

ALCOR LIFE EXTENSION FOUNDATION

CRYONICS

4TH QUARTER 2009 · VOLUME 30:4

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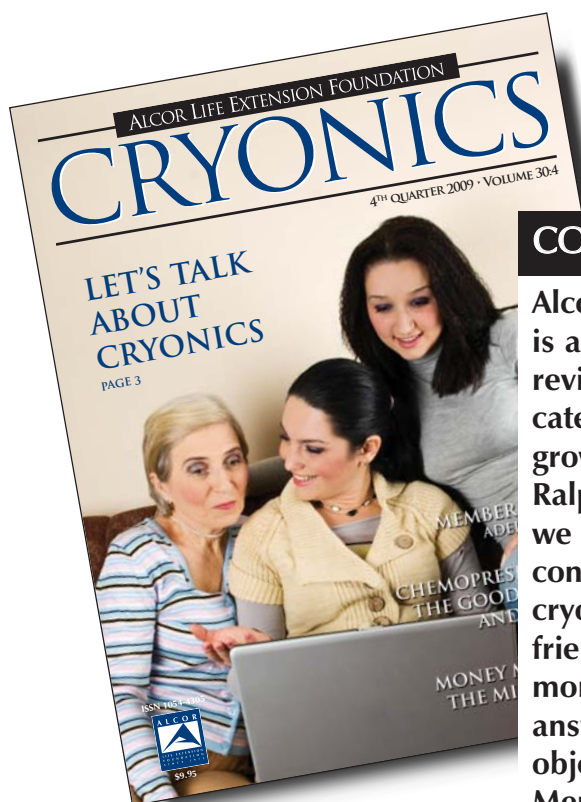


Starting in 2010, *Cryonics* will be continued as an electronic publication. This decision has a lot of advantages. We have more control over the number of pages and contents of the magazine. There will be shorter delays between completion of the magazine and publication. We will be able to publish additional or special editions at little extra cost. The magazine will be more accessible to international subscribers.

And last, but not least, *Cryonics* will be reducing its carbon footprint!

We understand that some of you still prefer the older paper format. Alcor has made arrangements with MagCloud, a popular print-on-demand service. Just go to <http://magcloud.com/> and look for *Cryonics* to order your paper copy. If you have any remaining questions about this transition, we are happy to answer them at 1-877-462-5267 or email the editor (aschwin@alcor.org).

CRYONICS

4TH QUARTER 2009 · VOLUME 30:4

COVER STORY: PAGE 3

Alcor membership growth is a good thing. Instead of reviewing all kinds of complicated ideas about how to grow cryonics, Board Member Ralph Merkle focuses on what we know works: personal contact. How to address cryonics with your family and friends? Where can they find more information? How to answer the most common objections to cryonics? Ralph Merkle discusses all these issues and presents some valuable talking points for our members.

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Do you think that Alcor has conservative cryonics funding policies? Think again. Charles Platt argues that Alcor cryopreservation minimums may still fall short of future costs. He suggests a number of solutions including the idea of making cryopreservation minimums age-dependent.

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FROM THE EDITOR

This issue of *Cryonics Magazine* contains a number of thought-provoking contributions. My own contribution called "*Chemopreservation: The Good, the Bad and the Ugly*" discusses the topic of chemical fixation as an alternative to cryonics. I provide a framework that distinguishes among chemopreservation as a research program, as a contemporary alternative for cryonics, and as a complement to conventional cryopreservation. In light of what we know today (or perhaps we should say, what we do not know today), chemopreservation is not a credible competitor for cryonics; but there is good reason to believe that it could constitute a fruitful research program. Chemopreservation may also play a role in improving the care of some cryonics patients.

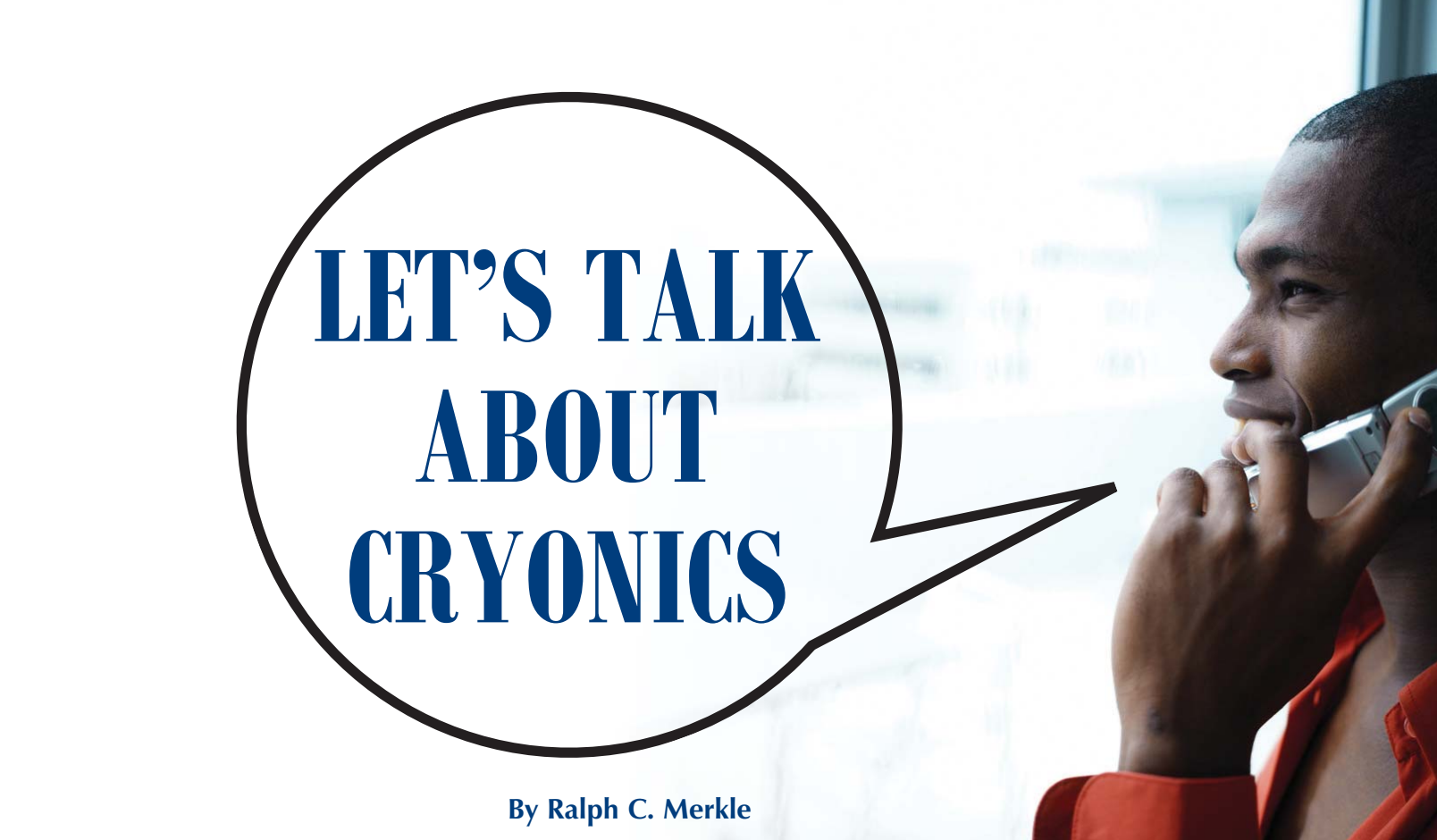
Charles Platt is known for his outspoken opinions about the field of cryonics. In his article "*Money Matters in the Third Phase*," Platt argues that Alcor's current cryopreservation minimums may still not be conservative enough. As a general rule, young cryonicists have life insurance policies that are expected to pay out only a fraction of the future costs associated with the cryopreservation process, long term storage and resuscitation. In other words, when these people are older and need to be cryopreserved, Alcor's (projected) costs will exceed its income. To some extent this scenario is mitigated by the existence of Alcor's Comprehensive Member Standby fees, which can be adjusted to inflation. But there might be additional pressure to revisit the current practices of "grandfathering" existing members and offering the same services to all members. Going forward, one of Platt's proposals is to make cryopreservation minimums age-dependent. We welcome the perspectives of our members on this important topic.

Alcor Board member Ralph Merkle has produced an inspiring piece on the topic of how to grow our membership. As Merkle notes, if we study the geographical distribution of our membership (see *Cryonics Magazine* 2009-2 for a table by US state) we see clear evidence of clustering. If signing up for cryonics were a strictly individual decision, we would not see such clusters. Merkle makes the sensible suggestion to turn our knowledge that friends and family sign up other friends and family into a plan of action. For years there have been recurring debates about how to increase the number of people making cryonics arrangements. The most obvious answer is closer than we think. The author offers a number of recommendations and talking points and discusses how to counter common objections to cryonics.

This issue features a member profile of Rebecca Lively. Rebecca Lively is one of the promising young cryonicists that attended the recent teens and twenties cryonics meeting in Florida. As a lawyer, Rebecca is eager to share her legal expertise to strengthen our organization and protect our patients. For the upcoming 2010-1 issue of *Cryonics* she has written an article about legal strategies to protect oneself against cryonics interference by hostile relatives.

As can be seen in this issue's Membership Statistics, Alcor passed the 900 mark in August 2009. If we follow the common sense course recommended in Ralph Merkle's article about how to grow cryonics Alcor may end the year 2010 with 1000 members.

Alcor regrets to inform you that this issue of *Cryonics* is the last regular paper copy of the magazine. Starting with the 1st quarter issue of 2010 *Cryonics* will be going digital. For those who prefer the old paper format, Alcor has made arrangements with a print-on-demand company that can still send you a paper copy of the magazine for a small fee. More information can be found on the first page of this magazine, our blog and in the letter that has been mailed to all subscribers.



LET'S TALK ABOUT CRYONICS

By Ralph C. Merkle

Introduction

Alcor has grown over the years, and the rate of growth has varied dramatically. In our best year we grew by 44%, in our worst we shrank by 4%. In 2009 our net gain was 38 members – somewhat more than 4%.

Growth is good. A higher growth rate is better. More members means more resources for everything we do. Research and development, legal rights, legal expenses, conferences, operating rooms, publications, the web site, public relations, lobbying – everything.

Which has created great interest in the cryonics community in ways to increase growth. Everyone has an opinion, many of the opinions differ, and it is sometimes difficult to say which opinions are better.

contact. Alcor members come in clusters. California and Florida have many members. North Dakota has few. The United States has almost 800 members. There are 27 in the U.K. France has none. Statistically it is very unlikely that two Alcor members would be closely related, but there are siblings, spouses, and even whole families signed up. If joining Alcor was a decision made entirely independently by each person who thought about cryonics, we would not see these clusters.

But we do see clusters, and we see them because people form communities. Ideas spread from member to member in these communities. You meet people at work, in clubs, in schools, at conferences, on the web – we swim in a sea of friends, acquaintances,

“So here’s an idea: we should talk with people about cryonics, and explain to them why it makes sense and why they should do it.”

People Talk About Ideas

Rather than attempt to review all the ideas about what drives (or doesn’t drive) the growth of cryonics, it seemed more useful to focus on one of the few areas where there seems to be broad agreement: personal

co-workers, relatives, colleagues and others. You talk with them about the iPhone and the Nexus One, the Super Bowl, whether to get a Mac or a PC, which type of chocolate is best – almost everything we do we talk about. If



about cryonics – you’ll find that your own knowledge and understanding grows deeper as you talk about the issues with others, and that talking about things that matter to you is more interesting than talking about the weather. And there’s always the sheer altruistic pleasure of persuading someone to do the right thing – not for any particular reason, but just because that seems to be part of what being human is all about.

If every member of Alcor persuaded one or two of *their* friends or relatives that cryonics was a good idea; and if those friends and relatives persuaded one or two of their friends and relatives, and so on; then Alcor would grow exponentially – which helps us all.

What to Say

What do we say when we talk with people about cryonics? What do we need to know, what are they likely to be curious about, and what do they need to know that they don’t know they don’t know?

The single most important piece of advice I can give you is: read the FAQ!

Alcor’s website working group has done a fantastic job on Alcor’s web site. The FAQ, in particular, is truly excellent. The main FAQ is at <http://www.alcor.org/FAQs/index.html> and the Scientist’s Cryonics FAQ is at <http://www.alcor.org/sciencefaq.htm>. I recommend them both.

The FAQs are remarkable because of the breadth and scope of the topics they need to cover to provide a balanced picture of cryonics. From cryobiology to nanomedicine to neuroscience to finance to the soul, the FAQs have it all. Whenever we hear a common question, we add it to the FAQ. It has become quite formidable – and it continues to grow.

Just as important as the FAQ are the instructions on how to sign up at <http://www.alcor.org/BecomeMember/index.html> – which methodically goes through all the steps in the process. If we want people to sign up they have to know how.

But before someone can sign up, before they can think about cryonics, they have to hear about it. And more than hear about it, they have to hear about it in a context where they decide it is worth thinking about and asking about. The most likely way this will happen is if someone they know talks with them about it. This means *you*.

Starting a Conversation

How might such a conversation start? There are a million ways. At lunch one day in the company cafeteria I was sitting next to an acquaintance who said, out of the blue, that he had just heard about cryonics. “Who would be dumb enough to do that?” he asked, to which I replied “me.” Flustered, he said “I’m so embarrassed...” (he’s a very polite sort of person, and would never have dreamed of deliberately offending anyone). Which, of course, led to a discussion of cryonics – and his position on the subject promptly became more favorable just because someone he was talking to was actually signed up.

It’s often that simple. As long as cryonics is something “they” do, for unknown and mysterious motives, then it’s easier to dismiss. If a friend or relative learns that *you* do it, then suddenly most of those imagined scenarios collapse. Cryonics is now something that someone they know has actually signed up to do. It’s part of their world, just like that new web site you suggested they try, or the new restaurant that has *fantastic* salads.

If someone brings up the subject that provides an obvious opportunity to jump in and discuss it. If such an opportunity doesn’t spontaneously occur, there are many other approaches. There’s the direct approach – “I signed up with Alcor – they freeze people. If I’m ever in an accident or something, make sure to call them. The number is right here on my bracelet.” No need to tell them *they* should sign up – not just yet. Just let them get used to the idea that *you* signed up, and if there’s ever any problem they should call Alcor. Most of the time, the response will be to look at your bracelet and perhaps start reading it. “It says push 50,000 U Heparin – what’s that?” At this point, you can talk about cryoprotectants and ice blockers – or they might ask “Doesn’t it cost a bunch?” at which point you can talk about life insurance and how inexpensive it can be. Or they might ask a few polite questions and not express much interest, in which case you can let the topic slide. Some people take time to get used to cryonics – and if you know the person there will be plenty of time in the future to mention it in small, easily handled bites.

More indirectly, you can talk with people about life extension. That latest study you read about in *Cryonics* magazine that shows

we hear an idea, and it seems to make sense to us, we adopt it as our own.

Growth is a good idea for many reasons. More members means greater strength as an organization and a better chance that all of us will survive. Each new member brings a new set of skills, a new set of capabilities, new resources. Alcor needs medical and paramedical personnel, lawyers, accountants, administrative support, computer experts, investment advisors, handymen, writers, ... In short, Alcor needs all the skills that any modern organization needs if it is to thrive and grow.

More members means more influence at the polls. More members means a better chance that the EMT who shows up after your heart attack has heard of cryonics and will follow the instructions on your Alcor ID tag. More members means a better chance that the hospital you are in will cooperate with Alcor when the time comes, because someone on the staff has a friend whose uncle is an Alcor member.

More directly, if your friends and loved ones know you are signed up with Alcor then they will better know what to do in an emergency. If everyone around you knows what you want, then the odds that you will be cryopreserved are much better. If you keep it a secret, when the time comes no one will know what to do – they might not even realize they should do anything at all.

If you persuade a friend or relative that signing up with Alcor is a good idea then that’s one more friendly face when you wake up in the future. And even if you don’t succeed, they’ll know what you want and what to do in an emergency. It’s also fun talking

that calorie restriction slows aging – you can mention it and ask “Would you like to live longer? If they could figure out why calorie restriction worked and develop a medical treatment (something that didn’t involve being hungry all the time) would you want to use it? If you could stay healthy, how long would you want to live?” If they are uncomfortable with the idea of a long and healthy life, no need to bring up cryonics when it looks like they don’t even want to live! But if they express interest in a long and healthy life, you can say things like “Medical technology is getting better all the time. We might even be able to revive someone who was cryopreserved” and see how they respond.

Most people are receptive to a discussion *about* cryonics, but can be sensitive if you try to *sell* them on cryonics. Usually, you won’t persuade someone to sign up in one encounter. Pick one area confusion or a single reason they wouldn’t consider signing up, and discuss that. This is seldom threatening, as they usually have other reasons for not signing up which you don’t have to disturb – at least, not in that conversation. And, of course, when they examine this one reason for not signing up, they find it doesn’t actually make much sense.

Common Arguments Against Cryonics

Often you will hear an argument against cryonics that is logically the same as an argument in favor of suicide – which makes it easy to explain why it is not a very good argument. Perhaps the classic was a conversation around a table when the reason for not signing up was “I wouldn’t have any friends in the future.” What he didn’t know was that everyone else around the table was signed up. When he gave his reason we all smiled and said “We’ll be there!” Scratch one reason for not signing up! Another argument you will often hear is that cryonics would be great if it worked, but it doesn’t work. The most common form of this argument is to say “but it has never been done, therefore it is impossible!” It often takes some time to convey the obvious fact that flight to the moon was “impossible” in 1940 but that did not make it impossible in 1969. There’s a first time for everything – arguing that something hasn’t been done before is not an argument that it can never be done, nor even that it is unlikely or will be

expensive. No one built a stored program computer until the 20th century, but now they are ubiquitous.

It is actually very hard to make a well founded argument that no future technology – no matter how advanced – could ever revive someone who was cryopreserved today. Anyone who has even a modest idea of what technologies are likely to be possible in a few centuries will see how hard it is to support this argument. The simplest counter to this argument is the “sweep of history.” An ancient Roman who time-travelled to our day would be awed by our technology – flights to the moon, heart transplants, transatlantic flights and the internet to mention just a few. So too would someone from our day be amazed by the commonplace a few centuries from now. For us to dismiss cryonics is like an ancient Roman dismissing heart transplant surgery.

Picking a specific reason for dismissing cryonics and countering it is based on the assumption that most people have a finite list of reasons, and that people are more amenable to logical persuasion if you only ask them to make a small change in their world view (also known as “salami tactics.”) If, over time, all their reasons are addressed they often switch from “I don’t want to sign up because” to “Yes, I really should sign up.” Once in this latter mental state people can still procrastinate for years – but they will generally enjoy conversations about cryonics and are likely to sign up at some point.

Not everyone can be persuaded by reason and friendly discussion. Some people seem to have a deep seated emotional bias against cryonics. They are entirely comfortable with some facile-sounding reason for not signing up – and can become quite agitated when you show their “reason” is entirely irrational. Some of these people are even sufficiently self-aware to acknowledge that they have an emotional bias and don’t care about logic, evidence or reason – they don’t want to do it and that’s that! For the most part, once you have identified such a person just leave them be.

Sometimes the list of reasons is very short. One person had decided cryonics was a good idea, but literally was not aware that it could be funded inexpensively through life insurance. When he heard that final piece of information, everything clicked and he signed up.

Who to Talk With

Perhaps the most obvious rule of thumb is to talk with people who seem interested. Cast your net wide and let those who are interested come to you. If you let everyone know you are interested in cryonics, most people will discuss it politely and then move on to other subjects. Occasionally, someone will be more interested. Talk with them, and listen to their concerns. Address them at a pace they can handle, and give them time to absorb the new ideas. If you are the only person in your school, or at your job, or in your club who is signed up let everyone know about it. If someone is interested and wants to talk more about it – follow up and talk with them.

There is also the role of social pressure. While still the exception, there are environments where the majority opinion is both that cryonics is likely to work and that being alive in the future is a good idea. In these environments it is much easier to persuade people they should sign up. In a casual conversation with three or four people – only one of whom is not signed up – the subject can be raised, discussed and analyzed in a context where the social instincts of the lone holdout are to go with the crowd. This can be quite effective, particularly if it can be repeated over time. Conferences, parties or other social events involving food, movies, conversation, talks and good friends where there are a significant percentage of cryonists in attendance can often be used effectively for this purpose. And, of course, they are fun.

Conclusion

Persuading people to sign up is a fascinating hobby. The discussions span most of human knowledge and often cut to the root of what it means to be human. Every year the evidence in favor of cryonics gets stronger and the number of supporters goes up. Even if you never persuade one other person to sign up you have clarified your own understanding of your own views and told everyone what you believe in and what you want – which could save your life when the time comes. And if you persuade just a few other people then you have improved everyone’s chances for survival – theirs, yours and ours. ■



Rebecca Lively, intellectual property lawyer and Alcor member, works and lives in San Antonio, Texas.

MEMBER PROFILE:

REBECCA LIVELY

By Chana de Wolf

able about his cryonics arrangements, as had women he had dated in the past. But it made sense to Rebecca, and she told him so.

“Two hundred years ago, people would have thought that it was mutilation to open up a person’s chest and cut into their heart while they were still alive,” she considered. “Today, open heart surgery is performed across the world on a regular basis. Surely further advances will be made in the future. Perhaps those advances will be remarkable enough to restore a person to life if they have been properly preserved. How could this be a bad idea?”

This type of reasoning most certainly set Rebecca apart from other women. And though she never explicitly said so, it’s probably safe to say that this event solidified their relationship in a way that only a cryonicist who has met another cryonicist understands.

But, being the self-analytical type, Rebecca wanted to be sure she wasn’t signing up for the wrong reasons. So she researched the topic at Alcor’s website and by reading anti-cryonics information in order to reach an unbiased opinion. She waited to sign up until she knew that she wanted it for herself, finally deciding to join after she had finished with law school and gotten a job.

Being a lawyer, one of the things Rebecca was most interested in was making sure that Alcor wasn’t a scam. After talking with her husband, a research scientist who

With the issue of family interference in an individual’s cryopreservation arrangements rearing its ugly head in multiple cases this past year, it is always good to meet the growing number of cryonicist couples and families out there.

Rebecca Lively was introduced to cryonics by way of her husband when they first started dating – he showed her his necklace and asked her if she knew what it meant. Seeing the engraved medical information, she figured he must have had an allergy or illness of which she should be aware. Instead, he explained cryonics to her “in what seemed like one long breath.”

Following this, he offered to answer any questions she might have. He thought she might feel confused, worried, or uncomfort-



Glowing with happiness on her wedding day, Rebecca prepares to tie the knot.

So Rebecca started brainstorming ways to prevent such scenarios. Making use of her background, she came up with several legal ideas, such as: disallowing those you know to be in disagreement with your cryonics arrangements as guardians; including a “no contest” clause in your will, such that those who interfere are disinherited; and changing the contingent beneficiary on your life insurance policy from a person you know to someone who doesn’t know you – or even know that you exist. “Make it a completely unrelated to life extension charity,” Rebecca suggests. “Not a family member, not Alcor – don’t tempt anyone to do anything to prevent your preservation.”

The sad fact is, people who don’t understand your cryopreservation arrangements are not going to feel bad about preventing your cryopreservation. Rebecca feels that the most challenging aspect of cryonics is the socio-political climate of our time. “It is human nature to reject what they do not understand or what is different,” she observes. “One of the biggest risks to cryonics is other people.”

Though her husband and nine year-old son are both cryonicists, Rebecca says that, in general, her experiences in telling others about her arrangements have not been overly positive. “Most people just think I’m crazy without giving any specific reasons why,” she says. A co-worker she asked to witness her Alcor paperwork flipped through it and was incredulous at the thought, but couldn’t pinpoint why. “Ultimately, he said he would do it, but that he would really rather not,” Rebecca recalls.

“I think it’s all just a psychological mechanism to cope with death,” Rebecca theorizes. Because of this, she feels that one of the worst things cryonicists can do is to present themselves as loud and proud atheists. In order to grow and become more mainstream, cryonics must appeal to and accept people of all walks of life, especially if their background or faith makes them more susceptible to unquestioning acceptance of death.

Outside of her husband and son, Rebecca describes her friends and family as indifferent to her arrangements. “They mostly think that it is just something that is different about me,” she explains. “I do not let cryonics

“I do not let cryonics define me. So, whether or not my friends and extended family agree with my choice to be cryopreserved, they still value me as an individual and friend.”

studies aging, about it and going over the details regarding funding, she reached the conclusion that it was a legitimate, life-saving endeavor and began tackling the membership application in 2008.

“It took me awhile to sign up because I wanted to read all of the paperwork and there was quite a bit,” she admits. But Rebecca also points out that such paperwork is necessary for legal protection of both Alcor and the member and that “there’s really no choice but to keep it that long.”

In fact, all that paperwork still isn’t enough to protect a member under all circumstances. Rebecca began thinking harder about this issue while following the recent Mary Robbins case. “This woman had gone through the same pile of paperwork and even hired a lawyer to look it over and to look over her will, and yet she was somehow talked out of her cryonics arrangements at the end of her life,” Rebecca laments. “She was put on ice in a nursing home for a long period, suffering ischemic damage. And all seemingly over money! It was very disturbing.”



Rebecca feels strongly about advance preparation of legal documents to protect cryonics members at the time of cryopreservation.



Cryonics is a family affair! Rebecca's husband introduced her to cryonics while they were dating. Now Rebecca and her son are members as well.

define me. So, whether or not my friends and extended family agree with my choice to be cryopreserved, they still value me as an individual and friend.”

Still, it's nice to know that other people see things your way, and Rebecca was happily introduced to many young cryonicists recently at the Teens and Twenties cryonics conference sponsored by Life Extension Foundation in January 2010. Prior to that, she had also met several individual cryonicists through her husband and by attending the yearly regional CryoFeast held in Austin, Texas, a couple of times.

Having lived in both Cleveland, OH, and San Diego, CA, as a child, Rebecca is happy to have called San Antonio, TX, “home” since the age of 12, where she graduated from high school and entered college at the age of 16. She obtained a bachelor's degree in Information Systems before deciding (after a long talk with Mom) that she was more interested in law. Once settled upon that conclusion, Rebecca applied to St. Mary's Law School and later received a law degree at the age of 23.

Rebecca's legal, political, and social interests involve patent and copyright law reform, personal jurisdiction and defamation on the internet, gay rights, and freedom from regulation of morality in general. Her cryonics-related interests include far-future retirement planning and “finding a way to never need cryonics at all.” As a backup plan, she hopes to contribute to cryonics in the best way she knows how – and right now that is using her legal background to ensure that access to cryonics and preservation of patients is not impaired by operation of law or public pressure.

Like most cryonicists, Rebecca longs for more general acceptance and wants cryonics organizations to beef up their public relations campaigns. “I hope that Alcor works to improve the public image of cryonics by highlighting its benefits to as many people as possible without regard to religious or political affiliation, thus helping cryonics to achieve a more mainstream status.”

For fun, Rebecca likes to spend time with her son, doing things “including but not limited to jumping on the trampoline, digging in the dirt for bugs, looking at ‘lol cats’ on the internet, hiking, swimming, and teaching him about anything and everything that can hold his attention for more than 3 minutes.” She also loves traveling, board games, intelligent discussion with interesting people, scuba diving, and eating chocolate. ■

Chemopreservation: The Good, The Bad and the Ugly

By Aschwin de Wolf

Introduction

At this time, cryonics constitutes the most popular and credible method of long term stabilization of a critically ill person in anticipation of treatment by future medicine. But cryonics does not exhaust the options available to those who question contemporary views on death. One alternative is to use chemical fixation to stabilize the structure of the brain. Throughout the history of cryonics there have been recurrent discussions whether chemical fixation can be considered a credible, or even superior alternative, to cryonics. Chemical fixation has also been advocated as a low cost alternative for those who cannot afford to make cryonics arrangements. In this article I will present a framework for how to look at the technical feasibility of chemopreservation by viewing it from three different perspectives.

The Good

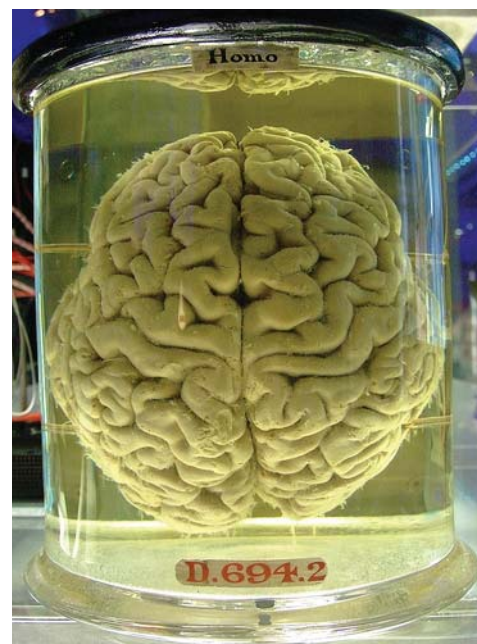
The case for chemopreservation is straightforward. Let us picture ourselves a dedicated cryonics researcher who wants to observe the ultrastructure of the brain after vitrification. The researcher warms up the tissue, removes the cryoprotective agent, and uses a number of fixatives and other chemicals to stabilize the tissue and prepare it for electron microscopy. The researcher looks at the electron micrographs and is content with what he sees.

Not surprisingly, a number of people have presented the following argument: Why go through all the trouble of cryopreservation if you can stabilize the tissue with chemicals instead? Why subject the brain to the dangers

of ice formation and maintenance in liquid nitrogen when chemical fixation is the gold standard for ultrastructural preservation in biochemical research? This is not a bad argument but, as is so often the case, the devil is in the details.

For good ultrastructural preservation it is not likely that one single fixative will be sufficient. Different chemicals are employed that work through different mechanisms (e.g., cross linking, coagulation) and have a preference for certain bio-molecules. For example, the expensive and extremely toxic chemical osmium tetroxide is routinely used for stabilization of lipids in preparation for electron microscopy. Depending on what the researcher wants to see, fixation protocols are tweaked to get the desired results. Which raises the obvious question: what would be the ideal protocol for long term preservation of the human brain?

There have been experiments in which glutaraldehyde, osmium tetroxide and uranyl acetate have been introduced through vascular perfusion of the lung, followed by dehydration through a graded series of ethanol¹. Perhaps perfusion can also be used to circulate a high viscosity resin. Would this be sufficient for long term preservation? It is at this point that the advocate of chemical fixation runs into a problem. Unlike the cryobiologist, the chemical fixation researcher cannot reverse fixation and test for viability. With current technologies, chemical fixation is a dead end. The researcher can use electron microscopy to inspect the intricate ultrastructure of the brain after these protocols and compare it against the best controls available



but in that case he would be evaluating the adequacy of chemical fixation by...chemical fixation. The cryobiologist does not have to confine himself to this fate because he can attempt to measure viability in the brain, or even the whole organism.

Let us assume, for the sake of the argument, that the chemopreservation advocate has identified a number of fixatives (and other treatments) that are sufficient for complete ultrastructural preservation of the brain. The next question is going to be: how stable will chemopreservation be over time? This is a very important point for the technical feasibility of chemopreservation. Unfortunately, there has been little experimental research on this issue. Like the aging researcher, the chemopreservation researcher needs to

¹ Oldmixon EH, Suzuki S, Butler JP, Hoppin FG Jr. *Perfusion dehydration fixes elastin and preserves lung air-space dimensions*. Journal of Applied Physiology, Vol 58, Issue 1 105-113, 1985.

develop a reliable biomarker of degradation and would be forced to rely on something like an incubator to simulate the passage of time.

For high quality chemopreservation² there is one formidable practical obstacle. Unless the researcher identifies a form of fixation (or vehicle) that can very rapidly diffuse through tissues, the size of a human brain requires the use of *perfusion fixation* to stabilize the tissue. With current technologies, diffusion fixation is too slow, resulting in extensive ischemic injury and autolysis. Unfortunately, good artificial perfusion is hard. The biomedical researcher does not have to worry about 100% complete fixation and can just use the tissue that has been fixed well. But for the advocate of chemopreservation, such pragmatism is not an option.

This raises two challenges. It is not only necessary to demonstrate that all chemicals can be introduced by perfusion fixation without perfusion artifacts, it also means that this kind of high quality chemopreservation can only be offered to those who are still alive. It is even doubtful whether this

method should be recommended as a last-minute intervention. Terminally ill and agonal patients often suffer from various degrees of perfusion impairment. There are experimental protocols to overcome the so called “no reflow” phenomenon but it remains to be seen if these methods are helpful for good chemopreservation.

There are other practical challenges such as the cost and extreme toxicity of chemicals like osmium tetroxide. But perhaps if more encouraging research results are presented, economies of scale will prevail.

If chemopreservation would work there is one major advantage compared to cryopreservation – it would not require continuous maintenance such as the re-filling of liquid nitrogen dewars. For example, one could argue that if the nine cryonics patients that were destroyed in the 1970s in Chatsworth had been chemically fixed there would be a higher chance that these patients would still be preserved in some form. It is for this reason that some of us who are rather pessimistic about future social and

political events, have singled out this feature of chemopreservation as an advantage.

There might be one additional argument in favor of chemopreservation. Although cryonics organizations like Alcor have been offering vitrification technologies for almost 10 years now, this fact does not seem to register with the scientific community or general public. Cryonics, as understood by most people, simply involves the freezing of dead people. Since chemopreservation does not require the use of subzero temperatures it could appeal to more people on a basic intuitive level.

As should be clear from the discussion so far, high quality chemopreservation is currently not an option but a research project. As a possible means to preserve those that cannot be sustained by contemporary medicine, it is well worth pursuing.

The Bad

There is a school of thought that advocates the pursuit of chemopreservation right now. This argument can be made on two distinct grounds.

First, one can simply ignore the technical problems that surround chemopreservation and push for offering it anyway. This does not seem a prudent approach to me. If the skeptics about chemopreservation are correct, there is a risk that essential parts of the brain will not be fixed, as a result of inadequacies of the protocol, perfusion artifacts, or long term degradation. It is at this point where classic cryopreservation really shines. Even tissue that is not protected from ice formation as a consequence of perfusion impairment will still be “fixed” through low temperatures.

One could argue, however, that from the perspective of information-theoretic death there might be little difference between straight freezing and autolysis³. In my opinion, the prospect of autolysis is much worse because when biomolecules break up into their constitutive parts, and go into solution, there is little hope of inferring the original structure of the brain. From a technical point of view, it is hard to make a credible case for



² The possibility of normothermic stabilization through advanced nanotechnology has been omitted from this discussion because such as technology would be so different from ordinary chemical fixation that it would be better discussed as a form of suspended animation.

³ I owe this point to Ken Hayworth, who has produced the most comprehensive review of the technical feasibility of chemopreservation to date at: http://www.brainpreservation.org/web_documents/proposalforbrainpreservationtechnologyprize.pdf



chemopreservation if resources are available to choose between chemical fixation and cryopreservation.

Another perspective is that chemical fixation should be offered to those who cannot afford cryonics. The reasoning is that chemical preservation has enough technical credibility to prefer it to oblivion. Since this argument is identical in form to the argument that is often used by advocates of cryonics it cannot be dismissed by designating it as a form of false hope. Whether to accept chemopreservation in a less than ideal form depends on one's estimate of low cost chemopreservation succeeding and the value that is placed on survival. Like cryonics, this is not so much a decision between being right or wrong but an issue of decision making under uncertainty.

The advocate of such low cost chemopreservation still needs to deal with a number of technical and practical questions. Low cost chemopreservation is often compared with the price of conventional cryopreservation which includes a portion set aside for long term maintenance and future resuscitation attempts. But how much difference would there be between a low cost neuro "straight freeze" with only basic maintenance and low cost chemopreservation? Is this difference of such a magnitude that an identifiable group of people would benefit from the existence of low cost chemopreservation?

The advocate of low cost chemopreservation also needs to make a number of tech-

nical decisions. What fixative(s) will be used? Who will do the fixation (the organization offering chemopreservation or a funeral director)? At what temperature will these patients be stored? There is also the issue of future resuscitation. Most people now reject third-party-funding for cryopreservation. But low cost chemopreservation (or any kind of low cost preservation for that matter) would still depend on the benevolence of future generations for resuscitation, even if the initial procedure is paid for in advance.

Unlike the advocate of high quality chemopreservation, the advocate of low cost chemopreservation does not need to delay offering the service in good conscience until there is more research but it is clear that there are a lot of practical research questions associated with this approach as well.

The Ugly

So far cryonics and chemopreservation have been used as mutually exclusive approaches to preservation of the person but the matter does not have to be so black and white. One can imagine a combination of chemical fixation and cryopreservation. As a matter of fact, this possibility is discussed in Eric Drexler's book *"Engines of Creation."* It should be clear that if viability is used as an endpoint, such a "chemo-cryo" combination pales in comparison to what can be achieved through cryopreservation only. At best, such an option could confer more security to those

who are very concerned about the thawing out of cryonics patients.

There is another way in which chemopreservation can be combined with cryopreservation. In the last couple of years there have been a number of Alcor cases where an isolated fixed (i.e., chemopreserved) brain was loaded with a high concentration cryoprotective agent (glycerol) through diffusion to protect it against ice formation at cryogenic temperatures. There has been little experimental guidance for such protocols but it is easy to imagine a research program that investigates the use of various fixatives, cryoprotective agents, and techniques to arrive at more evidence-based protocols.

There is also the question of whether patients with anticipated long transport times could benefit from some form of perfusion fixation to allow for cryoprotective perfusion or, if not technically feasible, diffusion of the isolated brain with a cryoprotective agent. Could it be that a protocol that has been used for only really ugly cases may turn out to be superior to an ordinary straight freeze as well? To my knowledge, there are no public research results available to answer such questions. Since a lot of cryonics patients fall in the category of "bad cases" as a result of prolonged ischemia, long transport times, or autopsy, the question of the role that chemical fixation can play in cryonics remains relevant. ■

MONEY MATTERS

in the *Middle Phase*

By Charles Platt

The Three Phases

We have entered what I regard as the “middle phase” in the evolution of cryonics. The past, the present, and the future of the field may be subdivided like this (of course, I am speculating about the future):

Phase 1. Very few people are signed up, and most of them are relatively young. Alcor has no more than one case per year, on average, and never even thinks about simultaneous cases. Almost all field work and operating-room work is performed by volunteers. Procedures are relatively simple, and their cost is relatively modest.

This phase ended in the late 1980s.

Phase 2. A growing membership, with a higher average age, increases the probable average case load to 4 or 5 per year. The risk of two cases occurring two days apart (or less) rises to 3 percent (as calculated in my article “Growth and its Consequences” in *Cryonics* magazine, 1998, third quarter). The organization requires redundancy in equipment and personnel to address this risk. Many volunteers begin to burn out or drift away, or they don’t want to work for free anymore. The cost of procedures is rising faster than cryopreservation minimums—and the growth in membership is not yet sufficient to create economies of scale.

Alcor entered this phase in the 1990s and remains in it today.

Phase 3. In the future, as Alcor membership reaches perhaps 10,000, the case load will be about one every two weeks (assuming maximum human lifespan remains unchanged), and cases will often overlap. However, the large membership base means that genuinely self-sufficient regional groups will be practical, and economies of scale will apply.

Intuitively, one might expect that costs relating to cryonics should increase no faster than the size of an organization. Unfortunately, during Phase 2, this is not so. While I do not have precise figures, my own experience in cryonics extends over 20 years, and I have seen the costs associated with standby, stabilization, transport, and perfusion increasing faster than the number of members during that period. Table 1 summarizes some of the reasons.

It is important to understand that the death rate among Alcor members has been rising faster than the increase in membership. This is because of the maturing process of the organization during the past two or three decades. Alcor had a relatively young membership with a very low mortality risk in its early days, but as members who joined the organization during the 1970s, 1980s, and 1990s grew older, the average age of the membership increased, and the case load went up. (I provided an analysis of this

“A basic concept of cryonics is that people in the future will have greater resources than we have today, and will be able to undo mistakes or deficiencies in our procedures.”

During Phase 1

Small staff, low pay.
Total of all salaries:
Less than \$75,000/year.

Standbys are rare and are staffed almost entirely by volunteers.

One primary standby kit.

One second-hand ambulance, strictly for local use.

Small operating room.

Glycerol-based cryoprotectant, relatively cheap and simple to use.

Manual control of perfusion circuit.

During Phase 2

Larger staff, higher pay.
Total of all salaries:
More than \$250,000/year.

Standbys are more frequent and make increasing use of paid help.

Multiple complete kits needed.

Customized transport vehicle with a range of up to 1,000 miles.

Larger operating room, separate equipment for neuro/whole-body.

Vitrification solution, more expensive, requires precise control.

Automated circuit in development.

Table 1. Financial burdens in Phase 1 and Phase 2 of Alcor history.

problem, with detailed data, in “The Standby Dilemma” in *Cryonics* magazine, 2002, fourth quarter.)

More cases per year require more money and labor—not just in field work, but in building, upgrading, maintaining, and restocking standby kits. There is also an incentive to buy additional or improved equipment.

Some readers may object that an additional readiness fee was introduced to defray standby costs. This fee, however, only covers direct costs of standby, stabilization, and transport. It does not mitigate indirect costs, labor costs, and capital costs, such as those listed on the “Phase 2” side of Table 1.

I think the cost increases are undeniable, and I see four possible responses:

1. Institute cost reductions. Some cost-cutting may indeed be possible, but there are obvious limits to this.

2. Increase the membership dues and/or cryopreservation minimums. This option also is limited, because dues have already been increased and the organization may be reaching a point of diminishing returns.
3. Seek donations and bequests. Alcor has depended on gifts to cover shortfalls in funding, but cannot count on this in the long term.
4. Make sure that cryopreservation funding is adequate.

The fourth point sounds elementary, but is the one that I wish to discuss here. Obviously the level of funding required by Alcor should be sufficient to pay for the procedures which Alcor provides—yet by my informal reckoning, at least half of Alcor’s

cases during the past five years or so have probably been underfunded. Moreover, this situation can only get worse.

The problem originates in the practice known as “grandfathering.” In the following discussion, for the sake of simplicity, I will use figures for neuropreservation only. The argument is exactly the same for whole-body cases.

The Grandfathering Issue

Suppose that someone joined Alcor in 1990, and obtained life insurance with a face value of \$35,000, which was the minimum for neuropreservation at that time. If this person dies today, just 20 years later, he receives a procedure currently valued at \$80,000, even though his insurance still only pays \$35,000. We say that the person was “grandfathered in” at the old rate. *In effect, he receives a 56 percent discount.*

Alcor has never made a formal commitment to provide full service for people whose funding has been rendered inadequate by the passage of time, yet in reality, this is what it has done. Why would the organization allow such a policy, even on an unofficial basis? I can think of many reasons. Most obviously, no one wants to deprive a member of a chance of future life. When someone has a terminal condition, and the person’s funding was adequate when he signed up but has been overtaken by subsequent increases, no one will want to say “Sorry, we are just going to sit here and let you die.” This decision could be especially painful if the member had been an activist who assisted Alcor greatly in the past on a volunteer basis.

Until the last five years, grandfathering was not a significant issue. The cryopreservation minimum for neuro patients remained fixed at \$35,000 from 1983 until the end of 1990. At the start of 1991 it increased to \$41,000 and remained at that level until the end of 1993. Thus, until January, 1994, almost all Alcor members were fully funded.

When the minimum went up to \$50,000 in 1994, this exceeded the funding of some members, but only a minority. The big transition occurred in 2005, when the minimum for neuros jumped to \$80,000. From this point onward, numerous members were underfunded—but since grandfathering had become an unofficial policy, no one was willing to address the issue.

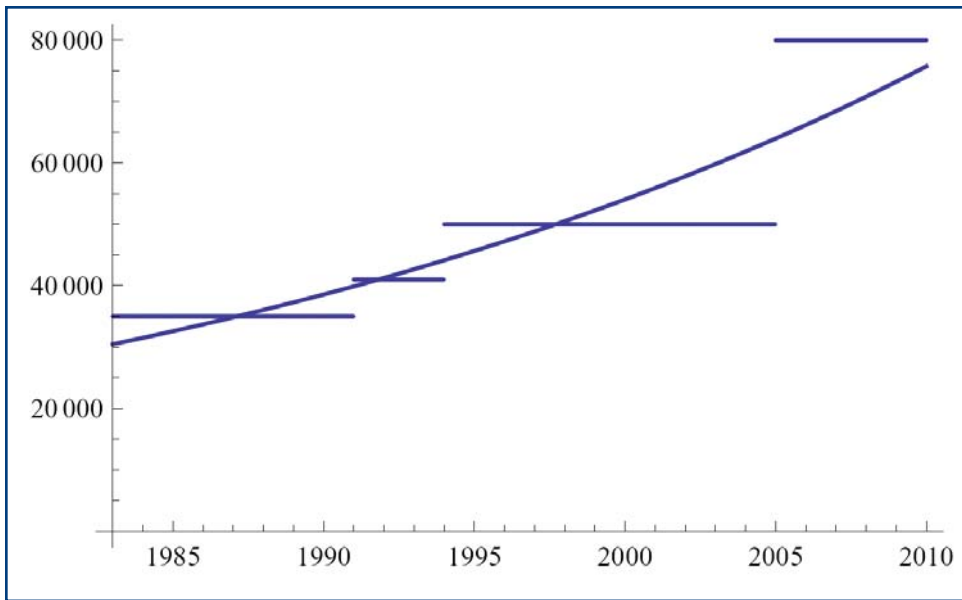


Figure 1: Minimum funding for neuropreservation in U.S. dollars (vertical scale), prevailing in years 1983 through 2010 (horizontal scale). Curve-fitting by Mike Perry using Mathematica software.

To its credit, Alcor has always advised new members to obtain more than the minimum required funding. Unfortunately, recommendations have been somewhat vague and sometimes unduly optimistic. In my hypothetical example above, I considered the case of someone who became a member of Alcor in 1990. That's actually when I began my own signup process, and I remember asking the President of Alcor at that time if he thought that a \$55,000 life-insurance policy would be sufficient to allow for future cost increases above the \$35,000 which was the current minimum. "Oh, that should be fine," he said. Twenty years later, with the wisdom of hindsight, we see that it was not fine at all.

Today, Alcor still advises members to overfund themselves, but anyone who chooses to sign up with the minimum funding can still do so. We don't need much math to show how big a problem this is going to become. Suppose a 25-year-old person signs

up for neuropreservation in 2010. On average, this new member will live for at least another 50 years, at current rates of mortality. I will assume that the actual costs of a typical standby, stabilization, and transport, plus operating-room procedures and sufficient funding to set aside for storage for a neuro patient, are approximately equal to the current \$80,000 minimum. How much will these costs increase during the 50 years before the member dies?

We can refer to the U. S. cost of living index, but I think it's more relevant to look at Alcor's own actual experience. Computer scientist Mike Perry kindly offered to evaluate past funding increases, and has derived an inflation function using Mathematica software. His calculations show that the average increase in cryopreservation minimums for neuropatients has been 3 percent per year between 1983 and 2010. The results of his curve-fitting appear in Figure 1.

Year	Annual Inflation Rate				
	1%	2%	3%	4%	5%
2020	88,370	97,520	107,513	118,420	130,312
2030	97,615	118,876	144,489	175,290	212,264
2040	107,828	144,909	194,181	259,472	345,755
2050	119,109	176,643	260,963	384,082	563,199
2060	131,571	215,327	350,713	568,535	917,392
2070	145,336	262,482	471,328	841,570	1,494,334
2080	160,541	319,965	633,426	1,245,729	2,434,113

Table 2. Estimated future cost of neuropreservation at various annual inflation rates, assuming a cost in 2010 of \$80,000.

If the 3 percent inflation rate for cryopreservation minimums continues during the next 50 years, by the time our hypothetical 25-year-old member dies in 2060 at age 75, he will receive a procedure valued at *more than four times the value of his life insurance*.

What if the cryopreservation inflation rate changes in the future? Or what if the new member lives for more or less than 50 years? Table 2 shows a variety of possibilities.

From this you can see that if the member dies at the age of 95 in 2080, and the inflation rate for cryopreservation costs remains a steady 3 percent, his life insurance will pay less than 13 percent of the cryopreservation minimum. If the cost of cryopreservation rises more rapidly than 3 percent per year, the situation becomes much worse.

We can try to halt or lower the cryopreservation inflation rate, but I am skeptical about such efforts, for two reasons. First, the rate has prevailed for 27 years, and second, I suspect that the real cost of procedures, equipment, and consumables has actually risen faster than 3 percent per year.

I think the conclusion is inescapable. If the grandfathering issue is not addressed, the number of underfunded members will grow to the point where it becomes a significant financial burden. New members will have to satisfy higher minimums, while old members will get a sweet deal. This looks uncomfortably like a pyramid scheme.

I believe the only fiscally responsible approach is to revise or eliminate the grandfathering policy. Here are five possible ways in which it might be done.

Five Possible Solutions

1. Risk-Shifting. Alcor can warn all existing members that at their time of death, they will have to pay the future minimum for cryopreservation, no matter what it happens to be at that time. Thus, Alcor will shift the entire risk of cost increases from itself to its membership.

This policy would have ugly repercussions, because some elderly members will not be able to obtain additional life insurance at an affordable rate, and may be unable to supplement life insurance with their own savings. Some might even sue Alcor, claiming that the organization tacitly encouraged everyone to believe that they would receive service, because service was never denied in the past.

Even those people who can obtain additional insurance will not know exactly how much to buy, to pay for the unknown cost of

future care. And there will be deathbed dilemmas in which the organization must choose between either breaking its own rules by allowing another underfunded exception, or allowing the member to die without being cryopreserved.

2. Tiered Service. Under the current system, Alcor members must pay more if they wish to have whole-body preservation rather than neuropreservation, and they can receive a discount if they move close to the organization before they require care. In every other respect, all existing members are eligible for identical treatment, regardless of funding. This really means that underfunded members are being subsidized by those who are fully funded. A more equitable arrangement might be to have tiered levels of service.

Lower-cost options could include:

- Cheaper vitrification, omitting some of the most costly components.
- Glycerolization, allowing some ice damage.
- Straight freeze.
- Minimal standby-stabilization procedures (fewer team members, no organ preservation solution or blood washout in remote locations).
- No standby-stabilization procedures at all.
- Substitution of neuropreservation for whole-body preservation, where whole-body members are underfunded.

Higher-cost options could include:

- Intermediate temperature storage, when available.

Ideally, these options should be selected by members in advance. Signup paperwork would require each member to establish a hierarchy of cost cutting measures that should be used if a funding shortfall turns out to exist at the time of death. For existing members who fail to make such contingency plans, Alcor would have to choose on their behalf.

3. Inflation Pass-Along. Each year the organization could calculate its cost increases associated with doing cases, and apply this percentage to each member's level of funding, whatever it currently happens to be. Membership will terminate immediately if the person's funding is left behind by the inflationary pass-along. This would avoid the deathbed scenario in option 1, but would still

be an unpopular policy, and would entail a burden of clerical work and time-consuming interactions with unhappy members.

4. Grandfathering Sunset Date. Alcor could accept the reality of its unwritten grandfathering policy and make it a formal policy guaranteeing cryopreservation without cost increases for all existing members. However, it could establish a sunset date for this policy. After that cutoff, all future signups would be subject to plan 1, 2, or 3, above.

5. Age Indexing. Younger people would have to provide evidence of higher minimum funding, in recognition that they are likely to live longer. For the hypothetical case discussed above, a 25-year-old signup could be required to have \$1 million minimum for neuropreservation instead of \$80,000.

Naturally, this would entail much higher insurance premiums. According to Certified Financial Planner Rudi Hoffman, currently a 25-year-old nonsmoker might expect to pay an annual premium of \$385 for a whole-life policy with \$100,000 face value. The same person might pay slightly more than \$3,500 annually for a policy with \$1 million face value. This is a cost increase of 900 percent. To alleviate the sticker shock, the 25-year-old could use term insurance as a fallback. For a 20-year term policy with \$1 million face value, the typical premium would be only around \$710 per year. At the end of the 20-year term, the person might be in a stronger financial situation, and able to afford the whole-life option.

If younger people were required to have higher funding when they sign up, Alcor might soften the impact on them by revising its membership dues in the opposite direction. This would recognize that the current dues system (and standby surcharge) is unfair to younger members, because they pay the same as older members even though their risk of death is far lower. In effect, flat-rate dues are a way of taxing young members to benefit older ones.

In the past, when Alcor was located in California, the topic of age-indexed fees was discussed but was abandoned because of possible legal and regulatory problems. According to Steve Bridge, who has a good memory for events preceding his term as President of Alcor in the 1990s, there were concerns that if Alcor varied its cryopreservation minimums according to the age of its members, it might be regulated as an insurance company, and would be required to put up a large sum (perhaps \$3 million) under

state law. However, Steve doesn't believe that Alcor pursued this issue in a lot of depth, and in any case, Arizona state law may impose requirements that are different from California state law. He feels that the topic could be revisited.

Age indexing might also have tax implications. Any nonprofit organization which is tax-exempt under section 501(c)3 of the IRS code cannot charge a fee-for-service, and Alcor's cryopreservation minimums are thus not actually classified as fees. Again, expert advice would be necessary before the tax implications of age indexing could be accepted or rejected.

Financial Credibility

A basic concept of cryonics is that people in the future will have greater resources than we have today, and will be able to undo mistakes or deficiencies in our procedures. I'm concerned that this mindset may tempt us to have a similar attitude toward financial problems, even though they are likely to occur on a much shorter time scale, and there is no assurance that anyone in the future may be able to solve those problems on our behalf.

Any decision in this area is obviously a matter for board members. My only purpose here is to describe what I see, and suggest some alternatives. But the overall choice appears very simple:

If the grandfathering issue is not resolved, the organization faces a future in which literally hundreds of members will be underfunded. No plans have been made to cover this funding gap.

If the grandfathering issue can be resolved, Alcor will gain financial security. Perhaps equally importantly, it will gain financial credibility. ■

Many thanks to Mike Perry, Rudi Hoffman, and Steve Bridge for assistance with this article. They do not necessarily share my opinions on these issues.

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And 1 Makes 76

By Derek Joe Tennant

Wake Up!

*That annoying voice again...
“Nikki please respond, Nikki
please respond...”*

Over and over, and not for the first time. The light hurts my eyes, so I keep them closed. I've been dreaming so long, this too, feels like just another part of the dream. The dream began with my face hitting the windscreen, and then moved to a snowy mountaintop where the icy wind howled around me for what seems like forever. I couldn't find a path that would lead me off the knife edge and down to some place warmer, and I suffered in silence, the keening wind my only company.

“Nikki please respond...” I've been alone long enough, I should open my eyes and see who it is that keeps intruding on my dream.... in a moment, when the light doesn't hurt as much....

“Nikki please respond...” I turn my head away from the light and open one eye just a fraction, then open both in astonishment. The walls of my room are translucent, and a beautiful color of blue I only remember seeing in a rare sky on warm summer afternoons. No one is with me, and there's nothing in this small chamber but the raised slab on which I lie. Although I see no pad or mattress, the surface under me is soft. The walls seem to glow, the blue is so beautiful and bright. But I might as easily be in a cloud as on the ground.

“Nikki thank you for responding. Someone will be with you shortly.” I am

unable to tell where the voice is coming from. It seems to come from all directions and I can't see a speaker. There's a slight smell of roses in the air, odd because that's my favorite smell. Roses remind me of my mother, who grew them in our backyard and always had a few in a vase on the dining table. I can't decide if I'm awake or still dreaming.

“Nikki, I'll be coming in now.” The voice is different, deeper and more masculine. A man walked into my room, through the wall, as there is no discernable door. He was about my height and weight, wearing a brilliant red jumpsuit that set off the blond hair that barely touched his shoulders. He squatted easily and looked up into my startled eyes.

“You've made quite a trip, my friend, and I'm here to tell you something about that, and about what lies ahead. First, my name is Harvey. What do you remember about the last few hours?”

I hesitated to answer, as it seems to me that the snowy mountaintop has occupied my thoughts for years. I can't imagine that he would want to know about only those last few hours there. I wasn't even sure I still had a voice left to answer him. I tried to clear my throat and found it difficult to speak.

“I have been very cold. The mountaintop was very snowy and windy, but I was there for a very long time, and these last few hours were no different. Oh wait, there was a difference, the voice asking me ‘to respond.’”

“That's our medical unit. It felt you were ready to awaken, and it was trying to get you to open your eyes.”

“When is this?” I should be forgiven for not knowing, having dreamed for so long.

“Before I tell you, let me ask this; do you recall anything about an organization named Alcor?”

“Of course!” I blurt out, excited by the flood of memories the name brings to mind. The Alcor Life Extension Foundation was organized in the 1970s to freeze people who had been pronounced ‘dead’ by current medical practices, in the hope of reviving them later when medical science was able to treat their illness or injuries. I had been very active, participating in the ‘suspensions’ of many friends and peers. But along with the flood of friendly faces and tense suspensions in my mind, was the dawning realization that I was probably now waking from my own suspension.

“Good. Among other things, this tells me you have survived with some good amount of your memory intact. I suppose, judging by the looks I've just seen on your face, that you have deduced you were suspended and now, reanimated?” Harvey seemed pleased that I had remembered.

“That would certainly explain the long, lonely time I spent recently on a snowy mountaintop. We were always told there'd be no consciousness during our suspension.”

“I'm sure there wasn't...you were probably dreaming only during these last few days as we brought your consciousness back to the surface. Dream time often seems to take much longer than real time, especially if one is trying to avoid facing some upcoming shock. Your subconscious probably knew you'd be due for a big



one when you finally awoke. I'll tell you now, the year is 2175, by your old calendar. It has been 172 years, 157 days and a few hours since your 'de-animation' and the scrambling of the 'Rescue Team' that put you 'on ice', so to speak. Believe me, the world is a different place now."

"How many people have been brought back already? Has John or Randy made it back before me? And how reliable is the process? Did I get any "upgrades" or "modifications"? Any changes to my body resulting from advances in medicine? How soon before I can..."

Harvey interrupted, "Slow down! That's already hours worth of discussion, and I've not got all day unfortunately. Let me answer briefly what I can, and tell you what I must. You'll be wanting to sleep again very soon, also. You are actually the fourth person that we've successfully revived. Two of those are slightly "memory-impaired", meaning there are gaps in what they can recall of their previous life. All three show no neural deficits in functioning, however. But there were also several revivals that didn't pan out, as we learned the ups-and-downs of the process required. I suppose it's possible that one of the people you asked about was in that group. We'll check for you later. Actually, once you've had more sleep and receive your instruction sessions on the changes that have occurred since your suspension, you can access our computer database and find the answers yourself. Your computer access is hardwired into your brain now; it's just not turned on. You'll be taught how to use it starting tomorrow. That's one of the "upgrades" you asked about. There are others, mostly having to do with life extension."

I stifled a yawn, not that this was boring me, I just felt exhausted. "What's the biggest change you can tell me about now?"

"I suppose I have to tell you that this is truly a different world than what it was when you went to 'sleep'. In 2021, a virus wiped out most of the Earth's population. Scientists tell us it was probably released from a research lab early that year. Some people said it came on a meteorite, others that it was God's retribution for mankind destroying the environment. In any case, it appeared nearly instantly all around the globe. Of course, it happened so fast, literally within days the planet's population was under a billion - and falling. I doubt very many people spent much time trying to discover the origin of the plague; they were all too busy trying to

survive. The few hundred million left after six months began to rebuild society in tropical regions. Communications were relatively easy to establish, as most of the infrastructure survived. The immediate problems were food supplies and disease control from all the bodies. There were too many to properly care for, so the survivors concentrated on clearing a few small sections of earth and moving everyone to those locations. The tropics were handy, because the food supply would be year-round and there was little worry about staying warm."

"You're telling me that 150 years ago, the world's population shrank to a few hundred million? How did they manage to survive?"

"The nice thing about the plague, it was indiscriminate in who it took, which meant there was a good cross-section of civilization left. A few people in every occupation, so to speak, so the rebuilding process went very smoothly. There's just lots of places on Earth today that are uninhabited, but still show remnants of our previous life."

"Is there a particular reason you've chosen this time to bring us, the Alcor suspendees, back?"

"I don't actually know. My instructions are to bring you up to speed over the next several days, to get you to where you can properly access the database and get you settled in to your space. After that, I'll move on to our next revival until we are finished or I'm given something else to do."

I tried not to be offended by the cold way he seemed to address his 'work'. He had been rather informative so far, and this might be new to him too, so I decided to cut him some slack. "Where are we, then?"

"What you used to call Panama. This is actually the northern edge of what is now the 'civilized' world."

This time I wasn't successful in stifling the yawn. "When do we eat? I'm starving here. Who knows how long it's been since I've had a good meal."

"To do that properly, you'd need to be in our database. That will take time. I'm afraid it's a liquid diet until then." Harvey rummaged around in a drawer underneath me that I hadn't noticed, and brought out a bottle. The top was easily removed, and he handed it to me. It looked like Coke, but when I tasted it I found a rather bland liquid, the consistency of dirty water. Even a little bit of sugar would have been welcome.

"You mean this what passes for food the next few days?" I tried not to sound incredulous.

I probably sounded upset.

"The other big change you'll find, when we get you settled into your space, is that we all live our lives now in a virtual world. As the survivors in 2021 were rebuilding, they set safety as a high priority, so now we all are protected in little cells and do everything within the virtual world in the database. The computer systems monitor our health, protect us from dirty air, and maintain our bodies while we work and play and eat in the database world. The food there is exquisite. The real thing, that keeps us alive however, is this basic vitamin and mineral soup."

Despite my hunger, I felt my eyelids growing heavy. "You'd best get me on the database quickly then, I don't think I can stomach this, and I'd hate to come through all this just to starve to death."

I imagine Harvey said something to that, but I was already fast asleep. And this time, there was no dream to remember. ■

About the Author

Derek Joe Tennant



Derek has been an Alcor member since 1990, and was on the Transport Team for nearly 15 years. He has always believed in volunteer work, beginning with a Crisis Intervention Hotline and the 'Free Angela Davis' committee in the early 1970's, continuing through a volunteer firefighter career and, most recently, teaching English to Burmese refugee children on the Burma-Thailand border and helping clean-up following hurricanes in Haiti and an EF3 tornado in Arkansas. This short story imagines awakening to a future radically changed by a sudden decrease in population around the world. Derek says, "Thankfully, two of my greatest dreams are realized in this tale, my Alcor suspension is a success, and, well, you'll just have to read the story to find out about the other!" He has self-published several books; information about them, and the remainder of the story that begins here, can be found at www.derekjoetennant.net

I Was a Teenage Popsicle and Beyond Cool

Author: Bev Katz Rosenbaum [New York: Berkeley Publishing Group (Penguin Group), 2006 & 2007]

BOOK REVIEW BY MIKE PERRY

Two young-adult, science-fiction novels with a cryonics theme, *I Was a Teenage Popsicle* and its sequel, *Beyond Cool* manage to treat the subject of human cryopreservation respectfully while weaving a story that can be enjoyed by young and old alike. Don't take matters too seriously. At the start of the story sixteen-year-old Floe Ryan is suffering from a rare, terminal illness and is "vitrified." After ten years (technology gallops a bit here) she is cured and resuscitated and resumes her life as a teenager, only of course time has passed and she must cope somewhat as Rip Van Winkle. Her parents, it turns out, were also incurably ill and are still in cryostasis, so she is living with her now-grown-up sister who was her kid sister before. A bigger complication (not that the sister problem is trivial) is that for certain reasons she must keep her status as a resuscitee secret for now. She has to pose as a "regular" among highly intelligent, perceptive schoolmates who are also engaged in the usual rivalries and conflicts of such an age group. She is strangely out of place in a setting where technology has very rapidly advanced. She can't do "hoverblading" for instance, a sport that has newly developed with a kind of levitating skates and is now the rage.

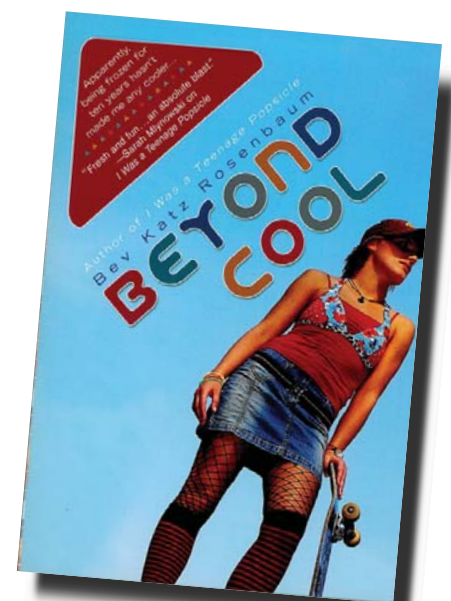
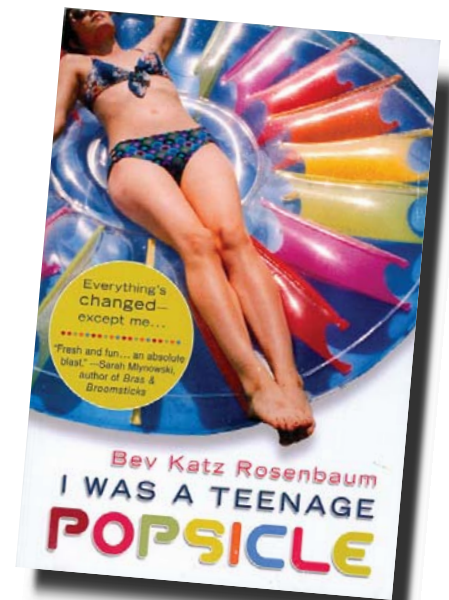
As one compensation, her guy-friend Taz Taber is also a cryonic resuscitee and, of course, in on the secret that very few must know about. One of those not in the know is a senator who thinks cryonics is a fraud and is trying to have the practice banned. If that is done the cryonics center where Floe's parents are still stored will have to shut down. Floe is worried her parents "might never be thawed" but it seems far more

likely they would be thawed all right, only tragically prematurely and thus not resuscitated, just "disposed of." (It's certainly happened before in real-life cryonics.)

Well, you have to suspend a certain amount of disbelief in all science fiction, and often, as here, on social issues as well as the merely technological. Extraordinary events, any demonstrated success with cryonic resuscitation in particular, would surely have extraordinary ripple effects, something that is rather overlooked in this story, presumably in the interest of entertainment. So you swallow your critical gut and read on.

Cryonic resuscitation stays a public secret throughout the second volume, and here Floe must cope with anticryonicists (though a select few were won over in the first volume), as well as a deteriorating relationship with Taz. She overcomes a mental block and can pilot the various, newfangled hovercraft with expertise, which helps in important ways, including that it's now easier for her to pass as "normal" and not betray her status as a resuscitee or "popsicle" until the proper time. Another challenge is that a new, virulent virus has emerged that could threaten those still in cryostasis. A hard-to-find specialist, Dr. Simkofsky, is the only one with a chance of dealing with this threat, and he has issues with the cryonics center's main personnel. The interesting theme is explored that, if someone doesn't like you in the way you want them to, you can see if a near-copy is available who does....

In all, these volumes offer an entertaining read, at a not-too-serious (or even plausible) philosophical level. Probably not something to win over converts to the real-life cause of cryonics—read for fun. (And look into real cryonics, too, if you haven't already.) ■



Take a look at the **ALCOR BLOG**

www.alcornews.org/weblog

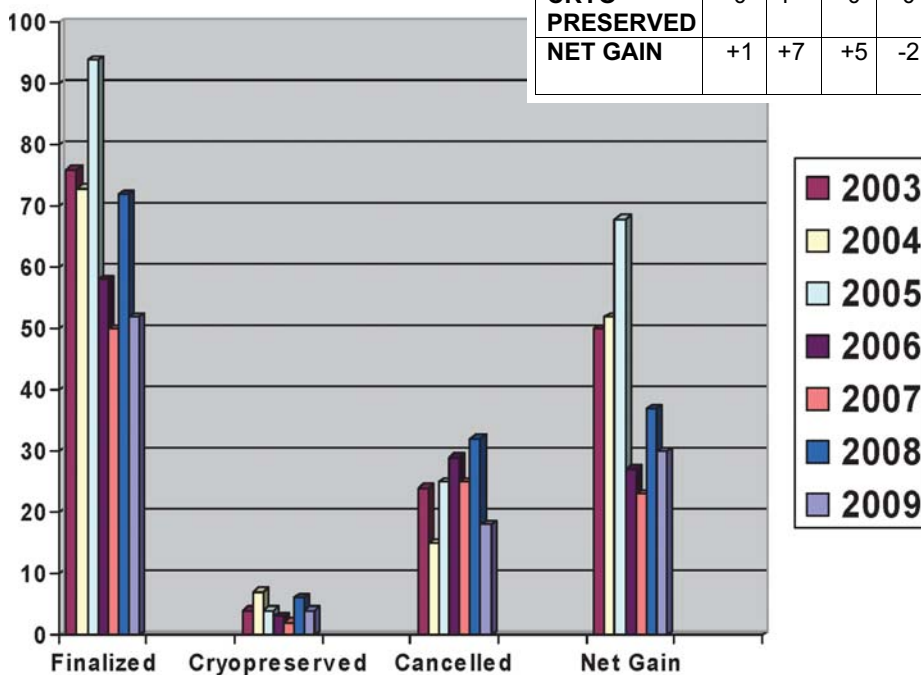


Your source for news about:

- Cryonics technology**
- Cryopreservation cases**
- Television programs about cryonics**
- Speaking events and meetings**
- Employment opportunities**

Membership Statistics

2009	01	02	03	04	05	06	07	08	09	10	11	12	
TOTAL	876	883	888	886	891	893	895	903	905				905
FINALIZED	3	11	8	0	4	3	3	11	5				48
REINSTATED	1	0	0	0	2	0	0	1	0				4
CANCELLED	3	3	3	2	1	0	0	3	3				18
CRYO-PRESERVED	0	1	0	0	0	1	1	1	0				4
NET GAIN	+1	+7	+5	-2	+5	+2	+2	+8	+2				+30



On September 30, 2009, Alcor had 905 members on its Emergency Responsibility List. During the first nine months of 2009 48 memberships were approved, 4 memberships were reinstated, 18 memberships were cancelled and 4 members were cryopreserved. Overall, there was a net gain of 30 members for the year of 2009 to date.

The chart on the left displays the year-end monthly average net gain since 2002.

China Plans for Humanoid Olympics

China is planning to hold a robot Olympics in 2010. The international event will be held in the city of Harbin and will see robots take part in 16 different events. Robots will be able to compete in familiar Olympic sports such as athletics as well as those more suited to machines such as cleaning. Entry to the competition will be restricted to robots resembling humans. They must possess two arms and legs. Wheels are banned. The organizers of the games expect more than 100 universities from around the world to send competitors to the event. Harbin has been picked as the venue because the city's Institute of Technology is the home of a robot football research group that manages a very successful team of soccer playing humanoids. Professor Hong Rongbing, from the Harbin Institute of Technology, said the idea of the competition was to drive innovation and produce robots that are more flexible and helpful. No specific date has been set for the games as its organizers are still rounding up sponsors to help pay for it. The Harbin robot games will be one among an increasingly crowded calendar for robot sports and other competitive events. Robots already have their own world cup. The 2009 competition saw entries from 400 teams that hailed from 35 separate nations.

BBC News
11/6/09

<http://news.bbc.co.uk/2/hi/technology/8346185.stm>

Tiny Chip Could Diagnose Disease

Much research in recent years has focused on the chemical and medical possibilities of so-called microfluidic devices at the heart of lab-on-a-chip designs. Now, scientists at IBM's research labs in Zurich have developed a cheap lab-on-a-chip that has the potential to diagnose dozens of diseases. The device relies on an array of antibody molecules that are designed to latch on to the protein-based

molecular markers of disease in blood. The antibodies are chemically connected to molecules that emit light of a specific color when illuminated – but only when they have bound to the disease markers. “There are devices that have been developed in microfluidics to do analysis of proteins, but most of them use active pumping and electrical components,” said Luc Gervais, a co-author on the study. “They're very complex systems; this makes them less easy to use by non-trained personnel – and it makes them a lot more expensive to manufacture,” Dr Gervais told BBC News. Instead, the new device exploits capillary action, the tendency of fluids to climb through narrow channels – the same phenomenon that drives water into a sponge placed on a wet surface.

BBC News
11/18/09

<http://news.bbc.co.uk/2/hi/science/nature/8366405.stm>

Pork Meat Grown in a Laboratory

Scientists have grown meat in the laboratory for the first time. Experts in Holland used cells from a live pig to replicate growth in a petri dish. The advent of so-called “in-vitro” or cultured meat could reduce the billions of tons of greenhouse gases emitted each year by farm animals – if people are willing to eat it. So far the scientists have not tasted it, but they believe the breakthrough could lead to sausages and other processed products being made from laboratory meat in as little as five years' time. They initially extracted cells from the muscle of a live pig. Called myoblasts, these cells are programmed to grow into muscle and repair damage in animals. The cells were then incubated in a solution containing nutrients to encourage them to multiply indefinitely. The result was sticky muscle tissue that requires exercise, like human muscles, to turn it into a tougher steak-like consistency. “You could take the meat from one animal and create the volume of meat previously provided by a million animals,”

said Mark Post, professor of physiology at Eindhoven University, who is leading the Dutch government-funded research. Peta, the animal rights group, said: “As far as we're concerned, if meat is no longer a piece of a dead animal there's no ethical objection.”



Wikimedia Commons

TimesOnline
11/29/09

<http://www.timesonline.co.uk/tol/news/science/article6936352.ece>

Lifelong Memories Linked to Stable Nerve Connections

Our ability to learn new information and adapt to changes in our daily environment, as well as to retain lifelong memories, appears to lie in the minute junctions where nerve cells communicate, according to a new study by NYU Langone Medicine Center researchers. The study is published online December 3 in the journal *Nature*. The scientists, led by Wen-Biao Gan, PhD, associate professor of physiology and neuroscience at NYU School of Medicine, discovered that a delicate balancing act occurs in the brain where neuronal connections are continually being formed, eliminated, and maintained. This feat allows the brain to integrate new information without jeopardizing already established memories, the new study suggests. Using a powerful optical imaging technique called two-photon microscopy, Dr. Gan and colleagues viewed the precise changes that take place at synapses, the junctions where nerve cells

communicate, in the wake of learning a new task or being exposed to a novel situation. New knowledge, explains Dr. Gan, prompts alterations in the dendritic spines, the knobby protrusions along the branching ends of nerve cells. With learning, spines are gained and others lost.

ScienceDaily
12/1/09

[http://www.sciencedaily.com/
releases/2009/12/091203112157.htm](http://www.sciencedaily.com/releases/2009/12/091203112157.htm)

Mind-Machine Breakthrough: People Type With Just Thoughts

By focusing on images of letters, people with electrodes in their brains can type with just their minds. These findings make up one more step on the road to mind-machine interfaces that may one day help people communicate with just their thoughts. Researchers have recently employed brain scans to see numbers and maybe even pull videos from inside people's heads. The neuroscientists were monitoring two patients with epilepsy for seizure activity with electrodes placed directly on the surface of their brains to record electrical activity generated by the firing of nerve cells. This kind of procedure requires a craniotomy, a surgical incision into the skull. Lead investigator Jerry Shih, a neurologist at the Mayo Clinic campus in Jacksonville, Fla., wanted to test how well their fledgling mind-machine interface functioned in these patients. He reasoned it would perform better when electrodes were placed directly on the brain instead of when placed on the scalp, as is done with electroencephalography, or EEG. "The scalp and bony skull diffuses and distorts the signal, rather like how the Earth's atmosphere blurs the light from stars," Shih said. "That's why progress to date on developing these kinds of mind interfaces has been slow."

LiveScience
12/6/09

[http://www.livescience.com/health/
091206-mind-machine-interface.html](http://www.livescience.com/health/091206-mind-machine-interface.html)

US Approves 13 Embryonic Stem Cell Lines for Research

US regulators have approved 13 new lines of human embryonic stem cells for use in scien-

tific research. They are the first batches of embryonic stem cells—the building blocks of the body—that have been made available to US researchers in almost a decade. The move comes after President Barack Obama eased restrictions on federally funded embryonic stem cell research. Another 96 lines could soon be approved if they meet the ethical guidelines unveiled in July, US scientists said. Scientists hope to harness the cells to treat a variety of diseases, including injuries, cancer and diabetes. "I am happy to say that we now have human embryonic stem cell lines eligible for use by our research community under our new stem cell policy," said Francis Collins, director of the US National Institutes of Health. Embryonic stem cells come from days-old embryos and can morph into any type of cell in the body. Each embryo yields one stem cell line—a family of cells which can be replicated indefinitely in a laboratory. But their use in scientific research is controversial. Opponents say culling the cells is unethical, as it destroys the human embryo. Scientists say the new lines were created in ways that made them far better candidates for successful research.

BBC News
12/2/09

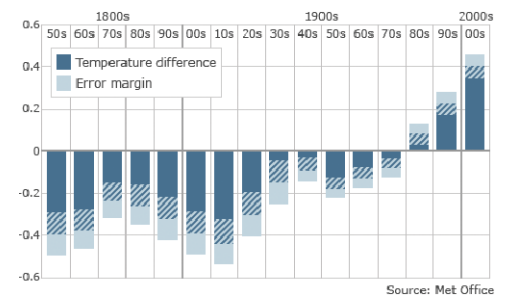
[http://news.bbc.co.uk/2/hi/
health/8391924.stm](http://news.bbc.co.uk/2/hi/health/8391924.stm)

This Decade "Warmest on Record"

The first decade of this century is "by far" the warmest since instrumental records began, say the UK Met Office and World Meteorological Organization. Their analyses also show that 2009 will almost certainly be the fifth warmest in the 160-year record. Burgeoning El Nino conditions, adding to man-made greenhouse warming, have pushed 2009 into the "top 10" years. The US space agency Nasa suggests that a new global temperature record will be set "in the next one or two years." World Meteorological Organization (WMO) and Met Office scientists have been giving details of the new analysis at the UN climate summit in Copenhagen. The WMO said global temperatures were 0.44C (0.79F) above the long-term average. "We've seen above average temperatures in most continents, and only in North America were there conditions that were cooler than average,"

said WMO secretary-general Michel Jarraud. Mr. Jarraud emphasized that the final analysis would not be complete until early next year; but the UN agency always issues a summary during the annual climate negotiations in order that delegates have the latest information.

Global average temperature 1850-2009
Temperature difference from 1961-1990 (°C)



BBC News
12/8/09

[http://news.bbc.co.uk/2/hi/
science/nature/8400905.stm](http://news.bbc.co.uk/2/hi/science/nature/8400905.stm)

New Antifreeze Molecule Found in Alaska Beetle

Scientists have identified a novel antifreeze molecule in a freeze-tolerant Alaska beetle able to survive temperatures below -100°F . Unlike all previously described biological antifreezes that contain protein, this new molecule, called xylomannan, has little or no protein. It is composed of a sugar and a fatty acid and may exist in new places within the cells of organisms. "The most exciting part of this discovery is that this molecule is a whole new kind of antifreeze that may work in a different location of the cell and in a different way," said zoophysiological Brian Barnes, director of the University of Alaska Fairbanks Institute of Arctic Biology and one of five scientists who participated in the Alaska Upis ceramboides beetle project. UAF graduate student and project collaborator Todd Sformo found that the Alaska Upis beetle first freezes at about -18.5°F in the lab and survives temperatures down to about -104°F . A possible advantage of this novel molecule comes from it having the same fatty acid that cells membranes do. This similarity, says Barnes, may allow the molecule to become part of a cell wall and protect the cell from internal ice crystal formation. Antifreeze molecules made of proteins may not fit into cell membranes.

Drinking Cups of Tea and Coffee “Can Prevent Diabetes”

Tea and coffee drinkers have a lower risk of developing type 2 diabetes, a large body of evidence shows. And the protection may not be down to caffeine since decaf coffee has the greatest effect, say researchers in Archives of Internal Medicine. They looked at 18 separate studies involving nearly 500,000 people. This analysis revealed that people who drink three or four cups of coffee or tea a day cut their risk by a fifth or more, say researchers. The same amount of decaffeinated coffee had an even bigger effect, lowering risk by a third. Lead researcher Dr. Rachel Huxley, from the University of Sydney in Australia, said because of the finding with decaffeinated coffee, the link is unlikely to be solely related to caffeine. Type 2 diabetes usually starts after the age of 40 and develops when the body can still make some insulin, but not enough, or when the insulin that is produced does not work properly. Type 2 diabetes is treated with a healthy diet and increased physical activity. In addition to this, medication and/or insulin is often required. The identification of the active components of these beverages would open up new therapeutic pathways for the primary prevention of diabetes mellitus.

BBC News
12/15/09
[http://news.bbc.co.uk/2/hi/
health/8411605.stm](http://news.bbc.co.uk/2/hi/health/8411605.stm)

“Molecular Switch” Could Prevent Huntington’s Disease

A “molecular switch” that can prevent Huntington’s disease from developing has been found in mice. A US study concluded the mutated huntingtin protein, which causes the disease, could be stopped in its tracks by a subtle chemical modification. It is hoped the work could lead to much-needed treatments for the inherited disorder. The study, by the University of California, Los Angeles, is published in the journal Neuron. It is thought between 6,000 and 8,500 people in the UK

have Huntington’s disease—a neurological condition that starts to show in mid-life and slowly impairs a person’s ability to walk, talk and reason. Children who have one parent with the condition have a 50% chance of developing it themselves and often it is passed on before people are aware that they have it. There is no cure for the illness and treatment focuses on managing the symptoms. This finding suggests an exciting new avenue to develop therapeutics for Huntington’s disease. Although it is known that a protein mutation underpins the disease, it is not exactly clear how that mutation causes the damage seen in those with the condition. In the latest study, researchers found a small section of the mutated protein that can be modified by phosphorylation.



The work was carried out on mice

BBC News
12/24/09
[http://news.bbc.co.uk/2/hi/
health/8428051.stm](http://news.bbc.co.uk/2/hi/health/8428051.stm)

Molecules and Synapses Cement Memories, Say Scientists

Scientists have been perplexed for some time as to why, when synapses are strengthened, you have the degradation of proteins going on side by side with the synthesis of new proteins. A strong synapse is needed for cementing a memory, and this process involves making new proteins. But how exactly the body controls this process has not been clear. Now scientists at the University of California Santa Barbara say their laboratory work on rats shows the production of proteins needed to cement memories can only happen when the RNA—the collection of molecules that take genetic messages from the nucleus to the rest of the cell—is switched on. Until it is required, the RNA is paralyzed by a “silencing” molecule—which itself contains proteins. When an external signal comes in—for example when one sees something interesting or has an unusual experience—the

silencing molecule fragments and the RNA is released. This interesting development could give a greater understanding of the memory loss experienced by people with Alzheimer’s and other forms of dementia and lead to new treatments. Kenneth Kosik of the university’s neuroscience research institute said: “We show that protein degradation and synthesis go hand in hand.”

BBC News
12/24/09
[http://news.bbc.co.uk/2/hi/
health/8426959.stm](http://news.bbc.co.uk/2/hi/health/8426959.stm)

Study Blames Two genes for Aggressive Brain Cancer

Scientists have discovered two genes that appear responsible for one of the most aggressive forms of brain cancer. Glioblastoma multiforme rapidly invades the normal brain, producing inoperable tumors, but scientists have not understood why it is so aggressive. The latest study, by a Columbia University team, published in Nature, pinpoints two genes. The researchers say that the findings raise hopes of developing a treatment for the cancer. It means we are no longer wasting time developing drugs against minor actors in brain cancer—we can now attack the major players. The genes—C/EBP and Stat3—are active in about 60% of glioblastoma patients. They appear to work in tandem to turn on many other genes that make brain cells cancerous. Patients in the study whose tumors showed evidence of both genes being active died within 140 weeks of diagnosis. In contrast, half of patients without activity from these genes were alive after that time. Lead researcher Dr Antonio Iavarone described the two genes as the disease’s master control knobs. “The finding means that suppressing both genes simultaneously, using a combination of drugs, may be a powerful therapeutic approach for these patients, for whom no satisfactory treatment exists.”

BBC News
12/27/09
<http://news.bbc.co.uk/2/hi/8426015.stm>

MEETINGS

About the Alcor Foundation

The Alcor Life Extension Foundation is a nonprofit tax-exempt scientific and educational organization dedicated to advancing the science of cryopreservation and promoting it as a rational option. Being an Alcor member means knowing that—should the worst happen—Alcor's Emergency Response Team is ready to respond for you, 24 hours a day, 365 days a year.

Alcor's Emergency Response capability includes specially trained technicians and customized equipment in Arizona, northern California, southern California, and south Florida, as well as many additional certified technicians on-call around the United States. Alcor's Arizona facility includes a full-time staff, and the Patient Care Bay is personally monitored 24 hours a day.

ARIZONA

Scottsdale:

This group meets the third Friday of each month and gatherings are hosted at a home near Alcor. To RSVP, visit <http://cryonics.meetup.com/45/>.

At Alcor:

Alcor Board of Directors Meetings and Facility Tours – Alcor business meetings are generally held on the first Saturday of every month starting at 11:00 AM MST. Guests are welcome. Facility tours are held every Tuesday and Friday at 2:00 PM. For more information or to schedule a tour, call D'Bora Tarrant at (877) 462-5267 x 101 or email dbora@alcor.org.

CALIFORNIA

Los Angeles:

Alcor Southern California Meetings— For information, call Peter Voss at (310) 822-4533 or e-mail him at peter@optimal.org. Although monthly meetings are not held regularly, you can meet Los Angeles Alcor members by contacting Peter.

San Francisco Bay:

Alcor Northern California Meetings are held quarterly in January, April, July, and October. A CryoFeast is held once a year. For information on Northern California meetings, call Mark Galecki at (408) 245-4928 or email Mark_galecki@pacbell.net.

DISTRICT OF COLUMBIA

Life Extension Society, Inc. is a cryonics and life extension group with members from Washington, D.C., Virginia, and Maryland. Meetings are held monthly. Contact Secretary Keith Lynch at kfl@keithlynch.net. For information on LES, see our web site at www.keithlynch.net/les.

FLORIDA

Central Florida Life Extension group meets once a month in the Tampa Bay area (Tampa and St. Petersburg) for discussion and socializing. The group has been active since 2007. Email arcturus12453@yahoo.com for more information.

NEVADA

Las Vegas:

There are many Alcor members in the Las Vegas area. If you wish to meet and socialize, contact Katie Kars at (702) 251-1975. This group wants to get to know you!

NEW ENGLAND

Cambridge:

The New England regional group strives to meet monthly in Cambridge, MA – for information or to be added to the AlcorNE mailing list, please contact Bret Kulakovich at 617-824-8982, alcor@bonfireproductions.com, or on FACEBOOK via the Cryonics Special Interest Group.

OREGON

Portland:

Cryonics Oregon holds regular meetings every 2-3 months for members of cryonics organizations living in Portland and the surrounding areas. For information, please contact Chana de Wolf at chana.de.wolf@gmail.com or (503) 756-0864. <http://www.cryonicsoregon.com/>

A Yahoo group is also maintained for cryonics activities in the Pacific Northwest at <http://tech.groups.yahoo.com/group/CryonicsNW/>.

ALCOR PORTUGAL

Alcor Portugal is working to have good stabilization and transport capabilities. The group meets every Saturday for two hours. For information about meetings, contact Nuno Martins at n-martins@n-martins.com. The Alcor Portugal website is: www.alcor-portugal.com.

TEXAS

Dallas:

North Texas Cryonauts, please sign up for our announcements list for meetings (<http://groups.yahoo.com/group/cryonauts-announce>) or contact David Wallace Croft at (214) 636-3790 for details of upcoming meetings.

UNITED KINGDOM

There is an Alcor chapter in England. Its members are working diligently to build solid emergency response, transport, and cryopreservation capability. For information about meetings, contact Alan Sinclair at cryoservices@yahoo.co.uk. See the web site at www.alcor-uk.org.

If you are interested in hosting regular meetings in your area, contact Alcor at 877-462-5267 ext. 113. Meetings are a great way to learn about cryonics, meet others with similar interests, and introduce your friends and family to Alcor members!

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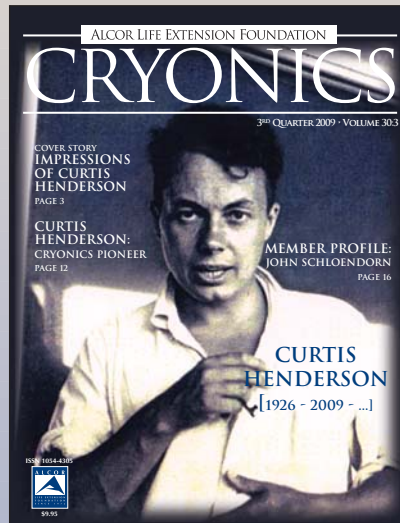


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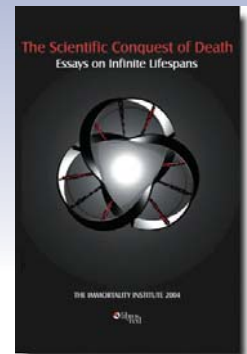
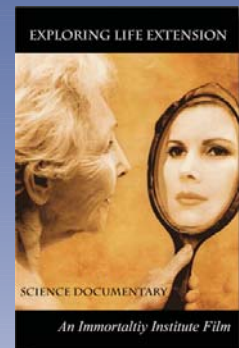
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WHAT IS CRYONICS?

Cryonics is an attempt to preserve and protect the gift of human life, not reverse death. It is the speculative practice of using extreme cold to preserve the life of a person who can no longer be supported by today's medicine. Will future medicine, including mature nanotechnology, have the ability to heal at the cellular and molecular levels? Can cryonics successfully carry the cryopreserved person forward through time, for however many decades or centuries might be necessary, until the cryopreservation process can be reversed and the person restored to full health? While cryonics may sound like science fiction, there is a basis for it in real science. The complete scientific story of cryonics is seldom told in media reports, leaving cryonics widely misunderstood. We invite you to reach your own conclusions.

HOW DO I FIND OUT MORE?

The Alcor Life Extension Foundation is the world leader in cryonics research and technology. Alcor is a non-profit organization located in Scottsdale, Arizona, founded in 1972. Our website is one of the best sources of detailed introductory information about Alcor and cryopreservation (www.alcor.org). We also invite you to request our **FREE** information package on the "Free Information" section of our website. It includes:

- A fully illustrated color brochure
- A sample of our magazine
- An application for membership and brochure explaining how to join
- And more!

Your free package should arrive in 1-2 weeks.

(The complete package will be sent free in the U.S., Canada, and the United Kingdom.)

HOW DO I ENROLL?

Signing up for a cryopreservation is easy!

Step 1: Fill out an application and submit it with your \$150 application fee.

Step 2: You will then be sent a set of contracts to review and sign.

Step 3: Fund your cryopreservation. While most people use life insurance to fund their cryopreservation, other forms of prepayment are also accepted. Alcor's Membership Coordinator can provide you with a list of insurance agents familiar with satisfying Alcor's current funding requirements.

Finally: After enrolling, you will wear emergency alert tags or carry a special card in your wallet. This is your confirmation that Alcor will respond immediately to an emergency call on your behalf.

Call toll-free today to start your application:

877-462-5267 ext. 132
info@alcor.org
www.alcor.org





Will You Be Alive and Healthy 10...20...30 Years from now?

Your best chance at achieving future immortality is to protect your precious health now so you can benefit from future medical breakthroughs. Staying informed about the latest health discoveries can mean the difference between life and premature death.

And the **Life Extension Foundation** can be your passport to the future. As the largest anti-aging organization in the world, we are dedicated to finding scientific ways to prevent disease, slow aging, and eventually stop death.

For more than two decades, Life Extension has been at the forefront of the movement to support revolutionary anti-aging research that is taking us closer to our goal of extending the healthy human life span indefinitely. We inform our members about path-breaking therapies to help keep them healthy and alive.

Join today and you'll receive these life-prolonging benefits:

- A subscription to *Life Extension* magazine (\$59.88 yearly newsstand value)...Over 100 full-color pages every month are filled with medical research findings, scientific reports, and practical guidance about using diet, nutrients, hormones, and drugs to prevent disease and slow aging.
- Access to a toll-free phone line to speak with **knowledgeable health advisors**, including naturopathic doctors, nutritionists, and a cancer expert, about your individual health concerns. You can also receive help in developing your own personal life extension program.
- Discounts on prescription drugs, blood tests, and pharmaceutical quality supplements that will greatly exceed

your membership dues. You'll receive a directory listing the latest vitamins and supplements, backed by scientific research and available through a unique buyers club.

FREE BONUS!

- **Disease Prevention and Treatment book** (\$49.95 cover price) ...this hardbound fourth edition provides novel information on complementary therapies for 133 diseases and illnesses—from Alzheimer's disease to cancer, from arthritis to heart disease—that is based on thousands of scientific studies.

Life Extension Foundation funds advanced vitrification and gene-chip research. Your \$75 membership fee helps support scientific projects that could literally save your life.

Call 1-866-820-4967 today.

LIVE
Healthier & Longer

LifeExtensionSM
FOUNDATION

Join today. Call toll-free 1-866-820-4967. Or visit www.lef.org/pim