Alcor Life Extension Foundation
A Non-Profit Organization

CRYONICS

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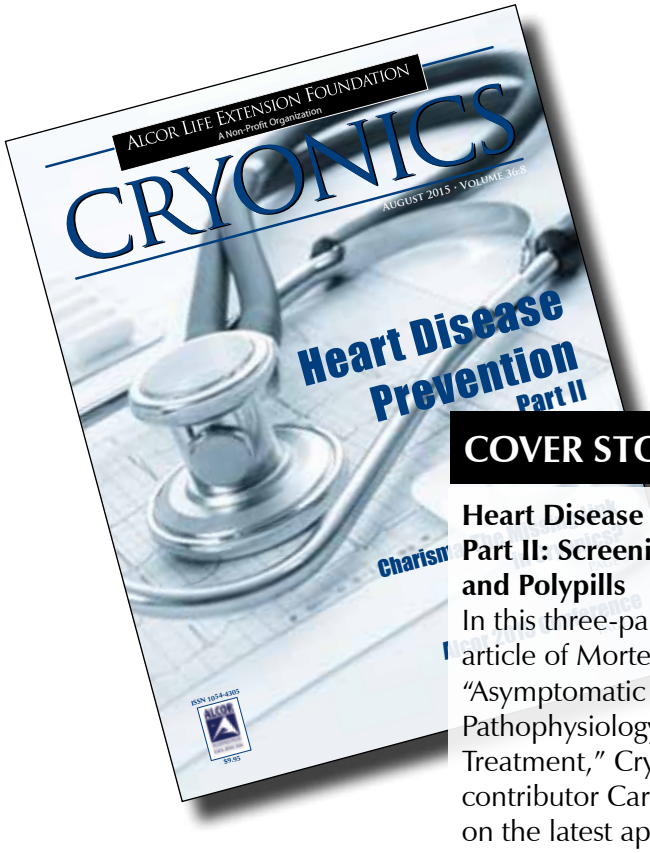
CRYONICS



COVER STORY: PAGE 12

Heart Disease Prevention—Part II: Screening, Therapies, and Polypills

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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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.

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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.

CHARISMA: THE MISSING LINK IN CRYONICS? By Aschwin de Wolf

In the June issue of *Cryonics* magazine, I published an article called "Concepts of Identity and the Growth of Cryonics." With the exception of my co-authored article on hostile partners in cryonics this article garnered the most feedback that I have ever received on an opinion piece about cryonics. Many people seemed to be sympathetic to the point that the lack of popularity of cryonics cannot be simply attributed to its lack of technological feasibility but I am not sure how widely my suggestion for cryonics organizations to embrace a broader concept of identity is shared. In fact, one person wrote to tell me that my perspective still ignores a rather fundamental point about the successful adoption of ideas and beliefs; the importance of charisma. He writes:

*"Your list of rational responses to alleged shortcomings in cryopreservation procedures was good, but I think it misses the point. We can be rational about this, day after day, and get nowhere—because you are omitting the key factor, which I think is the ability to *close a deal*...The ability to sell entails persistence, force of personality, confidence, charm, and a kind of charisma. Most of these attributes are rare among cryonics activists...Why should charisma be necessary? Because of the "disconnect," which I have seen so often. I run through the rational reasons for cryonics, and I answer all the questions. The person I am speaking to becomes reflective. The person often says, something like, "I guess it does make sense." Then I say, "How about for you?" The person blinks, looking surprised, and pulls back a little. "Oh no, not for ME!"... This is the disconnect, between abstract agreement and personal commitment. I don't think the perception of identity has much to do with it. That's just another in the long list of issues such as religious faith, fear of the future, and concern about depriving heirs of a life insurance payout."*

I am quite persuaded by this response because it can both explain why ideas with no scientific credibility whatsoever can persuade so many people and why ideas with solid reasoning and evidence behind them have remained in obscurity. But I do think this is still only part of the puzzle. Having a very charismatic proponent of cryonics may be be sufficient for rapid growth, but is it necessary? Let's look at my favorite example, astrology, again. I think that the rather widespread belief in astrology cannot be attributed to one charismatic person, or a number of charismatic persons. Astrology seems to offer something so important that many people demand little in terms of scientific evidence. In this case if offers assurance about personal identity and the future. Interestingly enough, cryonics presents an interesting contrast because people believe that it raises even *more* uncertainty about their identity and the future. An unorthodox way to put this would be to say that the idea of astrology itself has "charisma" because it appeals to the hopes and aspirations of many people.

An obvious rejoinder to this would be to point out that the idea of immortality or overcoming death should have the biggest draw of all. That idea of eternal life that is often associated with cryonics is such an appealing prospect that even people with "negative charisma" would not be able to prevent its widespread endorsement. Well, that is not quite the situation we have found ourselves in (to put it mildly). I actually think that for many people the idea of overcoming death or (true) immortality sounds great but as in most fiction and SF movies, the idea of indefinite life has often been associated with "bad" events. A prevalent one in popular fiction is to associate the desire for immortality with the selling of one's "soul." In the case of cryonics many people think that the price for indefinite life is alienation and loss of family and friends.

So I remain convinced that offering a vision of cryonics that does justice to those concerns has a much higher chance of gaining in popularity but we also still need a charismatic person to close that deal. Let's go for both! ■

CEO Update

By Max More

Last month's update was devoted to catching up on news from the last several months concerning media and communications. This time, I will focus on membership growth and various improvements. In my next update, I expect to review Alcor's finances.

MEMBERSHIP GROWTH AND SIGN-UP BARRIERS

For the first time for Alcor and for any cryonics organization, full cryopreservation membership in Alcor reached 1000 on September 24, 2014. (You may have seen another cryonics organization claim to have well over 1,000 members, but that counts many people who do not have any arrangements to be cryopreserved.) A modest acceleration in membership is continuing and, at 4.0%, is the fastest growth rate since 2009 (before dues and CMS fees were increased) and the largest absolute number of new members since 2005.

Last year, and even more so this year, we have made it easier to attract and retain members by reducing membership costs and introducing an option for waiving the CMS fee. I think we can also do more to make continued membership more appealing. I've had a number of conversations on this topic, including discussions of strengthening the community and rewards for maintaining membership. This is an area that I want to pursue further over the year ahead. At the same time, we are working on ways to make it easier to become an Alcor member.

Becoming an Associate Member is an easy step to take, and may lead to more full cryopreservation members over time. You, our members, can help with this. For instance, last December, David Kekich hosted another of his annual life extension/cryonics gatherings in Southern California. Thanks to Dave, Alcor gained around 15 new Associate Members in November.

Applicants are deterred by all the decisions they have to make and the complexity of our paperwork. My guiding principle is to reduce the cognitive burden of our paperwork. Simplify, **highlight** defaults, and make it easy to get help. Most people will be happy with the defaults and it leaves them less thinking and deciding to do. Depending on cost and ROI, we might also look into creating an online "wizard" to help with decisions.

ALCOR-2015 CONFERENCE

Elsewhere in this issue you will find information about sessions and speakers for the October Alcor conference. By the time you receive this issue of *Cryonics*, we will have added full biographical information on speakers and more about the contents of the sessions. So be sure to check the conference webpage (linked from the top of the homepage). I am keeping open one or two spots that I hope to fill with very well-known public figures.

TECHNICAL AND OTHER IMPROVEMENTS

Monitoring: At the 2014 Annual Meeting, we discussed various options for improving feedback on the quality of procedures during stabilization and during surgery and perfusion. During stabilization, it seems useful to use capnography in the form of end-tidal CO2 monitoring (ETCO2). The consensus was to use the digital system. We are currently looking at the cost of digital systems that record and those that do not. We have researched and ordered two units (one that records and one that does not) that will work in concert to provide us the data we hope to analyze.

First, we identified a portable patient monitor that can obtain not only ETCO2, but also SPO2, respiratory rate, pulse, ECG, non-invasive blood pressure and dual temperature readings. Some components of this monitor will help observe the patient's condition prior to pronouncement and the other components will be beneficial after pronouncement. This device will also collect and store the data for further analysis or possible graphs.

The second device is a portable ventilator that will provide consistent respirations throughout the stabilization. Unlike most ventilators which require compressed O2 for power, it runs off battery power and can use room air—which we prefer. This device will ensure that the above mentioned monitor will collect accurate data, as ventilation consistency is vital in determining ETCO2 values. In addition, once this unit is set up and established, it

will free-up a medical provider from having to provide manual ventilations and allow them to assist on other aspects of the stabilization.

We are also investigating the cost and availability of doing our own testing on the O'Leary system for tracking pH levels and look forward to comparing notes with SA which is doing its own testing. We will also look into what equipment and skills are needed to begin taking tissue samples, starting with the spinal cord, to be studied using micrographs, histology, and differential scanning calorimetry.

Steve Graber acquired new Atago refractometers and integrated them into the operating table. We have since added a third unit in order to complete automation.

The operating room has been enhanced by the addition of a 4K (3,840 x 2,560 pixels) 70" monitor (snagged by Steve Graber at a remarkably low price) to display output from the perfusion process control system. This greatly improves the visibility of data on temperature, pressure, flow rates, and refractive index. Steve modified the graphical user interface so that all the controls could be seen on one display, rather than being split across two monitors. The much larger display makes it far easier to see the continually changing readings from various positions in the operating room rather than having to stop what you're doing and come up close.

Wireless internet access has been poor in major areas of the facility, including the conference room and the operating room. We have installed a high security enterprise class wireless system that covers the entire building. This enables us to separate users into those who can log in to the Network securely and guests.

Presenting Alcor research: Alcor has been conducting its own research as well as funding outside research. However, the website lags well behind in reporting recent developments. In the near future, I want to update the Research and Evidence section of the website. The update should include summaries of recent research and fresh EM studies. In the meantime, we have created an "Alcor Research Center" (ARC) page to highlight the recent paper on survival of memory through cryopreservation in *C. elegans*. We have done several more CT scans of neuro patients over the last few months. Expect a review of what we have learned at the October conference.

Aesthetic improvements: We are continuing to work on low-cost, high-impact aesthetic improvements to Alcor, both internally and externally. We expect to complete most of the current task list by the October conference. Some potential members care little or nothing about appearance, but many do, and certainly the resulting portrayal in written and video media makes a difference to how we are perceived. We are also looking into replacing our old and weak operating room lights with LED models or an alternative that provides better illumination. We have also taken lighting of the patient care bay to a new level. The media and many visitors have clearly responded positively to this.

We are in the process of painting to brighten the remaining drab or dark areas. (Outside painting will have to wait until it cools down.) In May, the floors in the OR and hallway, bathroom, corridor, and demo room were stripped, cleaned, and waxed, making them noticeably brighter.

Outside improvements are also well underway and should be completed in time for the tour following the October conference. We have already added gravel to bare areas of ground, added river rocks, upgraded the irrigation system, and planted new trees and colorful bushes and flowers. We replaced the rotting wood beams lining the entrance pathway and tore up the old, narrow pathway, replacing it with a wider pathway of smooth concrete leading up to the main entrance. As ex-president and Cryonics Property LLC principal Steve Bridge noted: "While I was there Alcor was putting in a new sidewalk to the front door. The very next day I heard two delivery people thank us for it, since the previous one had been both narrow and awkwardly placed. It also looks more inviting and professional for visitors."

Once the temperatures come down, we will be repainting some areas of the outside of the building, painting the curb, and laying down new asphalt to replace the cracked material that surrounds the building. My thanks for their cooperation in this endeavor to Steve Bridge, Hugh Hixon, and property manager Gina Gringle.

Building medical relationships and capabilities: On February 17, Aaron and I hosted a meeting and tour at Alcor for the new Executive Director (and Clinical Director) of a cooperative local hospice we have used several times. They were accompanied by two individuals with whom we have interacted multiple times before. They said they wanted to know how they could do better for us in caring for our patients and in optimizing outcomes when members travel to Scottsdale for end of life care. In July, we had another meeting with the CEO of a local hospital used several times by Alcor for our patients. This level of cooperation differs greatly from the earlier days of cryonics!

Medical Response Director Aaron Drake held an introduction, orientation, and initial training session for four individuals who appear to be interested or actively eager to augment our local and regional response capabilities. For standbys and shift support, we have been fortunate to be able to bring in skilled personnel from California. But, as our caseload rises, we need to have a deeper bench of local talent, especially when Aaron is out of town on international cases. In spending some time with the group toward this end, it seemed that they had a good grasp of what was involved and at least one of them wanted to sign up as a full member.

Given the crucial importance of having someone deeply familiar with the perfusion setup in Alcor's OR, further training of Steve Graber will take place to ensure that he can perform all perfusion tasks even if Hugh Hixon is not available. To allow Steve to focus solely on that task, we are first identifying and eliminating all other distracting tasks. We have run dry runs for Steve with Hugh observing only and then judging Steve's performance. Steve has also found and is training two very smart young fellows to learn aspects of his work.

RESILIENCE

Despite being an important economic area for Scottsdale, the Airpark area is subject to overly-frequent power outages. In 2013, we installed a backup generator to

provide power for multiple functions but most importantly to ensure uninterrupted power during surgery and perfusion. A 91-minute power outage on September 28, 2014, provided a real-world test of its performance. During that time, the fuel gauge went from 0.75 full to 0.70 full. That indicates that the generator would run for nearly 23 hours if fully fueled to start. This was a pleasing performance especially because a cool down was in progress at the time. More recently, in July, we had another outage lasting 53 minutes. Again, the backup system performed as expected.

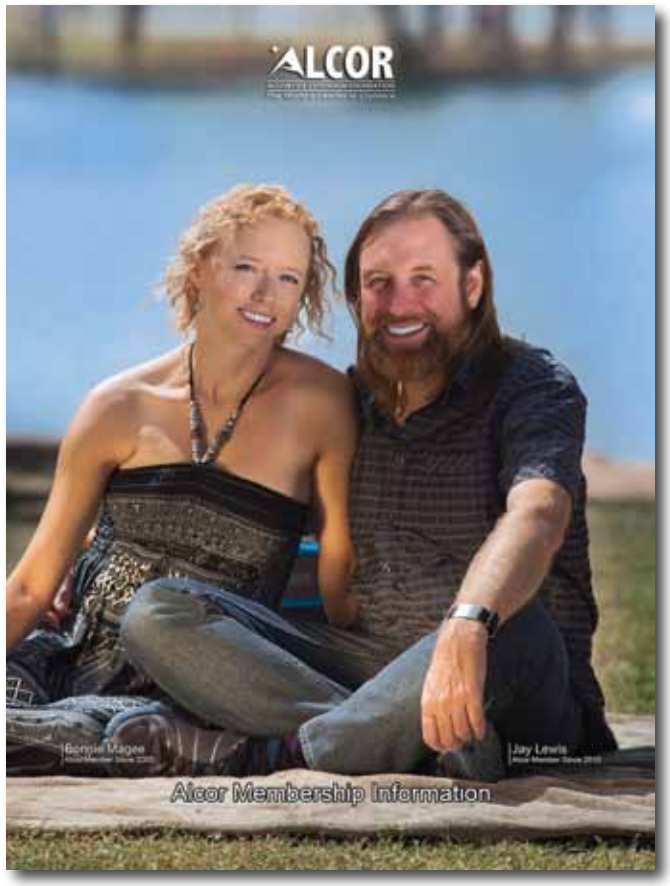
MEDIA AND MARKETING

Last month, I mentioned that we were in the process of completely redesigning the information pack/presentation folder. After many rounds of revision, in July we printed it and it is now being sent out in response to inquiries. During August, you will be able to find a downloadable PDF version of this on the website.

By the time you receive this issue, you should be able to find a one-minute Alcor TV commercial on YouTube.

On the level of print and television: On June 2, I did an interview with Hikaru Nagano for *Nikkei Business*. I also communicated concerning filming at Alcor related to a movie version of Alcor member Jim Halperin's book, *The First Immortal*. We also did an interview with Korean Channel MBC, with an audience of 20 million, on July 1. We are getting more media attention than we can handle while working on other projects, so I'm talking to selective, experienced Alcor members about helping take on some of these opportunities.

New challenges always pop up and have to be dealt with, and we keep finding ways to improve. But we have been making many improvements and advances, from minor to major. I look forward to seeing many of you at the October conference, and at the Sunday afternoon tour where you can see many of these improvements yourself. ■



Cover photo of the new Alcor info pack

ARE YOU GETTING Curcumin's BENEFITS?

Curcumin is the health-promoting trace compound derived from the Indian spice **turmeric**. But not all turmeric is alike.

The curcumin found in the vast majority of dietary supplements is derived from turmeric that is **nutritionally inferior**.

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A bottle containing 60 vegetarian capsules of **Super Bio-Curcumin®** retails for $38. If a member buys four bottles, the price is reduced to only **$26.25** per bottle.

Item # 00407

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2. *J Food Nutr Res.* 2009;48(3):148-52.
3. *Arch Gerontol Geriatr.* 2002;34:37-46.
4. *Indian J Pharm Sci.* 2008 Jul-Aug;70(4):445-9.
5. Bioavailability study of BCM-95® in rats. Orcas International Inc. 2006.

CAUTION: Do not take if you have gallbladder problems or gallstones. If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

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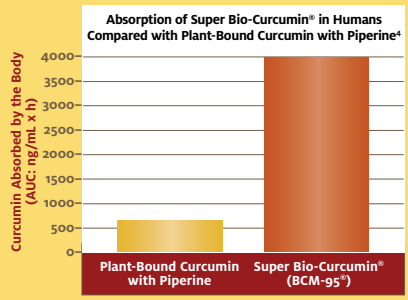

Chart 1. Super Bio-Curcumin® (BCM-95®) showed 6.3 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with plant-bound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin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

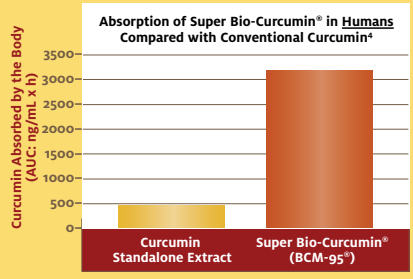

Chart 2. Super Bio-Curcumin® (BCM-95®) showed 6.9 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with conventional curcumin (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed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

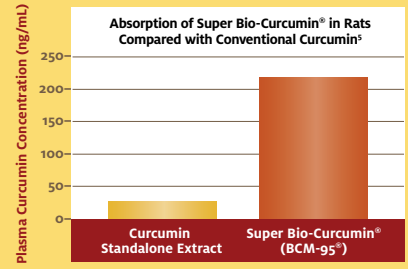

Chart 3. Bioavailability in rats fed with BCM-95® is 7.8 times higher than conventional curcumin.

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.

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1 bottle	$32	**$24**
4 bottles	$28 each	**$21 each**
10 bottles	$22.73 each	**$17.05 each**

References
1. *Public Health Nutr*. 2006 Dec;9(8A):1136-40.
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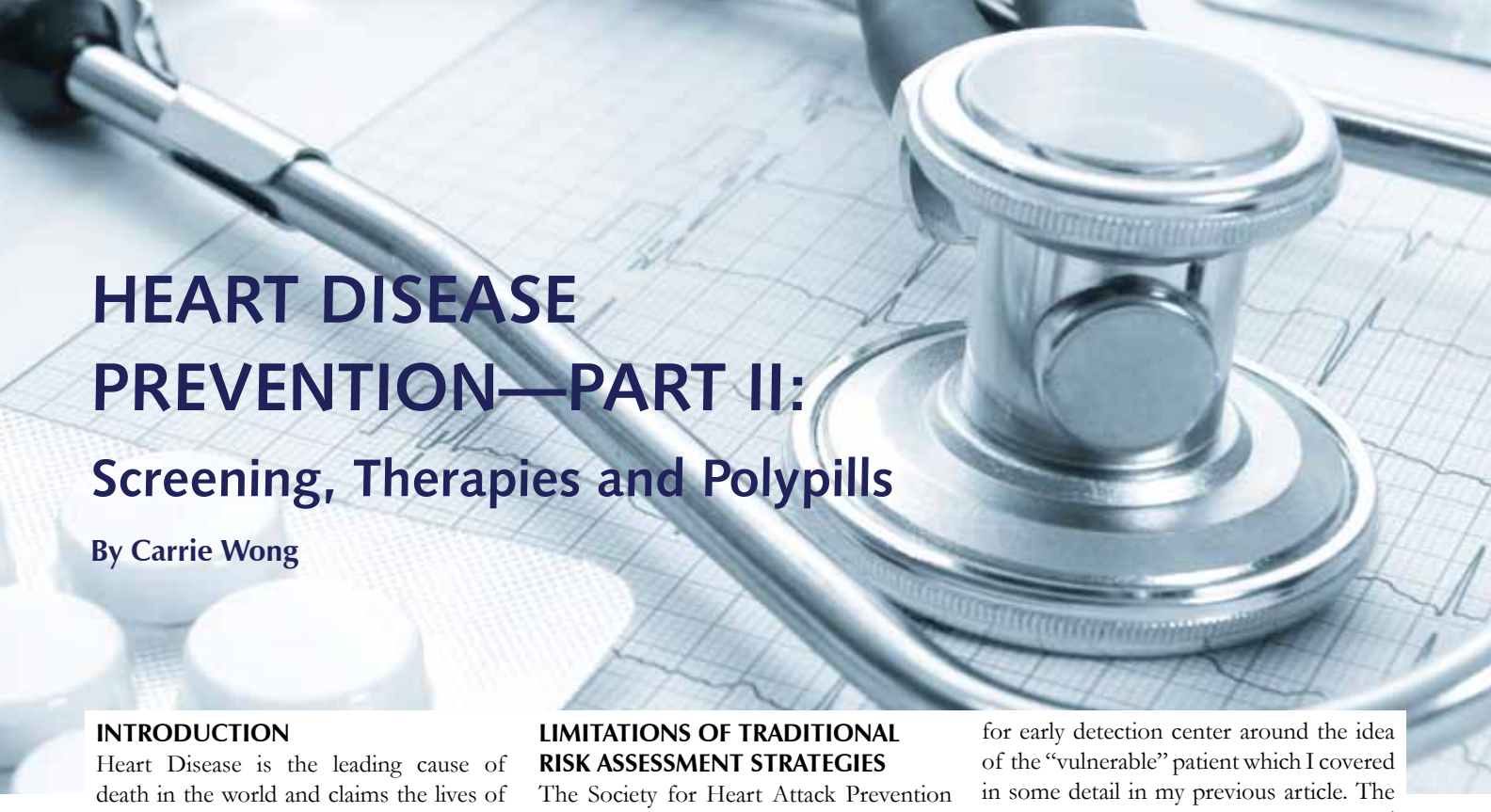
Note: While the health benefits of omega-3s from fish oil are universally recognized, the critical importance of olive oil in maintaining healthy vascular function remains largely overlooked.

To order **Super Omega-3**, call **1-800-544-4440** or visit **www.LifeExtension.com**



HEART DISEASE PREVENTION—PART II:

Screening, Therapies and Polypills

By Carrie Wong

INTRODUCTION

Heart Disease is the leading cause of death in the world and claims the lives of 610,000 Americans every year. Over the past 50 years, great progress has been made in treating symptomatic cardiovascular disease but little progress has been made for asymptomatic cardiovascular disease which is the leading cause of sudden death. 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 indication of the disease is an acute heart attack, which is often fatal (Naghavi, 2010, pg. 77). As cryonicists, we have to pay special attention to preventing sudden death to ensure a timely cryopreservation.

In my previous article, *Heart Disease Prevention – Part I: Introduction and Risk Factors*, I gave an introduction to my summary of **"Asymptomatic Atherosclerosis – Pathophysiology, Detection and Treatment"** by Morteza Naghavi, MD[1]. This is part two in my three-part summary of this extensive 700 page volume outlining the Society for Heart Attack Prevention and Eradication (SHAPE) initiative. In part one; I gave a brief summary of the pathophysiology of atherosclerotic cardiovascular disease (ACVD) as well as SHAPE's guideline for what constitutes a "vulnerable" patient. In this article, I cover additional risk factors, targeted therapy, and preventive drugs (polypills).

LIMITATIONS OF TRADITIONAL RISK ASSESSMENT STRATEGIES

The Society for Heart Attack Prevention and Eradication (SHAPE) has provided a unique clinical approach to early detection of asymptomatic atherosclerosis because 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 levels[2]. As a result of the shortcomings of traditional risk assessment, the Society for Heart Attack Prevention has come up with criteria for early detection and prevention of asymptomatic atherosclerotic cardiovascular disease (ACVD). The criteria for early detection center around the idea of the "vulnerable" patient which I covered in some detail in my previous article. The vulnerable patient has vulnerable plaque/arteries, vulnerable blood, or vulnerable myocardium (Naghavi, 2010, pg. 30).

The SHAPE task force has called for non-invasive screening of all asymptomatic men 45-75 years of age and all asymptomatic women 55-75 years of age to detect and potentially treat those with subclinical atherosclerosis[3]. There is widespread awareness of regular mammogram screening for women over 40 years of age to detect breast cancer but much less awareness for atherosclerosis screening. Cardiovascular disease kills more young and middle-aged women than breast cancer, yet the majority of those women would be considered at low cardiovascular risk (Naghavi, 2010, pg. 78). There are currently low levels of awareness and screening for asymptomatic cardiovascular disease. Traditional risk factors such as

MAJOR RISK FACTORS	OTHER RISK FACTORS
Cigarette Smoking	Obesity
Elevated Blood Pressure	Physical Inactivity
Elevated Serum total (and LDL) cholesterol	Dietary Habits
Low serum HDL cholesterol	Family history of premature ACVD
Diabetes Mellitus	
Advancing Age	

Table 1: Traditional Risk Factors (Naghavi, 2010, pg. 93)

elevated LDL, blood pressure, or low HDL do not affect all people who suffer from ACVD (Table 1). Up to 20% of those affected by ACVD have no traditional risk factors (Naghavi, 2010, pg. 89).

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. Recently, additional limitations have emerged with the Framingham Risk Score (FRS), including poor calibration in various ethnic groups, and misclassification of risk in young people and women (Naghavi, 2010, pg. 89). The Framingham Risk Score (FRS) was able to predict risk in black and white Americans, but it was poorly calibrated for risk assessment in Japanese Americans, Hispanics and Native Americans. These ethnic groups had significant overestimation of cardiovascular disease according to their FRS. Reports from Chinese and other Asian populations have also described an overestimation of CVD risk using the FRS (Naghavi, 2010, pg. 100). While women develop CVD later in life than men, the classification of risk by the FRS most likely underestimates the short-term risk of CVD in many women. Approximately 50% of men and 33% of women will develop CVD over their lifetimes starting from age 40. Most of those who will eventually suffer from CVD would have been categorized as low short-term risk by the current FRS when applied at a younger age (Naghavi, 2010, pg. 102).

ADDITIONAL RISK FACTORS FOR ASYMPTOMATIC CARDIOVASCULAR DISEASE

Since traditional risk assessment has fallen short for a number of individuals, the SHAPE task force has come up with additional factors to consider when screening for the onset of asymptomatic cardiovascular disease.

Lipid Profiling Beyond LDL

Abdominally obese and insulin-resistant individuals have a strong tendency to develop atherosclerosis independent of LDL cholesterol levels (Naghavi, 2010, pg. 107). This fat accumulation around the waist is often associated with elevated plasma levels of triglycerides and apoliopoprotein B (apoB) and with decreased HDL and apolioprotein A-I (apoA-I). ApoB transports all potentially atherogenic low-density lipoprotein (LDL) while apoA-I transports HDL particles and acts as a major anti-atherogenic protein. There is a growing body of evidence that the apoB/apoA-I ratio is a much more effective marker for ACVD than merely using traditional lipids profiling like LDL or HDL[4]. The lower the apoB/apoA-I ratio, the lower the risk for developing ACVD. Abdominal diameter is a quick and easy metric to quickly identify ACVD and metabolic syndrome risk. Abdominal obesity is clinically defined as women or men with a waist circumference over 90cm (Naghavi, 2010, pg. 115).

New Blood Biomarkers of Atherosclerosis and Inflammation

Both systemic and local inflammation may play a prominent role in the pathogenesis of atherosclerosis and its clinical complications. Inflammatory processes accompany all stages of atherosclerosis and screening for low-grade inflammation using several novel biomarkers might provide an important tool for identifying individuals at increased risk.

C-Reactive Protein (CRP) is the most well-studied pro-inflammatory biomarker. CRP is a protein found in blood plasma and the levels of CRP rise in response to inflammation. Data from more than 25 studies indicate that CRP is strongly associated with future CVD in apparently healthy men and women (Naghavi, 2010, pg. 121).

Fibrinogen is a glycoprotein that aids in the formation of blood clots. Elevated fibrinogen levels lead to the formation of tight and rigid structures and decrease the deformability of blood clots which makes the body less likely to break down those clots (Naghavi, 2010, pg. 121). There is extensive clinical and epidemiologic evidence demonstrating an association between elevated fibrinogen levels and cardiovascular disease. This association is strong and consistent in many published studies, across diverse population groups and variable follow-up lengths. Fibrinogen is an independent biomarker for the development of ACVD and mortality. An increase in fibrinogen level by 1g/L was associated with approximately a twofold increase in risk for ACVD (Naghavi, 2010, pg. 122).

Fibrin D-dimer is a small protein fragment present in the blood after a blood clot is broken down by the body in a process called fibrinolysis. As a biomarker, D-dimer plays an important role in the detection of hypercoagulable states such as pulmonary embolism or deep vein thrombosis. D-dimer is an independent biomarker for the development of CVD and these results have been summarized in a meta-analysis of 1,535 patients (Naghavi, 2010, pg. 123). According to the results of the meta-analysis, there was approximately a 70% increased risk for CVD for those in the top third of D-dimer distribution.

Interleukin-6 (IL-6) is a single chain glycoprotein produced by many cell types as well as by adipose tissue. This glycoprotein amplifies the inflammatory cascade during an acute event and promotes synthesis of CRP, serum amyloid A and fibrinogen. According to many clinical and epidemiological studies, IL-6 has extensive plaque-forming properties (Naghavi, 2010, pg. 123). Elevated IL-6 levels in patients with unstable atherosclerotic plaque were independently associated with twofold increase in mortality at 6 months and again at 12 months. Interleukin-6 is another independent biomarker that possesses strong predictive ability for future CVD risk.

Genomics and Cardiovascular Disease

It is estimated that between 20 and 33% of individuals with significant CVD are misclassified by the Framingham Risk Assessment (Naghavi, 2010, pg. 136). These findings suggest the presence of important undiscovered pathophysiologic mechanisms. Contemporary advances in personal genomic technologies hold great promise in transforming the practice of medicine through an understanding of the biomolecular mechanisms responsible for a variety of diseases. Before a personalized medicine approach to ACVD can become reality, researchers must validate novel biomarkers across different cohorts and in relation to various environmental factors. It is an intricate network of genes, environmental factors, and gene-by-environment interactions that complicates understanding of the underlying genetic components of CVD.

Early results from several genomic studies provide proof of concept for consistent and reproducible markers through genetic testing. Rapid advancement in genomic and proteomic technologies has the potential to provide novel insight into the underlying mechanisms that cause ACVD. However, clinical translation of these genomic findings requires more research and validation in prospective studies that include large, ethnically diverse cohorts (Naghavi, 2010, pg. 147).

Family History

It is well-known that a family history of premature cardiovascular disease (CVD) reflects a genetic predisposition to develop atherosclerosis (Naghavi, 2010, pg. 169). The standard Framingham Risk Evaluation algorithm does not include family history information in its criteria. There is overwhelming evidence that family history of CVD is an independent predictor of early onset atherosclerosis. Individuals in the Framingham low risk category with a family history of early onset CVD should be considered intermediate risk and be targets for further screening. Using family history is a cost-effective, well-established and individualized genomic means that encompasses all the complex genetic and environmental interactions that lead to the development of CVD (Naghavi, 2010, pg. 173). The Family Risk Score (FRS) is a quantitative measure of family risk for the development of CVD within a clinical setting (Naghavi, 2010, pg. 174). The FRS considers the number of first degree relatives who had early onset CVD and the age they developed CVD to calculate a quantitative risk score. In summary, having a number of close relatives who have had coronary heart disease before 60 years of age would probably yield a high FRS.

TREATMENT OF ASYMPTOMATIC ATHEROSCLEROTIC CARDIOVASCULAR DISEASE (ACVD)

The majority of patients who suffer a cardiovascular event have at least one risk factor but only a minority of individuals with only one risk factor will suffer a cardiovascular event. The majority of adults in the US population are classifiable as being at intermediate risk for cardiovascular events so this is the segment of the population on whom preventive efforts should be concentrated (Naghavi, 2010, pg. 582). In the following sections, I will briefly cover preventive treatments for the "vulnerable patient". The definition of the "vulnerable patient" was extensively covered in my previous article but as a recap, the vulnerable patient is at high clinical risk. These vulnerable patients may be asymptomatic with high atherosclerotic plaque burdens detected by non-invasive means, for example carotid ultrasound, high coronary calcium quantification, computerized tomography or reduced ankle-brachial index.

LDL Targeted Therapies: Statins

Epidemiological and ecological studies have confirmed that LDL-cholesterol (LDL-C) levels are directly associated with the prevalence of CVD (Naghavi, 2010, pg. 605). Statins are a group of drugs that lower LDL-C by blocking substances your body needs to make cholesterol. They may also aid the body in reabsorbing cholesterol that has built up in plaques on artery walls. Not only does LDL-C reduction with statins reduce atherosclerosis progression, it may induce its regression. There's a linear relationship between LDL-C lowering and CVD reduction. In a meta-analysis with 90,056 patients on statins, there was a 21% decrease in major cardiovascular events for each 1 mmol/L or 39 mg/dL reduction of LDL-C. Regardless of other risk factors, low LDL-C levels are associated with low prevalence of CVD. Vulnerable patients should have intense LDL-C reduction regardless of their baseline LDL-C (Naghavi, 2010, pg. 606).

ANTI-OXIDANTS AS TARGETED THERAPY

There is increased oxidative stress in high risk patients who have diabetes, hypertension or dyslipidemia (Naghavi, 2010, pg. 621). This is associated with a reduction in antioxidants such as vitamin E, carotenoids, superoxide dismutase (SOD), catalase, glutathiones and HDL-associated paraoxonase (PON1). To reduce oxidative stress and development of atherosclerosis, dietary modifications can be made. An increase in nutritional antioxidants such as vitamin E, carotenoids or polyphenols can reduce inflammation and therefore attenuate atherosclerosis development. These nutritional antioxidants have direct protective effects and indirect protective effects by increasing serum HDL-associated enzyme activity which breaks down specific lipids.

Vitamin E

Vitamin E is found in many foods including tofu, nuts, sunflower oil and fish. It has an important role as an antioxidant and scavenges free radicals in cellular subcellular membranes and in plasma lipoproteins (Naghavi, 2010, pg. 624). Vitamin E is regenerated by the water-soluble vitamin C and by other co-antioxidants including ubiquinol-10. The benefits of vitamin E supplementation together with other antioxidants may explain the protection of a vitamin-E rich diet against CVD more than merely taking vitamin E supplements. There have been contradictory findings with regards to vitamin E supplementation protecting against CVD. However, it was recently shown that vitamin E supplementation reduces CVD in individuals that have the haptoglobin 2-2 genotype (Naghavi, 2010, pg. 625). Perhaps only some percentage of the population with specific genotypes can benefit from vitamin E. This would explain the contradictory findings.

Carotenoids

Carotenoids are pigments with lipophilic properties which are found in many fruits and vegetables including carrots and tomatoes. Dietary carotenoid consumption was associated with reduced CVD mortality in epidemiological studies (Naghavi, 2010, pg. 625). However, clinical intervention trials with carotenoid supplements are controversial. A couple of studies have shown that natural antioxidants from tomato extract reduced blood pressure in patients with hypertension.

Polyphenolic Flavonoids

Polyphenolic flavonoids are one of the largest categories of phytochemicals. They are widely distributed among many plants and should be an integral part of our diet. They are powerful antioxidants against LDL oxidation and effective scavengers of both hydroxyl and peroxyl radicals (Naghavi, 2010, pg. 626). There is an inverse association between flavonoid intake and development of heart disease. Three rich sources of polyphenols are licorice, red wine and pomegranates. Consumption of licorice extract (glabridin) resulted in an increased resistance to LDL oxidation.

Grape skins are found in red wine and are a rich source of polyphenols. These polyphenols are antioxidants and anti-atherogenic and suppress monocyte tissue factor induction (Naghavi, 2010, pg. 627). Pomegranates contain polyphenols that have hydrolysable tannins. Consumption of pomegranate juice by healthy subjects for only two weeks resulted in significantly reduced oxidation of both LDL and HDL. Studies in patients with partially blocked arteries who drank pomegranate juice for three years showed reduced oxidative stress and a significant reduction in atherosclerotic lesion size. In addition, pomegranate juice consumption reduced blood pressure in CVD patients.

Population Based Preventive Drug Therapy (Polypills)

The SHAPE task force recommends screening for subclinical atherosclerosis and implementing aggressive treatment of the "vulnerable" patient. I have covered a few of these preventive treatments in this article, however, the task force also envisions mass screening followed by mass preventive drug therapy in the form of polypills to proactively combat CVD. Polypills are a combination of statin, low-dose, anti-hypertension aspirin and folic acid in a single pill taken by a higher risk population. Researchers estimate that this preventive measure could cut CVD events rates as much as 80% (Naghavi, 2010, pg. 636). The polypill is only one of many possible combinations of multi-constituent cardiovascular pills (MCCP).

Since the concept of CVD risk factors was put forward by pioneering epidemiologists, considerable effort and investment have been made to promote population-based strategies for the prevention of cardiovascular events. These have included dietary guidelines as well as national politics to promote exercise and reduce smoking. Despite early improvements, risk factors for the development of CVD have become increasingly prevalent. In the USA, more than half of middle aged adults have one or more risk factors.

The SHAPE task force has proposed an "unconditional" population-based polypill therapy of high-risk populations without screening (Naghavi, 2010, pg. 637). The idea of an "unconditional" population-based drug therapy appears controversial without context. The components of such polypills would undergo extensive testing for safety. Currently, doctors recommend low aspirin doses to men over 45 years of age and women over 50 years of age to prevent CVD[5]. The polypill is merely an extension of contemporary preventive medicine. Low-dose aspirin is fairly innocuous but even this form of intervention carries some risk, for example, stomach or intestinal bleeding or ulcers[5]. At present proposed polypills are not ready for mass public consumption because they lack evidence from randomized control trials. Despite the risks, polypills or multi-constituent pills (MCCP) have the potential to become a simple, cost-effective and major public healthcare initiative in the movement to eradicate heart attacks worldwide.

Summary of the SHAPE Guideline

There should be non-invasive screening of all asymptomatic men 45-75 years of age and all asymptomatic women 55-75 years of age to detect and potentially treat those with subclinical atherosclerosis. Non-invasive screening methods include carotid ultrasound, high coronary calcium quantification, computerized tomography or reduced ankle-brachial index. With non-invasive screening, the "vulnerable patient" can be discovered. In addition to the Framingham Risk Score, there are other risk factors to consider such as lipid profiling using the apoB/apoA-I ratio, blood biomarkers of inflammation (CRP, Fribrinogen, Fibrin D-dimer, Interleukin-6), and the patient's family history. If a vulnerable patient is discovered, even if they are asymptomatic, they should undergo immediate preventive medicine. Highly vulnerable patients or patients who have intermediate risk should take anti-oxidants (vitamin E, Carotenoids and polyphenolic Flavonoids) and consult a physician to undergo LDL targeted therapy such as statins.

Polypills are currently being developed for "unconditional" population-based therapy but further testing is required before clinical application. Currently doctors recommend low-dose aspirin for men over 45 and women over 50 years of age because age is the greatest risk factor in determining cardiovascular risk.

In my next article **Heart Disease Prevention – Part III: Focal Therapies and Life-style Modifications** I will cover therapies targeted directly at vulnerable plaques, diet and lifestyle modification as preventive measures. ■

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ALCOR 2015 CONFERENCE

October 9-11, 2015

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THEMES (Stay tuned for speaker list)

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- Learn about new approaches to eliminating fracturing, by Greg Fahy, Robert McIntyre, Mark Voelker, and others.
- Learn about new medication protocols to improve biological viability prior to cryopreservation.
- Hear how researchers continue to pursue reduced cryoprotectant toxicity.
- See a multimedia presentation by Natasha Vita-More on memory preservation throughout vitrification.
- Discover the latest findings from Alcor's CT-scanning project.

- Learn how to more effectively communicate why cryonics and radical life extension are feasible and desirable from David Kekich, Joe Polish, Jim Strole, Max More, John Bevens, and others, and leave with a take-away action pack.
- You will hear how Alcor works with hospitals and hospices from Chrissy Bird, Executive Director, Seasons Hospice & Palliative Care of Arizona, Aaron Drake, Alcor's Medical Response Director, and Catherine Baldwin, Chief Operating Officer Suspended Animation.
- Other speakers include Martine Rothblatt, and one or two famous mystery speakers (to be confirmed).
- Stay around for the Sunday afternoon cookout and tour of Alcor. If you haven't seen inside Alcor for a few years, you will find that a lot has changed! Computerized perfusion, internal and external aesthetic changes, infographic display room, 3-D printers, new television commercials for Alcor, and much more.

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**
99:00 am – 9:20 am	Opening by Alcor President
9:20 am – 9:50 am	Opening address and welcome from senior political figures in Arizona
9:50 am – 11:00 am	Research Session 1
11:00 am – 11:20 pm	Break
11:20 am – 12:30 pm	Research Session 2
12:30 pm – 2:15 pm	**Lunch**
2:15 pm – 3:45 pm	Fracturing Research
3:45 pm – 4:10 pm	Break
4:10 pm – 5:30 pm	How Alcor and Suspended Animation Work with Hospitals and Hospices
7:00 pm – 10:00 pm	**Banquet Dinner**
8:30 pm	Banquet Dinner Speaker
Sunday • October 11, 2015	
7:00 am – 9:00 am	**Breakfast**
9:30 am – 10:00 am	Martine Rothblatt
10:00 am – 10:15 am	Presentation on new book collection *The Best of Cryonics*
10:15 am – 10:25 am	Break
10:25 am – 11:00 am	Mystery speakers
11:15 am – 1:00 pm	Effective Communication about Cryonics and Radical Life Extension
2:00 pm – 6:00 pm	**Alcor Open House & Cookout**

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2015	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
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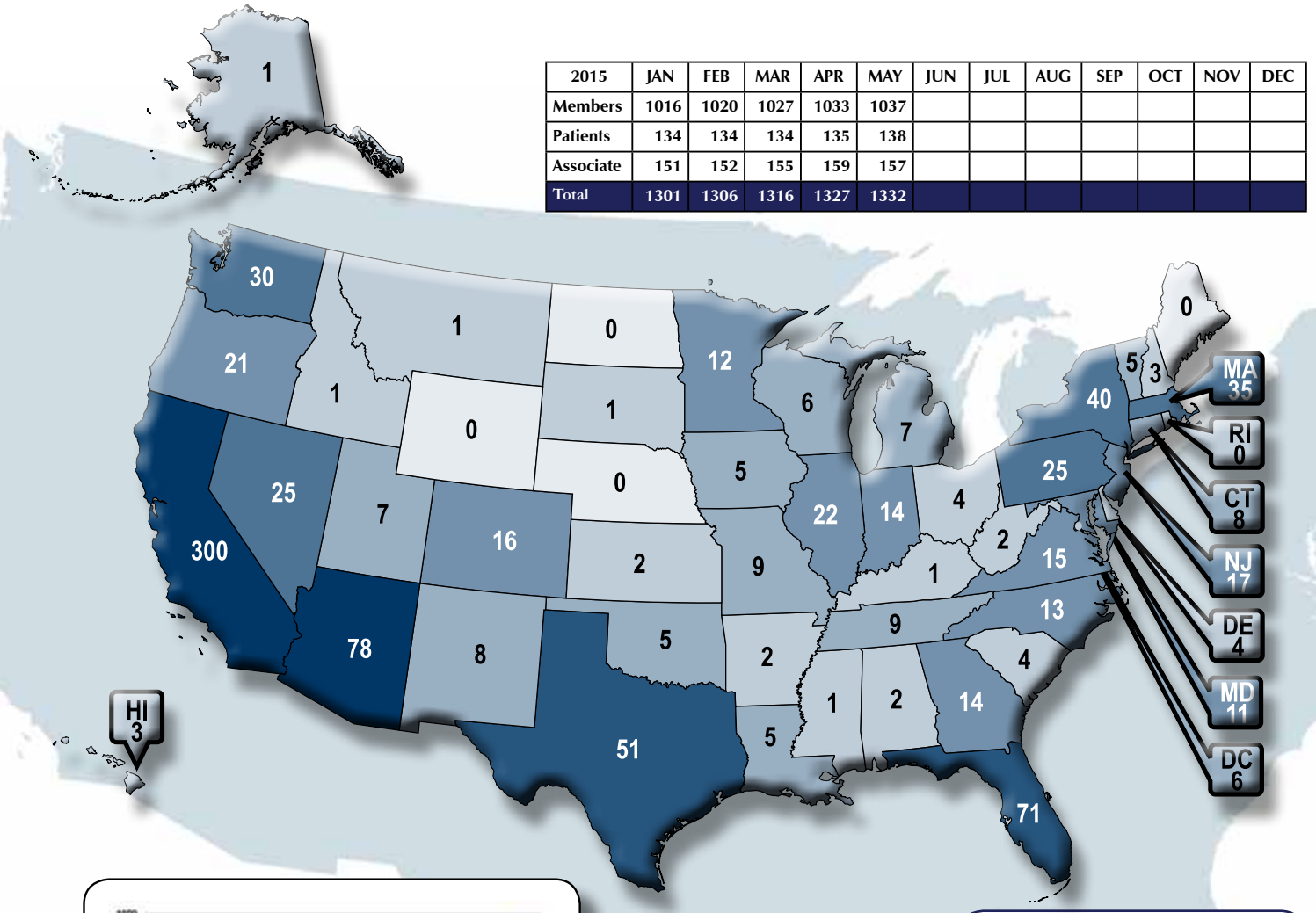
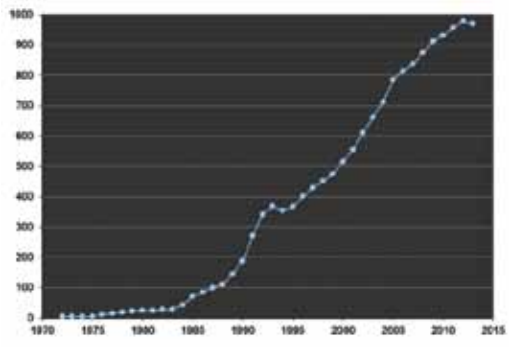
Patients	134	134	134	135	138							
Associate	151	152	155	159	157							
Total	1301	1306	1316	1327	1332							





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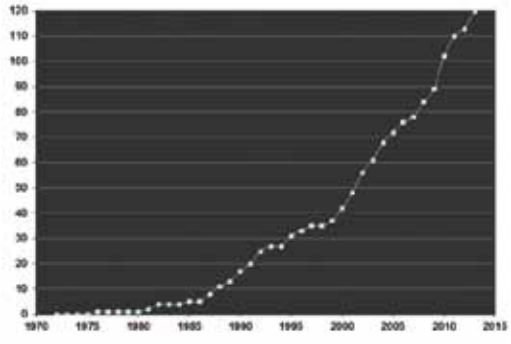

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- 1–4 Members
- 5–9 Members
- 10–24 Members
- 25–49 Members
- 50–74 Members
- 75+ Members

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China	0	1
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
Singapore	1	0
Spain	3	1
Thailand	3	1
United Arab Emirates	1	0
United Kingdom	24	2
TOTAL	**113**	**11**

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Persistence of Long-Term Memory in Vitrified and Revived *C. elegans*

Can memory be retained after cryopreservation? Two researchers, Natasha Vita-More (University of Advancing Technology, Scottsdale, Arizona) and Daniel Barranco (University of Seville, Seville, Spain), have attempted to answer this long-standing question. They used the nematode worm Caenorhabditis elegans (*C. elegans*), a well-known model organism for biological research that has generated revolutionary findings but has not been tested for memory retention after cryopreservation. Their study's goal was to test *C. elegans'* memory recall after vitrification and reviving. Using a method of sensory imprinting in the young *C. elegans* they established that learning acquired through olfactory cues shapes the animal's behavior and the learning is retained at the adult stage after vitrification. Their results in testing memory retention after cryopreservation show that the mechanisms that regulate the odorant imprinting (a form of long-term memory) in *C. elegans* have not been modified by the process of vitrification or by slow freezing.

Rejuvenation Research
13 Apr. 2015
http://online.liebertpub.com/doi/10.1089/rej.2014.1636

A Better Way to Build Brain-Inspired Chips

Memristors, exotic electronic devices only confirmed to exist in 2008, have been used to create a chip that borrows design points from the brain. The prototype chip only learned to recognize extremely simple black-and-white patterns. But larger, more complex versions might make computers better at understanding speech, images, and the world around them. The circuitry of the chip, built by researchers at the University of California, Santa Barbara, and Stony Brook University, processes data not with digital logic circuits but with elements that mimic, in simplified form, the neurons and synapses of biological brains. Brain-inspired—or "neuromorphic"—chips have been made before, but generally use the same silicon transistors and digital circuits as ordinary computer processors. But those digital components are not suited to mimicking synapses, says Dmitri Strukov, who led work on the new memristor chip. Many transistors and digital circuits are needed to represent a single synapse, versus a single memristor for each of the 100 or so synapses on the UCSB chip.

Tom Simonite / *MIT Technology Review*
6 May 2015
http://www.technologyreview.com/news/537211/a-better-way-to-build-brain-inspired-chips/?utm_campaign=newsletters&utm_source=newsletter-daily-all&utm_medium=email&utm_content=20150507

Nano Memory Cell Can Mimic the Brain's Long-Term Memory

RMIT University researchers have mimicked the way the human brain processes information with the development of an electronic long-term memory cell. Researchers at the MicroNano Research Facility (MNRF) have built the one of the world's first electronic multi-state memory cells which mirrors the brain's ability to simultaneously process and store multiple strands of information. The development brings them closer to imitating key electronic aspects of the human brain—a vital step towards creating a bionic brain—which could help unlock successful treatments for common neurological conditions such as Alzheimer's and Parkinson's diseases. The discovery was recently published in the prestigious materials science journal *Advanced Functional Materials*. Project leader Dr. Sharath Sriram, co-leader of the RMIT Functional Materials and Microsystems Research Group, said the ground-breaking development imitates the way the brain uses long-term memory. The research builds on RMIT's previous discovery where ultra-fast nano-scale memories were developed using a functional oxide material.

RMIT University (Melbourne, Australia)
11 May 2015
http://www.rmit.edu.au/news/all-news/media-releases/2015/may/nano-memory-cell-can-mimic-long-term-memory/

Neurobiologists Restore Youthful Vigor to Adult Brains

They say you can't teach an old dog new tricks. The same can be said of the adult brain. Its connections are hard to change, while in children, novel experiences rapidly mold new connections during critical periods of brain development. UC Irvine neurobiologist Sunil Gandhi and colleagues wanted to know whether the flexibility of the juvenile brain could be restored to the adult brain. Apparently, it can: They've successfully re-created a critical juvenile period in the brains of adult mice. In other words, the researchers have reactivated brain plasticity—the rapid and robust changes in neural pathways and synapses as a result of learning and experience. And in doing so, they've cleared a trail for further study that may lead to new treatments for developmental brain disorders such as autism and schizophrenia. Results of their study appear online in *Neuron*. The scientists achieved this by transplanting a certain type of embryonic neuron into the brains of adult mice. The transplanted neurons express GABA, a chief inhibitory neurotransmitter.

UCI News (University of California, Irivne)
18 May 2015
http://news.uci.edu/press-releases/uci-neurobiologists-restore-youthful-vigor-to-adult-brains/

New Math Model Shows How Neural Networks Create Memories

Memory is one of the most crucial elements of life. Without memory, there is no learning; without learning there is no invention, progress, or civilization. On the flipside, forgetting some experiences, especially traumatic ones, can help regain mental health and function. The key to all this is to understand how the brain forms memories in the first place, and then how it retains and recalls them. Scientists at EPFL have developed a mathematical model to describe how networks of neurons create memories. Published in *Nature Communications*, the model could clarify longstanding theories of memory formation, and could change the way we understand, simulate and even alter memory formation. A research team led by Wolfram Gerstner at EPFL has now developed a model of Hebbian plasticity that succeeds where previous ones have failed. The researchers focused on the formation of what are known as "memory assemblies," which are networks of neurons, connected via synapses, which can store a particular segment of a memory.

Neuroscience News
18 May 2015
http://neurosciencenews.com/synaptic-plasticity-model-memory-2049/

Nature Inspires First Artificial Molecular Pump

Using nature for inspiration, a team of Northwestern University scientists is the first to develop an entirely artificial molecular pump, in which molecules pump other molecules. This tiny machine is no small feat. The pump one day might be used to power other molecular machines, such as artificial muscles. The new machine mimics the pumping mechanism of life-sustaining proteins that move small molecules around living cells to metabolize and store energy from food. For its food, the artificial pump draws power from chemical reactions, driving molecules step-by-step from a low-energy state to a high-energy state—far away from equilibrium. "Our molecular pump is radical chemistry—an ingenious way of transferring energy from molecule to molecule, the way nature does," said Sir Fraser Stoddart, the senior author of the study. "All living organisms, including humans, must continuously transport and redistribute molecules around their cells, using vital carrier proteins," he said. "We are trying to recreate the actions of these proteins using relatively simple small molecules we make in the laboratory."

Megan Fellman, Northwestern University
19 May 2015
http://www.northwestern.edu/newscenter/stories/2015/05/nature-inspires-first-artificial-molecular-pump-.html

A Roadmap to Resuscitation

Successful rejuvenation of cryonics patients will require three distinct technologies: (1) A cure for the disease that put the patient in a critical condition prior to cryopreservation; (2) biological or mechanical cell repair technologies that can reverse any injury associated with the cryopreservation process and long-term care at low temperatures; (3) rejuvenation biotechnologies that restore the patient to good health prior to resuscitation. OR it will require some entirely new approach such as (1) mapping the ultrastructure of cryopreserved brain tissue using nanotechnology, and (2) using this information to deduce the original structure and repairing, replicating or simulating tissue or structure in some viable form so the person "comes back."

The following list is a list of landmark papers and books that reflect ongoing progress towards the resuscitation of cryonics patients:

Jerome B. White, "**Viral-Induced Repair of Damaged Neurons with Preservation of Long-Term Information Content,**" Second Annual Conference of the Cryonics Societies of America, University of Michigan at Ann Arbor, April 11-12, 1969, by J. B. White reprinted in *Cryonics* 35:10 (October 2014), 8-17.

Michael G. Darwin, **"The Anabolocyte: A Biological Approach to Repairing Cryoinjury,"** *Life Extension Magazine* (July-August 1977):80-83. Reprinted in *Cryonics* 29:4 (4th Quarter 2008),14-17.

Greg Fahy, **"A 'Realistic' Scenario for Nanotechnological Repair of the Frozen Human Brain,"** in Brian Wowk, Michael Darwin, eds., *Cryonics: Reaching for Tomorrow,* Alcor Life Extension Foundation, 1991.

Ralph C. Merkle, **"The Molecular Repair of the Brain,"** *Cryonics* 15(January 1994):16-31 (Part I) & *Cryonics* 15(April 1994):20-32 (Part II).

Ralph C. Merkle, **"Cryonics, Cryptography, and Maximum Likelihood Estimation,"** First Extropy Institute Conference, Sunnyvale CA, 1994.

Aubrey de Grey & Michael Rae, **"Ending Aging: The Rejuvenation Breakthroughs That Could Reverse Human Aging in Our Lifetime."** St. Martin's Press, 2007

Robert A. Freitas Jr., **"Comprehensive Nanorobotic Control of Human Morbidity and Aging,"** in Gregory M. Fahy, Michael D. West, L. Stephen Coles, and Steven B. Harris, eds, *The Future of Aging: Pathways to Human Life Extension,* Springer, New York, 2010, pp. 685-805.

Chana de Wolf (now Phaedra), **"Reconstructive Connectomics,"** *Cryonics* 34:7 (July 2013), 26-28.

MEETINGS

ABOUT THE ALCOR FOUNDATION

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

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

ARIZONA

FLAGSTAFF:

Arizona without the inferno. Cryonics group in beautiful, high-altitude Flagstaff. Two-hour drive to Alcor. Contact eric@flagstaffcryo.com for more information.

PHOENIX
VALLEY OF THE SUN:

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.

UNITED KINGDOM

Alcor members in the UK can contact Garret Smyth at Alcor-UK@alcor.org for information about local meetings.

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 $5/month (or $15/quarter or $60 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 ($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. You can also pay using PayPal (and get the Declaration of Intent to Be Cryopreserved) here: http://www.alcor.org/BecomeMember/associate.html

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