lack of blood flow at normal body temperature). At this time, Alcor is the only cryonics organization that has obtained a license to use compounds developed and tested by CCR.

We are not claiming to prevent ischemic injury, but we believe that our current medications enable us to delay it more successfully than has been possible in the past.

To continue our regional upgrades, we hope to distribute more Air Transportable Perfusion kits (ATPs) which enable blood washout and intravenous cooling in remote locations. Surgical trays containing instruments for vascular access must be assembled to accompany each ATP, and our new lab assistant Todd Huffman will be working on this with Hugh Hixon in the near future.

Upgrading our regional capability has been a long-term goal at Alcor. It took longer than we hoped, but is now becoming a reality.

We can't afford to distribute meds kits and ATPs to every part of the country, but if you live in an area where there is a concentration of Alcor members, your first step should be to attend our training course to learn how we treat cryopatiens immediately after legal death is pronounced.

=====
Training Update

As reported in the previous Alcor News, Alcor's next training sessions will be at Creekside Lodge, near Mayer, Arizona, commencing Friday, October 24th and continuing until Monday, October 27th. A free shuttle-bus service will transport attendees to Creekside from Phoenix Sky Harbor airport. The shuttle takes approximately 90 minutes to make the journey.

Students who arrive at Creekside during the afternoon of Friday 24th will find a free buffet waiting for them. Registration will be at 6 PM, followed by an evening class providing an overview of standby/transport tasks, problems, and priorities.

Hands-on work will start the next day at 8 AM and will continue till 6 PM, with a break for lunch in the Creekside Lodge dining room. Classes on Sunday will run from 8 AM through 7 PM.

Some of our students at the March training session commented that the instruction could have been a little more intensive, and we've taken their advice. If you spend the weekend with us at Creekside in October, you should expect us to keep you fully occupied.

Topics will include intubation, medications, cardiopulmonary support, blood washout and intravenous cooling with the ATP, and legal issues associated with cryonics. Students will be able to practice with our equipment in the evenings.

We are planning to limit attendance to 20 students, who will be divided into two groups of 10 for the hands-on work during the weekend. Some students have already registered, so we encourage you to make your reservation as soon as possible.

Learning the basics of cryonics field work is a challenging but fulfilling experience, and can help you to establish a nucleus of volunteers in your area. The more Alcor members who become actively involved, the better the chances are for all of us to receive a successful cryopreservation.

For additional information, please send email to:

Paula Lemler

=====

Progress Toward Intermediate Temperature Storage

In the previous Alcor News we reported that Alcor has acquired the prototype of an Intermediate Temperature Storage (ITS) device developed by Brian Wowk of 21st Century Medicine. (For an explanation of why ITS is desirable, please go to our archives at www.alcornews.org and check the explanatory section in Alcor News #13 dated July 1st, 2003.)

Our new lab assistant, Todd Huffman, has been studying Brian Wowk's design and has visited 21st Century Medicine to discuss reliability issues and possible modifications. Since the ITS pod will be cooled by positioning it above a pool of liquid nitrogen inside a Dewar, we have been debating which type of Dewar to use. An off-the-shelf industrial design is available, large enough to contain seven ITS pods (one in the center and six around it, in a hexagonal pattern). However, our proprietary "bigfoot" Dewar design is much taller, only slightly more expensive, and we have had extensive experience operating them over the past decade. A "bigfoot" seems our best option at this point.

In theory, it would be tall enough to contain a stack of three layers of ITS pods, with seven pods in each layer. The problem is that a tall Dewar will allow a more severe temperature gradient. In other words, the pods at the top will tend to be warmer than the pods at the bottom, and ITS requires that the temperature should be controlled with some precision.

One way around the problem is to use an internal framework of metal such as aluminum, which is a good conductor of heat and could minimize the temperature gradient. Another possibility is to fill the lower part of the Dewar with conventional neuropatients fully immersed in liquid nitrogen, with a single layer of ITS pods above them at the top. The disadvantage of this configuration is that we would have to modify our standard neuropatient containment shell. Also the ITS pods would get in the way during insertion or removal of neuropatients.

Another issue which Todd is investigating is the optimal refill system to maintain the reservoir of liquid nitrogen. A gravity feed would provide the security of constant refill without pumps, but would be grossly inefficient since the

pipe connecting it with the Dewar cannot be optimally insulated and will promote nitrogen boiloff.

Using a pump for automatic refill sounds intuitively risky, but low-temperature pump design has been perfected in industrial applications, and a Dewar refill pump probably would run only for a few minutes per week. Two pumps could be installed in parallel for redundancy.

Todd has been tabulating every conceivable failure mode, including liquid-nitrogen level sensor malfunction (Dewar will boil dry), failure of temperature sensor inside ITS pod (patient may become too cold or too warm), wire-break failure, pod heater failure, control system failure, and many others.

Probably we will need four months to explore all these failure modes and develop satisfactory solutions, after which the construction and testing of actual patient storage units may take another two months. This is longer than we would like, but obviously the system must be absolutely reliable before we can offer it as an option to our members.

We can't predict how much ITS will cost relative to conventional Dewar storage until we have established all the components in the system and have measured the liquid nitrogen boiloff rate.

=====
July Board Meeting

Here are some quick items from the board meeting which was held at the Alcor facility in Scottsdale on July 13th:

Our membership administrator, Jennifer Chapman, reported that Alcor membership is growing at an annualized rate of 10 percent.

A bulk storage liquid nitrogen tank has been located for our new patient care bay, but construction of the patient care bay is still being delayed by our difficulty in finding an engineer who will come to the facility to evaluate the strength of the roof, where we plan to install a crane for Dewar-to-Dewar patient transfers.

Alcor's web site is being moved to a new hosting service, where we will have direct control over the content. (Previously, a web design company implemented every alteration, which was a slow and costly procedure.) We hope the new site will be up within another couple of weeks, but the transfer must be carefully handled, since all of Alcor's email addresses and email distribution lists will move to the new hosting service along with the web pages.

Alcor is renewing its licensing agreement with 21st Century Medicine for the vitrification solution which we use for cryoprotection of our patients.

A plan to change our rules for remote standby will be presented for a board vote at the September meeting. Also, our board members will be up for election at that meeting.

Alcor director Ralph Merkle made a motion to transfer a cryopatient from the CryoStar freezer into conventional liquid nitrogen storage. Five directors voted in favor, one abstained, and one voted against. The transfer has since taken place. This helped to resolve an issue which has been a source of debate during several board meetings. For further details, see "The CryoStar Controversy," below.

Paramedic Larry Johnson, who serves as Alcor's Director of Clinical Services, has completed all the necessary signup paperwork and is now an Alcor member. Jerry Lemler stated that Larry will be taking on responsibilities of Chief Operating Officer, since Charles Platt resigned from that position (as reported in the previous Alcor News). However, any appointee to the position of C.O.O. must be confirmed by the Alcor board.

All Alcor board meetings are open to the public. The dates of future meetings have been established for the rest of the year:

Sunday, August 10th.
Sunday, September 7th.
Sunday, October 5th.
Sunday, November 2nd.
Sunday, December 14th.

Meetings usually begin at 10 AM during the summer months and 11 AM in the winter. They are held at the Alcor facility in Scottsdale. Please contact Alcor for additional details.

=====

The CryoStar Controversy

Rick Potvin, an Alcor member who lives in the Phoenix area, has been publishing some personal commentary about Alcor on a web site which some of our members may have visited after Rick publicized it on CryoNet. We welcome opinions and suggestions from anyone who takes an active interest in cryonics, but we found some of Rick's statements a bit surprising. For instance, he wrote on July 14th:

"In trying to figure out what I can say and not say--which I suppose is going to be par for the course if I continue to write about cryonics--I concluded that it's okay to talk about what a piece of junk the Cryostar is."

Alcor owns a CryoStar freezer of a type that is a standard item of equipment in hundreds of laboratories, and our directors, advisors, and staff have been discussing the relative merits of maintaining patients around -125 degrees Celsius in the CryoStar instead of immersing them at -196 degrees in liquid nitrogen. While we are waiting for the Wowk design of Intermediate Temperature Storage pod to be refined and tested, the CryoStar can provide ITS on an interim basis right now, and has proved that it will reduce the incidence of fractures which tend to occur after vitrification. Alcor clearly should do whatever it can to minimize all forms of damage to its patients.

The disadvantages of the CryoStar are obvious: It requires a supply of electricity and contains a compressor and a thermostat, just like a domestic refrigerator. It is fitted with an alarm and a highly dependable liquid-nitrogen backup system, and a patient can be "evacuated" from it quickly if necessary; but overall it may be less reliable than a Dewar.

That said, we feel that characterizing the CryoStar as "a piece of junk" may be a bit misleading.

A recent concern about the performance of our CryoStar was resolved when a technician visited Alcor and noted that the ambient temperature in the operating environment should not exceed 80 degrees Fahrenheit. Exceptionally hot Phoenix summer weather had driven the temperature above 80 degrees in our patient care bay, even with Alcor's industrial-strength air conditioning running constantly.

We considered options such as adding extra insulation to the CryoStar, adding a standalone air-conditioning unit in the patient care bay, adding a blower to increase the efficiency of the CryoStar's heat exchanger, or devising a liquid-nitrogen vapor system that would cool the heat exchanger more aggressively. So far, the first of these options has been implemented with some success.

We welcome debate on current issues at Alcor, and we welcome visitors to our board meetings. However, debate is pointless if it is based on misconceptions or oversimplifications, and the CryoStar issue has been complicated enough to sustain in-house discussions and disagreements for almost a year. Anyone who is interested in airing this kind of issue publicly should feel free to do so, but we invite them to contact us for some basic fact-checking first.

Alcor News is written primarily by Charles Platt.
Contents are copyright 2003 by Alcor
Foundation but permission is granted to reprint any whole
news item, so long as Alcor is credited as the source and
the reprint includes our URL at <http://www.alcornews.org>.

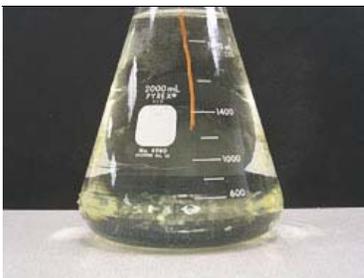
EXHIBIT OO

Cryopreservation and Fracturing

[Update: In June, 2003, Alcor began testing a simple fail-safe system for storage at temperatures higher than liquid nitrogen based on low-power electrical heating of insulated containers in or near liquid nitrogen. For more information about fracturing and engineering progress since 2003, see the 2011 article [Systems for Intermediate Temperature Storage for Fracturing Reduction and Avoidance.](#)]

Cryopatients are currently stored under liquid nitrogen at a temperature of -196°C . The first question that might come to mind is why so cold in the first place? The answer is provided in detail in the Alcor publication [How Cold is Cold Enough?](#) by Hugh Hixon [1]. In summary, when tissue is frozen, the freezing point of water is depressed by solutes concentrated between growing ice crystals. Water therefore remains a liquid (albeit a very viscous liquid) even at dry ice temperature (-79°C). Finally, usually at temperatures between -90°C and -130°C , a "glass transition" occurs and any remaining unfrozen water turns into a solid glass. Below this temperature, translational molecular motion is very slow to non-existent. With molecules able to do little more than vibrate in place, chemistry is effectively stopped, and extremely long storage times are possible.

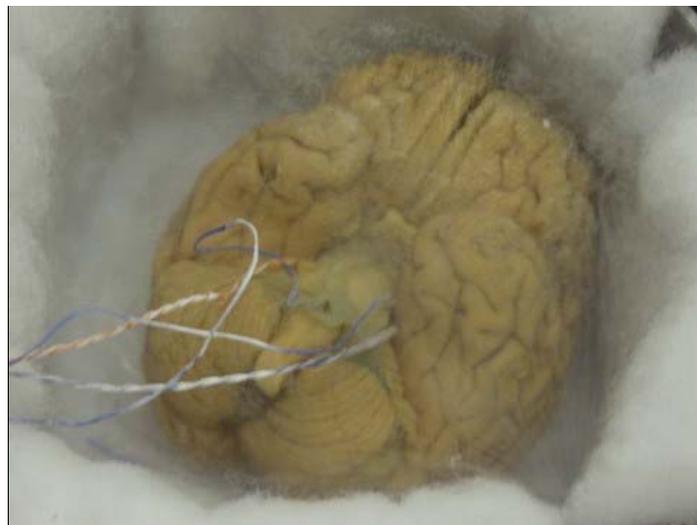
The Fracturing Problem



Vitrification solution before cooling



Vitrification solution fractured during cooling



Vitrified human brain of Alcor patient A-2077 under liquid nitrogen. Despite multiple large acoustic fracturing events recorded during cooling, the brain remains a cohesive whole with no grossly apparent fracturing or freezing damage. The consequences of fracturing seem to remain microscopic as long as tissue remains at cryogenic temperature. (Due to circumstances of legal death, this brain was removed by a pathologist. It was then chemically fixed prior to equilibration by diffusion with 10 Molar glycerol, followed by vitrification as an isolated brain, which is unusual in

cryonics.)

One problem with cooling to temperatures well below the glass transition temperature is that mechanical stresses due to thermal contraction are no longer easily accommodated. Solids want to contract as they are cooled, but glassy solids cannot contract. If tissue is cooled to liquid nitrogen temperature, which is far below the glass transition temperature, these conflicting forces cause the tissue to fracture. Fractures have been observed during post-mortem examination of the bodies of frozen cryopatients who were converted to neuropreservation [2].

Fracturing is a special concern for vitrification protocols that Alcor began using at the turn of the century. Ideally, vitrification avoids ice formation completely so that the entire tissue mass becomes an undisturbed block of glass. Fracturing breaks the otherwise pristine structural preservation that vitrification can achieve. An ounce of vitrification solution will tend to fracture if it is cooled more than 20 degrees below the glass transition temperature. (For practical vitrification solutions, the glass transition temperature is usually near -125°C .) Ominously, however, the fracture temperature increases with solution volume. Solution volumes greater than one liter can fracture at temperatures only a couple of degrees below the glass transition [3].

It should be mentioned that if advanced nanotechnology is available for patient recovery, then fracturing per se probably causes little information loss. In pure solutions fractures appear as clean refractive index boundaries, so any microscale damage must be at a scale smaller than the wavelength of light. Fractures might just be simple tissue displacement along a surface that is smooth down to the molecular level.

However the number of fracture lines in a single solution mass can be very large, especially if fracturing is delayed until lower temperatures are reached [3]. Fracturing therefore commits cryopatients to the need for molecular repair at cryogenic temperatures (a highly specialized and advanced form of nanotechnology) whereas unfractured patients may be able to benefit sooner from simpler forms of nanotechnology developed for more mainstream medical applications. Unfractured patients also have the option of being rewarmed without any nanotechnology and perfused with alternative preservation solutions, such as fixatives, if emergencies ever necessitate it. Fractured patients would be unperfusable, and likely suffer irreversible information loss, if they are ever rewarmed above the glass transition without prior nanotechnological repair.

Beyond improving existing cryopreservation methods, there is another reason why developing means to avoid fractures is important. Vitrification is an active area of research in cryobiology, and if people interested in the problem bring enough resources to bear, it is likely that some sort of reversible suspended animation of the brain can be achieved within the natural lifetime of most readers. To be reversible, such technology must necessarily store at non-fracturing temperatures. The prospect of this technology is perhaps the most powerful argument for development of higher temperature storage. Higher temperature storage is thus an essential part of the more general effort to achieve reversible suspended animation in our lifetime.

Long Term Instability at Higher Temperatures

The observation that large masses can fracture only a few degrees below the glass transition temperature suggests that safe fracture-free storage must take place very close to the glass transition temperature. The long-term stability of temperatures below the glass transition used to be taken for granted by cryobiologists. However the advent of vitrification has forced a re-examination of this belief because metastable vitrification

(vitrification based on rapid cooling) is a non-equilibrium process. Vitrified solutions therefore have strong and unique thermodynamic instabilities capable of driving change at temperatures near the glass transition temperature [4].

The most important instability for cryopreservation purposes is a tendency toward ice nucleation. At temperatures down to 20 degrees below the glass transition temperature, water molecules are capable of small translations and rotations to form nanoscale ice-crystals, and there is strong thermodynamic incentive to do so [5, 6]. These nanoscale crystals (called "nuclei") remain small and biologically insignificant below the glass transition, but grow quickly into damaging ice crystals as the temperature rises past -90°C during rewarming. Accumulating ice nuclei are therefore a growing liability that makes future ice-free rewarming efforts progressively more difficult the longer vitrified tissue is stored near the glass transition temperature. For example, storing a vitrification solution 10 degrees below the glass transition for six months was found to double the warming rate necessary to avoid ice growth during rewarming [5]. The vitrification solution that Alcor uses is far more stable than the solution used (VS41A) in this particular experiment, but Alcor must store its patients far longer than six months.

The Importance of Annealing

If truly stable storage requires temperatures more than 20 degrees below the glass transition, but fracturing can occur only a few degrees below it, what can be done? This is a problem that has recently received attention from cryobiologists seeking to preserve vitrified vascular grafts. Obviously preserved blood vessels cannot be transplanted if they crack into pieces during the preservation process. Fortunately it has been discovered that if during cooling samples are first taken slightly below the glass transition, then above it, and then back down below again, it is possible to go all the way to liquid nitrogen temperature without fracturing [7]. This is a remarkable demonstration of how a modest change in cooling protocol can relax thermal stresses, and permit glasses to be cooled to much lower temperatures without fracturing. These "annealing" protocols, which are still in their research infancy, are obviously critically important to the future of higher temperature storage.

Practical Systems

It is possible that future annealing research may show that it is possible to take even large vitrified masses all the way to liquid nitrogen temperature without fracturing. It is more likely, however, that temperatures closer to -150°C will be found optimum for long-term storage. This is the highest temperature at which ice nucleation is confidently stopped, and a temperature that will be safer against fracturing than lower temperatures (assuming that future annealing research will allow lower temperatures to be reached).

Mechanical freezers able to hold up to 12 neuropatients (but not whole body patients) at -140°C are commercially available. For various reasons, these freezers are not ideal for long-term storage. They are better suited for annealing processes, and temporary storage for perhaps a few years while better systems are developed.

Perhaps the best system for long-term higher temperature storage of cryopatiens is a system that has been suggested by Alcor engineer, Hugh Hixon (Appendix). This is a system based the same reliable "Bigfoot" dewars presently used by Alcor for liquid nitrogen storage of cryopatiens. For use at intermediate temperatures, a liquid nitrogen reservoir would be maintained at the bottom of the dewar with patients stored in the vapor space above

the liquid. A control system would circulate the vapor and draw cold for the liquid reservoir as necessary to maintain the desired target temperature in the vapor. Although much research and development is required, this system may ultimately be cost-competitive with existing liquid nitrogen storage.

Appendix by Hugh Hixon:

The advent of vitrifying cryoprotectants which block ice crystal formation when properly applied has led to a shift in focus to another well-recognized problem; cracking of the perfused organs on a macroscopic scale. To prevent this untoward event, it becomes necessary to store patients at a temperature near the glass transition point of the particular cryoprotectant.

Patient storage at LN2 temperature has been the "gold standard" up to the present time, as it has demonstrated consistent reliability at minimum expense. Any system that stores at some other temperature is not likely to be as reliable as LN2 storage by orders of magnitude, and certain problems (some of which we cannot anticipate) are inevitable. It should be possible to technically overcome most of the recognized problems, and achieve acceptable reliability, without raising storage costs to any great degree, although significant initial technology development costs are inescapable, and storage at or near glass transition points does not assure against cracking or other possible adverse effects of long-term thermal cycling.

The anticipated technical problems are:

- 1) *Gas stratification*. Between the cold liquid in the bottom of a dewar and the outside temperature at the top, there is a natural convective stagnation of the cold gas in a temperature/density gradient. In order to obtain a uniform temperature in the storage volume it is necessary to vertically circulate the gas by stirring, with fans or other means. Conventional fans are not normally expected to operate at cryogenic temperatures, primarily because the lubricant in the bearings freezes.
- 2) *Difficulty of achieving active control with minimum power*. Active systems can require a significant amount of power. Since the proposed high temperature storage systems are expected to operate through periods of commercial power failure, power requirements must be minimized. To achieve the synthesis of close temperature regulation and minimal power requirements, a combination of active and passive regulation is required, with fine active control being superimposed on passive regulation.
- 3) *Gas-liquid mixture on fill*. In filling, large quantities of cold gas can be introduced along with the LN2, interfering with control system regulation. Since the system is being designed for minimum power requirements, however, separating the cold gas from the liquid prior to its entering the dewar reservoir is necessary.
- 4) *Lack of reliability*. Backup systems and alarms are required for redundancy, thus it is expected that the final product will have no less than two nearly separate systems, each independently able to carry regulation on its own, plus appropriate alarms to notify operators of component failure.
- 5) *Data collection*. Programming will be required for computerized monitoring of the demonstrator.

Alcor senior staff is of the opinion that "...the ultimate high temperature storage will be in modified Bigfoot dewars, using some of the volume in the bottom of the dewar for an LN2 supply, while regulating the temperature of the remainder of the Bigfoot volume."

References

1. "[How Cold is Cold Enough](#)" CRYONICS, January 1985
2. "[Post Mortem Examination of Three Cryonic Suspension Patients](#)" CRYONICS, September 1984.
3. "Physical Problems with the Vitrification of Large Biological Systems" G. M. Fahy, J. S. Saur, and R. J. Williams,

Cryobiology 27, 492-510 (1990).

4. "Physical Aging of Glassy State: DSC Study of Vitrified Glycerol Systems" Z. H. Chang and J. G. Baust, *Cryobiology* 28, 87-95 (1991).

5. "Nucleation and Crystal Growth in a Vitrification Solution Tested for Organ Cryopreservation by Vitrification" P. M. Mehl, *Cryobiology* 30, 509-518 (1993).

6. "Crystallization of Ice in Aqueous Solutions of Glycerol and Dimethyl Sulfoxide" J. M. Hey and D. R. MacFarlane, *Cryobiology* 33, 205-216 (1996).

7. A. Baudot, abstract presented at the Annual Meeting of the Society for Cryobiology, 2001.

Alcor News Bulletin

Number 13: July 1st, 2003Intermediate Temperature Storage:
A New Era at Alcor

Maintaining patients at an intermediate temperature means keeping them warmer than liquid nitrogen, but cold enough to inhibit biological decay. For years we have wanted to provide this option. On June 14th, we came much closer to our goal.

Why Intermediate Temperature Storage is Necessary

If cryoprotective perfusion is performed successfully with a high terminal concentration, residual amounts of water in solution in the brain tend to solidify instead of forming ice crystals. When we use the vitrification solution which is now standard for all Alcor neuropatients, the entire brain should become a glassy solid as its temperature drops below the "glass transition point" around -125 degrees Celsius.

Traditionally, we have maintained our cryopatiens at -196 degrees, the temperature of liquid nitrogen. We use liquid nitrogen because it is cheap, nontoxic, convenient, and requires no refrigeration equipment at our facility. The liquid is "precooled" when it is delivered. Unfortunately, it is colder than we would really like it to be.

When a cryopatient makes the long journey from -125 to -196 degrees, some portions of the brain inevitably tend to cool faster than others. This creates thermal stress which can result in fracturing. We use a "crackphone" to sense and record vibrations which we believe are an accurate indication of fracturing events.

Proponents of nanotechnology believe that fracturing will be relatively easy to repair in the future compared with cellular damage, but still we would like to prevent it. The problem probably can be minimized or even eliminated if the patient isn't allowed to get so cold, and is held at a temperature just below the glass transition point. In other words, we would like our patients to be cold enough to vitrify, but not so cold that they start to fracture. Unfortunately the only easy way to achieve this has been by using an expensive laboratory freezer--until now.

A New Way to Maintain an Intermediate Temperature

On June 14th, in Rancho Cucamonga, California, biophysicist Brian Wowk of 21st Century Medicine gave a remarkable presentation attended by all Alcor board members and many staff members. Dr. Wowk has developed a simple, reliable design for an intermediate temperature storage device using a heavy-gauge metal container enclosed in a jacket of closed-cell insulating foam fitted with two 2-watt heaters. The insulating jacket is then immersed in liquid nitrogen, and the heaters are run variably by an external controller to maintain the desired temperature inside the metal liner, which conducts heat and minimizes the thermal gradient.

According to Dr. Wowk, seven of his storage devices will fit beside each other within the diameter of a typical "bigfoot" dewar of the design that Alcor uses. The initial cost of building each storage device will be around \$2,000, but a greater expense will be incurred in the long term as the heating elements will increase the total boiloff of liquid nitrogen in the enclosing Dewar. Also, because of the foam insulating jacket, each intermediate temperature storage device will occupy a greater volume compared with a standard neuro container. However, we believe that many of our members may feel that a higher payment for longterm care is a very reasonable tradeoff if Dr. Wowk's design minimizes or eliminates fracturing.

Alcor has purchased Dr. Wowk's first prototype and will be testing it for reliability and boiloff. After we have the numbers, we will be able to offer intermediate temperature

storage probably as an extra-cost option. We can't estimate the precise cost at this time, but Alcor News will provide additional updates in the future.

This is the most exciting development in cryonics since the advent of vitrification, and we're especially pleased by its simplicity. We believe there is an excellent chance that this will become the preferred method of patient care at Alcor.

=====

Charles Platt Steps Down as C.O.O.

After serving for slightly less than three months as Alcor's Chief Operating Officer, Charles Platt notified the board of directors on June 18th that he was not willing to continue his management duties. He said he had never felt very comfortable being a manager.

Platt will continue to pursue several projects for Alcor as an independent contractor. These include:

1. Editing and distributing Alcor News on a monthly basis.
2. Writing and designing a fund-raising appeal to address Alcor's current operating deficit and help pay for facility expansion.
3. Revising and producing a final version of the transport manual, of which a preliminary version was distributed to attendees at Alcor's training sessions last March.
4. Establishing a new and equitable membership discount scheme for existing Alcor Cryotransport Technicians (ACTs).
5. Managing Alcor's email service and distribution lists.
6. Participating as a member of the Alcor Facility Expansion subcommittee, which is evaluating each step of our major expansion project (to be reported in detail in the next issue of Cryonics magazine).
7. Participating in the design, development, and fabrication of a new collapsible portable ice bath, with Cindy Felix, Alcor's new facility manager and crafts person (see below).
8. Establishing a new Alcor web site with revised text.
9. In addition, Platt will be available as often as possible to assist with cryonics cases when necessary.
10. He will be available to to teach at the next training sessions.

While Charles Platt has spent most of his professional life as a freelance writer and is the author of 41 books and more than 300 magazine features, he has also involved himself in cryonics on a part-time basis for more than ten years and was a cofounder of CryoCare Foundation. His decision to serve as Director of Suspension Services at Alcor in August, 2002 was the first time he had participated in cryonics on a fulltime, paid basis. He continues to live in Northern Arizona where he will return to writing projects and real-estate ventures.

Platt left Alcor with a list of 33 unfinished tasks (in addition to the ones itemized above). Many of these tasks were described in a recent article which he wrote for Cryonics magazine. They will be shared by Jerry Lemler MD (our C.E.O.), Larry Johnson (our new C.O.O.), Todd Huffman (our new laboratory assistant), Cindy Felix (the new facility manager), Mathew Sullivan (director of suspension readiness), and Hugh Hixon (Alcor fellow).

=====

Personal From Dr. Jerry Lemler, C.E.O.

It is with sincere regret that the Alcor Foundation has accepted the resignation of its Chief Operating Officer Charles Platt. This man of tremendous action has enhanced our suspension capabilities many times over and has been able to take complex projects (documents, plans, theories) and break them down into component parts where they can be understood, addressed, and eventually formulated into action

plans. This ability will certainly be missed.

We are fortunate, however, that Charles will continue his role in several ongoing projects, and it is my hope that with the success of these he might be coaxed into some type of permanent part-time arrangement with Alcor so we all may benefit from this man's many skills. This was initially, in fact, Charles' desire when he first approached me back in September of last year, prior to my cajoling him into considering a more active role.

New Chief Operating Officer

With the resignation of Charles Platt, the vacancy in the Chief Operating Officer's position has been filled by former Director of Clinical Services Larry Johnson. Though Larry has been with the organization but a short period of time, he has demonstrated a remarkable ability to absorb much of the knowledge he needs (specifically with respect to cryonics), that when coupled with his outstanding paramedic and management of paramedic skills should bode well for him in his new position. Charles Platt, likewise, has groomed Larry to take his place, and I know will be of continuing assistance to him in his new role. I hope all of you will support Larry in his new capacity and wish him well, as we all do here in Scottsdale.

Training Exercises Scheduled for October

After the great success of the first ACT Training session at the Creekside Resort in Mayer, Arizona in March of this year, Alcor management has secured, through David Pizer, the Creekside Lodge for our second and final ACT training event to be held over the weekend of Friday, October 24 through Monday, October 27.

This will be a more compact event, and while there will be less time for socializing among ACT participants, we hope the training to be every bit as intense and robust as during the March six-day session. Coordinating this event on Alcor's behalf are Dr. Jerry Lemler and new Chief Operating Officer Larry Johnson, with logistical and tactical support (once again) from Paula Lemler. The specific modules that comprise the curriculum will be formulated within the next two to three weeks at which time a more general announcement will be made and sent to all ACT roster members. Please be aware if you are currently an ACT, and you have not participated in a cryonics case or a training session within the past two years, Alcor may review your eligibility for a continuing discount on your membership dues. We will be writing to all our ACTs about this in the near future.

October is a beautiful time of the year in Mayer, which is located approximately one hour north from the Phoenix area. If you are interested in participating in our October session, please contact Paula Lemler at paula@alcor.org.

C.E.O. Health Status

I am continuing to receive monthly in-patient chemotherapy treatments for my malignant lymphoma. Thus far he I am responding to the treatments, although at intervals still tire from being anemic and having white cell counts and platelets drop somewhat below normal. My prognosis in the longrun continues to be quite good, with a stated five year survival rate at over seventy percent.

=====

Todd Huffman Joins Alcor

On June 5th, Alcor acquired a research assistant who just completed his B.Sc. in neuroscience and made the Dean's List at California State University at Long Beach with a 3.5 grade point average. His name is Todd Huffman, and he has relocated in the Phoenix area where eventually he expects to do graduate work. At Alcor he has started providing overdue help for Hugh Hixon in our lab.

Todd has already served as co-coordinator of our Southern California transport team and participated in the rapid sequence of five California Alcor cases that began last November. His EMT training, which he received during high school, enabled him to be a particularly effective member of

the team.

At Alcor he has been learning details of perfusate composition and tubing circuits, and will be researching intermediate temperature storage while developing an inventory control system and participating in the design of our expanded lab.

Todd tells us that he became interested in Cryonics "when I was 13 and read an article in Skeptic magazine, which also mentioned the Extropians and gave the URL of their web site." He joined the Extropian mail list and eventually attended two of their conferences, the first being in 1998. He considers himself primarily a life extensionist, "with cryonics as a backup strategy in case life extension therapies are not developed soon enough." He became an Alcor member this year.

Todd remains available to participate in Southern California cases when necessary, and will be helping in our operating room.

=====

Cindy Felix Joins Alcor

After the departure of James Sikes, Alcor needed a new facility operations manager and hired Christopher Thomas for this position (as reported previously in Alcor News). Unfortunately health problems prevented Christopher from continuing with us, but in the meantime our job ad was still running at monster.com and continued to attract resumes. One of them was from a crafts person named Cindy Felix.

Cindy is now an Alcor employee, maintaining our facility and building prototypes of new equipment. Her first assignment was to create a noncollapsible ice bath with a welded steel frame, for our new California van-ambulance. After that she built a patient cooling device to be used in conjunction with the ice bath. Currently she is fabricating protective boxes for handheld DualogR units which record patient temperature during the transport phase. Cindy has also completed a major cleanup of our workshop and has supervised maintenance of our Chevy Suburban (our primary retrieval vehicle in the Phoenix area).

Cindy says that she has "a lifelong interest in figuring out how things work." She maintains her own workshop at home and is proficient with the tools that will be necessary in fabrication tasks at Alcor. "And I'm motivated," she adds. "I like working here, because Alcor appreciates its employees and shows that they are appreciated." She also enjoys having the freedom to take initiative on a diverse range of projects. Although she knew very little about cryonics before starting the job, she now feels excited by being involved in something "which seems as if it could become a part of history. I like the idea of making things that can be used in cryonics cases in the future."

We're glad that Cindy joined us, and her positive effect on the facility is already visible.

=====

Facility Expansion Report

Alcor's expanded facility ultimately will include a greatly enlarged patient storage area, a bigger operating room (with two tables and a duplicate set of pumps), a lab area that is more than double the size of our current lab, and extra office space. Although the floor plan was approved early this year, construction has been delayed by problems such as locating an affordable bulk-storage liquid-nitrogen tank. In addition we have unresolved issues regarding the ideal crane system for transfer of patients between Dewars.

While these issues were under consideration, we contracted for preliminary work on a new conference room (the old conference room will become our new operating room), a "guest room" where team members can get some rest during long overnight procedures, a storage room for remote-standby kits, a new office in the old public-relations area (which will become the principal visitor entrance to the building), and two cubicles which are taking over our existing lobby so that temporary helpers and volunteers will have desks where

they can work.

The new conference room has been completed, the guest room and storage room are almost complete, the cubicles are waiting for texturing and painting, and the new office and visitor lobby have not been started yet. The next issue of Cryonics magazine will contain a more detailed exploration of our facility plans.

=====

Update on STASIS (Standby/Transport Ambulance
for Surgical Intervention and Stabilization)

Progress completing the conversion of our truck for medical/surgical use has been slowed by the intense summer heat in Phoenix, with daytime temperatures exceeding 110 Fahrenheit. Tim Carney has been getting up at 5AM to work on finishing the interior of the vehicle, having completed the installation of insulation and power outlets. The next step will be to install medical equipment and a generator.

=====

Southern California Update

On June 16th, the Southern California team members met at Applied Effects, the special-effects company cofounded by team member Regina Pancake. The new van that was purchased for Southern California is now kept permanently at Applied Effects and has been fitted with an alarm system. Team members test-lifted the noncollapsible ice bath that had been supplied to them from Alcor and determined that the rubber mat on the floor of the van should be scrapped, along with the fiber insulation beneath it. A new floor of 3/4-inch plywood layered with linoleum of Formica may be fitted as a substitute. During the meeting, team members practiced with dummy meds supplied by Alcor, familiarized themselves with the alarm system on the van, and learned the precise storage location of meds kit, washout solution, and other essentials. Scuba tanks of compressed air are being considered as a substitute for oxygen or an active air compressor, to drive a Thumper in conjunction with the ice bath. The Southern California team is active and can always use additional assistance. Send email to mail@alcornews.info if you are interested in participating.

=====

The Unexpected Death of Paul Segall
by Charles Platt

Cryonics pioneer Paul Segall died on June 23rd, 2003 from an aortic aneurysm. He was chairman and CEO of BioTime, Inc, which owned a \$1 million life insurance policy on Dr. Segall and will be looking for a successor, according to a report in the San Francisco Business Times.

Sources in the cryonics field allege that Dr. Segall was cryopreserved by Trans Time, an almost-dormant cryonics organization located in the Bay Area. Since no formal report was issued, I attempted to verify the story. This turned out to be difficult. When I dialled the contact number listed on the Trans Time web site I reached a recording telling me to call Jackson Zinn of the "International Cryonics Foundation." At that number I reached someone who answered the phone by saying, "Office." When I asked his name, he said "Bill." While a TV played in the background and the voice of a child seemed audible, Bill told me that Zinn was unavailable. He suggested that if I wanted information, I should call Alcor Foundation!

Instead I called BioTime and spoke to Mark Voelker, a former Alcor director who now works for that company. Mark told me that no one at BioTime wishes to comment on any connection between Paul Segall and cryonics.

However, Segall's involvement with cryonics is well documented in the book Living Longer, Growing Younger which he coauthored with Carol Kahn (published by Times Books in 1989). This book contains an entire chapter on cryonics and mentions Segall's participation on behalf of the Cryonics Society of New York in the case of Steven Jay Mandell on July 29th, 1968. Subsequently he helped in other New York cases

until he relocated to Berkeley, California, in 1971. There he linked up with Art Quaife, the founder of Trans Time. Eight years later Segall was listed as a team member in the case of an anonymous patient reported in issue 16 of Cryonics magazine.

Segall pursued a variety of research projects through the 1980s. His work resuscitating hamsters from periods of hypothermia was relatively unsuccessful, but he became widely known for developing Hextend, often referred to as a "blood substitute" but more properly known as a plasma volume extender since it does not carry oxygen as a substitute for hemoglobin.

The history of Hextend remains a contentious issue in the cryonics field. Jerry Leaf, Mike Darwin, and other Alcor members pursued a series of dramatic experiments with dogs at Cryovita Laboratories in 1984, resuscitating the animals successfully after maintaining them for hours at near-freezing temperatures. Leaf and Darwin replaced blood in the dogs with a substitute that provided some metabolic support, and Alcor still uses a similar compound as its washout-transport solution.

The Cryovita work was described briefly in Cryonics magazine but was never formally published. A biochemist named Hal Sternberg, who was collaborating with Segall on the hamster resuscitation research, visited Cryovita and learned about their blood substitute. Subsequently Segall and Sternberg decided to perform dog experiments themselves using their own blood substitute, which became known as Hextend.

Their first three experiments failed, but on the fourth try they resuscitated a beagle after about 20 minutes without vital signs. Segall presented this research at the annual meeting of the Federation of American Societies for Experimental Biology and reaped a huge amount of publicity on television and in publications such as People magazine. In collaboration with his wife, Hal Sternberg, and Harry Waitz, he formed BioTime in 1990. The company did a successful IPO in 1992 and remains probably the only enterprise founded by life extensionists and cryonicists that has raised sufficient capital to navigate the arduous process of testing a product to obtain FDA approval.

Acquaintances of Segall suggest that one of his motivations in Biotime could have been to raise money for future life extension research. Whether this may still be possible remains unclear; the company is trading as BTX on Amex for a few dollars per share, and according to a report filed for the quarter ending in March 2003, its total net loss since its inception is slightly more than \$34 million. However, Hextend has been approved for use in human patients in the United States and Canada, and it may yet have a promising future.

No one will confirm that Segall has been cryopreserved, but if the site of his aneurysm was close to the aortic arch, cryoprotective perfusion could have been difficult or impossible, and a straight freeze without cryoprotectant may have been necessary. This would be a tragic fate for a cryonics pioneer who achieved exceptional business success and was one of the most effectively vocal proponents of the concepts of life extension.

Alcor News is written primarily by Charles Platt.
Contents are copyright 2003 by Alcor
Foundation but permission is granted to reprint any whole
news item, so long as Alcor is credited as the source and
the reprint includes our URL at <http://www.alcornews.org>.

Alcor News Bulletin-----
Number 20: January 7th 2004

This bulletin is sent via email to anyone who has requested it. Please do not reply to this message; the news server at alcornews.org does not receive email. Send any comments, suggestions, or complaints to the new address that has been established to deal with human communications: mail@alcornews.info. Note, this is a .info address, not a .com or .org address! If you type the URL manually, please type carefully. Subscribe/unsubscribe information is at the end of this message. The layout of Alcor News is best viewed using a monospaced font such as Courier. Contents are copyright 2003 by Alcor Foundation but permission is granted to reprint any whole news item, so long as Alcor is credited as the source and the reprint includes our URL at <http://www.alcornews.org>.

Contributors to this issue: Tanya Jones [TJ], Joe Waynick [JW], and Mike Perry [MP].

First Words

The beginning of 2004 finds us at Alcor busily preparing for a new administration with a budgetary review and some new policies. Tanya Jones as usual has most of the say-so in this issue, with an added message from our new CEO, Joe Waynick. [MP]

New CEO and President

At the December 13, 2003 meeting, Alcor's Board of Directors selected Joseph Waynick as Alcor's new CEO, President and member of the Board. Mr. Waynick took office January 1, 2004, succeeding Dr. Jerry Lemler, who continues as Alcor's Medical Director and chief spokesperson.

Joe Waynick began his career in 1980 as a computer programmer in the U.S. Marine Corps. He then relocated to San Diego, California and joined California First Bank as a senior systems programmer. By 1993 he was Vice President in charge of Technical Support. In 1997 he again relocated, this time to Phoenix, Arizona as Vice President and Technology Leader of Technical Support with American Express and later transferred to Vice President and Technology Leader of Computer Operations. He retired from the information technology industry in April 2001 to pursue private business interests. He completed his signup and became an Alcor member in September 2001. In 2002 he acquired Custom Impressions, LLC, a printing and graphics design company.

We're all impressed with the management skills Joe has displayed since arriving on the scene, and are looking forward to working closely with him to improve the long-term protection and preservation of our patients and the quality of Alcor's research and cryopreservation capability that sound management practices will afford. Welcome, Joe! [TJ, MP]

A Message from Joe Waynick

It is a great privilege and honor to have been selected by the Board of Directors as the new CEO/President of Alcor. I am looking forward to continuing Alcor's progress by improving our ability to provide the best suspension capability current science can offer as well improving the long-term care of our patients.

Alcor and the cryonics industry itself are facing increasing

challenges from society all the way from government regulation and public acceptance, to legal opposition to our pursuit of longevity and ultimately reanimation. I am confident that our organization will overcome any social and technological obstacles we encounter.

The coming year looms before us with the prospect of great opportunity as well as great challenges. In the opportunity category, I am excited about some of the innovative fundraising options we plan to introduce this year. They represent new sources of revenue that will help reinforce Alcor's financial foundation while at the same time allow members to support the organization in a unique fashion without adding yet another financial burden.

In the obstacles category, Alcor continues to battle those who would try to divert us from our mission. Add to that our efforts to upgrade the facility with a new and improved Patient Care Bay, new Operating Room, the retrofit of the new Ambulance, and many other enhancement projects on the drawing board, and you can see that we really have our work cut out for us.

Rest assured, that the team here at Alcor Central is more determined than ever to make the organization bigger, better and stronger in the new year. Your continued support and encouragement is always greatly appreciated. [JW]

Intermediate Temperature Storage Project Progressing

Work on the intermediate temperature storage for neuro patients has moved into a new phase. After extensive testing Todd Huffman is convinced Brian Wowk's design is sufficiently robust and resistant to failure. Some changes are being made to the design, and Brian is currently constructing a version with those changes.

Besides the unit designed by Brian Wowk there are various support mechanisms needed. The Bigfoot dewars will need to be retrofitted to accommodate the new containers, and safety measures will have to be put in place to ensure uninterrupted operation. There is also a control infrastructure needed to manage multiple, independent storage units. Currently, these components are being designed and will be built as soon as funds allow. [TJ]

Administrative Report

Alcor ended the year with 661 cryopreservation members, having started the year with 611. This represents an 8.2% growth in membership during a time of some turmoil in the cryonics community. While respectable considering the lack of coordinated marketing, we still hope to improve the growth rate to 10% or more for 2004.

For the past few weeks, the executive team has been developing the 2004 budget. Admittedly, we're a little behind on the scheduling, but we hope to have this task complete by the end of the month. It has been a while since Alcor has operated strictly to a budget, and we're looking forward to making cryonics less of a sinkhole for funding. For now, all projects are on temporary hold as we determine the minimum requirements for maintaining our current level of service. We'll be prioritizing and re-introducing specific projects and upgrades as the funding becomes available.

Budgetary considerations were also important in the dismissal of Katherine Waters from the Alcor staff last week. Katherine was hired by Alcor in 2002 to assist in accounting duties; and she has performed those duties well, taking much of the load from Joe Hovey. Joe had hoped to move to a half-time schedule later this quarter, but this plan is now on hold with the abolishing of Katherine's position as our accounting department is reorganized. We thank Katherine for her hard work over the past couple of years, and wish her the best in her future endeavors. [TJ]

Alcor Central Meeting

Alcor's first meeting of the year will be held on Saturday, January 10, at 11am MST (10am PST, noon CST, 1pm EST). Alcor meetings are now held in the new conference room at the facility's location in Scottsdale. [MP]

=====
End of Alcor News bulletin #20 dated January 7th, 2004.
Distribution: 424 subscribers.
=====

EXHIBIT PP

Alcor News Bulletin

Number 14: August 1st, 2003

Alcor Upgrades its Regional Capabilities

July was a pleasantly quiet month at Alcor. None of our members required help, and we're happy to report that no one contacted us with news of any potentially serious medical condition.

Mathew Sullivan, Director of Suspension Readiness, used the welcome break in our case load as an opportunity to complete his assembly of ten new meds kits, plus additional support kits which are now required because our meds kits have grown in content and complexity. Two meds kits and two support kits have already been sent to our team in Southern California. Meds/support packages are also destined for northern California, Florida, Boston, Canada, and the UK.

The purpose of deploying these kits is to enable "first aid" for cryopatiens in an emergency, ideally with the help of local volunteers who have received basic training at Alcor.

When paramedic Larry Johnson joined Alcor as Director of Clinical Services earlier this year, one of his first decisions was to change the way we package our medications. Formerly each set of meds was contained in numbered Zip-Loc bags inside a rigid plastic Pelican-brand suitcase of the type that is often used to transport photographic equipment. Larry recommended that we switch to "Thomas packs," which are padded backpacks specifically designed to hold pharmaceutical supplies in color-coded compartments. These packs are widely used by paramedics, and we adopted them earlier this year as our new standard.

The medications in our kits include anticoagulants and specially compounded drugs that help to minimize ischemic injury to the brain. Critical Care Research, a California laboratory specializing in resuscitation medicine, revamped our medications based on their unique and unmatched success in reviving dogs after substantial periods of warm ischemia (lack of blood flow at normal body temperature). At this time, Alcor is the only cryonics organization that has obtained a license to use compounds developed and tested by CCR.

We are not claiming to prevent ischemic injury, but we believe that our current medications enable us to delay it more successfully than has been possible in the past.

To continue our regional upgrades, we hope to distribute more Air Transportable Perfusion kits (ATPs) which enable blood washout and intravenous cooling in remote locations. Surgical trays containing instruments for vascular access must be assembled to accompany each ATP, and our new lab assistant Todd Huffman will be working on this with Hugh Hixon in the near future.

Upgrading our regional capability has been a long-term goal at Alcor. It took longer than we hoped, but is now becoming a reality.

We can't afford to distribute meds kits and ATPs to every part of the country, but if you live in an area where there is a concentration of Alcor members, your first step should be to attend our training course to learn how we treat cryopatiens immediately after legal death is pronounced.

=====

Training Update

As reported in the previous Alcor News, Alcor's next training sessions will be at Creekside Lodge, near Mayer, Arizona, commencing Friday, October 24th and continuing until Monday, October 27th. A free shuttle-bus service will transport attendees to Creekside from Phoenix Sky Harbor airport. The shuttle takes approximately 90 minutes to make the journey.

Students who arrive at Creekside during the afternoon of Friday 24th will find a free buffet waiting for them. Registration will be at 6 PM, followed by an evening class providing an overview of standby/transport tasks, problems, and priorities.

Hands-on work will start the next day at 8 AM and will continue till 6 PM, with a break for lunch in the Creekside Lodge dining room. Classes on Sunday will run from 8 AM through 7 PM.

Some of our students at the March training session commented that the instruction could have been a little more intensive, and we've taken their advice. If you spend the weekend with us at Creekside in October, you should expect us to keep you fully occupied.

Topics will include intubation, medications, cardiopulmonary support, blood washout and intravenous cooling with the ATP, and legal issues associated with cryonics. Students will be able to practice with our equipment in the evenings.

We are planning to limit attendance to 20 students, who will be divided into two groups of 10 for the hands-on work during the weekend. Some students have already registered, so we encourage you to make your reservation as soon as possible.

Learning the basics of cryonics field work is a challenging but fulfilling experience, and can help you to establish a nucleus of volunteers in your area. The more Alcor members who become actively involved, the better the chances are for all of us to receive a successful cryopreservation.

For additional information, please send email to:

Paula Lemler

=====

Progress Toward Intermediate Temperature Storage

In the previous Alcor News we reported that Alcor has acquired the prototype of an Intermediate Temperature Storage (ITS) device developed by Brian Wowk of 21st Century Medicine. (For an explanation of why ITS is desirable, please go to our archives at www.alcornews.org and check the explanatory section in Alcor News #13 dated July 1st, 2003.)

Our new lab assistant, Todd Huffman, has been studying Brian Wowk's design and has visited 21st Century Medicine to discuss reliability issues and possible modifications. Since the ITS pod will be cooled by positioning it above a pool of liquid nitrogen inside a Dewar, we have been debating which type of Dewar to use. An off-the-shelf industrial design is available, large enough to contain seven ITS pods (one in the center and six around it, in a hexagonal pattern). However, our proprietary "bigfoot" Dewar design is much taller, only slightly more expensive, and we have had extensive experience operating them over the past decade. A "bigfoot" seems our best option at this point.

In theory, it would be tall enough to contain a stack of three layers of ITS pods, with seven pods in each layer. The problem is that a tall Dewar will allow a more severe temperature gradient. In other words, the pods at the top will tend to be warmer than the pods at the bottom, and ITS requires that the temperature should be controlled with some precision.

One way around the problem is to use an internal framework of metal such as aluminum, which is a good conductor of heat and could minimize the temperature gradient. Another possibility is to fill the lower part of the Dewar with conventional neuropatients fully immersed in liquid nitrogen, with a single layer of ITS pods above them at the top. The disadvantage of this configuration is that we would have to modify our standard neuropatient containment shell. Also the ITS pods would get in the way during insertion or removal of neuropatients.

Another issue which Todd is investigating is the optimal refill system to maintain the reservoir of liquid nitrogen. A gravity feed would provide the security of constant refill without pumps, but would be grossly inefficient since the

pipe connecting it with the Dewar cannot be optimally insulated and will promote nitrogen boiloff.

Using a pump for automatic refill sounds intuitively risky, but low-temperature pump design has been perfected in industrial applications, and a Dewar refill pump probably would run only for a few minutes per week. Two pumps could be installed in parallel for redundancy.

Todd has been tabulating every conceivable failure mode, including liquid-nitrogen level sensor malfunction (Dewar will boil dry), failure of temperature sensor inside ITS pod (patient may become too cold or too warm), wire-break failure, pod heater failure, control system failure, and many others.

Probably we will need four months to explore all these failure modes and develop satisfactory solutions, after which the construction and testing of actual patient storage units may take another two months. This is longer than we would like, but obviously the system must be absolutely reliable before we can offer it as an option to our members.

We can't predict how much ITS will cost relative to conventional Dewar storage until we have established all the components in the system and have measured the liquid nitrogen boiloff rate.

=====
July Board Meeting

Here are some quick items from the board meeting which was held at the Alcor facility in Scottsdale on July 13th:

Our membership administrator, Jennifer Chapman, reported that Alcor membership is growing at an annualized rate of 10 percent.

A bulk storage liquid nitrogen tank has been located for our new patient care bay, but construction of the patient care bay is still being delayed by our difficulty in finding an engineer who will come to the facility to evaluate the strength of the roof, where we plan to install a crane for Dewar-to-Dewar patient transfers.

Alcor's web site is being moved to a new hosting service, where we will have direct control over the content. (Previously, a web design company implemented every alteration, which was a slow and costly procedure.) We hope the new site will be up within another couple of weeks, but the transfer must be carefully handled, since all of Alcor's email addresses and email distribution lists will move to the new hosting service along with the web pages.

Alcor is renewing its licensing agreement with 21st Century Medicine for the vitrification solution which we use for cryoprotection of our patients.

A plan to change our rules for remote standby will be presented for a board vote at the September meeting. Also, our board members will be up for election at that meeting.

Alcor director Ralph Merkle made a motion to transfer a cryopatient from the CryoStar freezer into conventional liquid nitrogen storage. Five directors voted in favor, one abstained, and one voted against. The transfer has since taken place. This helped to resolve an issue which has been a source of debate during several board meetings. For further details, see "The CryoStar Controversy," below.

Paramedic Larry Johnson, who serves as Alcor's Director of Clinical Services, has completed all the necessary signup paperwork and is now an Alcor member. Jerry Lemler stated that Larry will be taking on responsibilities of Chief Operating Officer, since Charles Platt resigned from that position (as reported in the previous Alcor News). However, any appointee to the position of C.O.O. must be confirmed by the Alcor board.

All Alcor board meetings are open to the public. The dates of future meetings have been established for the rest of the year:

Sunday, August 10th.
Sunday, September 7th.
Sunday, October 5th.
Sunday, November 2nd.
Sunday, December 14th.

Meetings usually begin at 10 AM during the summer months and 11 AM in the winter. They are held at the Alcor facility in Scottsdale. Please contact Alcor for additional details.

=====

The CryoStar Controversy

Rick Potvin, an Alcor member who lives in the Phoenix area, has been publishing some personal commentary about Alcor on a web site which some of our members may have visited after Rick publicized it on CryoNet. We welcome opinions and suggestions from anyone who takes an active interest in cryonics, but we found some of Rick's statements a bit surprising. For instance, he wrote on July 14th:

"In trying to figure out what I can say and not say--which I suppose is going to be par for the course if I continue to write about cryonics--I concluded that it's okay to talk about what a piece of junk the Cryostar is."

Alcor owns a CryoStar freezer of a type that is a standard item of equipment in hundreds of laboratories, and our directors, advisors, and staff have been discussing the relative merits of maintaining patients around -125 degrees Celsius in the CryoStar instead of immersing them at -196 degrees in liquid nitrogen. While we are waiting for the Wowk design of Intermediate Temperature Storage pod to be refined and tested, the CryoStar can provide ITS on an interim basis right now, and has proved that it will reduce the incidence of fractures which tend to occur after vitrification. Alcor clearly should do whatever it can to minimize all forms of damage to its patients.

The disadvantages of the CryoStar are obvious: It requires a supply of electricity and contains a compressor and a thermostat, just like a domestic refrigerator. It is fitted with an alarm and a highly dependable liquid-nitrogen backup system, and a patient can be "evacuated" from it quickly if necessary; but overall it may be less reliable than a Dewar.

That said, we feel that characterizing the CryoStar as "a piece of junk" may be a bit misleading.

A recent concern about the performance of our CryoStar was resolved when a technician visited Alcor and noted that the ambient temperature in the operating environment should not exceed 80 degrees Fahrenheit. Exceptionally hot Phoenix summer weather had driven the temperature above 80 degrees in our patient care bay, even with Alcor's industrial-strength air conditioning running constantly.

We considered options such as adding extra insulation to the CryoStar, adding a standalone air-conditioning unit in the patient care bay, adding a blower to increase the efficiency of the CryoStar's heat exchanger, or devising a liquid-nitrogen vapor system that would cool the heat exchanger more aggressively. So far, the first of these options has been implemented with some success.

We welcome debate on current issues at Alcor, and we welcome visitors to our board meetings. However, debate is pointless if it is based on misconceptions or oversimplifications, and the CryoStar issue has been complicated enough to sustain in-house discussions and disagreements for almost a year. Anyone who is interested in airing this kind of issue publicly should feel free to do so, but we invite them to contact us for some basic fact-checking first.

Alcor News is written primarily by Charles Platt.
Contents are copyright 2003 by Alcor
Foundation but permission is granted to reprint any whole
news item, so long as Alcor is credited as the source and
the reprint includes our URL at <http://www.alcornews.org>.

EXHIBIT QQ

DAILY NEWS

U.S

Ted Williams' frozen head for batting practice at cryogenics lab: book

BY NATHANIEL VINTON / DAILY NEWS STAFF WRITER

FRIDAY, OCTOBER 2, 2009, 10:44 AM



TOPPING/REUTERS

Head of Ted Williams was abused by employees at Alcor Life Extension Foundation in Scottsdale, Ariz., whistleblower says.

Workers at an [Arizona](#) cryonics facility mutilated the frozen head of baseball legend [Ted Williams](#) - even using it for a bizarre batting practice, a new tell-all book claims.

In "Frozen," [Larry Johnson](#), a former exec at the [Alcor Life Extension Foundation](#) in [Scottsdale, Ariz.](#), graphically describes how The Splendid Splinter" was beheaded, his head frozen and repeatedly abused.

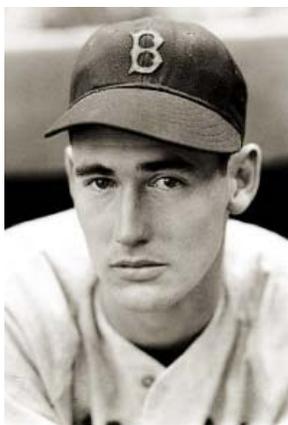
[RELATED: CONVICTED CHILD KILLER JOHN EVANDER COUEY DIES IN PRISON, BEFORE SCHEDULED EXECUTION](#)

The book, out Tuesday from Vanguard Press, tells how Williams' corpse became "Alcorian A-1949" at the facility, where bodies are kept suspended in liquid nitrogen in case future generations learn how to revive them.

Johnson writes that in July 2002, shortly after the [Red Sox](#) slugger died at age 83, technicians with no medical certification gleefully photographed and used crude equipment to decapitate the majors' last .400 hitter.

[RELATED: ELIZABETH SMART TESTIMONY: 'SLIMY, SELFISH' CAPTOR BRIAN DAVID MITCHELL RAPED HER EVERY DAY](#)

Williams' severed head was then frozen, and even used for batting practice by a technician trying to dislodge it from a tuna fish can.



AP

Ted Williams, who spent his entire career with the Red Sox, died in 2002 at the age of 83.

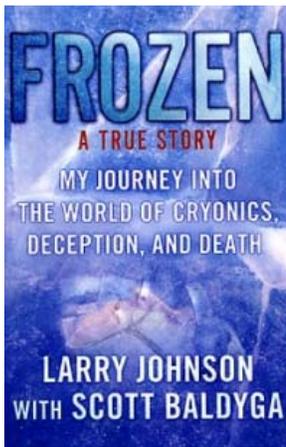
The chief operating officer of Alcor for eight months before becoming a whistleblower in 2003, Johnson wrote his book while in hiding, fearful for his life.

[RELATED: LONG ISLAND ATTORNEY ACCUSED OF RUNNING ADOPTION PONZI SCHEME - PROMISED BABIES THAT DIDN'T EXIST](#)

He told the Daily News then he had received death threats and was moving from safehouse to safehouse. Johnson plans to come out of the shadows Tuesday, with his book and an appearance on ABC's "Nightline."

Johnson said he wired himself with an audio recorder for his last three months at Alcor, stole internal records and took gruesome photographs that are reproduced in the book.

[RELATED: OBAMA ON IRAN: 'THERE IS A PATH TO A BETTER RELATIONSHIP'](#)



'Frozen,' by former Alcor exec Larry Johnson, makes shocking claims about how employees treated Ted Williams' frozen head.

The book describes other atrocities at Alcor's facility in Arizona, including the dismembering of live dogs that were injected with chemicals in experiments, and a situation in which human blood and toxic chemicals were dumped into a parking lot sewer drain.

It also also details suspicious circumstances involving the bodies of two people who are frozen in steel cylinders at Alcor: gay rights activist [John Dentinger](#) and [Dora Kent](#), an elderly woman whose son, [Saul Dent](#), gave Alcor lots of money.

[RELATED: TEXAS PARDONS LONGEST-SERVING INMATE, JAMES WOODWARD, FREED BY DNA](#)

Nothing in the book is as gruesome as Johnson's descriptions of what happened to Williams' body after it was sent to Alcor at the direction of the Williams' son [John Henry Williams](#), who died of leukemia in 2004.

In 2003, The News reported that [Buzz Hamon](#), the ballplayer's close friend and former director of the [Ted Williams Museum](#) in Hernando, Fla., sneaked into Alcor with the help of a mortician friend.

[RELATED: WHAT THE ...? WISCONSIN TOURISM FEDERATION CHANGES ITS 'WTF' LOGO AFTER BLOGGERS HAVE A FIELD DAY](#)

Hamon said he was "appalled" by the conditions there, where Williams' body and more than 50 others were stored in steel tanks alongside cardboard boxes and junk. Hamon died in 2004, reportedly committing suicide.

Johnson writes that holes were drilled in Williams' severed head for the insertion of microphones, then frozen in liquid nitrogen while Alcor employees recorded the sounds of Williams' brain cracking 16 times as temperatures dropped to -321 degrees Fahrenheit.

[RELATED: FAKE IMMIGRATION AGENT STABS WOMAN, STEALS HER BABY](#)

Johnson writes that the head was balanced on an empty can of Bumble Bee tuna to keep it from sticking to the bottom of its case.

Johnson describes watching as another Alcor employee removed Williams' head from the freezer with a stick, and tried to dislodge the tuna can by swinging at it with a monkey wrench.

The technician, no .406 hitter like the baseball legend, missed the can with several swings of the wrench and smacked Williams' head directly, spraying "tiny pieces of frozen head" around the room.

Johnson accuses the company of joking morbidly about mailing Williams' thawing remains back to his family if his son didn't pay his outstanding debt to the company.

Reprints of invoices show that Alcor president [John Lemler](#) charged \$120,000 for the honor of "suspending" [Teddy Ballgame's](#) body.

A former paramedic, Johnson first blew the whistle on Alcor in a 2003 [Sports Illustrated](#) article about Williams' stored body.

He drew criticism at the time for an aborted attempt to sell photos online purportedly showing Williams' corpse.

Johnson said he hopes his book will help fulfill the wishes Williams expressed in his will - that his body be cremated and the ashes "sprinkled at sea off the coast of Florida, where the water is very deep."

nvinton@nydailynews.com