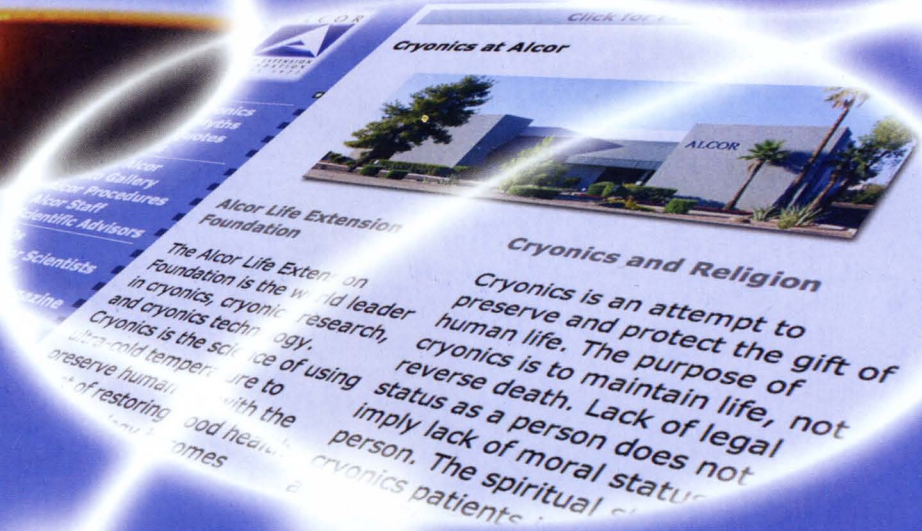


# CRYONICS

Jul • Aug 2005 A Publication of the Alcor Life Extension Foundation Volume 26 • 4



[www.alcor.org](http://www.alcor.org)

see it for yourself

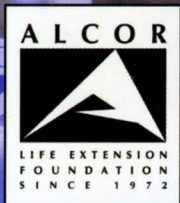
**Alcor's NEW Website**

**Member Profile: Kerry Davis**

**Cryopreservation Case Summary: Patient A-2024**

**How Will We Redesign Ourselves?**

**Is Hydrogen Sulfide The Secret To Suspended Animation?**



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# Cryonics

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July/August 2005

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## To Our Readers

In this issue of *Cryonics* magazine our lead article showcases the many useful features offered by Alcor's website ([www.alcor.org](http://www.alcor.org)). It covers the highlights of the site, including the Library which provides in-depth information on a multitude of related topics, the FAQ section, and the most popular pages and essays. Alcor's website is one of its most important mediums for communicating with those interested in learning about cryonics. Everyone is encouraged to use this article as a guide for utilizing the website as an educational tool for yourself and others.

Improving the public perception of cryonics is a vital aspect of our growth now and in the coming years. Joe Waynick's *CEO Report* discusses the opportunities available to members who want to get actively involved. He provides simple and practical guidelines for ways you can help Alcor grow, including volunteering your time, offering financial support, and just speaking openly about the topic.

Thomas Donaldson, Ph.D. has written many articles for *Cryonics* magazine over the years. He has graciously offered to share reprints from his publication, *Periastron*, for which you can find subscription information in the ads section. In this issue of *Cryonics* he explores how aging and life extension affect our lives and our futures. Make sure to read *How Will We Redesign Ourselves* for his insights.

Also, we introduce you to a couple of good books. *The Garden in the Machine* by Claus Emmeche discusses how computer simulations of "life" offer insights into the workings of living things and the methods computer scientists turned to when efforts to make real world robots failed. *Wintermind* by Marvin Kaye and Parke Godwin provides useful lessons about human nature and explores issues some cryonicists take to heart.

As always, feel free to share your comments about these topics and others.

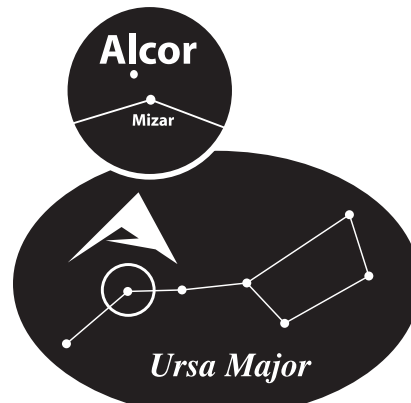
## Letters to the Editor

Letters or questions for the Editor are most welcome on all topics, including counterpoint on previously published materials and suggestions for future content. We especially invite questions about cryopreservation or reanimation that are original and far-reaching. Email your feedback to [articles@alcor.org](mailto:articles@alcor.org). If you are seeking information about Alcor, visit our website ([www.alcor.org](http://www.alcor.org)).

## Alcor: Seen By Few

Did you know "Alcor" is a star? A star barely within the threshold of human vision, Alcor is located in the Big Dipper's handle. Only with excellent vision can one see Alcor, which is quite close to, but dimmer than, Mizar. The name Alcor, chosen for its symbolism and its historical use as a test for vision and focus, serves as a reminder that the distant dreams seen by few today may become the reality of tomorrow.

Want to see a topic discussed?  
[articles@alcor.org](mailto:articles@alcor.org)



# Cryonics

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The Alcor Staff

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Submissions may be sent via e-mail ([articles@alcor.org](mailto:articles@alcor.org)) in ASCII, Word, or PageMaker format. Mailed submissions should include a PC diskette with the file in any previously mentioned format (although printed text alone will be considered). All submitted media become property of the Alcor Life Extension Foundation unless accompanied by a self-addressed stamped envelope. The Alcor Life Extension Foundation assumes no responsibility for unsolicited manuscripts, photographs, or art. Send all correspondence and submissions to:

*Cryonics*  
Alcor Life Extension Foundation  
7895 E. Acoma Dr., Suite 110  
Scottsdale, AZ 85260

Visit us on the Web at [www.alcor.org](http://www.alcor.org)

# HOW TO JOIN ALCOR

**Y**our research is finally complete. You browsed our web site (www.alcor.org), presented your questions to our Membership Coordinator, and toured our facility. Now you are ready to establish your membership with the Alcor Foundation. Congratulations and welcome!

Upon receipt of your completed application for membership and \$150 application charge, Alcor will send you various membership documents (samples available upon request). After reviewing these documents, you will need to sign them in the presence of two signing witnesses. At least one document requires the services of a notary public. After returning all of your documents to Alcor for approval, you can expect to receive one original copy of each for your personal records.

Most people use life insurance to fund their cryopreservation, although cash prepayment is also acceptable. If you do not already have an insurance policy, Alcor recommends that you apply for one at your earliest convenience, as the underwriting process can last several weeks. Diane Cremeens, Membership Coordinator, can provide you with a list of insurance agents who have previously written policies for this purpose. These agents can assist you with satisfying Alcor's various funding requirements, such as naming Alcor as the owner and irrevocable beneficiary of your policy and ensuring that your benefit amount is sufficient.

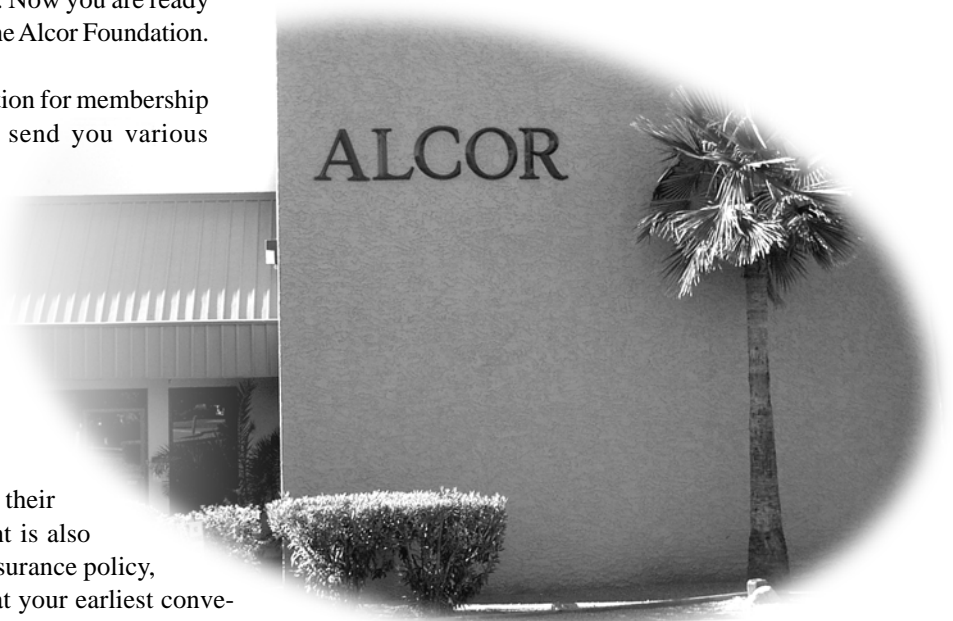
With your membership documents completed and your funding approved by Alcor, you will be issued emergency identification tags engraved with your personal Cryopreservation Number. This is your confirmation that Alcor will respond, should our emergency technicians ever receive a call on your behalf. Certainly, Alcor hopes that you will not need us anytime soon, but as a member you can feel confident that our organization will care for you and your future to the best of our ability. Please call 877-462-5267 ext. 132 today to request your application.

## Attention All Members and Applicants

**Please! Please! Please!** When you move, change phone numbers (work number as well), change e-mail addresses, or plan to undergo any medical procedure where general anesthesia is used, please inform us as far ahead of time as you can.

Too many times we have tried to contact our members and found out the contact information we have is no longer valid. Other times we find out well after the fact that a member has undergone a medical procedure with life threatening potential.

*Help us to serve you better! Keep in touch!*



## Alcor Membership Status

On June 1, 2005, Alcor had 750 members (including 114 Life Members) and 68 cryopreservation patients.

Country	Membership Status			Country	Membership Status		
	Members	Applicants	Subscribers		Members	Applicants	Subscribers
Argentina	0	0	1	Monaco	2	0	0
Australia	8	2	1	Netherlands	3	0	1
Austria	0	0	1	Spain	0	4	0
Canada	27	6	6	Sweden	0	0	1
France	0	0	1	Switzerland	0	0	2
Germany	3	1	2	Taiwan	0	0	1
Ireland	0	0	0	U.K.	17	6	3
Italy	1	2	3	U.S.A.	687	61	158
Japan	0	0	1				
Lebanon	0	0	1				
Mexico	2	0	1	<b>TOTALS</b>	<b>750</b>	<b>82</b>	<b>184</b>

The number of complimentary subscribers was drastically reduced recently. Only 15 individuals responded to a mailing requesting confirmation of continued interest in free subscriptions.



## Member Profile

# An Interview With... Kerry Davis

**K**erry Davis was born in Altus, Oklahoma, in 1972 and is the oldest of three children. He attended college in Southern California with visions of getting a Bible degree and eventually becoming a pastor. Somewhere along the way, though, he realized that he really did not have the personality type for it, so he ended up getting his degree in music instead, thinking he could get involved with music ministry. By graduation, he had gotten involved in the field of computers, and he took a job out of college with a technology firm. He has been in the Information Technology field ever since. He met his wife while in college (both were music majors), and they got married in 1998. They now have two sons, ages 4 and 2, and recently moved back to Oklahoma from Southern California, where they live on an acre of land with plenty of greenery and open space in the central part of the state. You can contact Kerry at [kerryd@sylvangate.com](mailto:kerryd@sylvangate.com).

**CM:** Tell us about your first exposure to the topic of cryonics.

**KD:** I first learned about cryonics through my readings on the subject of Transhumanism. I remember first reading about it in Nick Bostrom's *Transhumanist FAQ* (volume 2.0). It's a document that opened my mind to whole new ways of thinking about everything from the nature of the human mind to nanotechnology to artificial intelligence. It covered the topic of cryonics in a summary fashion, so that I could understand it as a component of a more far-reaching way of thinking. From there I read through Robert Ettinger's book, *The Prospect of Immortality*, as well as fictional works like *The First Immortal* by James Halperin. Both gave me a more in-depth understanding of the science, its concepts and its goals. By then I was hooked. I went on to research the various cryonics organizations, and it wasn't long before I was an Alcor member.

**CM:** When did you join Alcor and what motivated you to become a member?

**KD:** I joined Alcor about a year ago. Ultimately, a variety of factors converged to put me on the path that got me involved in cryonics. Like many, I suspect, several years ago I became disenchanted with and moved away from my traditional religious beliefs in salvation/heaven, etc. Naturally this led me to ponder, "What do I do now?" At that point I had a desire to take action to affect the course of my own fate, rather than passively waiting for whatever comes. Not like many, I suspect, my choice was to opt for involvement in cryonics. In addition, this got me quite

excited about the prospect of perhaps living to see and participate in whatever future may come!

**CM:** What are your hobbies or special interests?

**KD:** I enjoy a variety of activities. My baseline personality causes me to gravitate toward some of the more "geeky" pastimes like astronomy, computers, video games, and movie watching. These days I'm making more of an effort to balance those things with other activities that are more outside my normal comfort zone like working outdoors on our property (planting trees, clearing land, etc.), financial investing, and even wine tasting.

**CM:** How does your membership impact your life plans or lifestyle?

**KD:** In the day-to-day world, not very much, truthfully. I live my life each day like everyone else. If I were perhaps going to be immortal, one might think I'd avoid silly risks like driving a car, flying in airplanes, or riding roller coasters for fear that I'd irreparably damage my body. But, of course, I still do things like this every day. The only tangible external difference about me is that I have an extra life insurance policy, wear a strange little necklace, and carry a card in my wallet with some odd medical instructions.

That said, there have been substantial changes to my way of thinking, and I'm sure these will eventually translate to choices that I wouldn't have otherwise made had I not been a member of Alcor. For instance, should I ever be diagnosed with a terminal illness, especially a brain debilitating one, I'm sure I'll take different actions than would a non-member who knows nothing about cryonics. Also, I now have plans to make an eventual career change to a field (molecular nanotechnology) that may eventually assist with either the suspension or revival process, or both, or a host of other things.

**CM:** What do your friends and family members think about your cryopreservation arrangements?

**KD:** I come from a conservative religious background and most of my family members still adhere to these types of beliefs. As such, I know my commitment to cryonics seems odd and maybe even a little sad to them. This is especially true for some of my closest family members, since this has meant a fairly drastic

shift in my way of thinking over the past several years. Thankfully though, I'm getting involved while still relatively young, and I think that over time they may grow more accepting, especially as science progresses and cryonics gains more and more acceptance in general.

**CM:** *What do you consider the most challenging aspect(s) of cryonics?*

**KD:** There are a couple for me. One of the more challenging aspects I think about is the nagging knowledge that I ultimately do not control the time or fashion under which I will end up being cryopreserved, if at all. I live in a fairly rural area, 15 to 20 minutes from the nearest hospital, so this is sometimes on my mind. As I mentioned, some of my family members have doubts about my decision because they have different beliefs. This is quite understandable, but there are times that it can cause issues.

**CM:** *Have you met a lot of other Alcor members?*

**KD:** Not yet, though I would very much like to. My family and I recently moved back to Oklahoma from Orange County, California. I had just become aware of some local organizations/meetings in the Los Angeles area as I was in the process of moving, and, of course, there are far fewer members in Oklahoma. Also, I haven't been a member that long yet! I have subscribed to certain mailing lists and frequent several websites that at least keep me informed about other members. This magazine is a welcome source of information as well.

**CM:** *What areas of Alcor's program would you like to see developed over the next 5 to 10 years?*

**KD:** I think Alcor is doing an outstanding job of proactively improving upon the service offered. The inclusion of standby services for all members is a wonderful step in the right direction. Alcor stays engaged with political and legal events that affect our goals, and Alcor advances the science of cryonics. Obviously, I want to see continued research and improvements to the cryopreservation process itself, as well as continuing research into revival; and I think Alcor is blazing the trail in these areas. If anything, I'd like to see all these efforts



*A favorite spot for Kerry and his family*

**CM:** *What kind of lasting contribution would you like to make to cryonics?*

**KD:** I'd really like to contribute in a couple of areas. First, I just want to continue to be open with friends and acquaintances about my involvement in cryonics and the reasons for it. In this way I hope to, in my own small way, make others aware of what we are about and hopefully accelerate the growing awareness and acceptance we find in the community at large. With any luck, this in turn will generate more interest in membership and add to the resources we have available to us to pursue our goals of getting better and more timely cryopreservations within the legal constraints members must deal with across various states and countries.


As a more long-term goal, I'd like to re-educate myself to begin making eventual meaningful contributions to the area of nanotechnology. To this end, I plan to start classes this fall to get a bachelor degree in physics, though this will be a long road with my current full-time job and my family! Wish me luck.

**CM:** *We certainly wish you good luck with your endeavors, Kerry! And finally, what would you like to say to other members reading this interview?*

**KD:** Well, as a fairly new member, I hope my responses hold at least a little interest for those who have been involved for longer. I really look forward to reading similar profiles in the future for other members who have been with Alcor for a longer period of time than I have to see their perspective on many of the same things.



*Kerry with his two sons*

If you are interested in being profiled for *Cryonics* magazine, let us know ([articles@alcor.org](mailto:articles@alcor.org)). 



# CEO Report

By Joseph A. Waynick

**Y**ou can help advance cryonics research. Yes, **YOU**, the reader. It is a simple matter of getting involved. Let me explain.

I did an interesting thing in the first quarter of the year. I spent months normalizing and cleaning the data that has been accumulating in Alcor's central database the last 15 years or so. When I worked for a Fortune 100 company a few years ago that is what I did for a living. I sifted through databases looking for patterns of information that could be used to improve our operation. I thought to myself, why is Alcor any different?

What I was looking for was growth patterns in the membership base. I looked at growth progression charts starting from nearly 10 years ago. What I saw was a steady average growth rate of about 8 percent per year, every year. Next I wanted to know what drove that growth. Here is what I found:

Total Members	750	
Source of members:		
Alcor Members	248	33%
Unknown	108	14%
Articles	101	13%
Internet	88	12%
Books	62	8%
Referrals	58	8%
Television	46	6%
Conferences	15	2%
eMail	7	1%
Radio	7	1%
Advertisements	2	<1%
Conventions	2	<1%
Library	2	<1%
School	2	<1%
Directory	1	<1%
Movies	1	<1%
	<u>750</u>	<u>100%</u>

Now, if we spread out the "Unknown" category proportionately amongst the known categories, we get the following data:

Total Members:	750	
Source of members:		
Alcor Members	285	38%
Articles	120	16%
Internet	105	14%
Books	75	10%
Referrals	67	9%
Television	51	7%
Conferences	15	2%
eMail	15	2%
Radio	7	1%
Advertisements	2	<1%
Conventions	2	<1%
Library	2	<1%
School	2	<1%
Directory	1	<1%
Movies	1	<1%
	<u>750</u>	<u>100%</u>

Staring at you in those columns of numbers is the "secret" to Alcor's success. It is YOU, the member. Yes, it is all about YOU. It has always been about YOU. Do YOU detect a pattern here?

Alcor has been successful largely because of the active participation of the membership. But the members are not quite as active as they have been in the past. Why? Answering that question is a bit more difficult than sifting through 15 years worth of raw data. There is a human element at work that simply cannot be distilled down to fields in a database.

What I want to do today is make participation by Alcor members simple and practical. Here are just a few ways you can help Alcor grow:

## Increase Your Knowledge

How versed are you in cryonics procedures? Can you articulately explain the concept to others? When was the last time you visited the Alcor website? If you have not been there recently, you will find a helpful link in the upper right hand corner of the home page called "What's New". Click the link and you will be taken to a page that lists all recent updates to the website. It is a

treasure trove of current and historical information. See “Alcor’s New Website” later in this issue of the magazine for more tips on utilizing the website to your advantage.

You do not have to be in love with science to talk about cryonics. However, it is helpful if you are in love with life. Enthusiasm is contagious, and if you are enthusiastic about cryonics, others will be too. Not everyone will be receptive, but if each member introduced one new person to cryonics each year, our membership would double annually. Is this a simplistic perspective? Perhaps. But look at the numbers. Thirty-eight percent of our membership comes from word of mouth alone!

## Drop Confidentiality and Talk

I have written about this one before. Secrecy hurts us. Only a well-informed and well-educated public will embrace the benefits of cryonics. Since my last discussion on this topic, some of you have actually taken the initiative to change your Cryonic Suspension Agreement. Great! Now let’s talk about cryonics in a positive and constructive way. We do not want to appear pushy, and we do not want to impose our views on others. But we certainly have many opportunities to discuss cryonics in a casual and non-threatening way with our friends, family, and acquaintances.

Do you own an Alcor T-shirt or cap? Why not? You can order one through this magazine. Just look on page 28. They are great-looking shirts that are bound to generate some curiosity. So if you are shy about initiating conversations about cryonics, then let your shirt or cap do it for you.

Members in all areas of the country are needed for on and off camera interviews for Alcor supported media events. Often, television, newspaper and magazine reporters want to talk to real members and not just staff. You can help by letting Alcor know you are agreeable to being interviewed.

## Host a CryoFeast

If we want to see exponential growth in the organization, then we need to build a sense of community. People join groups because they feel like they belong. They find some aspect of the group with which they can identify, and then they may want to make a contribution to the group.

Nothing creates that sense of community better than casual get togethers with food, drinks, socializing and good conversation. Make it a point to encourage every local member to bring at least one non-member as a guest. In this relaxed atmosphere, members can mingle and discuss cryonics with non-members without undue pressure on either party. Besides, you will have a good time!

CryoFeasts have been one of the most successful methods ever used by Alcor members to introduce non-members to the organization. Alcor is in the process of organizing a CryoFeast in every major region where large concentrations of members reside. Staff members from Alcor will attend each event, and I will be there to bring you up-to-date on the latest developments in the

organization. There will be incentives for bringing guests, lots of food, and hopefully everyone will enjoy themselves.

You can help by providing your home or other suitable location to host the event. If you are interested, then send me an eMail at [joewaynick@alcor.org](mailto:joewaynick@alcor.org) and let me know. I will send you a list of proposed dates, and we can work out the details.

## Use the DVD

Alcor recently produced a high quality, high definition DVD that educates viewers about the benefits and promise of cryonics. It is a tool you can be proud of and we intend to ensure that every membership household receives a complementary copy. Show it to your family. Show it to your friends. Show it to acquaintances. It makes a powerful argument for the science of cryonics. Lend it out (make sure you get it back!)

Talk to your local librarian. Try to get your local library to put it on their shelf. If he or she agrees, send the contact information to Jennifer Chapman at [jennifer@alcor.org](mailto:jennifer@alcor.org). We will send them a copy of the DVD for lending to others. While you are talking to your librarian, you might as well take along a copy of *Cryonics* magazine. They can get a complementary subscription for their reading room.

If concerned members convince just one librarian to accept our DVD and magazine for lending, we can have hundreds of new outlets for literature about cryonics inside of a year. And we could add hundreds more every year after that.

## Become a Volunteer

Every non-profit can always use volunteers. Alcor is no different. Do you have a skill you can use to help and/or promote the organization? For example, can you write? *Cryonics* magazine can always use interesting and relevant articles.

Volunteering is especially useful to us if you are an Arizona member. Being local, you can visit the facility and help in any number of ways. For example, Mathew Sullivan is always in need of someone to assist him with cryopreservation readiness preparation. Jerry Searcy could always use a hand as he performs tasks around the facility. Administrative skills are always appreciated. Obviously, all skills in the medical profession are strongly needed.

Just because you do not live in Arizona does not mean you cannot help! Do you have proofreading experience? You can help us keep *Cryonics* on schedule. You can organize events in your local area. You can talk to all of the librarians in your town or city to convince them to opt-in to the DVD and *Cryonics* for their lending programs.

You can join one of our regional standby and transport teams. What better way to contribute than to help save the life of fellow cryonicists? You can volunteer in ways not even listed here. If you think you have a contribution to make, contact me at [joewaynick@alcor.org](mailto:joewaynick@alcor.org).

(continued on page 18)



# How Will We *Redesign* Ourselves?

by Thomas Donaldson, Ph.D.

**N**o one here doubts that relatively soon we will have virtually complete control over the design of living things --- including human beings. And even if in some cases some people may choose virtually arbitrary redesigns for themselves, it is still a sensible question to ask about the changes we would believe to be desirable versus those that we would work hard to avoid. As human beings, our values do not differ so much from every other human being that we will all go off and change ourselves along quite different paths.

Moreover, no design, including our own, can be arbitrarily modified. Both physics and engineering will sometimes put strong controls on what we can do distinct from what we want. Even if we analyze existing life on Earth, some simple but major points show up: our main constituents are carbon, hydrogen, and oxygen (the latter two often bound in water, although each atom occurs in many biochemicals in forms other than water). Nor does formation of any of our biochemical constituents happen without any expenditure of energy: either the energy to catch other creatures containing it or the energy used to make it ourselves. Sure, biochemistry often forms chemicals in steps, rather than putting out all the energy needed at once, but the total energy required still must come from somewhere, just like the atoms composing it must also come from somewhere. Again, even if we want to redesign our brains, some have noticed that our brains use millions of times less energy than any computer. This may explain why we run on chemistry rather than electricity, even though electric charges and currents play a large role in how our brains work.

So what might really happen when we try to redesign ourselves? We are seeing it right now as we try for physical immortality. There is no explicit opposition but spotty opposition by low-level officials and politicians: nontrivial expenses just to implement the very simplest method to reach physical immortality (cryonics), and frequent doubts from many sides, often identical to previous doubts which we have already dealt with many times. Nor is our own struggle for immortality the only case of attempt at redesign going on right now. All the tales of sportsmen and sportswomen taking drugs to enhance their performance gives another example, usually far more in the news than the struggle of a still tiny group for immortality. If someone wants to run faster, what is wrong with him or her taking a drug that increases their running speed? The simple fact that it is possible for a drug to do this raises questions about the worth of a running contest itself. Presently, authorities forbid runners in contests to use any drugs to enhance their speed.

Doing so actually injures the whole idea of a contest: OK, some people were born with genetics that let them run faster than others. Others can do the same by modifying themselves artificially. Just what special value, then, does genetics have in the first place? Or the ability to run fast that it allows?

Anything close to immortality will inevitably change many things about us as human beings: how we deal with others, how and when we have children, how we think of seniority in society --- and how we think of youth, too. Just what is then meant by a career for an immortal person? How do we judge one another for our actions? The presence of aging does not just mean that we will all die of old age. It also means that we relate to other people differently depending on their age: something totally wiped out by immortality.

We would have very few children, at intervals of thousands of years. Fundamentally, just as now, we would have children to replace those who had died, but if almost no one dies then children too will become very rare and even rarer for the resources we would want to give to them<sup>1</sup>. If we use schools even for very young children, we would have to take children to another star system to find a school for them where they could play with others of their age. Schools as such might also disappear completely, as would the special life period in which most people attend them. Instead whenever we needed knowledge or new abilities, we would contact those who provide such knowledge to learn from systems they had created. Learning, of course, might well turn out inseparable from changes to our brains, and it would not take up any unique period in our lives.

Again, we would have many resources, enough that most things people want now would become free or almost free. Even places to live multiply by millions if we live in space habitats. Real estate on a planet, especially a habitable one where we could live with few or no special adaptations, would become an exception to this, and it would rise in price to match all the other things we would want. Nor do all these "free" goods mean everything: if you want a star of your own, you will

have to pay for it. It is not that everything will become free, but rather that most common things now would become free, while we would pay for many things far more extensive than even the richest person now imagines: solar systems, habitats, results of scientific advances not yet achieved (tamed black holes?). Nor would we spend our lives on one career, but we would take up many kinds of paying activities.

*It is our desires and ambitions that we will not wish to change, by redesigning or any other modification; and any contest between us will come down to them.*

Presently we have no drugs that increase intelligence, though we are coming closer and closer to that. Intelligence and experience differ, but intelligence remains an advantage in many circumstances, though hardly all<sup>2</sup>. Experience, of course, requires time and effort, and intelligence helps acquire it. Any drug that truly increased intelligence might take awhile to show itself. So just how do we regard intellectual tasks when we know that anyone, including ourselves, with the proper drugs or genetic redesign, could do them easily? One point here also needs making: many people now have jobs that do require them to use their intelligence and experience. Intelligence will still remain valuable, if anything more so than now. But if we are all essentially “geniuses”, separation of groups of scientists, engineers, and poets would become much fuzzier: I will find it much easier to understand what you are doing and vice versa. We will also see connections between widely separated ideas, with no special territorial feelings by some trying to stop that. A group of physicists working on a problem will have no reason to reject the ideas of some poet who breaks in on their discussions with a few pertinent comments.

Not only would such abilities at redesign make most current contests meaningless, but they would also raise us all to a different level entirely. As with any species, I would expect that some level of competition would persist. Yet, it would deal not with simple abilities but with desires and ambitions, for which abilities play a role but do not determine at all. It is our desires and ambitions that we will not wish to change, by redesigning or any other modification; and any contest between us will come down to them. Clearly not all individual desires and ambitions will be compatible with one another. Nor will that incompatibility necessarily remain constant. (Yes, if we both want the same physical thing, such as a planet, we have incompatible desires. But if it turns out that we want that planet for different reasons, we may each get what we want with different planets, or even different non-planetary objects. Such contests can come to different resolutions depending on the exact reason for the conflict. One party might even decide not to have that desire or ambition anymore, and win by that decision.)

A complete ability to modify ourselves implies the same kind of ability to modify others. It will, in an odd way, thus abolish crime. To some degree punishment for crimes comes from a primitive desire for revenge; it may also, however, constitute a primitive attempt to change someone’s behavior, which too many find damaging. A “medical” approach to crimes has lots of implications, not the least of which could very easily turn into a means to “cure” those who disagree with you. So with that “medical” approach would also come some process of public judgment. Imagine a jury chosen from the citizenry, not to find guilt or assess punishment, but to decide whether you are sick or not. That citizenry, of course, would consist of people all of whom would count as highly intelligent in our present society. Illness, of course, would also have become an issue of personal choice: if you really did not want to feel as you did (symptoms and all) you could cure yourself immediately, without

any special need for the help of others. Yet what if you liked how you felt and acted? So, one more issue of personal desires and ambitions would exist, which others may oppose.

Nor would such absence of crime lack other consequences: a society able to cure people from their particular desires and ambitions raises issues crossing all the questions of freedom and individual rights our politics deal with now. The simple ability to turn everyone into “good people” does not imply that it will be exercised at all. For that matter, even now we need not look hard to find lots of disagreements about what a “good person” might do and be: someday an important issue.

And finally, note that I have said nothing at all here about physical redesign. I omit that question out of a belief that we will find that no physical redesign will give us bodies optimal for


all circumstances. Duplicating our chromosomes to make us far more resistant to radiation would sometimes help, but if we live where radiation is low that duplication becomes useless and even perhaps harmful. Instead of a single redesign, these issues suggest that we will learn how to make many reversible changes to our bodies. Moreover, tools themselves, which made us the humans that we are, can be seen as such reversible changes. We can pick them up and put them down far more easily than any change to our bodies. Rather than physical redesign, most such changes might well simply use new tools. It is changes to our minds that we may choose to be our permanent changes.

#### FOOTNOTES:

<sup>1</sup> Even the desire to have children depends on availability of resources to support that child. Not only would we live almost infinite lives by current standards, but we would also have and want far more resources, for objects now out of the imagination of most people now living: our own labs or our own forests (where we can design life forms to suit). If we had a child we would want far more for that child than even the richest now imagine.

<sup>2</sup> Think of someone who must perform a boring occupation for lack of any other job. As our technology advanced, such jobs became rarer and rarer. But there was still a time when almost everyone had to work that way: farm labor with no mechanical help, digging in mines or for buildings, and almost all other tasks.

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Dr. Thomas Donaldson has a Ph.D. in mathematics and has published several long math papers, articles on both aging and cryonics, and a variety of books. He joined BACS (now ACS) in January of 1975. While living in Australia, he founded the Cryonics Association of Australia. Soon after returning to the US in 1985, he joined Alcor. In 1987, he became the center of a lawsuit to allow cryonic suspension before legal death due to a brain tumor. The suit failed, and he remains active and alive residing in Australia. 

# Cryopreservation Case Summary:

## *The Cryopreservation of Patient A-2024*

by Tanya Jones, Director of Technical Operations

**T**his patient contacted Alcor in September 2002, after reading an article on Alcor in the *Atlanta Journal*. He was already suffering from lung cancer and diabetes at the time of his application for membership the following month. Though his diabetes was under control at the time of his application, he was receiving treatment for lung cancer that included chemotherapy and medications. His membership was approved on June 6, 2003.

In October 2003, the member traveled from his home in Georgia to attend an Alcor training session held in Mayer, AZ. He learned about the stabilization protocol, the logistical arrangements that we prefer be made in advance of a case, and met some of the people who would provide for his care. Armed with the parameters of a successful cryopreservation stabilization and transport, he then went home and ensured that his family was informed of his wishes; that his personal physician would be supportive; and started corresponding with Alcor, looking for more detailed information than his brief training was able to provide. As his questions were answered, the member took care to use the information to ensure his preparations were as thorough as possible.

### **Preliminary Standby**

When a preliminary standby was launched on March 21, 2005, the patient was in relatively good condition for a 65-year old man with metastatic lung cancer. The standby was launched because he had an episode resembling a stroke that resulted in a brief hospitalization. He, his family, and Alcor personnel were all concerned about the risks of sudden death and of not having an Alcor team on site, and we felt an assessment was warranted. Five team members were deployed: Bill Voice and Tanya Jones traveled from Alcor, one from Laughlin, and two from Florida. In his first case as Transport Coordinator, Bill Voice traveled first to carry out the assessment; and it was his opinion that the team would be needed soon. Our patient was anxious and did not relax until the rest of the team arrived and could reassure him that the equipment was ready for use.

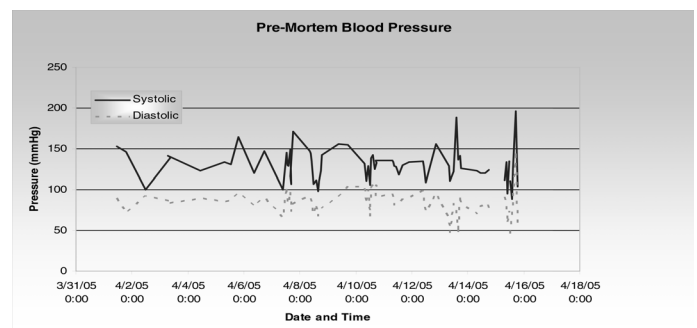
Arrangements were made for one of the Florida paramedics to carry their transport kit as baggage on her flight from Fort Lauderdale. After she boarded the plane, she was informed that there would be a delay in departure. Passengers were given the opportunity to step off the plane; she took this opportunity to use the terminal restroom and subsequently missed the flight. The Florida Coordinator made arrangements for the baggage to be

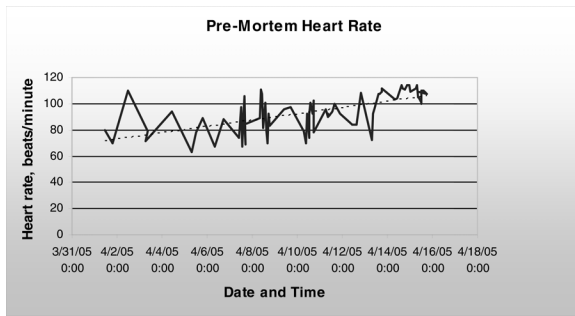
picked up by Bill and Tanya upon their arrival at the Atlanta airport. Though there was no trouble in the custody transfer of the baggage, one of the necessary kit components (ATP Support Kit) was missing. We had the ATP Support Kit delivered late the next day via Federal Express.

The patient was being cared for on the main floor of a three-story townhouse, and the team set up their equipment in the lower floor library. Preparations were made that included drawing up the medications; assembling the portable ice bath; purchasing ice; and setting up a bookshelf to hold airway supplies, temperature probes and loggers, and safety supplies. The team met with caregivers, the family and funeral directors to ensure that logistics were clear to all involved.

The on-site caregiver was not authorized to pronounce legal death, so we made alternate arrangements. A hospice nurse (and family friend) who lived nearby would be called by the caregiver on duty when the patient's heart stopped, and she would come to the house immediately to pronounce. Once pronouncement occurred, the funeral directors would be called to transport the patient from the home to the mortuary for blood washout. Though their facility was close to the home, the funeral director would only guarantee a pick-up within one hour. Our calculations indicated that this would be nearly ideal for our implementation of the preliminary portion of the stabilization protocol (surface cooling, medications, and cardiopulmonary support). A funeral director would do the femoral cut downs, and our team would be responsible for the perfusion.

After four days, it was clear the member was not in imminent danger; and we made arrangements to conclude the standby and return home. Because his remaining time was expected to be fairly short, we chose to leave the equipment and supplies in place. Before leaving, Bill and I counseled the family on agonal signs and general indications that clinical death was approaching. Starting on April 1, 2005, the family and caregivers began tracking





vitals, medications, food, fluids, urine output and bowel movements, and bathing in separate notebooks. As a result, we have an unprecedented amount of pre-mortem information for a home situation.

We also spoke to the funeral directors about a sudden death situation and what would be required of them if Alcor personnel were not on-hand at the moment of pronouncement. We left the ATP and perfusate in their care for the duration.

## Second Standby Deployment

During our absence from the state, we kept in close contact with the family and caregivers. The decision to return to Georgia was made on April 14, 2005, with the primary indicators being a change in the color of the patient's urine from tea-like to coffee, indicating kidney failure. Our patient was becoming tachycardic, and his oxygen saturation levels had dropped to 86 percent. Bill and I went out first in order to once again assess the situation. We put the other members of the transport team on alert.

After our arrival at 7:00 PM on April 15, 2005, a patient assessment yielded these results:

- Blood pressure: 105/78
- Pulse: 107
- Pulse oximetry: 87%
- Respirations: 38 / minute
- Temp: 100.7°F (axillary)
- Capillary refill: 2 seconds
- Lung sounds: crackling in all quadrants
- Physical: Weak distal pulse, no response to verbal commands, negative reflex in feet, no major discoloration or mottling, feet cool, hands warm and dry.

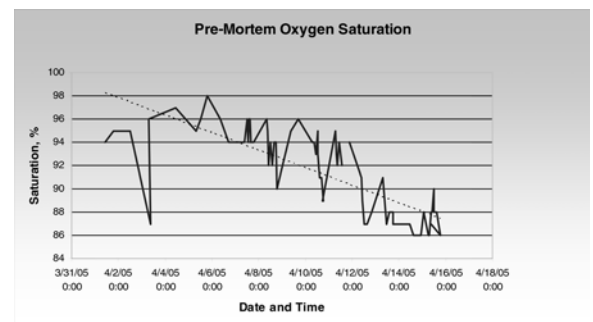
Bill and I went downstairs after spending some time with the family member and caregiver to ensure that our equipment was still ready. We checked the equipment placement, availability of ice, and coordinated the arrival of the remaining team members. Once our Florida paramedic arrived shortly after midnight, he and I began drawing the medications for administration.

## Stabilization

At about 3:15 AM (EST) on April 16, 2005, the caregiver came downstairs to alert us to an unspecified change in the

patient's condition. This was a timely alert, as by the time I arrived upstairs at 3:21, the patient's heart had stopped. His temperature (right tympanic) at the time was 101.9°F (38.83°C). The hospice nurse was called at 3:22 to pronounce, and I went downstairs to prepare the surface cooling and medications while the family waited for the nurse to arrive.

By 3:38, the patient had been pronounced, removed from the bed, and transferred to the portable ice bath downstairs. He was immediately surrounded with ice. Following the initiation of surface cooling, I placed a nasopharyngeal temperature probe (one connected to the new logging device found by Steve Van Sickle), verified its operation, and completed the medication preparation. Bill secured a Combi-tube airway (endotracheal placement) at 3:40, and the Florida paramedic began attempting to gain IV access. Numerous attempts were made by both of them to gain access to the circulatory system, using bilateral



antecubitals and wrists, the sub-clavian, and the external jugular. All failed; though at least two sticks flashed, they were unable to confirm proper placement. Ventilation and manual chest compressions were started (using the Ambu-Cardio pump), both beginning at 3:42. After a couple of minutes, good gas exchange was confirmed with the endtidal CO<sub>2</sub> detector, which registered at less than five percent.

Maalox was administered through the nasogastric tube at 4:16; epinephrine was administered through the endotracheal tube at 4:17. His temperature at the time was 32.9°C. At 4:27, the patient's temperature was 32.7°C. (These temperatures were manually recorded, using the DuaLogR display and a second nasopharyngeal temperature probe.)

## Washout

At 4:35, the funeral director arrived to transport the patient to the mortuary; compressions and ventilations were stopped at that time. By 4:42, the patient was loaded in the vehicle; and at 4:46, we arrived at the mortuary. By 4:50, the patient was unloaded; his temperature was 30.2°C. By 4:54, he was on the prep table and re-packed in ice. By 5:05, the funeral director was starting the right femoral cut down. A 14-french arterial cannula was placed. By this time, the ATP setup was complete, and circuit priming with MHP-2 washout solution had begun. At this time,

we also noted that the temperature probe had dislodged during transit; and it was replaced.

A 24-french venous cannula was placed on the right side by 5:10, and the patient's temperature was noted to be 27.4°C. By 5:20, both cut downs were complete, but we discovered that the arterial cannula did not fit the tubing connectors for perfusion. A brief search of the kit did not reveal any reducers that would work, so the funeral director was told to replace the arterial cannula with one that would fit. What he did to resolve the lack of connection was thread a venous cannula through the arterial one; and the venous cannula was then connected to the circuit. The connection should not have been completed this way, but the funeral director did not know that; and the team was unfortunately occupied with the perfusion preparation and did not notice until later troubleshooting was in progress.

De-bubbling of the circuit was started at 5:40. The washout itself was started at 5:50, and the first burst of blood escaping the patient revealed a large, fuzzy clot, an indication of the lack of medication protocol administration. The patient's temperature was 24.5°C at the start of the washout. A venous sample was taken at 5:55; the pump speed was 3.58 liters per minute.

At 6:10, we noticed bubbles in the circuit moving toward the patient's arterial intake and stopped perfusion. I isolated the source as the temperature probe port on the arterial side, and the thermocouple was removed from the port. This proved to be only one source of bubbles, of two, because there were still bubbles. After 15 minutes of investigation and tracing the circuit, I noticed the funeral director's improvisation on the arterial cannula. This was the second source of bubbles, and it was quickly fixed by having the funeral director remove the nested cannula and replace just the venous. We do not know if this introduced emboli into the patient. By 6:30, we were back on bypass.

Fixing the arterial cannula was the final problem with the washout, and by 6:35, the patient's temperature had fallen to 16.6°C. The patient looked good; and we observed his fingers and toes losing color, more clots were pushed from his circulatory system (all small), and his temperature was finally dropping at an acceptable pace.

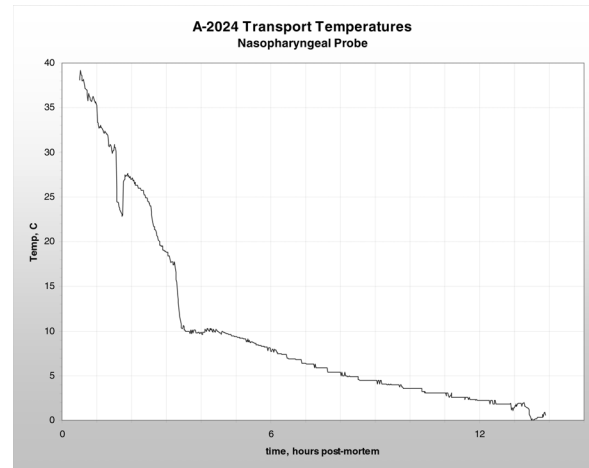
At 6:45, we began recirculation and observed signs of abdominal bleeding, despite the administration of Maalox. The patient's temperature was 10.0°C. The right side was washing out well, but the left side was notably darker in its effluent. I massaged around the incision, as our Scottsdale funeral director once recommended, and a large clot shot out. After that, the venous side cleared nicely. Perfusion was stopped at 6:50 (with the patient's temperature still at 10.0°C) due to abdominal distention and loss of perfusate volume. Transport samples were placed in the centrifuge upon delivery to Alcor and indicated hemodilution at three percent of normal.

By 7:30, the mortuary was cleaned up, the patient covered in ice, and we were preparing for shipment to Phoenix. Good cooperation was had from every person involved in this stabilization and transport. The time of pronouncement proved ideal for getting an early flight to Arizona, and we had no trouble

obtaining two seats on the plane with the patient. We landed at the Phoenix Sky Harbor airport at 12:21 (MST).

## Cryoprotection

The patient was picked up by our local funeral director and delivered to Alcor at 13:12, less than 13 hours after pronouncement. Within six minutes, he was transferred to the operating table and packed in ice. Prepping of the burr hole sites



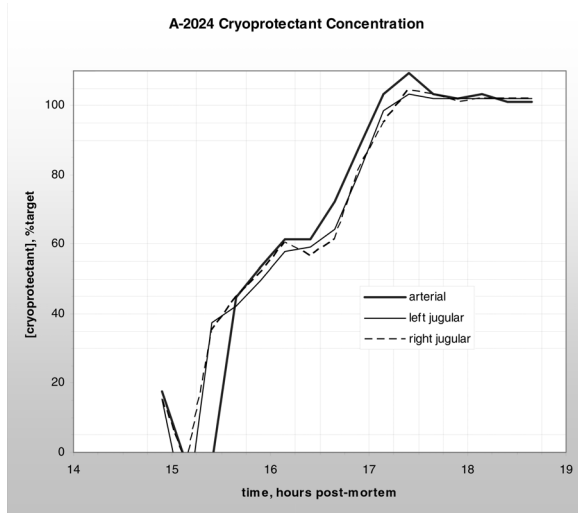
began at 13:23, with the first incision occurring at 13:27. Our new perforator was used, and the burr holes were both completed within four minutes.

As this was a neuro patient, surgery to access the neck vessels began next. The left carotid was isolated by 13:49 and the right by 13:56. Cephalic isolation was done, and the patient was transferred to the vitrification enclosure and secured for perfusion by 14:15. He was almost too large for the stabilizing ring in the enclosure, and we should consider alternate ways to accommodate larger patients, since it seems likely we will eventually get one who does not fit. At this time, the patient's temperature was 3.2°C.

Cannulation was completed within nine minutes, and perfusion was started at 14:30. Good flow rates and pressures were achieved immediately, and the effluent was noted to be clear. Within fifteen minutes, we observed retraction of the brain, indicating washout solution uptake, though slightly more in the left hemisphere than in the right. Removal of the field washout solution was completed by 14:47, and the cryoprotective ramp started moments later.

Lateral symmetry was observed during the initial portions of the cryoprotective perfusion, as measured by pressure and verified through external observation of brain retraction. Jugular flow was unusually good. During the latter part of the perfusion, the left hemisphere of the brain and the left side of the face both swelled slightly. The right side did not. Minimal foaming was seen in the circuit during perfusion, and samples were taken of the foam for analysis.

Cryoprotective perfusion continued until 19:02, at which



point the patient’s effluent had remained above the target concentration of cryoprotectant for more than an hour. Perfusion pressures and flow rates were consistently high, and the correlation between arterial and venous readings on all parameters (mainly, pressure, flow and refractive readings) was good. By 19:15, the patient had been disconnected from the circuit and removed from the enclosure for transfer to the cool down area.

## Cooling

Temperature probes were placed in the nasopharyngeal cavity and in both burr holes; we also monitored gas and ambient temperatures directly. Because this was a B2C perfusion, first-stage cool down was a plunge to  $-110^{\circ}\text{C}$  and was started at 19:38. Second stage cooling was carried out at the rate of  $1^{\circ}\text{C}/\text{hour}$  from  $-110^{\circ}$  to  $-200^{\circ}\text{C}$ , beginning at 10:06 on April 14.

Seven fracture events were recorded, with the first occurring at  $-125.6^{\circ}\text{C}$  and the last at  $-135.4^{\circ}\text{C}$ . This case was significant in that the number of acoustic events recorded was our second-lowest (Five was the lowest number recorded. A-2020, Dec 2003) and in that the temperature range across which the events occurred was unusually small.

Casting a shadow of doubt on this data, we were plagued with electrical noise of an unknown origin on this case, affecting both the antenna and the acoustic leads. The computer also crashed several times. Because we were monitoring the system for other reasons, we still had full coverage of the data.

On May 5, 2005, the patient was transferred to one of the Bigfoot dewars for long-term patient care.

## Conclusion

We had exceptional support from the family and caregivers; the patient himself went out of his way to become more familiar with the technical aspects of a cryopreservation procedure. Logistics were well-coordinated in advance, with the familiarity of the healthcare providers and family with cryonics,

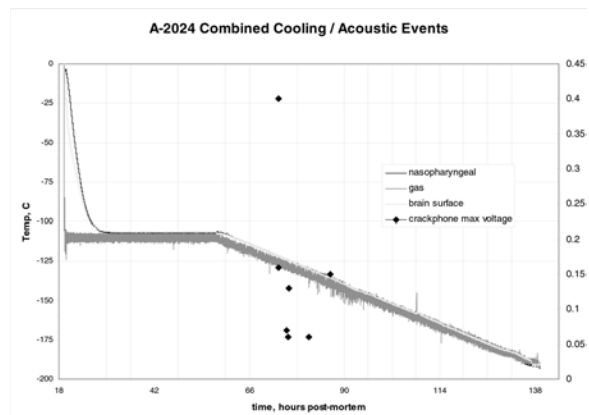
cooperation of the nearby funeral director, stabilization equipment being on-site and still ready when pronouncement occurred, and the general skill level of the transport team members. For the first application of our Comprehensive Member Standby program, we found that taking the time to deploy a team a few weeks before the patient needed our services was an invaluable preparatory tool.

The inability to obtain venous access during stabilization, even with experienced paramedics performing the sticks, is still a source of concern for us. We may have since found a solution to this problem and are investigating the use of a new intraosseous needle system that has a high success rate with under-trained personnel gaining IV access. The success rate of this new device is 97 percent, with contraindications being obesity and bone cancer; and it is able to maintain the flow rates needed for administration of even the large-volume stabilization medications. We hope that lack of IV access may no longer be a problem for our field teams, once the new equipment is deployed and personnel are trained in its use.

For this case, the patient benefited from the proximity of a cooperating funeral home and the speed with which the washout commenced. Later cryoprotection proceeded without incident, and good perfusion and bi-lateral cryoprotectant uptake were sustained throughout the entire procedure. Cooling was prompt; and the number of fracture events detected was low, covering an unusually small temperature range.

Communication between the family, medical personnel and Alcor was sustained between team deployments; and the transport team arrived in time to perform the stabilization, despite the difficulties of a remote patient assessment. Communication was critical in ensuring that the team was deployed in a timely manner. This was the first case for our new Transport Coordinator, and he responded very well to the situation. Bill was largely responsible for the quality of pre-mortem communication, as he kept in close contact with the family.

On the procedural side, we implemented our first cross-regional team exercise, in that we flew in transport personnel from one of the more remote, less-populated regions to participate in the case. We intend to continue this practice, to ensure that trained and experienced transport personnel exist in all regions.



# Alcor's



## Website

By the Alcor Website Working Group

In 1986 Eric Drexler predicted in his classic nanotechnology book, *Engines of Creation*, that one day there would be a world-wide “Network of Knowledge” in which hypertext-linked documents accessible to everyone would raise the quality of discussion about controversial subjects. In 2005, the now-ubiquitous implementation of the World Wide Web on the Internet has made most of this vision a reality. With cryonics being one of the most controversial subjects there is, we saw an obvious need for high quality information on the Web.

Alcor's new website is now almost two years old, having first gone live at the end of September 2003. At that time, the need for a new website was urgent. Alcor had been severely maligned in the press after a popular magazine sensationalized cryonics procedures, and the first grumblings of possible legislative action began to appear. Misinformation about cryonics was rampant and contagious. The information on the small existing website was inadequate.

Brian Wowk, David Brandt-Erichsen, Stephen Van Sickle, and Kevin Brown volunteered to take over an effort that began some months earlier with Charles Platt and a graphic design created by Bobby June. There was a need to improve explanations and expand content quickly. Alcor management agreed to allow the “Website Working Group” (WWG) maximum autonomy for the sake of speed. The new site went up within two weeks of starting work.

Much more material was added in the months that followed. Some of the most important contributions of 2004, especially photographic contributions, were made by Charles Platt supported by funding generously provided by the Life Extension Foundation. By May 2005, the site contained approximately 100 megabytes of material comprising more than 500 web pages.

### Expanding the Library

To expand the online Library, an electronic archive of *Cryonics* magazine covering 1981 to 1992 was drawn on heavily. This time period was in many respects a golden age of Alcor

communications. *Cryonics* magazine was published monthly, supported by the prolific writing of Mike Darwin and other contributors including Drs. Steven Harris, Thomas Donaldson, and Mike Perry. Alcor collaborated with Cryovita laboratories in an aggressive research program led by UCLA cardiothoracic researcher Jerry Leaf and Mike Darwin and a small corps of volunteers. Alcor's membership expanded ten-fold within a decade. This era ended with the cryopreservation of Jerry Leaf after a heart attack in 1991 and the departure of Mike Darwin to start his own cryonics research and service company in 1992. However a rich legacy of writing from this era has now been “immortalized” on the website thanks to an electronic archive of magazine text compiled by Brian Shock in 1993.

### Frequently Asked Question (FAQ)

The FAQ was extensively revised and expanded to answer more than 70 common questions in seven different categories.

### Scientific Defense of Cryonics

The new site contains an unprecedented compilation of scientific argument and evidence supporting cryonics. The site Library begins with a large section on the “Scientific Basis of Cryonics,” with subsections covering cerebral ischemia (what happens to the brain when blood circulation stops), cryobiology, and repair and resuscitation technologies. There are PubMed links to scientific journal articles supporting cryonics and seminal papers and presentations showing the quality of brain preservation achievable with modern methods.

There is also a new “FAQ for Scientists” that is accessible from the always-visible main menu bar. This FAQ presents the scientific issues of cryonics in an organized and compact form with links to numerous supporting documents.

### Debunking Myths

The “Cryonics Myths” section was first created in 2002 but was expanded and improved for the new version of the website. The purpose of the section is to address the nine most frequently recycled myths and distortions that appear in the popular media about cryonics. The two most common misconceptions, that cryonics freezes people and that cryonics seeks to recover dead people, are featured prominently.

### Cryonics and Religion

The topic of religion is dealt with early and often, starting with the home page. There are also dedicated sections in the FAQ and Library concerning religion. It is emphasized that cryonics is a type of medicine intended to save lives by preventing death. From a religious standpoint, cryonics is a long coma, the outcome of which will not be known until mature nanomedicine is available.

There is a cultural dividing line between life and death. On one side of that line there is medicine. On the other side of that line there are spiritual beliefs about the dead. Decades of experience have shown that cryonics is only spiritually comprehensible if kept on the “life” side of that line. The website seeks to clarify that point, as should all cryonics communications. That is hard to do in a primitive culture that still labels cryonics patients as “dead”, but it is essential for cryonics to be understood.

## **Problems of Cryonics**

In 2004 a special Problems Associated with Cryonics page was added and featured prominently in the main menu. Since much of the website discusses cryonics in terms of theoretical ideals, the purpose of this page is to disclose the gulf that still exists between what is ideal and what currently exists. The page has received wide praise for its frankness and honesty. It is a page that every Alcor member should read.

## **The Photo Gallery**

The Photo Gallery is the most popular page on the site. It is visited by thousands of people every month. It includes sections on Procedures, Equipment, and People. The Website Working Group is indebted to Charles Platt for his excellent photographic work on these pages. Charles also took the photos that comprise the Media Photography Resource Page described below.

## **News Media Page**

To make it easier for news media to deal with Alcor, there is a News Media page accessible from the main menu. This is the equivalent of a “Press Room” seen on other company websites, although there are also items of popular interest on Alcor’s media page. Any current Alcor press releases are placed directly on the page. There is also a link to an archive of past press releases. The Media Photography Resource link leads to a page of high resolution photographs available for immediate download and reproduction by permission. There is also a page of links to past positive or balanced stories in the press about Alcor.

## **Procedure and Training Documentation**

For the incredible to be credible, it must be open to examination. The new site contains a detailed lay-level explanation of cryonics procedures accessible from the main menu. The site Library also contains a Procedure and Training Manuals section for the purpose of documenting Alcor procedures on a technical level. It should also ideally be a reference resource to Alcor field personnel and technical advisors. At present the section is mostly an archive of past procedure documentation. It is hoped that complete documentation for current procedures will also be included when it becomes available.

## **Case Reports**

In keeping with the theme of openness about Alcor procedures, the Case Reports section of the Library contains a growing archive of past case reports and summaries. The goal is to eventually document every case that Alcor does in complete scientific detail on the website rather than just in binders on a shelf.

## **Contracts and Membership Information**

All contracts and other documentation required for membership were posted as unalterable PDF files in the Library. Important ancillary documents, such as Relative’s Affidavits and Religious Objection to Autopsy, are also available for download and printing.

## **Links**

The Links page features 80 other sites of interest, including educational cryobiology sites, sites about brain resuscitation, nanomedicine, and of course cryonics. There is even a humor section.

## **Contact Forms and Tour Reservations**

The sites has forms for sending inquiries or requests for information packages. Recently an online tour reservation system was also added so members of the public can schedule themselves for a tour of the Alcor facility.

## **Results**

In the past year, the number of distinct computers visiting the Alcor website every month has doubled from approximately 11,000 to 22,000. The site is also popular among other websites. Alcor’s site has a Google PageRank of 6 out of 10. PageRank is a measure of the number of links to a website from other popular websites. To put Alcor’s number in perspective, the government website for the entire city of Phoenix (<http://phoenix.gov/>) has a PageRank only one notch higher.

PageRank is used by Google as an implicit measure of credibility to order search results. Alcor’s high rank has some interesting consequences. For instance, Alcor’s site is the number one Google hit for the major medical topic “cerebral ischemic injury” because Alcor hosts a copy of a review article on that topic written by Mike Darwin in 1995. On a less serious note, Alcor is the number two hit for the search term “He’s dead, Jim.”

Server access logs show that virtually every week there is a new blog discussion about cryonics somewhere on the Internet that points to the Alcor site to support discussion points. Surprisingly, most of these discussions occur among the general public without instigation by known cryonics activists. Cryonicists who do get involved in online discussions about cryonics would



do well to familiarize themselves with the resources available on the Alcor site to support their arguments.

One of the most gratifying results of the website has been the appearance of a number of good reference articles about cryonics, such as the one at <http://www.howstuffworks.com>. As accurate information begins to spread among respected online sources, it should become harder for critics to make outrageous assertions (such as "cells burst") and remain credible. If this does not raise the quality of discussion about cryonics, perhaps at least agendas will be exposed.

## What to Put In, and What to Leave Out

When Alcor's Website Working Group took responsibility for upgrades in the second half of 2003, everyone agreed that something needed to be done, but no one was very clear about how to do it. Should the site be purely informative about cryonics, or should it promote Alcor in particular? Should it be large, with many departments, or small and simple? Should it be technical or nontechnical? Should it be heavily designed, with Flash animations, or should it minimize the use of graphics?

The site had been hosted by a company which required its clients to upgrade their pages using only a very limited range of software, which created highly inefficient and sometimes malfunctioning code. The first step was to move the site to Pair Networks, a very large but affordable hosting service that uses Unix servers. Kevin Brown, a computer scientist and long-time Alcor member who had worked previously at Bell Labs, completely reworked the site so that it was efficient, redundant, and secure. He did not change any of the content, however. The other members of the WWG inherited that challenge.

Almost immediately the WWG agreed that the site should have more technical information. We did not believe it would be in Alcor's interests to present a picture of cryonics that was excessively simplified. Since one of the most persistent challenges to cryonics has been that it is "unscientific," we were determined to present as much evidence as possible, as seriously as possible.

After a financial contribution by the Life Extension Foundation toward website upgrades, we embarked on another initiative which we felt was overdue: Presenting a more intimate picture of Alcor to the public. We created the "Alcor at Work" section, depicting employees in their everyday surroundings. This quickly became one of the most frequently viewed areas of the site.

A more controversial question was whether to include pictures of procedures in the operating room. Ultimately we chose a limited range of photographs that were sufficient to show that Alcor is serious about its surgical protocol.

As a 501(c)(3) nonprofit, tax-exempt foundation, Alcor has a legal obligation to inform and educate the public, and the website clearly must serve this purpose. The WWG expanded the "Library" section of the site and completely rewrote the "FAQ" with many more questions and longer answers. Frequently we receive messages from students and others who

## The Website Working Group

The four volunteers who comprise the Alcor Website Working Group have enjoyed a productive and friendly collaboration as well as a functional division of labor. Brian Wowk has been the primary content organizer, Kevin Brown has been the site designer and technical guru, David Brandt-Erichsen has been creating and maintaining the individual pages, and Steve Van Sickle has been (until recently) the liaison between the Website Group and the Alcor Board. Together, the group has donated many hundreds of hours of volunteer time to this project.

are using the site for general information about cryonics. While the site also serves the more specific purpose of promoting Alcor to the public, we believe that it is equally important to discuss cryonics generally, eliminating as many misconceptions as possible.

In 2004 we were told that our upgrades had achieved at least one dramatic result: A visitor to Alcor signed up for cryopreservation with cash in advance, after learning about the organization almost exclusively from the website. This was welcome news yet prompted us to pause and consider the potential implications. If Alcor's web presence was going to be the primary factor in some people's decision to sign up, we had an obvious obligation to make sure that our depiction of Alcor was fair and balanced. Just as a home owner must itemize any possible defects in a house before selling it and a publicly traded company must disclose any potential downside in a stock offering, we felt that Alcor should inform potential members of the significant challenges which face cryonics organizations. These considerations led us to create the "Problems" section of our site, which we feel is important not only to balance the overall picture but to demonstrate our commitment to openness and honesty.

Overall we believe our upgrades have been very successful and probably were a significant source of information for Arizona legislators whose understanding of Alcor had been based mostly on sensationalized news reports. All the most significant upgrades to the site were completed in 2004, leaving us with the less exciting but necessary task of ongoing maintenance, while we continue adding to the archival materials whenever time permits. There has never been a moment when members of the WWG formally considered the question, "Should it be large, with many departments, or small and simple?" Our answer has become implicitly obvious. We have seldom missed any opportunity to add more content. Cryonics is such a diverse field and has been so poorly documented over the years, the WWG was happy to take the opportunity to create a multipurpose informational resource.

# Recommended Reading

The following recommendations presume familiarity with cryonics. To learn the basic ideas, readers might start with the "About Cryonics" page and "FAQs" (Frequently Asked Questions) page.

## Problems

Cryonicists, being optimists by nature, sometimes find it easy to forget the many real problems and obstacles to cryonics as practiced today. Cryonics is very, very hard to do well. The Problems page is a reminder of the many practical difficulties and problems faced by cryonics.

## The Library

The Library was created with the dual intent of providing an accessible repository of writing, yet of such depth that a sufficiently-interested person could get absorbed in it for days. The Library contains a small selection of clickable recommended writings in the form of a bookshelf at the top. However someone already familiar with cryonics might do better to choose their own articles of interest within sections created to cover technical, legal, historical, or even theological aspects of cryonics. The Library also contains links to a growing number of non-fiction and fiction books related to cryonics that are available free in their entirety online.

## A Door to the Future

This is not actually a document on the Alcor site but a link featured in the Scientific Basis of Cryonics section of the Library. This is Chapter 9 of Eric Drexler's 1986 nanotechnology book, "*Engines of Creation*". It is a well-written classic exposition of cryonics ("biostasis"), with an excellent section entitled, "Reactions and Arguments."

## Cryonics Summary for Medical Professionals

This is one of the first items in the Scientific Basis of Cryonics section of the Library. On the document itself, it is entitled, "The Biology of Cryonics." This document is intended as a summary of cryonics for physicians or other health professionals you must deal with. There are instructions at the top for printing it out as a PDF document that can be folded in a pamphlet. Even if you do not read it, know that it is there.

## Neuropreservation FAQ

The Neuropreservation FAQ is one of the recommended readings at the top of the Library. It covers aspects of neuropreservation that are not well understood even by many cryonicists, such as whether cloning or transplants will be needed to restore neuropatients (neither will).

## What is Vitrification?

This is an elementary graphical explanation of how vitrification differs from freezing. It is located in the Cryobiology subsection of the Scientific Basis of Cryonics section of the Library. For anyone unfamiliar with

vitrification, this is a very simple explanation.

## Christianity and Cryonics

This is a recommended reading item at the top of the Library. Even Alcor members who are not Christians can benefit from a better understanding of how cryonics fits in with religious beliefs. The key is understanding cryonics as an attempt to preserve life and prevent death, not to reverse death.

## The Ethical Basis of Cryonics

This is a Library section containing some good essays on why cryonics is not only ethical but very much the right thing to do.

## Cryonics: Essays and Monographs section of the Library

The Cryonics: Essays and Monographs section contains some of the finest writing from back issues of *Cryonics* magazine. There are essays on philosophical issues related to cryonics and other essays that, for want of a better term, could be called "inspirational." There is also an elaborate semi-fictional resuscitation scenario.

The Essays and Monographs section also contains a link to the *Cryonics* Magazine Archives beginning with the merger of IABS (the Indiana-based Institute for Advanced Biological Studies) with Alcor in 1981. For anyone who wants to learn the in-depth history of Alcor, especially Alcor's medical approach to cryonics, there is no substitute for reading old issues of *Cryonics*.



New editions of *Cryonics* will be added with a one year latency to encourage print subscriptions. Unfortunately electronic records of 1993 to 2000 issues have been lost.

## Science Readings


Anyone interested in discussing cryonics with technical-minded people should familiarize themselves with the basic papers and technical essays available to support cryonics. Some of these documents are:

- New York Academy of Sciences Paper
- FAQ for Scientists
- Alcor Presentation at Cambridge University (2003)
- Effect of Human Cryopreservation Protocol on the Ultrastructure of the Canine Brain
- Medical Time Travel

- 24<sup>th</sup> Century Medicine
- Cardiopulmonary Support in Cryonics
- Molecular Repair of the Brain
- “Realistic” Scenario for Nanotechnological Repair of the Frozen Human Brain
- List of Published Papers

All these items are available in the Scientific Basis of Cryonics section of the Library, with the exception of the FAQ for Scientists, which is a main menu item.

## What's New

New material is added to the site frequently. Check the “What's New” page periodically to see new items of interest. You can find a link to What's New in the upper right hand corner of Alcor's home page. 

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## CEO Report

*(continued from page 7)*


### Make a Pledge

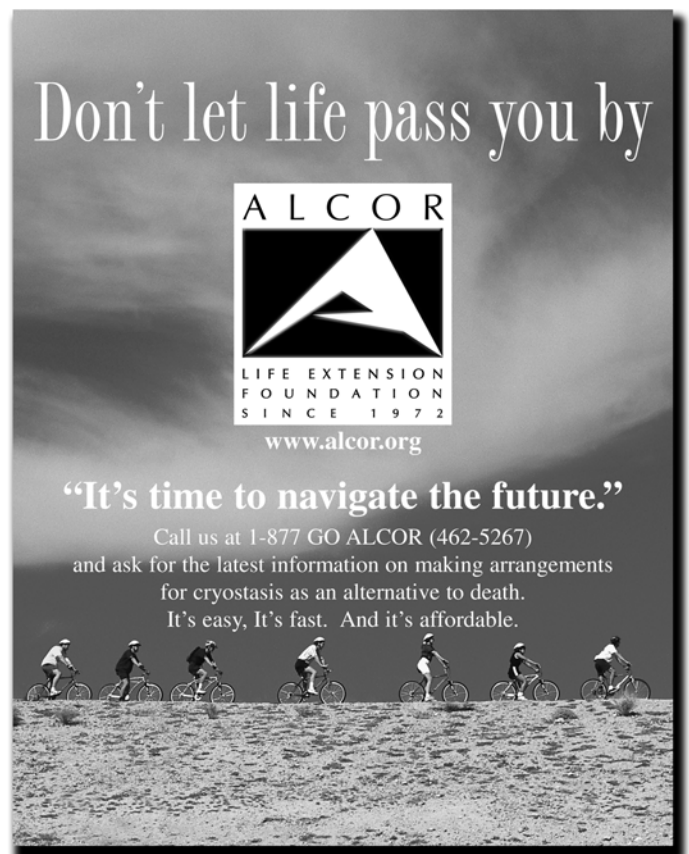
Finally, if you cannot donate your time, then consider donating money. (See the next page for our pledge form). Although labor is always in short supply, financial resources are always in shorter supply. The Alcor Endowment Fund is being designed to provide ongoing and more importantly a GROWING revenue stream to the organization. Donating to the Endowment Fund is one of the most important things you can do to help the organization.

Alcor does not have the benefit of large government grants, private foundations, or a huge fundraising organization to raise the millions of dollars necessary to develop much-needed technology and protocol enhancements. What we do have are loyal, dedicated members like you who have a personal interest in the success of cryonics. Your tax-deductible contribution will help ensure the future success of Alcor and the possible preservation of individual lives.

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Alcor is your organization. Its success is primarily dependent on YOU. You can help Alcor remain the world leader in cryonics by getting involved. Increase your knowledge. Drop confidentiality demands and talk about cryonics to your friends, family and acquaintances. Do a public interview for an Alcor-supported media event. Host a CryoFeast or other social event. Use the DVD as a recruiting tool. Become an Alcor volunteer or make a pledge. Let your talents be known! Send me a message and tell me what you want to do.

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In April 2005, Mark Roth and collaborators from the Fred Hutchinson Cancer Research Center in Seattle published a paper in *Science* showing induction of a reduced metabolic state in mice using hydrogen sulfide gas. The paper was widely hailed as a suspended animation breakthrough.

Hydrogen sulfide ( $H_2S$ ) was used to inhibit the energy producing enzyme cytochrome oxidase. With energy production inhibited, the temperature of the mice cooled to closely match their environment. They were allowed to ultimately cool from  $+37^\circ C$  to  $+11^\circ C$ , achieving a metabolic reduction of 90 percent. When the gas exposure was ended after six hours, they naturally recovered normal body temperature and metabolism with no ill effects.

The thinking behind the experiment was revealed in more detail in an article in June 2005 in *Scientific American*. Roth's lab found that several different animals ranging from nematodes to frogs are able to enter suspended animation-like states for up to 24 hours when deprived of oxygen. However the degree of oxygen deprivation must be near complete (anoxia, not hypoxia). There is a crucial low oxygen concentration above which damage occurs. They theorized that if cell energy production was inhibited in mice by  $H_2S$ , cells would act like they had no oxygen, thereby triggering the same suspended animation adaptation seen in other animals.

$H_2S$  has several qualities that would make it an ideal drug for inducing suspended animation. For one, it is a small, highly penetrating molecule that quickly goes everywhere in the body. For another, in water it exists in equilibrium with sulfide and hydrogen sulfide ions. This means that it can be administered to an animal either as a gas or injected as a buffered sulfide salt. Intravenous administration is actually preferable to gas administration because the acidic gas is chronically irritating to eyes, lungs, and mucus membranes.

But is hydrogen sulfide the secret to suspended animation? We can begin by asking why hydrogen sulfide is generally regarded as toxic to humans. Hydrogen sulfide kills precisely because it disables cell energy production. In fact it inhibits the same energy-producing enzyme as cyanide. If humans suddenly have this enzyme strongly inhibited at normal body temperature, the results are fatal. For  $H_2S$  to succeed at inducing suspended animation in large animals, the induction would presumably have to be gradual over a period of many hours to allow time for cooling, or cooling would have to be accelerated by cooling blood with a heart lung machine.

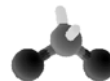
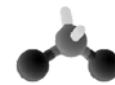
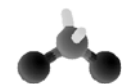
In fact, cooling by heart lung machine is presently used to achieve "suspended animation" in clinical medicine. Certain surgical procedures can only be done by stopping blood circulation in patients, sometimes for up to one hour. This is done by cooling the patient to temperatures near  $+18^\circ C$  before stopping blood circulation. At this reduced temperature, metabolic rates are greatly reduced. This permits one hour of circulatory arrest to have the same effect on the brain as five minutes of clinical death at ordinary body temperature.

Therein lies the greatest deficiency of the  $H_2S$  suspended

# Is HYDROGEN SULFIDE


## the Secret to Suspended Animation?

By Brian Wowk, Ph.D.



animation results presented so far. Reports of this work have not included consideration of the effect of cold on metabolism. For example, the article in *Scientific American* suggests that experiments in which dogs have their hearts stopped for one hour succeed because the blood is replaced with solutions that carry less oxygen. In fact, such experiments can be done without reducing the oxygen carrying capacity of the blood. They work because cold reduces the need for oxygen. In the *Science* paper, mice were allowed to cool to a temperature at which cold is known to reduce metabolic needs by approximately a factor of ten. It is therefore difficult to say whether the  $H_2S$  facilitated survival of the reduced metabolic state or whether the  $H_2S$  merely induced a hypothermic state that could have been survived without the  $H_2S$  if hypothermia was induced by other means. The inclusion of control animals cooled to  $+11^\circ C$  without  $H_2S$  for a similar length of time would have been instructive.

There are reasons to question the hypothesis that total deprivation of oxygen can facilitate suspended animation in mammals. For example, dogs can survive two to three hours of circulatory arrest near  $0^\circ C$ . Yet they survive twice that long at the same cold temperature if oxygenated blood substitute is slowly circulated through them. The importance of providing nutrients for supporting metabolism in the hypothermic state is widely appreciated in the organ preservation field. Even the mice in the *Science* paper were allowed to continue breathing and using oxygen during the experiment.

Still, it is possible that the reason anoxic suspended animation apparently does not work in mammals is that there is too much residual oxygen in tissues, generating a deadly hypoxic rather than protective anoxic state. If so, then the hypothesis of the Fred Hutchinson team that hydrogen sulfide can stifle harmful effects of residual oxygen may be valid. Further experiments that control for the natural protective effect of cold must be done. Experiments showing preservation of organs or whole animals for longer periods of time than previously achieved at a given temperature are required. The key unanswered question is whether hydrogen sulfide actually reduces the energy needed for survival at a given temperature versus merely reducing energy production. 

**Mice Put in “Suspended Animation.”** Mice have been placed in a state of near suspended animation, raising the possibility that hibernation could one day be induced in humans. In addition to its possible use in space travel, the ability to induce a hibernation-like state could have widespread uses in medicine. A US team from Seattle reports its findings in *Science* magazine. The researchers from the University of Washington and the Fred Hutchinson Cancer Research Center in Seattle put the mice in a chamber filled with air laced with 80 parts per million (ppm) of hydrogen sulphide (H<sub>2</sub>S) – the malodorous gas that gives rotten eggs their stink. Hydrogen sulphide can be deadly in high concentrations. But it is also produced normally in humans and animals and is believed to help regulate body temperature and metabolic activity. After six hours of exposure to the mixture, the mice were given fresh air. Their metabolic rate and core body temperature returned to normal, and tests showed they had suffered no ill effects. 4/21/05 BBC News <http://news.bbc.co.uk/1/hi/sci/tech/4469793.stm>

**Low Calories Tied to Long Life.** The latest analysis of data from a large group of O’ahu men of Japanese ancestry has provided the first reliable indication that a reduced-calorie diet – between 1,700 and 2,000 calories daily – promotes longevity, researchers say. That conclusion is drawn from studying data drawn 36 years ago from 1,915 men, a select group among the total of about 8,000 recruited for the Honolulu Heart Program study. The men were nonsmokers and had no other diseases, said Dr. Bradley Willcox of the Pacific Health Research Institute, who headed the team researching the longevity data. And although some of the men might have changed their diet somewhat over the years, researchers said the effect of reduced calories was pronounced enough to be counted as a factor in long life. 8/21/04 [honoluluadvertiser.com http://the.honoluluadvertiser.com/article/2004/Aug/21/ln/ln11a.html](http://the.honoluluadvertiser.com/article/2004/Aug/21/ln/ln11a.html)

**Modified Mice Enjoy One-Fifth More Life.** A mouse with the ability to mop up free radicals at the cellular level – and live longer as a result – has been created by scientists. The research is a boost for the free radical theory of aging. This proposes that reactive oxygen species damage cells and tissues, leading to declining health and, eventually, death. “We hope that in future years, this knowledge can be applied to deliver similar benefits to humans,” says lead researcher Peter Rabinovitch, a pathologist working on aging at the University of Washington, Seattle, US. The results may also encourage those on the fringes of mainstream research who long for immortality. The transgenic mice Rabinovitch’s team created produce higher-than-normal levels of the antioxidant enzyme catalase. Cells use catalase to convert

damaging hydrogen peroxide to harmless water and molecular oxygen, but the enzyme is usually found only in the cytoplasm of cells. 5/5/05 *NewScientist.com* <http://www.newscientist.com/article.ns?id=dn7347>

**Angry Heart Flutters Prove Most Dangerous.** The surge of adrenalin from an argument might trigger deadly heart flutters. To explore how feelings affect heartbeats, Matthew Stopper of the Yale University School of Medicine in New Haven, Connecticut, and his colleagues asked 24 patients with implanted defibrillator devices to keep a diary of their emotions. The patients all had conditions that can disrupt electrical signals to the heart, causing an unhealthy quivering of the muscles which can lead to a cardiac arrest. The researchers found that in 100% of cases where people reported anger levels above 2 on a scale of 1 to 5, the arrhythmias were initiated by a series of rapid, premature heart contractions. This type of contraction is known to put an individual at greater risk of sudden arrest. In contrast, only 68% of arrhythmias not preceded by angry feeling had this characteristic. 5/5/05 *news@nature.com* <http://www.nature.com/news/2005/050502/full/050502-6.html>

**UN General Assembly Votes to Ban All Forms of Human Cloning.** The United Nations General Assembly March 8 approved a non-binding declaration calling on all UN Member States to ban all forms of human cloning, including cloning for medical treatment, as “incompatible with human dignity and the protection of human life.” The vote was 84 in Favor, 34 Against, and 37 Abstentions, with 36 Absent. But some delegates said they opposed banning therapeutic cloning. South Africa, which abstained, said it understood therapeutic cloning to be aimed at protecting human life and not to be, therefore, inconsistent with the Declaration. The United States, which voted for the Declaration, said its Government’s position remained the same as it had recently expressed. Some other countries, including the United Kingdom, the Russian Federation, France, and India, regretted that there had been no consensus on banning reproductive cloning since they might want to keep their options open on therapeutic cloning. 3/8/05 UN News Centre <http://www0.un.org/apps/news/story.asp?NewsID=13576&Cr=cloning&Cr1>

**Champion Endurance Horse Cloned.** Pieraz-Cryozootech-Stallion is described as healthy and vibrant. The birth of the world’s second horse clone has been announced by scientists. The foal is a copy of a world endurance champion, Pieraz, an animal that has been castrated and was therefore incapable of normal reproduction. The research was undertaken by genetic engineering labs Cryozootech of Evry, France, and LTR-CIZ of

Cremona, Italy, where the foal is being kept. The world's first horse clone, Prometea, was produced by the same group of researchers in 2003. The new clone, Pieraz-Cryozootech-Stallion, was born on 25 February, weighing 42kg. In two or three years, the cloned foal can be used as a stallion. He will not be used for competition himself but will instead make his living siring new generations of horses. 4/14/05 BBC News <http://news.bbc.co.uk/1/hi/sci/tech/4443881.stm>

**DNA Family Tree Project.** Ever wondered where your family's ancestors roamed 60,000 years ago? Now you can find out by participating in the world's most ambitious project tracing the genetic and migratory history of the human race. Members of the general public from all over the world can supply their DNA to the Genographic Project, and scientists at The University of Arizona in Tucson will do the genetic analysis. The public DNA sampling is part of a larger undertaking to unravel the origins and migratory history of mankind thousands of years back in time by analyzing genetic samples from at least 200,000 people all over the world. 4/16/05 *Science Daily* <http://www.sciencedaily.com/releases/2005/04/050415204512.htm>


**Nanotech Promise for Global Poor.** Soon, health workers should be able to test a drop of blood on a coin-sized piece of plastic. A full diagnostic examination could be returned within minutes, using developments in nanotech. It would negate the need for time-consuming and costly separate tests and analyses for infectious diseases such as malaria and HIV/Aids. New nano-structured materials are also being used to build the next generation of solar cells and hydrogen fuel cells. Nanotechnologies are being used to develop ways of storing hydrogen, which has been a problem. Suitable hydrogen storage systems would mean cleaner, alternative energy could be delivered to countries still reliant on non-renewable fossil fuels. Other anticipated applications of nanotech, which should be especially significant for the world's poor, include agricultural productivity enhancement, water treatment and remediation, drug delivery systems, food processing and storage, air pollution remediation, construction, and vector and pest detection and control. 4/11/05 BBC News <http://news.bbc.co.uk/1/hi/sci/tech/4421867.stm>

**Supercomputing Power Made Real.** The fastest computer in the world now is an IBM Blue Gene system. It recently smashed its own record, clocking up 135.5 teraflops – 135.5 trillion calculations a second. According to Professor Bill Pulleyblank, who was the project leader of Blue Gene, within two years petaflop speeds will be reached – a thousand trillion calculations a second. There are hundreds of supercomputers across the world, working out highly complex problems across science and society. They are doing worthy jobs such as climate prediction, tsunami prediction, and working out the structures of proteins to improve medicines. Professor Pulleyblank has been charged with heading up IBM's new Center for Business Optimization (CBO) to bring supercomputing out of the labs. It is in the world of healthcare,

thinks Pulleyblank, where supercomputing power combined with databases of information could really have an impact in the coming years. For instance, doctors could manipulate very sophisticated, real-time 3D images of a person's heart generated from a CAT scan. This would allow a doctor to simulate surgery techniques. 4/17/05 BBC News <http://news.bbc.co.uk/1/hi/sci/tech/4315859.stm>

**Bending Nanotubes As Mechanical Quantum Bits.** Before the advent of electricity, the first computers were mechanical. Now advanced quantum computers might go back to mechanical roots, using rows of nanometer-scale bars as moving parts. In theory, because quantum bits, or "qubits," can exist in both an on and an off state simultaneously, a quantum computer with just 300 qubits can run more calculations in an instant than there are atoms in the universe. Existing methods to create qubits, however, are highly delicate; at best, researchers have managed to "entangle," or connect up, only a few qubits to form simple logic operations. A mechanical quantum computer would place molecular bars 10 to 30 nanometers long in rows spaced about 10 nanometers apart. Each bar would bear a charge, so that together their electric fields entangle their behavior, enabling the qubits to act in concert. The potential advantage of a mechanical system over an electronic system is that its qubits might intrinsically lose energy more slowly and thus remain in superposition longer, enabling them to perform more useful, complex calculations. 4/18/05 *sciam.com* <http://www.sciam.com/article.cfm?chanID=sa004&articleID=0002B13B-3848-1237-B62883414B7F0000&ref=nature>

**Stem Cells Tailored to Patients.** South Korean scientists say they have made stem cells tailored to match the individual for the first time. Each of the 11 new stem cell lines that they made was created by taking genetic material from the patient and putting it into a donated egg. The resultant cells were a perfect match for the individual and could mean treatments for diseases like diabetes without problems of rejection. The study, published in *Science*, has been hailed as a major advance. 5/20/05 BBC News <http://news.bbc.co.uk/1/hi/health/4555023.stm>

**Wormhole "No Use" for Time Travel.** For budding time travelers, the future (or should that be the past?) is starting to look bleak. Hypothetical tunnels called wormholes once looked like the best bet for constructing a real time machine. These cosmic shortcuts, which link one point in the Universe to another, are favored by science fiction writers as a means both of explaining time travel and of circumventing the limitations imposed by the speed of light. The concept of wormholes will be familiar to anyone who has watched the TV programs *Farscape*, *Stargate SG1* and *Star Trek: Deep Space Nine*. But the idea of building these so-called traversable wormholes is looking increasingly shaky, according to two new scientific analyses. 5/23/05 BBC News <http://news.bbc.co.uk/1/hi/sci/tech/4564477.stm> 

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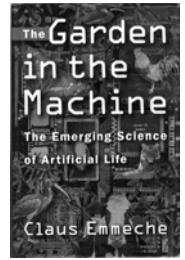
*Florida, Arizona, Texas, Canada,  
New York, & the United Kingdom*



# The Garden in the Machine: The Emerging Science of Artificial Life

By Claus Emmeche, trans. S. Sampson (Princeton U. Press, Princeton, NJ, 1994)

Book Review by Thomas Donaldson, Ph.D.



**T**his book tells about the idea of artificial life and just what it may mean. What is artificial life? It is basically life implemented inside one or several (parallel) computers. I personally have doubts about just how useful such a broad definition of life may be; the critical point about life is that it acts in the real world, not a simulated world. It is not even that I doubt the possibility of computer life forms: a computer virus is a primitive life form living in real computers.

Regardless, Emmeche defines "life" so broadly that simulated life "living" in a simulated world counts by his definition. The problems raised by the simulated worlds are not trivial at all: if we wish to draw conclusions about the actual behavior and evolution of life forms, having them only live in a simulated world omits almost all factors bearing on behavior and evolution of a real life form. Some cryonicists seem to believe in the merits of this kind of artificial life and actually hope to someday become such a creature in a suitable artificial world. It is not that anyone thinks such creatures or worlds will soon become real, but with cryonics we do not need our advances to come soon. We can wait in cryonic suspension until they occur. Yet to surround yourself completely with an artificial world remains no more than a way to spend the rest of your life gazing at your navel.

Still, as a means to learn about real life forms, computer simulations have lots of usefulness. Biologists and biochemists have run into one problem: the behavior of life forms, and even the behavior of biochemicals inside our body, work in a far more complex way than, say, gravitation in our Solar System or even electrical circuits. We can usually easily describe behavior due to mass, force, and gravity. Yet even our brains use not merely one transmission method (electrical currents) but a wide variety of chemical transmitters, plus electricity too.

Computer simulations help us understand such complex systems. The early part of Emmeche's book gives a good account of this work, with discussions of all of the major work done here. Again, if we want our artificial life not in an artificial setting but in the real world, he tells of work aimed at making computer systems able to do the kinds of things we and other animals do without much thought: walk, pick things up, and respond to what we see. It turns out that here we have some quite different researchers, and in a very broad sense, more imitation of biology: neural networks, evolutionary computing, and genetic networks.

*Some cryonicists seem to believe in the merits of this kind of artificial life and actually hope to someday become such a creature in a suitable artificial world.*

It is a truism now that work in artificial intelligence has found tasks such as classification and calculation very easy, but making a system with which a robot could walk on a real path in the real world turned out very hard. (Since Emmeche first published his book in 1991 in Denmark, this problem has seen some serious progress; four-legged robots are now able to walk without falling over). Many other such problems await solutions.

Emmeche is clearly aware of the distinction between artificial life in an artificial world and life in the real world. He tells of two ideas of computation (which, at least for artificial life, equals computation). One consists of the modification and movement of physical signs only, with its meaning given not by the computation but by someone outside it entirely. The other notion involves processes and change inherent in a physical system. As adult human beings we are normally immersed in symbols and see even the real world in terms of those symbols. Yet to say that a tree can walk does not allow it to walk; many mammals and birds deal with the world without using language at all, and they do so with some intelligence. It is this feature of our brains that gives meaning to all the symbols we use. It also forces us to deal with unexpected events, both minor and major.

In the latter part of his book, Emmeche devotes several chapters to discussions of various critiques of artificial life. The strongest argument came from a Peter Cariani, who points out that a consequence of living in the real world, whether a system is artificial or not, is that the real world never fits neatly and entirely into our symbolic, linguistic account of it. Even a robot

endowed with a computer as a brain can control its computations but not what it sees or the results of what it does in the real world. In one sense, Cariani's criticism should be quite obvious (but apparently may not be, at least for some).

If you can ignore the broad definition of life with which he begins his book, Emmeche has written an interesting book on two subjects: the use of computer simulations of life to give us insights into how living things work and the methods computer scientists turned to when ordinary digital programs and computers failed to help make robots able to work in the real world. There is a garden in our computers, but it is only an artificial one, just like everything else in our computers. It still remains beautiful but not a place in which to live. ▲

# Wintermind

by Marvin Kaye and Parke Godwin (New York: Doubleday, 1982)

Book Review by R. Michael Perry

Speculation about the future has been a popular theme in science fiction ever since H. G. Wells offered up *The Time Machine* back in 1898. As immortalists and cryonicists we are particularly interested in the future, because we hope to be there personally (a good reason indeed!). Such novels as Robert Heinlein's *The Door into Summer* and James Halperin's *The First Immortal* deal directly with our central idea of survival into the future through physical preservation of the body or brain in a dormant state, followed by eventual reanimation. In Halperin's imagined future there is the added benefit that aging and diseases are under control so that the survivors are virtually immortal. This future is basically good and the sort of place we would like to find ourselves in someday, which is not surprising since the author is a cryonicist himself. Though most science fiction that addresses the future presents a less rosy picture, it can still be of interest as entertainment or social commentary, and it may additionally provoke some thoughts directly relevant to immortalism. Such is the case with the two novels by Marvin Kaye and Parke Godwin, *The Masters of Solitude* and its sequel, *Wintermind*, which do address the issue of greatly enhanced longevity.

It is thousands of years from now on an Earth that has witnessed much in the way of hard times. Wars have been fought and major territories have lapsed into barbarism, though some remnants of civilization endure, ringed by more primitive societies. People are still essentially human, though some interesting mutations have occurred—some, for instance, have inborn psychic powers based on telepathy or “lepping.” In the former eastern United States a megalopolis called City retains the knowledge of science and advanced technology. Its inhabitants are free of aging and diseases, though non-telepathic, and live for centuries, eventually falling victim to accidents or other unavoidable catastrophes. Outside of City are various small settlements where many of the people live at a subliterate level without modern medicine or superlongevity, yet still find life meaningful.


There are several groups of people called Covenanters who have lepping ability and enjoy a kind of close communion called Circle. They worship Goddess Earth and also have their own, human gods and goddesses who govern and are worshipped by them. The religious rites of the Covenanter groups approximate the practice of Wicca, enhanced by the possibilities of communion through lepping. Their culture is a celebration of this-worldly life and nature at a basic level. Standing apart from the Covenanters are the Kriss, a non-lepping people who practice another ancient faith, Christianity, which focuses on a world to come rather than the here and now. A powerful group of extremist Kriss had determined to exterminate the Covenanters, following the biblical injunction, “you shall not suffer a witch to live.” The resulting struggle was a

major theme of *The Masters of Solitude*.

In *Wintermind* the Kriss threat has been met, and additionally, contact has been established with City, which had previously protected itself from feared contamination through use of a surrounding force ring that would zap any would-be intruder. Outsiders now have access to advanced medical technology—persons with missing limbs, for instance, can have new ones grown.

Arin and his wife, Shalane, are the reigning god and goddess of the Shando, a major group of Covenanters, but they are now living in City. Marian Singer, the centuries-old but ever youthful-looking head of City, has taken special interest in their talented daughter, Mady, supervising her education and serving as her mentor. While Arin is open to the possibilities of new, advanced learning and thinking, Shalane hates City, refuses to learn to read, and wants to return to the old lifestyle, taking Mady with her. An opportunity comes up, and the nine-year-old Mady dutifully goes along, reading for her mother when needed along the way, but only wants to go home.

The problem over Mady destroys the formerly close bond between Arin and Shalane, who is now determined to employ her considerable telepathic powers to “rescue” her resisting daughter and remake her as necessary into what she wants. Arin is also telepathically adept and takes his daughter's side. The resulting all-out struggle invokes the Wintermind, a mysterious, sinister gestalt that heightens the conflict and underscores its tragic dimensions. We are left with the thought that progress and enlightenment have their price—sometimes a heavy one. Other thoughts are that this book is certainly a moving tale, may have useful lessons to teach about human nature, and even explores some of the issues immortalists take to heart. Read and enjoy; yet I would not recommend the book for promoting cryonics or other means of actually seeing the future yourself.

Some afterthoughts: One of the authors, Marvin Kaye, wrote a series of pro-cryonics essays, which appeared in *Long Life Magazine*, 1979-80. Apparently this interest was short-lived, however. Born in 1938, Kaye has had a long and varied literary career, mainly but not exclusively in the areas of fantasy and science fiction, as author, editor, and also teacher. He recently completed *The Last Christmas of Ebenezer Scrooge*, a highly acclaimed sequel to Charles Dickens's *A Christmas Carol*. His collaborator Parke Godwin, born in 1929, has also had a long and distinguished career in imaginative fiction, again without special emphasis on immortalism in a scientific sense. The two were to have written a sequel to *Wintermind* and *Solitude*, and some plotting was done, but their careers drifted apart and the book has yet to appear. 



# MEMBER NOTES

## Transport Team Matters

### A Visit To Cryonics Institute

On Sunday, May 1st Joe Waynick had the pleasure of visiting the Cryonics Institute. He was given an excellent tour of the facility by CI Facilities Manager, Andy Zawacki. He also had the pleasure of visiting with Robert Ettinger at his home along with CI President, Ben Best. CI Board Member, Joe Kowalsky, and his wife, Jennifer, also hosted him at their home for dinner. Finally, he had the honor of meeting David Pascal, Marketing Consultant for the Cryonics Society, John Besancon, Treasurer of The Immoralist Society, and CI's newest member, Doug Dragin. Joe wishes to extend his warmest appreciation to Robert Ettinger, Ben, Andy, Joe and Jennifer for spending so much of their time making him feel welcome. It is Alcor's sincere hope that we will continue building closer ties between Alcor and CI in the future to benefit all cryonicists.

### Suspension Research Endowment Discontinued

It was decided at the June 4, 2005, Board Meeting that Alcor will no longer offer the Suspension Research Endowment. The Suspension Research Endowment was used to facilitate the objective of placing and maintaining a member's human remains in cryonic suspension, and attempting to revive and restore the individual, if possible, by furthering scientific research and education to advance the field of cryonics and related disciplines.

### German Group

Alcor's Director of International Relations, Dr. Peter Toma, reports a growing interest in Germany. The German group currently has about 20 individuals. They are beginning to hold regular meetings to address the best way to begin the cryonics process and transport individuals from Germany.

### Transport Vehicle Development

The plumbing is now complete on the vehicle, and it has been tested with positive results. During the test, the back of the vehicle grew quite warm. Unfortunately, an effort to cool things down with the air conditioner resulted in a broken air conditioner after a couple of hours. We will need to have this repaired, and there is only a single Carrier repair technician (the manufacturer) in the area. The electrical system is being installed and should be completed shortly.

Two training sessions were held recently, one in southern California covering the set-up and use of the ATP, and the second was in Laughlin, NV. There, a refresher was provided on medications, surface cooling, safety precautions, and an overview of the new transport equipment we plan to deploy in the next month. New gear includes improved safety equipment designed to reduce the potential for needle-stick injuries and a device that we hope will seriously improve the quality of circulation during cardiopulmonary support.

### Illustrated Surgical Instrument Books

Bill Voice completed an illustrated surgical instrument book for the main surgical and supplemental trays. In addition to just creating the books, reference numbers were engraved on each of the operating room instruments to allow for easy reordering or comparison with the illustrated instrument book.

### Personnel Update

Tim Reeves, Alcor's bookkeeper for the last year, has left the organization. We have hired a replacement, Aleetha Castro.

### Database Enhancements

A contractor was retained to complete the coding necessary to import data files downloaded from the internet directly into the Central Database for the purpose of automated capturing of info pack requests and tour request data. It is complete with sophisticated error handling routines, event logging, data archival, backup capability, and dashboard user interface. These upgrades will completely eliminate all manual labor previously necessary to carry out these routine and tedious tasks, thereby enhancing the productivity of the administrative staff.

### Website Activity

The number of distinct visitors to Alcor's website was down by about 1,700 computers in May as compared to April. Overall, the number of distinct visitors to Alcor's website has increased by around 60-65 percent since June of 2004.

### The First Immortal

View an online copy of this fictional story by James Halperin of a family surviving and reuniting after a century of cryopreservation:  
<http://www.heritagecoins.com/tfi/>



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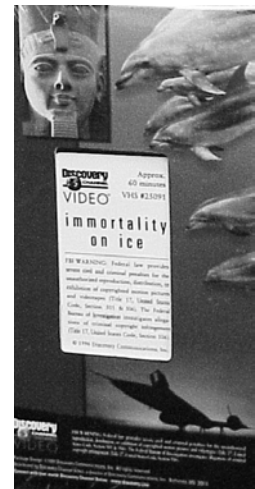
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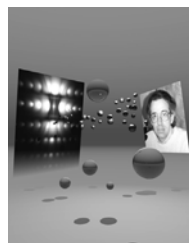
By the Discovery Channel. About 60 minutes run time. Popular introductory tape. \$25.00 plus \$5.00 S&H.



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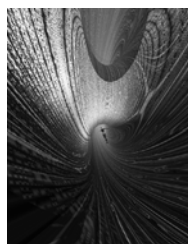
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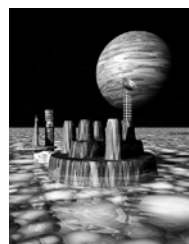
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1st Qtr. 99

## Cover Art by Tim Hubley!

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