Alcor News Bulletin

Number 13: July 1st, 2003

Intermediate 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.

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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).

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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

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.

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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.

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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.

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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.

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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.

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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 insultation 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 if you are interested in participating.

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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 Laboraties 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.