

ALCOR LIFE EXTENSION FOUNDATION

A Non-Profit Organization

CRYONICS

JULY 2015 · VOLUME 36:7

HEART DISEASE PREVENTION— PART I

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CRYONICS FOR FAMILIES

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THE MORAL DUTY OF CRYONICISTS

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CRYONICS



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Heart Disease Prevention— Part I: Introduction and Risk Factors

In this three-part review article of Morteza Naghavi's "Asymptomatic Atherosclerosis—Pathophysiology, Detection and Treatment," *Cryonics* magazine contributor Carrie Wong reports on the latest approaches to detect pathological vascular and heart conditions at the very early stages and how these new approaches can be used by cryonicists to prevent suffering acute cardiac arrest.

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The Alcor 2015 Conference will be held on October 9-11, 2015, at the Scottsdale Resort and Conference Center at McCormick Ranch. Program and registration information available now.

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CRYONICS

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2015 Annual Giving Program

Alcor provides a wide array of services for you the member, and the general public. We inform and educate, we protect and preserve, and we strive to remain at the forefront of cryonics technology.

Since its founding, Alcor has relied on member support to maintain its mission and attract new members. Your support, regardless of size, can provide a better future for all cryonicists. **Please act now.**

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We encourage every member to donate. Even if you can only afford \$5 right now, you will make a significant contribution to Alcor's future.

Donations may be made via the Donations button on the Alcor website or by contacting Alcor's Finance Director, Bonnie Magee, at bonnie@alcor.org. Your donation may be made as a lump sum or divided into easy monthly payments. ■

The James Bedford Society



Gifts have played a fundamental role in the cryonics movement since its earliest days. Dr. James Bedford, a man whose extraordinary vision led him to become the first person to be cryopreserved, and the first to make a bequest to a cryonics organization, exemplified the determination of the early pioneers of cryonics. We invite you to follow in his footsteps, and join the James Bedford Society.

The James Bedford Society recognizes those who make a bequest of any size to the Alcor Life Extension Foundation. If you have already provided a gift for Alcor in your estate, please send a copy of your relevant documents to Alcor's Finance Director, Bonnie Magee.

If you'd like to learn more about setting up a bequest, send an email to bonnie@alcor.org or call 480-905-1906 x114 to discuss your gift. ■



QUOD INCEPIMUS CONFICIEMUS



Photo: Cryo-Care Equipment Corporation at 2340 E. Washington St., Phoenix, AZ.
Dr. Bedford's "home" in 1970 or 1971.



CRYONICS FOR FAMILIES By Aschwin de Wolf

Alcor allows members to specify the conditions under which they do or do not want to be cryopreserved. One popular option reads as follows: "I wish Alcor to place into cryopreservation any biological remains that they may be able to recover, regardless of the severity of the damage from such causes as fire, decomposition, autopsy, embalming, etc." Interestingly, the options available in the Alcor membership application all concern scenarios in which the circumstances of only the member himself determines whether to proceed with cryopreservation. But what about scenarios in which, for example, a whole family makes cryonics arrangements and a catastrophic accident permits only one family member to be placed in cryopreservation?

When most people consider cryonics, one of their most immediate concerns is that the procedure could be disruptive of their social and family life. Is making cryonics arrangements without considering the preferences of those around me considered to be going it alone? If we all make cryonics arrangements and one person is the victim of a terrorist attack or plane crash, would I still want to proceed? How can I be sure that my whole family will be cryopreserved under acceptable conditions?

Default cryonics wisdom has it that it is better for a person to live than to die but the outlook of someone who is anxious about the idea of cryonics seems to conform more to something like this:

I would like everyone I care about to be cryopreserved and revived but if I lose someone I care for, I'd rather not come back either.

Now this is a rather bold version of the position I am trying to characterize but it does raise an important point. Would cryonics perhaps appeal to more people if cryonics organizations offered a number of options that reflect concerns about joint cryopreservation and revival?

In this document I use conditions for cryopreservation *and* survival together but we are really talking about two distinct issues here. For example, one of the scenarios concerned a situation in which it was possible to only cryopreserve one person in a family but it could also be possible that a whole family is cryopreserved but meaningful revival is only possible for one of them. Successful cryopreservation is not necessarily equivalent to successful revival.

Would it be feasible and desirable to allow more flexibility regarding such scenarios? For example, should members be permitted to insist on joint revival even if one of the persons has been cryopreserved under conditions that permits faster resuscitation?

Should a cryonics organization allow members to be thawed out and buried in case circumstances prevent their other family members to be cryopreserved?

These are difficult questions and need to be considered in more detail. We do know that most people who make cryonics arrangements care about these issues and that many people care about these issues to such an extent that they conclude that cryonics presents more of a risk than a potential benefit. In general, what would it mean for a cryonics organization to incorporate the joint preferences of families in the services it offers?

Comment by Mike Perry: About 25 years ago a case came up in which an Alcor member stated they didn't want to be revived unless all of their children could be, and were, revived. Alcor in effect was being asked to kill this member if it was unable to save one or more others. Alcor could not agree to such an option. (This individual remained a member and is still a member today.) Short of that, however, it might be reasonable to time revivals so that all in a group are brought back together. ■

CEO Update

By Max More



GROWING MEMBERSHIP AND AWARENESS

After 2014's record-setting year for number of cryopreservations, Alcor has continued to be busy. In my next update, I will cover many of the advances, challenges, events, and triumphs of the first half of 2015. In this issue's update, I will focus solely on growth and public communications.

GROWTH AND COMMUNICATIONS

Membership growth continues to rise. We have been making several changes (in addition to improved marketing and communications programs) that might account for this, but we have no way of separating out the various factors accurately. Gains in signed-up members are *not* coming by shrinking the applicant queue. The number of applications submitted in February was the highest since December 2007. Combining the first two months of the year, we see 29 new applications, which is also the best two-month number since 2007. That bodes well for near-term membership growth.

You may remember that Alcor experienced low membership growth in 2010 through 2013, actually shrinking by

0.9% in 2013. Growth picked up in 2014, accelerating throughout the year and averaged 4.0%. So, how are we doing in 2015? At an annualized rate based on the first five months of the year we have seen:

- 6.4% growth in (cryopreservation) membership so far this year.
- 8.4% in overall membership.

Associate Membership should be an important step toward full cryopreservation membership for many. We need to find new ways to bring in Associates and keep them. To lower the barrier to entry, I'm halving the cost of associate membership to \$5 per month or \$60/year. With a few exceptions, we will discontinue complimentary subscriptions to *Cryonics*, and send out a letter explaining that they can continue to receive *Cryonics* (and enjoy other benefits) if they become an associate member.

THE WEBSITE

This will be old news to all of you except the few who read *Cryonics* but don't visit Alcor online: Back in October 2014, Alcor's website underwent a major facelift. As I

posted to the blog and Alcor's Facebook page:

We wanted to bring the appearance of alcor.org up to date and make it more appealing. We also wanted to improve engagement with visitors. After a lot of work on the revision by John Bevens and his colleagues at Media Architects, with lots of input from me, and additional input from staff and website volunteers, the site is now public.

This revision is a major cosmetic facelift. We will follow up with significant changes to the content, designed to help visitors find the information most important to them. We have also added a chat function. In just the first couple of days, this is proving to be a valuable tool for engaging website visitors and answering their questions. Take a look!

Even before we consider moving onto a more advanced revision (which would require dedicated funding), much remains to do (and some improvements are

underway). This includes optimizing for mobile devices; working on language and presentation in various places; and creating new pages and important areas of focus for visitors. We recently redesigned the Application Form to make it easier to fill out, and will be doing the same with all the contracts. We are currently in the process of enabling applicants to fill out all forms online. Services such as DocuSign enable us to accept electronic signatures, and we have even found a way around the need for applicants to visit a Notary Public.

Feedback from the new ClickDesk chat function has been very interesting. It has greatly increased our direct dialogue with website visitors. Marji deserves considerable credit for consistently answering most of the chat messages – and for enduring some rude messages (typically from young students).

From a purely rational perspective, **testimonials** should not be taken as strong evidence in favor of the quality of any product or service. In the real world, testimonials often have a far stronger persuasive effect than a listing of facts and figures or rational arguments. With that in mind, Alcor's media consultants have been capturing member testimonials on video whenever possible. A dozen new testimonials were filmed in December 2014 at Kekich's annual life extension/cryonics gathering and added to the Alcor Cryonics YouTube channel. Another three were completed and uploaded in February.

INFO PACK

After we received a request for multiple copies of our Info Packet, I noticed that the Packet badly needs an overhaul in both content and appearance. I rethought the approach from the ground up, on the assumption that the info pack/presentation folder is the first point of contact with Alcor. The current version consists primarily of a letter to medical professionals and a multi-page, detailed explanation of the Comprehensive Member Standby program. The cover of the folder consists of photos depicting cold metal containers and someone undergoing surgery. Not terribly warm and welcoming!

The new cover depicts a happy couple

(real Alcor members), and the contents are designed to cover the main questions that will come to mind for people new to cryonics. The new info pack is about to go to print as I write this in late June. We will then make some modifications to a range of inserts that will fit into the inner pocket and that can be selected to fit the audience.

Throughout this issue, you will see the new Alcor logo, in both a vertical and horizontal format. After trying out several more radical designs, we settled on a more modest update to the existing logo.

TALKS

On Saturday, February 21, I was given well over two hours on stage at People Unlimited (based in Scottsdale) whose members believe in the desirability and possibility of "biological immortality." This audience was quite different from what I'm used to, and not only in the strength of their commitment to abolishing aging but also in the warmth and enthusiasm of their reception. Although some of the group's views (in my judgment) lack scientific basis, I found most of them open to practical means of radical life extension, including cryonics. A couple of dozen people asked for a free associate member card, and many said they would come for a tour.

On May 28, I gave a talk at the Church of Perpetual Life. This is no ordinary church. It was founded and is funded by Alcor member Bill Faloon. Bill bought what used to be a Baptist church then repurposed it to spread a non-supernatural message about overcoming biological death. Although the audience was modest in size, the talk was recorded and may be a helpful introduction to cryonics for a broader audience online.

Over the weekend of June 5-7, several Alcor members attended and spoke at the BRINK conference in Palm Desert, California. Due to the format of the event, I had only a few minutes to explain the essentials of cryonics.

Fortunately, the backgrounds of most of those present meant that—even with no previous familiarity with the idea—many, many people afterwards said they wanted to know more. During the same session, Natasha Vita-More's brief comments on her recent and remarkable research on memory persistence through cryopreservation, and Greg Fahy's presentation of his research results no doubt helped a great deal. I don't recall a single person dismissing cryonics, but many expressing a desire to learn more, come to our October conference, or even get started with the sign-up process. Clearly, the attendees were not in the least a random sample of the population. Even so, the friendly and open reception to these ideas is encouraging.

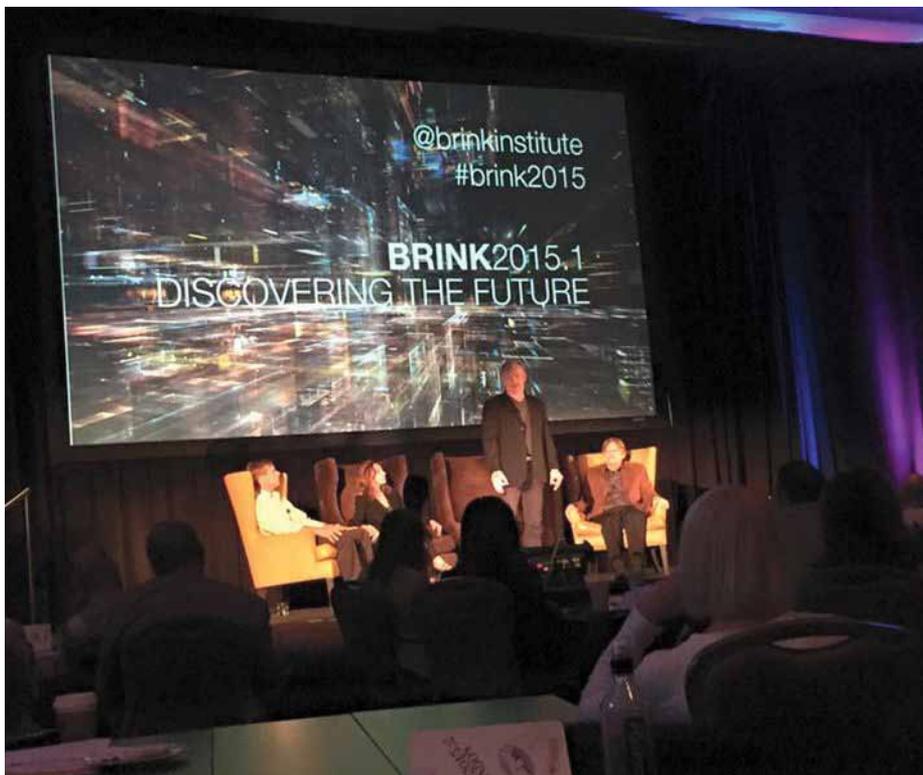
*To lower the barrier to entry,
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membership to \$5 per month or
\$60/year.*

MEDIA

Over the last few months, we seem to have attracted more media coverage than ever, not just in the USA, but in Canada, Britain, Poland, India, China, Thailand, Spain, Switzerland, France, and Australia. Requests for filming or interviews for print publications continue to come in with such frequency that I have been agreeing to fewer of them, while also inviting a few experienced



Adam and Dr. Max More, Alcor



Max speaking at BRINK conference

members to take on some of them. When considering media requests, I ask myself: How much time and energy will this detract from other tasks and projects? What is the likely size and interest of the audience? How informatively and sympathetically is this story likely to be presented?

Documentary and TV coverage: On November 20, we were filmed by a documentary maker (who will remain anonymous for now). The following day, I was interviewed by Steve Aoki, DJ and son of the founder of the Benihana restaurant chain. Steve is a very popular and successful DJ with a commitment to life extension.

In January 14, we worked with the BBC to shoot footage for a *Horizons* program on “Extending Life.” This involved the usual talk-and-talk tour, followed by an interview with me and also input from Medical Response Director, Aaron Drake. The BBC crew also wanted to interview a member. We invited Linda Chamberlain—co-founder of Alcor and recent returnee to Arizona—to be that (well-informed!) member.

By a curious coincidence, the day before the BBC filming at Alcor, a different branch

of the BBC based in Bristol, England, sent us an unusual question about freezing a whale for a possible documentary. Hugh Hixon provided a thoughtful and informative answer for which they were grateful. The synchronicity of the double-BBC activity was compounded for me by the fact that I used to pass BBC Bristol every day as I walked to school in the late 1970s.

We are currently in the process of enabling applicants to fill out all forms online.

In January, a Swiss TV crew filmed at Alcor for a show that will also include other life extension-related individuals who are Alcor members. In February, a film crew who had come to Scottsdale to film Natasha Vita-More requested additional filming at Alcor, with me giving a short tour and explanation.

On March 12, Alcor appeared on *The List*—a syndicated show that airs in 13 large city markets.

On April 1, Motherboard/VICE Media came to Alcor to film for a one-hour documentary on transhumanism in order to include a segment on cryonics. We expect this to air on a new daily show on HBO later this year. Motherboard/VICE Media published an extensive and encouraging article about Alcor and cryonics in the latter part of 2014. In addition to the documentary, I was interviewed for another print piece for the same outlet, focusing on legal issues of cryonics.

On April 8, several of us were filmed by What’s Up Films for a 90-minute piece, a major portion of which will focus on cryonics. This is scheduled to be aired on the French Public Broadcast Network this fall. Also in April, Kristy Siefkin from Fox channel 10 came to Alcor, resulting in a positive piece that you can find online. In May, Telemundo filmed at Alcor for a piece that aired on May 21.

FROM REALITY TO FICTION

In the first part of December, we talked to two individuals who came for the tour and who want to make a cryonics TV series. They have done their research, seem serious, and want to be as accurate as possible.

Alcor will appear in a fictional but highly positive news report in the movie *The Last Generation to Die*, set in 2031.

Cryonics was central to the plot of the *Elementary* episode “T-Bone And The Iceman” (season 3, episode 17). http://www.imdb.com/title/tt4472348/?ref_=ttep_ep17

It’s too early to say for sure, but the prospects look good that a well-known and very cryonics-positive novel will finally be made into a movie. The producers have asked to visit Alcor so as to get the technical details right.

PRINT COVERAGE

Given the dozens of print pieces, I will mention just some of the more significant or especially positive ones here. One of these resulted from a journalist at *California* magazine—UC Berkeley’s alumni

magazine, who said that he was interested in “exploring the philosophical and theoretical underpinnings of cryonics, its place in cutting-edge science and its relationship to religion, and cryonicists’ thoughts of the future and their potential role in it.” The resulting article, “Into the Deep Freeze: What Kind of Person Chooses to Get Cryonically Preserved?” by Chris A. Smith, came out in the Summer 2015 issue. This was a rare instance in which we received a call from fact-checkers. It’s good to know that checking of facts in journalism is not yet entirely extinct.

If you follow Alcor’s news online, you will know that we successfully cryopreserved a 2-year-old Thai girl in her home country. This was a major undertaking on our part and seeing it through depended on the tremendous determination and resourcefulness of Matheryn’s parents. This event (involving the youngest—and most distant—patient ever) generated a remarkable burst of press around the world, along with a record number of visitors to the website (and a lot of work for Marji in answering chat inquiries). Three major articles appeared on *Motherboard* and were then picked up by many other outlets. The one going into the most considerable and friendly detail was “The Girl Who Would Live Forever” by Brian Merchant, which appeared on *Motherboard* on April 16, 2015.

The *Motherboard* editors of a week-long focus on life extension concluded it on April 17 by stating their opposed views: “Is Immortality GOOD or BAD?” By Vicki Turk and Brian Anderson. The Matheryn story was picked up by the *Metro* UK, Australia’s *News.com*, the UK’s *Daily Mail* (two stories), *New York Daily News*, *Iran Daily*, *Asia News Net*, and the *Straits Times* (several stories), plus an audio interview I did for *Asia News Weekly* (syndicated on the *Korea Observer* in Seoul, *Japan Today* and *News on Japan* in Tokyo, and internationally through Broadband TV), and CNET. These were just a few of at least 50 published stories that I heard about through alerts.

Among other print coverage: I did an interview at the end of January for a story in *Worth*, a magazine with a circulation of 125,000 individuals of above-average

income for whom cryonics should be a cheap back-up plan. The resulting story, “The Search for Immortality” appeared in the April/May 2015 issue, mentioning Alcor along with sections on several well-known and wealthy individuals, at least two of whom are Alcor members. Based on a tour and interview I did with journalist Daniel Oberhaus, a highly informative and unusually accurate piece appeared in the November 28th issue of *The Verge*, “The Art of Not Dying.”

We were also able to present the cryonics message in February, thanks to an interview with me by Mark Edge, an Alcor member with an online radio show. We spoke to several writers who want to include Alcor and cryonics in books, including one by a writer for *Slate* who is working on a book on transhumanism and life extension; one for a book on longevity; and we were featured in an online book, *Futuremakers*. today.

Alcor member Natasha Vita-More was author, with Daniel Barranco, of a journal article reporting the results of research funded by and partly conducted at Alcor, “Persistence of Long-Term Memory in Vitrified and Revived C. elegans.”

Research stirs interest: Alcor member Natasha Vita-More was author, with Daniel Barranco, of a journal article reporting the results of research funded by and partly conducted at Alcor, “Persistence of Long-Term Memory in Vitrified and Revived *C. elegans*.” Even though no press release was issued, this research result was picked up by several people, including in a widely-read *Daily Mail* piece on June 2: “Memories can survive cryogenic preservation, study shows.” It can be expensive to gain access to scientific papers, due to the high fee imposed by publishers. To encourage

wider readership, Alcor paid to make the *Rejuvenation Research* paper open access. We were delighted to hear on June 22 from the publication’s manager that the paper “has had over 11,600 downloads! I think that’s a record for this journal.”

Larry King still talking cryonics: Finally, famous interviewer, Larry King, added to his several previous public declarations that he doesn’t want to die and wants to be cryopreserved. He repeated his thoughts on a recent episode of the *Dr. Oz Show* (which included a modestly-accurate and neutral explanation by Dr. Oz). Soon after that, Mr. King devoted part of his podcast (which takes the form of a discussion with his wife, Shawn). Although Mr. King describes himself as an “atheist Jew,” his wife is Mormon and seems to think cryonics conflicts with her religion.

I was fortunate in being able to provide, with just a few hours’ notice, bullet points on this topic. I’m indebted to the rapid and informative input from one Mormon and one ex-Mormon, both cryonics-friendly, who demonstrated that Mormon scripture, far from conflicting with cryonics, clearly supports it. You can listen to their vigorous banter on the topic in the first 15 minutes of the show: “Back and Forth with Shawn and Larry King,” episode 36, June 12, 2015.

We can rarely tell if and to what extent there is an eventual benefit to Alcor membership from any of these forms of media. But it’s a well-established adage that (with rare exceptions), most people must hear a message several times before they take action. That’s why we keep working with media to educate the public.

My next update will focus on all the *other* things that have been going on at Alcor over the last half-year. ■



REDUCE YOUR ALCOR DUES WITH THE CMS WAIVER

Alcor members pay general dues to cover Alcor's operating expenses and also make annual contributions to the Comprehensive Member Standby fund pool to cover the costs of readiness and standby. Benefits of Comprehensive Member Standby include no out-of-pocket expense for standby services at the time of need, and up to \$10,000 for relocation assistance to the Scottsdale, Arizona area.

Instead of paying \$180 per year in CMS dues, Alcor also provides members the option to cover all CMS-associated costs through life insurance or pre-payment. Members who provide an additional \$20,000 in minimum funding will no longer have to pay the \$180 CMS (Comprehensive Member Standby fund) fee. This increase in minimums is permanent (for example, if in the future Alcor were to raise the cost of a neurocryopreservation to \$90,000, the new minimum for

neurocryopreservation members under this election would be \$110,000). Once this election is made, the member cannot change back to the original minimums in the future.

To have the CMS fee waived, these are the minimums:

- **\$220,000 Whole Body Cryopreservation** (\$115,000 to the Patient Care Trust, \$60,000 for cryopreservation, \$45,000 to the CMS Fund).
- **\$100,000 Neurocryopreservation** (\$25,000 to the Patient Care Trust, \$30,000 for cryopreservation, \$45,000 to the CMS Fund).

If you have adequate funding and would like to take advantage of the CMS waiver, contact **Diane Cremeens** at diane@alcor.org.

Become An Alcor Associate Member!

Supporters of Alcor who are not yet ready to make cryopreservation arrangements can become an Associate Member for \$5/month (or \$15/quarter or \$60 annually). Associate Members are members of the Alcor Life Extension Foundation who have not made cryonics arrangements but financially support the organization. Associate Members will receive:

- **Cryonics magazine by mail**
- **Discounts on Alcor conferences**
- **Access to post in the Alcor Member Forums**
- **A dollar-for-dollar credit toward full membership sign-up fees for any dues paid for Associate Membership**

To become an Associate Member send a check or money order (\$5/month or \$15/quarter or \$60 annually) to Alcor Life Extension Foundation, 7895 E. Acoma Dr., Suite 110, Scottsdale, Arizona 85260, or call Marji Klima at (480) 905-1906 ext. 101 with your credit card information.

Or you can pay online via PayPal using the following link: <http://www.alcor.org/BecomeMember/associate.html> (quarterly option is not available this way).

Associate Members can improve their chances of being cryopreserved in an emergency if they complete and provide us with a Declaration of Intent to be Cryopreserved (<http://www.alcor.org/Library/html/declarationofintent.html>). Financial provisions would still have to be made by you or someone acting for you, but the combination of Associate Membership and Declaration of Intent meets the informed consent requirement and makes it much more likely that we could move ahead in a critical situation.



The MORAL DUTY of Cryonicists

By Caitlin Campbell

As cryonicists we, as a group, tend to be forward thinking people. Some of us follow every new development in the field of cryonics, while others just check in once in a while. We are as a group generally informed about cryonics in terms of technical developments and progress in science. What we often don't think about are the philosophical and ethical intricacies that come about as a result of the mere existence of cryonics. This article will argue that as people who accept the validity of cryonics, we have a moral duty to at least suggest cryonics to others.

The first point to be presented is loosely taken from Peter Singer's article "The Drowning Child and the Expanding Circle." Imagine that you are walking home when suddenly you spot a small child drowning in a muddy pond. You could easily save the child's life, but as a result would get mud on your shoes. Would you save the child's life? What if, as a result of saving the child, your shoes became completely caked in mud? To most of us, in both cases, the answer is obvious. The question is why. This too is clear. The saving of a life is worth the minor (yet annoying) inconvenience of muddy shoes. In essence if you accept that saving a life is worth the inconvenience of muddy shoes, then generally, it follows that you should accept that avoiding minor inconveniences is not an acceptable reason not to save a life.

The second point comes (ironically perhaps) from evangelical Christianity. Place yourself in the mindset of an evangelical Christian. God, heaven, and the eternal torment of hell exist absolutely and truly. Everyone (including yourself) is deserving of hell. Anyone can enter a heavenly paradise by simply

"accepting Jesus Christ as their lord and savior." As an evangelical Christian what would you do? Would you consider making spreading the good news about Jesus Christ a major part of your life? If we adopt the premises of an evangelical Christian, evangelical practices become quite reasonable. In essence, if you accept that if one (accurately) believes that harm will happen to people unless they hold a certain belief or take a certain action, then it follows generally that as moral agents we have at least some duty to suggest that people hold certain beliefs or take certain actions.

If one accepts these two points we can draw a basic argument.

Premise 1: Not being signed up for cryonics results in certain death.

Premise 2: Being signed up for cryonics results in a chance at continued life.

Premise 3: People who are unaware of the practicality of cryonics will not sign up.

Premise 4: Avoiding minor inconveniences is not an acceptable reason to not save a life.

Premise 5: If you believe that harm will occur to someone unless they take an action then you should at least consider suggesting taking that action.

Conclusion 1 (from premises 1, 2, and 3): If we do not risk the minor inconvenience of bringing up the topic of cryonics people will die.

Conclusion 2 (from premises 4, and 5): Avoiding potentially awkward situations that might arise due to bringing

up the subject of cryonics is not a good reason not to prevent a death.

Final Conclusion (from conclusion 1, and 2): We have a moral duty to at least suggest cryonics to others.

While it is true that the premises of this argument are not "absolute" in the philosophical sense it should be noted that if one accepts the premises then the conclusions are sound. Accepting the conclusions doesn't mean you are obligated to pester your family and friends at every opportunity. Rather, it means that you should, as has been said, "at least suggest cryonics to others." It can be as simple as an utterance of, "in case you were wondering what this bracelet is for, it is so I can be cryonically frozen after my legal death." (The redundancy in saying "cryonically frozen" is intentional as to give an easy hint for people less in the know.) It is almost certain that a follow-up question or two will be asked. From here a positive discussion of cryonics is almost guaranteed. It is through opportunities like these that as cryonicists, we can save peoples' lives in, arguably, the only meaningful way (i.e. permanently). ■

ABOUT THE AUTHOR



Caitlin Campbell is an entrepreneur, hacker, and computer systems engineer. She loves programing and designing secure networks. She is the founder of CIS

Solutions, along with being a senior engineer at 9three Solutions. She lives in West Virginia and is always looking for adventures with her pet python Longfish. Author contact: Caitlin@cissols.com



HEART DISEASE PREVENTION—PART I:

Introduction and Risk Factors

By Carrie Wong

INTRODUCTION

Preventing or eliminating sudden cardiac arrest and stroke is extremely important for living a longer and healthier life. Cryonicists must take preventive measures against sudden cardiac arrest to secure a timely and effective cryopreservation. Heart disease is the leading cause of death in the world, causing 610,000 deaths annually in the United States alone¹. The medical term for the condition is atherosclerotic cardiovascular disease (ACVD). ACVD is a chronic disease that often remains asymptomatic for decades, but early detection and preventive treatment is possible.

In this three part series, I will present a summary of **“Asymptomatic Atherosclerosis—Pathophysiology, Detection and Treatment”** by Morteza Naghavi, MD which gives an extensive overview of contemporary cardiology². Dr. Naghavi and his co-editors and colleagues at the Society for Heart Attack Prevention and Eradication (SHAPE) have created an initiative to advance the early detection and treatment of asymptomatic atherosclerosis. They have compiled their extensive findings into a 700 page volume.

Arteries are blood vessels that carry blood from the heart through the body and are lined by a thin layer of cells called the endothelium. This endothelium layer works to keep the inside of the arteries smooth, which helps keep blood flow regular. Atherosclerotic cardiovascular disease (ACVD) begins with damage to the endothelium which is influenced by

a number of risk factors including high blood pressure, cholesterol or smoking. The accumulated damage results in the formation of plaques, which are a jumble of cholesterol, cells, and other debris that restricts the flow of blood. Over time, the plaques can become larger and create blockages which results in a heart attack or stroke. Atherosclerosis does not usually cause noticeable symptoms until middle or old age, but it is well-known that heart attacks do not occur without a preceding atherosclerotic plaque. However, few efforts have been focused on the identification of high-risk individuals with asymptomatic atherosclerosis. Since 2003, the Society for Heart Attack Prevention and Eradication (SHAPE) has aimed to advance ACVD risk assessment strategies to save vulnerable patients.

ISSUES OF CONTEMPORARY CARDIOLOGY

Prevention of atherosclerotic cardiovascular disease (ACVD) is categorized into primary and secondary prevention (Naghavi, 2010, pg. 2). Primary prevention covers all the methods and treatments to prevent the first heart attack or stroke, while secondary prevention deals with recurrent heart attacks or strokes. Over the past 50 years, great progress has been made in the detection and management of risk factors associated with the treatment of symptomatic ACVD but little has been accomplished for asymptomatic ACVD which accounts for the majority of sudden cardiac deaths and silent strokes. Despite the fact that the

majority of asymptomatic ACVD can be detected and treated, no screening test is currently approved by federal agencies and made available to physicians (Naghavi, 2010, pg. 3). Traditional risk factor-based assessment strategies are insufficient. In a recent report published by the American Heart Association which studied 136,905 patients hospitalized with ACVD, it was shown that LDL-cholesterol, HDL-cholesterol and triglyceride levels were insufficient in identifying high-risk individuals. Shockingly, the report showed that 77% of the patients had normal LDL, 45.4% of patients had normal HDL and 61.8% of patients had normal triglyceride levels³.

As a result of these findings, the authors have identified two major problems within contemporary cardiology:

- 1) Inaccurate individualized assessment of cardiovascular risk and
- 2) Inadequate monitoring of the vascular response to treatments

There are a few celebrity examples that illustrate these inadequacies. Winston Churchill lived to be 90, despite being overweight, inactive, and a heavy smoker, while exercise advocate Jim Fixx, who was very fit and didn't smoke, died of sudden cardiac arrest at age 53. Another example is the sudden death of the famous journalist Tim Russert who had been provided with current standards of care including statin, aspirin, ACE inhibitors and even reached his target lipid profile. In Russert's case

there was inadequate monitoring of his response to the treatments he was given.

The majority of the federal Medicare budget is spent on “sick care,” treating existing diseases rather than promoting health and preventing disease. In 2007, the USA spent \$2.26 trillion on healthcare and this number increased to \$3.8 trillion in 2014. This 41% increase in spending on “sick care” has not resulted in any 41% disease reduction nor significantly increased life expectancy (Naghavi, 2010, pg. 7). Investment in preventive health care must go far beyond general public recommendations to consume healthy foods, exercise and avoid smoking. Only 10% of the total cardiovascular care budget is spent in the field of primary prevention, despite the fact that prevention creates an opportunity to see a great increase in quality-adjusted life years (QALY). The paradigm of cardiology must shift to provide more effective medicine that results in greater increases in quality-adjusted life years. Currently, the allocated budget for cardiovascular screening (one cholesterol and blood pressure test every 5 years) is woefully inadequate for prevention of the number one killer. Ultimately, primary prevention is more effective at stopping the disease rather than attempting to reverse it. In the long run, this route is more cost effective and results in greater quality-adjusted life years.

THE SHAPE INITIATIVE'S FIVE MAIN APPROACHES (NAGHAVI, 2010, PG. 1)

- 1) Defining and screening for early detection and aggressive treatment of the “vulnerable patient” based on non-invasive imaging of asymptomatic atherosclerosis.
- 2) Monitoring therapies and evaluating progression or regression of the disease based on structural, functional, and molecular markers of ACVD.
- 3) The development of safe and effective “Polypills” for preemptive population-based therapy.
- 4) Development of safe and effective

focal therapies, such as bio-absorbable drug-eluting stents, for rapid stabilization of the “vulnerable plaque.”

- 5) Lastly, immune modulation and vaccination strategies for prevention of atherosclerosis at an early age and halting its progression later in life. Simultaneously, the fast evolving IT and communication technologies, as well as low-cost home health-monitoring devices, will facilitate rapid dissemination of new information, empower consumers, and help shift cardiovascular care from hospitals to the home.

1) THE VULNERABLE PATIENT

In this article, I will expand on the first SHAPE approach which involves identification and early detection of the vulnerable patient based on non-invasive imaging. In subsequent articles, I will cover the other four main initiatives. There has been great modern progress in early detection and treatment of risk factors as well as treatment of symptomatic ACVD, but little progress has been made in asymptomatic ACVD. Many individuals, even those with severe atherosclerosis are unaware of their risk because of a complete lack of symptoms. In 30%-50% of these individuals, the first indicator of the disease is an acute heart attack, which is often a fatal first indicator (Naghavi, 2010, pg. 77). The Society for Heart Attack Prevention and Eradication (SHAPE) has created new guidelines to help detect “vulnerable patients” who may have asymptomatic cardiovascular disease.

There are three main characteristics used to determine whether or not a patient is considered vulnerable (Naghavi, 2010, pg. 30):

- 1) vulnerable plaque/artery,
- 2) vulnerable blood (prone to thrombosis)
- 3) vulnerable myocardium (prone to life-threatening arrhythmia).

Vulnerable plaques are a collection

of white blood cells, lipids (including cholesterol) that accumulate on the walls of arteries. Defining characteristics of vulnerable plaques include a thin fibrous cap, large lipid-rich necrotic core, increased inflammation, stenosis (narrowing of arteries) and structural damage (fissured caps). These plaques are particularly unstable and prone to ruptures which cause the majority of heart attacks and strokes. Plaque rupture is the most common type of plaque complication and accounts for 75% of fatal coronary deaths (Naghavi, 2010, pg. 41). However, rupture-prone plaques are not the only vulnerable plaques and all types of plaques, especially those with a rapid accumulation and progression, could become vulnerable.

Non-invasive vascular imaging and function tests have the potential to provide a comprehensive assessment of risk, including the detection of plaque burden, vulnerability and disease activity (Naghavi, 2010, pg. 39). Plaque thickness could be detected by Carotid Intima-Media Thickness (CIMT) and ultrasound or MRI. CIMT works by measuring the thickness of the inner two layers of the carotid artery by using non-invasive sound waves. Coronary calcium scores are determined by using a special x-ray test called computed tomography which creates images of calcium buildup in plaque on the walls of the arteries of the heart. Another non-invasive screening method is the Ankle Brachial Index (ABI). ABI is the ratio of the blood pressure in the lower legs to the blood pressure in the arms. Lower blood pressure in the leg compared to the arms is an indication of blocked arteries.

Vulnerable blood, generally speaking, is blood prone to clotting (thrombosis). The magnitude of cardiac arrest events, triggered by plaque rupture is modulated by factors that determine plaque and blood clot formation (thrombogenicity). Tissue factor (TF) exposure, fibrin deposition, platelet aggregation, and circulating procoagulant micro particles are key players in clot formation and propagation (Naghavi, 2010, pg. 54). Vulnerable blood can be tested with serum markers such as C-reactive protein (CRP). CRP is an independent risk factor and powerful

predictor of future cardiovascular disease. Circulating interleukin-6 levels are also elevated in patients with atherosclerosis. Another serum marker for CVD is elevated plasma concentrations of soluble CD40; this is especially helpful in identifying risk in apparently healthy women. Other conditions that lead to hypercoagulable states (clotting states) are diabetes mellitus, hypercholesterolemia and cigarette smoking. These conditions increase tissue factor (TF) circulation which in turn lead to the formation of larger blood clots and more severe acute coronary syndrome. Currently, there are new anti-clotting treatments which inhibit the TF pathway (Naghavi, 2010, pg. 61).

Lastly, vulnerable myocardium is distinguished by irregular heart beat (arrhythmia). The autonomic nervous system acts unconsciously and regulates bodily functions such as the heart rate, digestion, and respiratory rate. There is extensive clinical evidence that indicates that autonomic nervous activity (in the heart) has a significant role in the clinical outcome of a coronary occlusion or blockage. The most powerful predictor of sudden cardiac death (SCD) is poor left ventricular function. Other risk factors for developing SCD include hypertension, cigarette smoking, physical inactivity, diabetes, obesity and dietary n-3 polyunsaturated fatty acid intake (Naghavi, 2010, pg. 67). There are documented hereditary components for autonomic function and recovery. Atherosclerosis-derived heart vulnerability can be detected by ECG abnormalities during rest or during a stress test (Naghavi, 2010, pg. 71). Perfusion and viability disorder can

be detected using a PET scan or SPECT. Wall motion abnormalities in the heart can be detected using echocardiography, MR imaging or x-ray ventriculogram. There is a smaller subset of patients which experience fatal arrhythmia without atherosclerosis (Naghavi, 2010, pg. 70). The underlying pathological processes that cause this include valvular heart disease and primary electrical disturbances (Brugada syndrome, Wolff-Parkinson-White syndrome, long-QT duction disturbances and others).

SUMMARY AND RECOMMENDATIONS

The current standard for preventing sudden cardiac death is a focus on simply identifying patients with vulnerable plaque (Naghavi, 2010, pg. 57). But the presence of plaque, by itself, is not enough for risk stratification. Vulnerable blood or vulnerable myocardium, in addition to pre-existing plaques determines the final outcome of the patients. Traditional risk assessment is effective in predicting long-term outcomes in large populations, but they fall short in predicting near-future events for individuals (Naghavi, 2010, pg. 29). A high Framingham Risk Score, although capable of predicting adverse cardiovascular events in 10 years, falls short in accurately predicting events in an individual's life. Furthermore, traditional risk scores provide no clear clinical route for cardiologists to identify and proactively treat patients to prevent the development of ACVD. This is where SHAPE comes in; to provide guidance on screening and prevention.

The SHAPE task force has called for non-invasive screening of all asymptomatic

men 45-75 years of age and asymptomatic women 55-75 years of age to detect and potentially treat those with subclinical atherosclerosis⁴. The biggest risk factor for CVD in apparently healthy individuals is age because 96% of deaths from SCD or stroke occur in people over the age of 55. However, cardiovascular disease kills more young and middle-aged women than breast cancer, yet the majority of those women would be considered to have low cardiovascular risk. They are overlooked and left untreated based on the traditional risk assessment (Naghavi, 2010, pg. 78). There is much more awareness of breast cancer screening in women in their 20s and 30s than awareness of CVD risk. This shortcoming comes from a lack of national screening guidelines, which would provide clinical guidance⁴. Within the SHAPE paradigm there would be direct non-invasive screening for the presence and severity of atherosclerosis. Many family doctors make valid, but traditional recommendations for patients. They screen for a number of valid risk factors: high LDL, low HDL, blood pressure, smoking, diabetes and metabolic syndrome. However, this may fall short for individual cases and may not identify the vulnerable patient. At the present time, potentially vulnerable patients will have to take independent steps toward preventive screening and work with their healthcare provider to make this possible.

In the next issue of *Cryonics* magazine, I will cover (2) the current monitoring and evaluation of the progression or regression of ACVD based on structural or molecular markers. I will also cover (3), the development of effective "Polypills" for preemptive population-based therapy. ■

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Alcor, Charitably Speaking

Recently some Alcor members donated personal funds, in the name of their organization, to help establish a Science and Literacy Center in Uganda. Such actions underscore Alcor's role as a charitable organization which endeavors to extend the benefits of science, technology, and education to the world at large. It is through such efforts that we hope to prevail against all limits to a good life. Below is a brief report, reprinted with permission of Henri "Hank" Pellissier who founded and works with the Brighter Brains Institute which conducts fundraising and otherwise supports efforts to help needy people worldwide. —Mike Perry

Roger Hansen Delivers Equipment to Transhumanist Science Center in Uganda

Posted: Tue, June 23, 2015 | By: MTA & CTA & Alcor,

<http://brighterbrains.org/articles/entry/roger-hansen-delivers-equipment-to-transhumanist-science-center-in-uganda>

On June 20, 2015, Roger Hansen visited the **Science & Literacy Center** in Kyarumba, Uganda, that was funded via the generosity of the **Mormon Transhumanist Association**, the **Christian Transhumanist Association**, and the **Alcor Life Extension Foundation**.

Roger also delivered science equipment that was donated to the Center. He carried the equipment to Uganda in his suitcase.

Roger is the co-Manager of Humanitarian Activities for MTA, he's a frequent contributor to the **African Futures Project** at IIEET.org, and he blogs about his world-wide humanitarian projects at **Tired Road Warrior**. He travels to Uganda frequently, delivering supplies, and putting up **swing sets** in rural Uganda areas for orphanages and schools. He also recently helped establish a **Computer Training School** in Masaka, at the LDS Church.

The name "Vivienne Harr" can be seen in one of the photos. Vivienne is the "**Lemonade Girl**" of Fairfax, California, who has sold over \$100,000 worth of lemonade, to end slavery worldwide. She recently donated an American Girl Doll to the **World Girl Dolls (WGD)** organization. WGD sells American Girl Dolls on eBay and donates the money to help girls education internationally. Vivienne's donation paid for the tuition of a girl at Kyarumba's **Vision Care School**, which utilizes the Transhumanist Science & Literacy Center as their classroom. Vision Care students are wearing burgundy and powder blue uniforms, in the photos.

The three transhumanist groups are to be wildly commended for their generosity in accelerating knowledge in this part of the world. Their center is aiding the children and townspeople in understanding the scientific method, and the scientific principles that govern our world, and will guide us towards helpful technology in the future. ■



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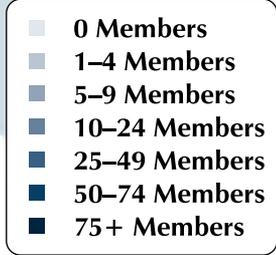
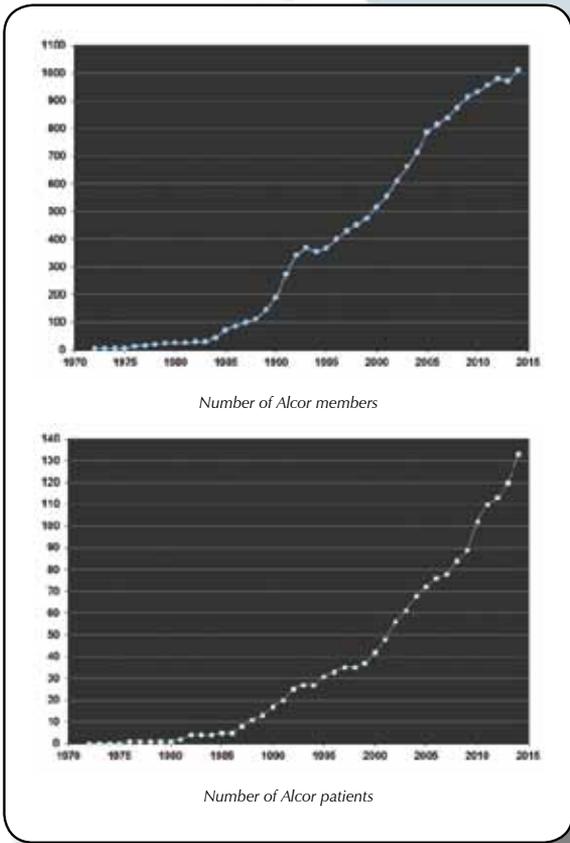
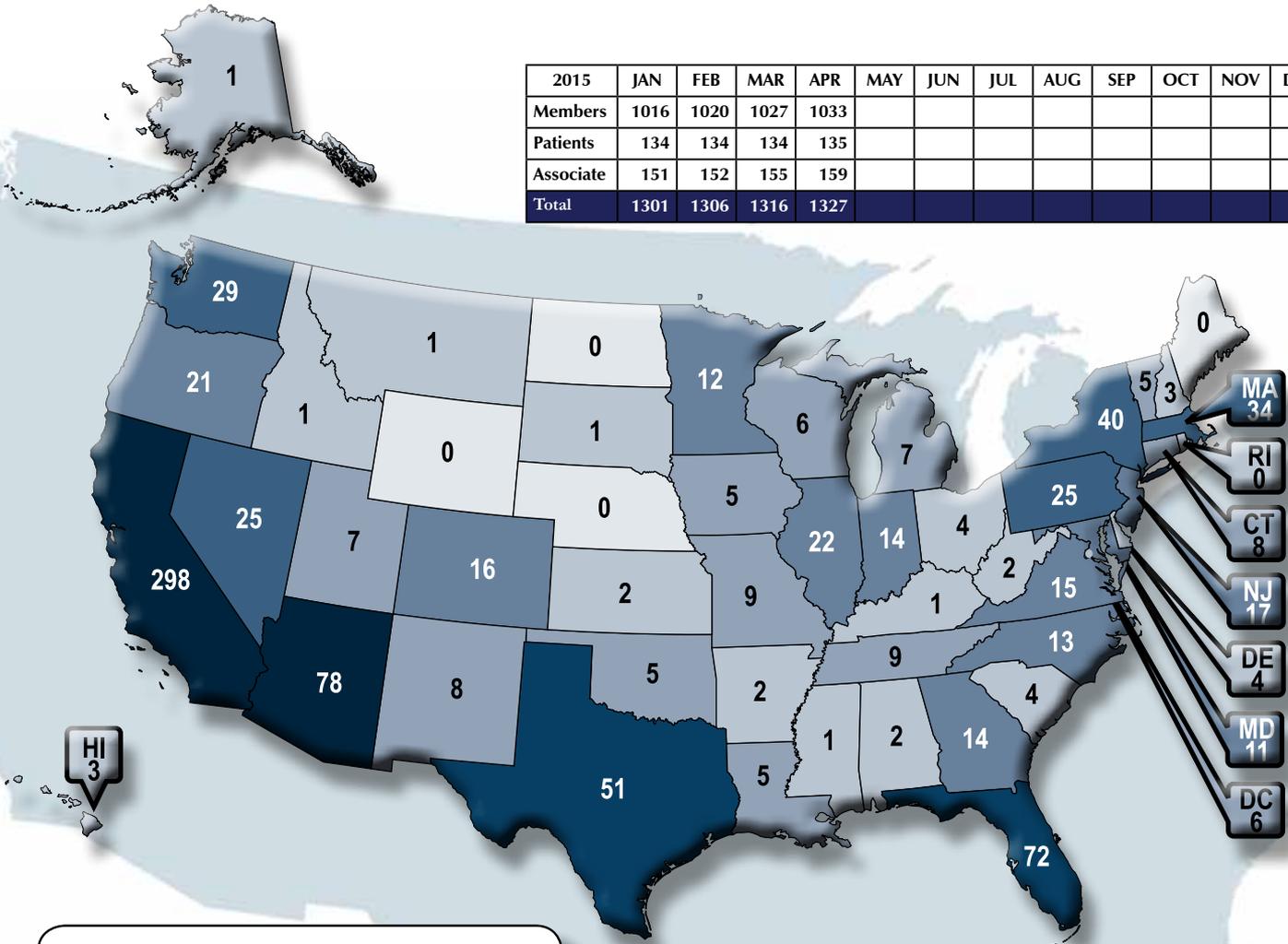
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Patients	134	134	134	135								
Associate	151	152	155	159								
Total	1301	1306	1316	1327								



International

Country	Members	Patients
Australia	10	3
Canada	43	2
Germany	6	0
Hong Kong	1	0
Israel	1	1
Italy	3	0
Japan	3	0
Mexico	4	0
Monaco	1	0
Netherlands	2	0
New Zealand	2	0
Norway	1	0
Portugal	4	0
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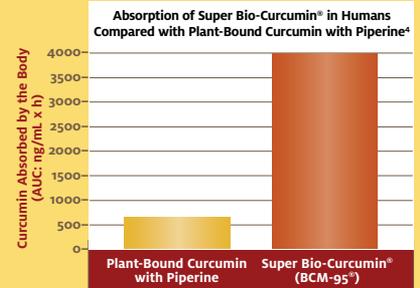


Chart 1. Super Bio-Curcumin® (BCM-95®) showed 6.3 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with plant-bound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by the body over 8 hours).

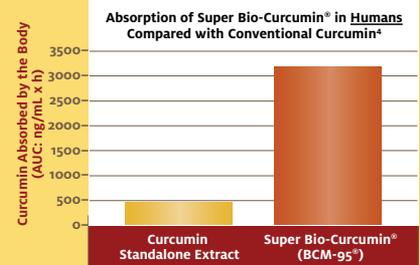


Chart 2. Super Bio-Curcumin® (BCM-95®) showed 6.9 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with conventional curcumin (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by the body over 8 hours).

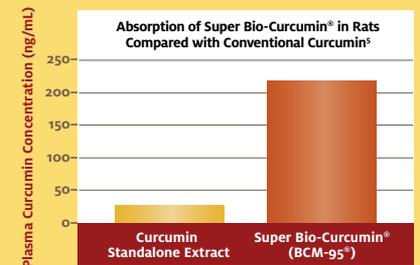


Chart 3. Bioavailability in rats fed with BCM-95® is 7.8 times higher than conventional curcumin.

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- How can a regular person afford cryonics and best plan for funding it and their own post-revival life?
- Research.
- How would you spend \$10 billion on anti-aging research?
- Legal issues.
- What happens if Alcor membership grows at 25% for 50 years? 70 million members, about 700,000 cases/year.

CONFERENCE SCHEDULE

Friday • October 9, 2015

5:00 pm - 8:00 pm	Registration
7:00 pm - 10:00 pm	Reception
8:00 pm	Welcome Address
10:00 pm until late	Networking

Saturday • October 10, 2015

7:30 am - 12:00 pm	Registration
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Speaker Presentations
12:30 pm - 2:15 pm	Lunch
2:15 pm - 5:30 pm	Speaker Presentations
7:00 pm - 10:00 pm	Banquet Dinner
10:00 pm until late	Networking

Sunday • October 11, 2015

7:00 am - 9:00 am	Breakfast
9:30 am - 1:00 pm	Speaker Presentations
2:00 pm - 6:00 pm	Alcor Open House & Cookout



MEETINGS

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This group meets monthly, usually in the third week of the month. Dates are determined by the activity or event planned. For more information or to RSVP, visit <http://cryonics.meetup.com/45/> or email Lisa Shock at lisa@alcor.org.

AT ALCOR:

Alcor Board of Directors Meetings and Facility Tours—Alcor business meetings are generally held on the first Saturday of every month starting at 11:00 AM MST. Guests are welcome to attend the fully-public board meetings. Facility tours are held every Tuesday at 10:00 AM and Friday at 2:00 PM. For more information or to schedule a tour, call Marji Klima at (877) 462-5267 x101 or email marji@alcor.org.

CALIFORNIA

LOS ANGELES:

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

SAN FRANCISCO BAY:

Alcor Northern California Meetings are held quarterly in January, April, July, and October. A CryoFeast is held once a year. For information on Northern California meetings, call Mark Galeck at (650) 969-1671, (650) 534-6409 or email Mark_galeck@pacbell.net.

FLORIDA

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

NEW ENGLAND

CAMBRIDGE:

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

PACIFIC NORTHWEST

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

BRITISH COLUMBIA (CANADA):

The contact person for meetings in the Vancouver area is Keegan Macintosh: keegan.macintosh@me.com.

OREGON:

The contact person for meetings in the Portland area is Aschwin de Wolf: aschwin@alcor.org. See also: <https://www.facebook.com/portland.life.extension>

ALCOR PORTUGAL

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

TEXAS

DALLAS:

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

AUSTIN/CENTRAL TEXAS:

A new group for the Austin area has been started for those interested in discussion and understanding of the relevant technologies and issues for cryopreservation, genomics, epigenetics and medical research for increased life/health span. Contact Tom Miller, 760-803-4107 or tom@blackmagicmissileworks.com.

JAPAN

Cryonics meetings are held monthly in Tokyo. Send queries to [grand88\(at\)yahoo.com](mailto:grand88(at)yahoo.com).

UNITED KINGDOM

There is an Alcor chapter in England. For information about meetings, contact Alan Sinclair at cryoservices@yahoo.co.uk. See the web site at www.alcor-uk.org.

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

WHAT IS CRYONICS?

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

HOW DO I FIND OUT MORE?

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

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

Your free package should arrive in 1-2 weeks. (The complete package will be sent free in the U.S., Canada, and the United Kingdom.)

HOW DO I ENROLL?

Signing up for a cryopreservation is easy!

- Step 1:** Fill out an application and submit it with your \$90 application fee.
- Step 2:** You will then be sent a set of contracts to review and sign.
- Step 3:** Fund your cryopreservation. While most people use life insurance to fund their cryopreservation, other forms of prepayment are also accepted. Alcor's Membership Coordinator can provide you with a list of insurance agents familiar with satisfying Alcor's current funding requirements.
- Finally:** After enrolling, you will wear emergency alert tags or carry a special card in your wallet. This is your confirmation that Alcor will respond immediately to an emergency call on your behalf.

Not ready to make full arrangements for cryopreservation? Then **become an Associate Member** for \$10/month (or \$30/quarter or \$120 annually). Associate Members will receive:

- *Cryonics* magazine by mail
- Discounts on Alcor conferences
- Access to post in the Alcor Member Forums
- A dollar-for-dollar credit toward full membership sign-up fees for any dues paid for Associate Membership

To become an Associate Member send a check or money order (\$10/month or \$30/quarter or \$120 annually) to Alcor Life Extension Foundation, 7895 E. Acoma Dr., Suite 110, Scottsdale, Arizona 85260, or call Marji Klima at (480) 905-1906 ext. 101 with your credit card information. You can also pay using PayPal (and get the Declaration of Intent to Be Cryopreserved) here: <http://www.alcor.org/BecomeMember/associate.html>



Call toll-free TODAY to start your application:

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