

ALCOR LIFE EXTENSION FOUNDATION

A Non-Profit Organization

CRYONICS

MARCH 2015 · VOLUME 36:3



**Society for Venturism
End Death Convention 2014
Report Part II
Page 12**

**Medical Myopia and Brain Death
Page 5**

**The Ketogenic Diet Part 2:
Neuro-Protection, Anti-Aging
and Anti-Cancer Benefits
Page 6**

ISSN 1054-4305



\$9.95

Improve Your Odds of a **Good Cryopreservation**

You have your cryonics funding and contracts in place but have you considered other steps you can take to prevent problems down the road?

- ✓ Keep Alcor up-to-date about personal and medical changes.
- ✓ Update your Alcor paperwork to reflect your current wishes.
- ✓ Execute a cryonics-friendly Living Will and Durable Power of Attorney for Health Care.
- ✓ Wear your bracelet and talk to your friends and family about your desire to be cryopreserved.
- ✓ Ask your relatives to sign Affidavits stating that they will not interfere with your cryopreservation.
- ✓ Attend local cryonics meetings or start a local group yourself.
- ✓ Contribute to Alcor's operations and research.



Contact Alcor (1-877-462-5267) and let us know how we can assist you.

Visit the ALCOR FORUMS www.alcor.org/forums/

Discuss Alcor and cryonics topics with other members and Alcor officials.

- The Alcor Foundation
- Cell Repair Technologies
- Cryobiology
- Events and Meetings
- Financial
- Rejuvenation
- Stabilization

Other features include pseudonyms (pending verification of membership status) and a private forum.

Visit the ALCOR BLOG www.alcor.org/blog/

Your source for news about:

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



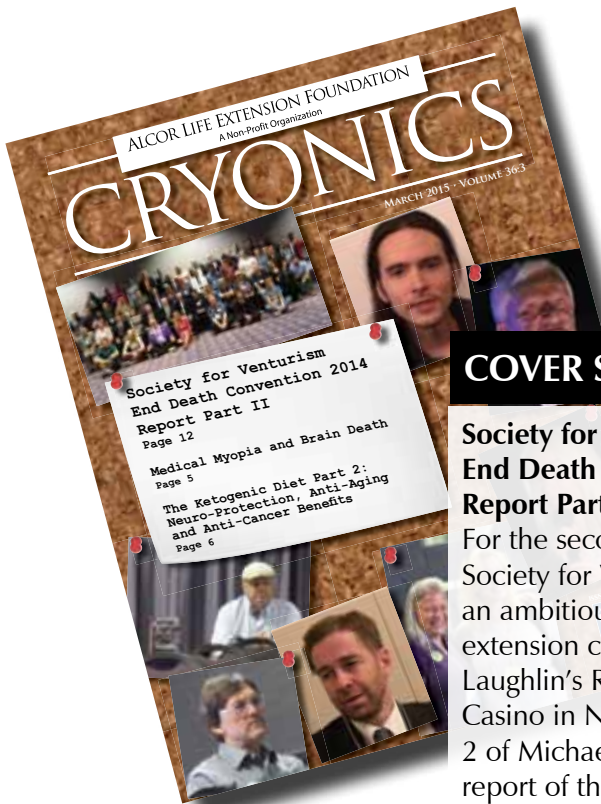
Alcor is on Facebook

Connect with Alcor members and supporters on our official Facebook page:

www.facebook.com/alcor.life.extension.foundation

Become a fan and encourage interested friends, family members, and colleagues to support us too.

CRYONICS



COVER STORY: PAGE 12

Society for Venturism End Death Convention 2014 Report Part 2

For the second year in a row, the Society for Venturism organized an ambitious cryonics and life extension conference at Don Laughlin's Riverside Hotel and Casino in Nevada. This is part 2 of Michael Perry's detailed report of the convention, which included presentations about the state of brain cryopreservation, anti-aging research, cryonics stabilization technologies, and the launch of a new cryonics organization in Oregon.

CONTENTS

18 Membership Statistics

How many members, associate members, and patients does Alcor have and where do they live?

20 Philosophy and the Problem of Mr. Branden's Death

On December 2014, former Ayn Rand Associate and psychotherapist Nathaniel Branden passed away. Despite the emphasis of Objectivist philosophers on "reason," Branden never conceived death as a technological problem to be solved but as a fact of human nature to come to terms with. Hugh Hixon presented a science-based alternative to Branden's philosophy on death in 1991 that is still persuasive today.

5 QUOD INCEPIMUS CONFICIEMUS

Medical Myopia and Brain Death

A lot of ink has been spilled about the biphilosophical intricacies of brain death but when it comes to the term "irreversibility" both the medical establishment and philosophers show a remarkable degree of medical myopia. What constitutes death in our society may be a curable condition in the future and cryonics is a means of getting the patient there.

6 The Ketogenic Diet Part 2: Neuro-Protection, Anti-Aging and Anti-Cancer Benefits

Carrie Wong concludes her review of the ketogenic diet and focuses on experimental findings about its effects on Alzheimer's disease, Parkinson's, brain trauma, cancer, and its efficacy as a life extension diet. She complements this survey with an account of her own experience and recommendations on how to start this diet.

CRYONICS

Editorial Board

Saul Kent
Ralph C. Merkle, Ph.D.
R. Michael Perry, Ph.D.

Editor

Aschwin de Wolf

Contributing Writers

Aschwin de Wolf
Hugh Hixon
R. Michael Perry, Ph.D.
Carrie Wong

Copyright 2015
by Alcor Life Extension Foundation
All rights reserved.
Reproduction, in whole or part, without
permission is prohibited.

Cryonics magazine is published monthly.

To subscribe to the printed edition
and/or change your address, please call
480.905.1906 x101 or visit the magazine
website:
www.alcor.org/magazine

Please note: If you change your address less than
a month before the magazine is mailed, it may
be sent to your old address.

Address correspondence to:

Cryonics Magazine

7895 East Acoma Drive, Suite 110
Scottsdale, Arizona 85260
Phone: 480.905.1906
Toll free: 877.462.5267
Fax: 480.922.9027

Letters to the Editor welcome:

aschwin@alcor.org

Advertising inquiries:

480.905.1906 x113
advertise@alcor.org
ISSN: 1054-4305

Visit us on the web at www.alcor.org

Alcor News Blog
<http://www.alcor.org/blog/>

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.**

SUGGESTED GIVING LEVELS

\$20	FRIEND
\$60	JUNIOR SUPPORTER
\$120	SUSTAINING SUPPORTER
\$500	ADVOCATE SUPPORTER
\$1,000	LEADING SUPPORTER
\$2,500	VISIONARY SUPPORTER
\$5,000	SILVER SUPPORTER
\$10,000	GOLD SUPPORTER
\$25,000	TITANIUM SUPPORTER
\$50,000	VANGUARD SUPPORTER

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.



MEDICAL MYOPIA AND BRAIN DEATH By Aschwin de Wolf

Recently someone sent me a number of papers that discussed the biophilosophical underpinnings of brain death. Medical doctors increasingly find themselves in the midst of heated debates about what constitutes death by neurological criteria. It is not hard to understand how controversies can occur in this area. Whenever a patient who satisfies the criteria for brain death shows signs of improvement or recovery, these criteria are called into question. Or, perhaps more troublesome, some people will simply not concede that a patient is dead because recovery can be *envisioned*. In such cases, the concept of death becomes more like a subjective “decision” than an objective property of the brain.

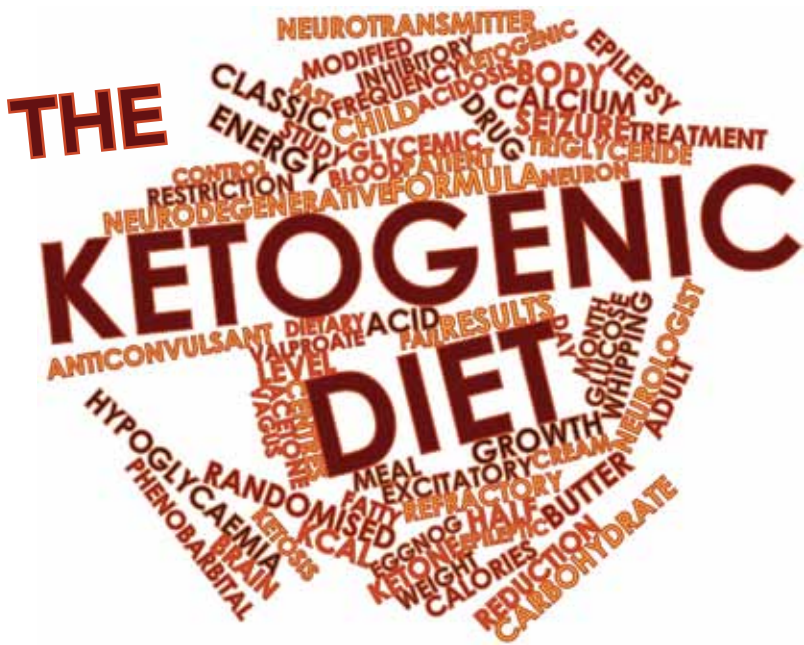
To someone sympathetic to cryonics these debates are mildly infuriating because it shows the reckless medical myopia with which matters of life and death are approached. When bioethicists debate what constitutes “permanent and irreversible loss of the capacity for consciousness and self-awareness” there is little recognition of the possibility that what looks hopeless and irreversible by contemporary medical technologies may be rather straightforward to repair or recover by *future* medical technologies. Would we abandon a patient if a cure would be available tomorrow? What about next month? Next year? 50 years?

The standard rejoinder to this position is that cryopreservation of the patient (cryonics) itself produces irreversible damage to the brain and is thus not suitable to stabilize the patient long-term until more advanced treatments are available. But how can we know what will be considered irreversible damage in the future? Should we simply pull the plug based on our guesswork about the limits of future technologies? Would it not be more prudent to let future doctors make that determination?

This does look a lot like saying that cryonics is just an argument in favor of prudence based on ignorance. A sophisticated way of saying, “well, you never know!” Not quite. If a healthy brain without damage gives rise to consciousness and identity, it follows that if the original state of the brain can be inferred from the damaged state, the capacity to restore consciousness and identity is preserved in principle. Ice formation undeniably alters the structure of the brain but it does not make the ultrastructure “disappear.” In fact, at cryogenic temperatures nothing “disappears,” a point that is not even sufficiently recognized by many cryonics advocates. Today we can do better than cryopreservation through freezing, though, and use vitrification agents which solidify into a glass upon cooling to cryogenic

temperatures. While these vitrification agents exhibit some toxicity, at the ultrastructural level this expresses itself as alteration of cell membranes, protein denaturation, etc., not wholesale destruction.

Where does this leave us on the issue of brain death? For starters, looking at a monitor and concluding that the patient is dead because of the absence of organized electrical activity will tell us little about the ultrastructure of the brain (case in point, at 15 degrees Celsius even a healthy brain will show a flat EEG). It is true that in some cases of brain death absence of electrical activity corresponds to substantial decomposition of brain tissue but it is important to recognize that in many such cases the brain has been *permitted* to self-destruct at body temperature as a result of trauma and ischemia. When a hospital is faced with a traumatic event of such magnitude that profound cell death can be expected, the most prudent action is to quickly cool the patient and prevent “information-theoretic death.” If the capacity for consciousness and awareness resides in the neuroanatomy of the brain, the first mandate of medicine is to preserve this. ■



PART 2: NEURO-PROTECTION, ANTI-AGING AND ANTI-CANCER BENEFITS

By Carrie Wong

INTRODUCTION

This is the follow-up article to *The Ketogenic Diet Part 1: Weight-loss, Cardiovascular Health and Diabetes* which appeared in the February 2015 issue of *Cryonics* magazine.

The ketogenic diet was originally developed in the 1920s to treat epilepsy, but over the years researchers began to notice that it provided other health benefits¹. I covered some of these in my last article including: weight-loss, improved cardiovascular health and improved health for diabetics. In this article I give a brief overview of the latest research and literature on the neuro-protective, anti-aging and anti-cancer benefits of the ketogenic diet. Lastly, I will provide some practical information on how to start.

NEURO-PROTECTIVE BENEFITS

Our bodies typically convert carbohydrates into glucose for energy but if there is an inadequate supply of carbohydrates in our diet, we are able to adapt to burning fats for energy. This process only occurs after the glucose stored as glycogen in our liver and body is depleted. The liver converts fat into fatty acids and ketone bodies. These ketone bodies include β -hydroxybutyrate (BHB), acetoacetate and acetone. These ketones pass through the blood-brain barrier and replace glucose as the main energy source². Since the ketogenic diet has anti-seizure effects, it must somehow alter neuron excitability, but the underlying molecular

mechanisms are not fully understood. Identifying the molecular mechanisms that confer neuro-protection has been challenging to researchers despite this diet being in use for almost a century. In the last few decades, researchers have proposed a number of mechanisms that contribute to the efficacy of the ketogenic diet (KD) in treating epilepsy, including carbohydrate restriction, activation of adenosine triphosphate (ATP)-sensitive potassium channels, inhibition of the rapamycin pathway and inhibition of glutamatergic excitatory synaptic transmission³. In addition, the KD has been shown to stimulate new mitochondrial growth resulting in stabilized synaptic function⁴. The mechanisms that aid in the treatment of epilepsy could also confer broad neuro-protective benefits to other neurological diseases including Alzheimer's, Parkinson's and amyotrophic lateral sclerosis (ALS).

ALZHEIMER'S DISEASE

Alzheimer's disease (AD) is the most common neurodegenerative disease and is the leading cause of cognitive impairment and disability among the aged population. This disease causes progressive synaptic dysfunction and loss of neurons leading to memory loss and personality changes. There is currently no effective treatment to prevent, modify or stop Alzheimer's disease⁷. Most of the approved drugs can only offer moderate symptom relief,

so this field of research is wide open for alternative therapies and intervention including clinical trials of KD.

In AD patients, there is a pathological decrease in the brain's ability to use glucose⁵. Fortunately, our brains can also burn ketones for fuel, so researchers in the last decade have started conducting clinical trials on the efficacy of the KD in treating AD. There is also a growing body of evidence to suggest that neuronal excitability is enhanced in patients with AD⁴. This view is supported by the fact that there is a higher incidence of seizures in patients with AD compared to the unaffected population. Since KD is so effective in treating epilepsy, it is hypothesized the same molecular mechanisms that are effective in treating epilepsy could also treat AD.

There have only been a few clinical studies on treating AD with KD. In a study conducted with medium-chain triglycerides (MCT) on AD, there was improved memory performance. This improved memory performance correlated with increased plasma levels of β -hydroxybutyrate (BHB), a ketone body, produced by oxidation of the MCT⁵. The KD increases overall BHB levels and this suggests the ketone bodies themselves confer a neuro-protective advantage. In another placebo-controlled trial of medium-chain triglyceride (MCT) KD treatment, there was significantly improved cognitive function in APOE4-negative patients with AD, but not with

patients with the APOε4 mutation. Conducted in 2009, this study was a double-blind randomized study, so it shows some promising results and warrants further investigation⁶.

PARKINSON'S DISEASE

Parkinson's disease (PD) is a degenerative disorder of the central nervous system resulting from the death of dopamine-generating cells in the mid-brain (substantia nigra). The cause of this cell death is unknown but it has been suggested that impaired mitochondrial function plays an important role in PD beginning and progression⁷. PD results in difficulty in movement including shaking, rigidity, slowness of movement and difficulty walking. The KD may aid in PD because ketones may be able to bypass defects in the mitochondrial complex and stimulate new mitochondrial growth⁴. In a few animal and *in-vitro* studies, it was shown that ketones (β-hydroxybutyrate) protected dopaminergic neurons from toxic neurodegeneration (the mechanism thought to cause cell death in PD)^{4,7}. Since this is a relatively new area of study, only one small clinical trial has been conducted to test the therapeutic effects of KD on PD⁸. Five out of seven volunteers with PD were able to prepare and adhere to a KD for 28 days. All five volunteers who adhered to a KD had a significant improvement in the Unified Parkinson's Disease Rating Scale. Researchers noted that it may be physically and mentally difficult for PD patients to prepare meals and adhere to a KD. This shortcoming may make KD a more challenging intervention in both PD and AD patients and may explain why it has not been more widely implemented.

AMYOTROPHIC LATERAL SCLEROSIS

Amyotrophic Lateral Sclerosis (ALS) is a neurodegenerative disease that causes the death of spinal and cortical motor neurons. This leads to progressive weakness, loss of muscle mass and difficulty in movement and speech. Affected subjects die within 2 to 5 years of symptom onset and death usually occurs from respiratory failure⁷. There is no cure for ALS and the approved pharmacological therapies only increase survival by 2 to 3 months⁷. The cause of neuronal cell death is uncertain but involves the following genetic and environmental factors: excessive oxidation

damage, generation of free radicals, neurofilament accumulation, excitotoxicity and mitochondrial membrane dysfunction⁹. In 2006, a paper was published on ALS mice that were fed a ketogenic diet⁹. The mice on KD had blood ketone levels 3.5 times the control and at the end of the 25 day trial retained 50% more motor function and retained more muscle mass for a longer period of time. It was found that mice on KD had significantly more preserved motor neurons compared to the control. Researchers believe these neuro-protective effects are due to the ability of ketone bodies to promote ATP synthesis and bypass mitochondrial dysfunction⁹. In another study on ketones tested on dissociated rat neocortical neurons subject to excitotoxicity, researchers once again found neuro-protective effects¹⁰. A combination of β-hydroxybutyrate (BHB) and acetoacetate decreased neuronal death and decreased mitochondrial production of reactive oxygen species (free radical formation). In summary, the KD may be a novel treatment for a variety of neurodegenerative disorders, especially those affecting mitochondrial function and excitotoxicity.

ANTI-AGING BENEFITS

In addition to the ketogenic diet's (KD) neuro-protective effects on age-related neurodegenerative diseases, the KD may confer broad anti-aging benefits. It is beyond the scope of this article to cover all the potential anti-aging benefits of KD, so the focus will be on brain health. Generally speaking, aging in the brain involves the gradual decrease in function and degeneration of neurons and neural circuits. Researchers believe that by altering the energetic metabolism of the brain with KD, the rates of degeneration of some neural structures could be slowed⁴. There are many mechanisms of aging including free-radical (oxidative) damage. According to the free-radical theory of aging, cells age because they accumulate free radical damage over time. The KD decreases oxidative damage associated with metabolic stress. In the brain, ketones generate lower levels of oxidative stress than glucose metabolism and have a greater cellular energy output⁷. In a 2013 paper published in *Science*, researchers found that β-hydroxybutyrate (BHB) blocked a compound class of enzymes known as histone deacetylases

(HDAC)¹¹. HDAC normally blocks genes which play a role in combating oxidative stress. They demonstrated this effect with a series of experiments *in-vitro* with human cells and then in tissues taken from mice who were calorie restricted and supplemented with BHB¹¹. This study has wide implications for aging in all the cells in the body, not just the brain.

Another mechanism of the aging process is the accumulation of advanced glycation end-products (AGEs). Generally speaking, glycation is a process in which excess glucose can bind with proteins, making cells stiffer and more vulnerable to damage and premature aging¹². Fasting glucose levels and glucose intolerance increases with age. This contributes to the accumulation of AGEs. Direct dietary sources of AGEs can be as damaging as AGEs produced endogenously (from the breakdown of foods)¹³. Vegetarians who consume foods rich in fructose have been shown to accelerate the formation of AGEs. To date, there have not been detailed studies on the KD effect on AGEs, but there have been many studies that show that calorie restriction significantly slows the production of AGEs¹³. This makes intuitive sense since there are quantitatively fewer dietary and endogenous sources of AGEs. This therapeutic benefit of avoiding glucose may very well extend to people on the KD. Glucose (and other sugars) is a primary trigger in the process of aging and there is a direct link between hyperglycemia, glycation and aging. In my previous article, I discussed how the KD lowered fasting blood glucose levels and decreased insulin resistance¹⁴. The benefits of the KD protect against the accumulation of AGEs.

PERFUSION AND ISCHEMIC DAMAGE

Several recent animal studies have supported the idea that dietary interventions may ameliorate traumatic brain injury⁴. Traumatic brain injury results in a sudden release of potassium and glutamate and a transient elevation in glucose metabolism followed by a period of depressed glucose metabolism and reduction of ATP¹⁵. This is followed by increased free radical production and generally impaired glycolytic metabolism. Within these conditions, shifting the brain towards ketone metabolism has been shown to provide neuro-protection. This was tested

by the intravenous injection of BHB into rats and led to an increase in ketone uptake and ATP production. Furthermore, the KD was able to reduce cortical contusion volume by 50% in another rat study¹⁵.

In an *in vivo* study on rats, researchers tested ketone body metabolism during reperfusion of the brain following vascular bilateral occlusion (cutting off the blood supply to the brain)¹⁶. They found there was an increased uptake of ketone bodies following brain ischemia, confirming the hypothesis that the brain uses ketones under conditions of cerebral stress. They found the greatest rate of ketone metabolism occurred after a few minutes of recirculation as a result of reperfusion injury¹⁶. In another small rat study, ketone bodies' effect on cardiac performance was tested after myocardial ischemia with a focus on reperfusion injury. This study was conducted on isolated rat hearts and cardiac performance was assessed by max cardiac output, cardiac work and cardiac efficiency. The rats were reperfused with a K-H buffer containing ketone bodies and it was found that in myocardial ischemia, ketone bodies produced mitochondrial energy and worked to protect the heart against ischemia and reperfusion injury¹⁷. How ketone bodies could protect against perfusion and ischemic damage has not been studied in humans, but the animal experiments that have been conducted are intriguing.

EMERGING RESEARCH ON THE KETOGENIC DIET AND CANCER

Cancer is a group of diseases and treatment varies greatly among the different types, stages of the disease and from case to case. It is not my intention to suggest the ketogenic diet as an intervention for any particular cancer, but to explain some theories and studies that have been conducted in the last decade. The Warburg Effect states that most cancer cells rely on anaerobic glycolysis to generate ATP, which is an inefficient way to generate ATP. Glycolysis is a metabolic process where one molecule of glucose is catabolized into two molecules of pyruvate with a net gain of two ATP. Cells with the most active metabolic rates (ie. cancer cells) are the most sensitive to the lack of metabolic energy to fuel their activity⁴. Therefore, it is hypothesized that depriving highly metabolic cancer cells of their usual fuel supply (glucose) by the use of KD could

be clinically therapeutic⁴. This hypothesis is supported by the association between modern chronic disease like metabolic syndrome and the risk of developing or succumbing to cancer¹⁸. In contrast to normal cells, most malignant cells depend on steady glucose availability in the blood for their energy and biomass generating demands and are not able to metabolize significant amounts of fatty acids or ketones due to mitochondrial dysfunction¹⁸. A few studies have shown that when insulin and blood glucose levels are low, ketone bodies negatively affect the proliferation of some malignant cells *in vitro*¹⁸.

In the last decade, researchers have been especially interested in the ketogenic diet (KD) as an intervention for malignant brain tumors. Despite modern advances in the understanding of tumor biology, the prognosis for patients with malignant brain tumors is still poor. Patients with advanced brain cancer have a median survival rate of about a year. Although large-scale and thorough investigations have not been conducted, there have been a few promising case reports suggesting that the KD may be effective in treating gliomas (brain tumors)¹⁹. In a few mice studies, the KD was also found to be anti-angiogenic (restricting blood vessel growth to tumors), anti-inflammatory and pro-apoptotic (promoting cancerous cell death) when evaluated in mice with malignant brain cancer¹⁹. In another study, researchers were able to demonstrate that glioma cells are incapable of metabolizing ketone bodies *in vitro* with rat neurons²⁰. Researchers found that β -hydroxybutyrate protected rat hippocampal neurons but not human glioma cell lines against glucose deprivation-induced cell death. To date, no extensive clinical, double-blind trials have been completed on the ketogenic diet's efficacy in treating any form of cancer, but researchers believe it could be a viable and novel treatment in the future²⁰.

MY APPROACH TO A KETOGENIC DIET

There is a wealth of information on the ketogenic diet for free online. I found that The Charlie Foundation had great introductory material to getting started along with the different formulations of the diet. The different formulations are based on the goals of the individual. For someone suffering from epilepsy, a stricter

form of the diet is available and greater care must be taken in administration. For someone focusing on weight-loss, the Atkins version would suffice. There are many recipes online for ketogenic dishes, I found many of them on ruledme.com and there are many overlaps between paleogenic recipes and ketogenic recipes.

In my opinion, the best way to get into and stay in ketosis, is to log every single food item eaten on an app that tracks nutrition, like myfitnesspal, until you are familiar with it. Furthermore, logging all foods on a program like myfitnesspal allows you to see whether or not you are getting sufficient vitamins and minerals. The average person must consume less than 50 grams of carbs a day to get into and stay within ketosis. That means greater than 75% fat by total calorie consumption. Myfitnesspal app shows me a daily pie-chart by calorie breakdown of carbohydrate, fat and protein. This is a quick way for me to know if I'm on track. The fastest way to test if you are in ketosis is by getting over-the-counter Ketostix and testing ketone levels in urine. A person typically goes into ketosis after 5-7 days on the ketogenic diet depending on their glycogen supplies and how strictly they adhere to the diet. I found that once I was in ketosis, I could relax my standards and only consume 60-70% fat and still be in ketosis. A common mistake that people make on the ketogenic diet (especially Atkins) is the idea that it is acceptable to consume protein instead of carbs. This view is incorrect because consuming too much protein can also put one out of ketosis. The idea is to consume as much healthy fat as possible.

MY TOP 10 KETOGENIC FOODS

1. **Oils** – MCT oil, versatile and flavorless, can be added to any dish or even to coffee. Olive oil mixed with vinegar makes a great salad dressing and has many longevity benefits.
2. **Coconut Milk** – can be used in smoothies or curry dishes; my only suggestion is to get some good quality brand that does not have fillers because it makes a big difference. Coconut milk may be the cheapest and best source of calories; one can from Walmart cost me \$2.00 CAD and is about 1000 calories
3. **Avocados**—A plethora of nutritional

benefits and livens up any salad

4. **Eggs** – Very nutritious and versatile
5. **Dairy Products** – Cheese, heavy cream and butter
6. **Sweeteners** – Stevia, Splenda, Erythritol and Xylitol. Erythritol is the most sugar-like in consistency and sweetness, and can be used to replace sugar in baking. Erythritol is 70% as sweet as sugar and the best way to bake with sweetener is to combine more than one kind. Combining different sweeteners can help balance the taste.
7. **Meats** – High-fat meats such as bacon are suggested. Chicken

thighs and beef oxtail are useful in making high-fat stews. Fatty fish are also recommended like salmon.

8. **Nuts** – Most nuts are high-fat and low carb including: almonds, pecans, macadamia, hazelnuts, pistachios, peanuts, etc.
9. **Olives** – A delicious and healthy snack
10. **Alternative Flours** – Almond flour, flax meal and coconut flour for baked goods. There are still carbs in these flours, but they can be used in moderation. There are also low-carb wraps or tortillas available, but always check the packaging to

Carrie Wong is a young Canadian cryonicist. She graduated in 2011 with degree in geology from The University of British Columbia and worked in gold exploration for a few years. In addition to writing for *Cryonics* magazine, she is also writing for geologyforinvestors.com and running a cartography business.



REFERENCES:

- 1) Wheless, J.W. (2008). History of the Ketogenic Diet. *Epilepsia*, 49(8), 3-5. doi:10.1111/j.1528-1167.2008.01821.x
- 2) Plogsted S. (2010).The Ketogenic Diet. *ICAN: Infant, Child, & Adolescent Nutrition*. 2(6), 370-376. doi: 10.1177/1941406410389490
- 3) Danial, N.N. et al. (2013). How Does the Ketogenic Diet Work? Four Potential Mechanisms. *J Child Neurol*, 28(8), 1027-1033. doi: 10.1177/0883073813487598
- 4) Stafstrom, C.E. and Rho, J.M. (2012). The ketogenic diet as a treatment paradigm for diverse neurological disorders. *Frontiers in Pharmacology*. 3(59). doi: 10.3389/fphar.2012.00059
- 5) Reger, M.A. (2004). Effects of beta-hydroxybutyrate on cognition in memory-impaired adults. *Neurobiol Aging*. 25(3), 311-4. doi: 10.1016/S0197-4580(03)00087-3
- 6) Henderson, S.T. et al. (2009). Study of the ketogenic agent AC-1202 in mild to moderate Alzheimer's disease: a randomized, double-blind, placebo-controlled, multicenter trial. *Nutr Metab (Lond)*. 6, 31. doi: 10.1186/1743-7075-6-31
- 7) Paoli, A. et al. (2014). Ketogenic Diet in Neuromuscular and Neurodegenerative Diseases. *BioMed Research International* 2014. 2014, 474296. doi:10.1155/2014/474296
- 8) VanItallie, T.B. et al. (2005). Treatment of Parkinson disease with diet-induced hyperketonemia: A feasibility study. *Neurology*. 64(4), 728-730. doi: 10.1212/01.WNL.0000152046.11390.45
- 9) Zhao, Z., et al. (2006). A ketogenic diet as a potential novel therapeutic intervention in amyotrophic lateral sclerosis. *BMC Neuroscience*. 7, 29. doi:10.1186/1471-2202-7-29
- 10) Maalouf, M., et al. (2007). Ketones Inhibit Mitochondrial Production of Reactive Oxygen Species Production Following Glutamate Excitotoxicity By Increasing NADH Oxidation. *Neuroscience*, 145(1), 256-264. doi:10.1016/j.neuroscience.2006.11.065
- 11) Shimazu, T., et al. (2013). Suppression of Oxidative Stress by β -Hydroxybutyrate, an Endogenous Histone Deacetylase Inhibitor. *Science*. 339(6116), 211-214. doi: 10.1126/science.1227166
- 12) Gkogkolou, P. and Bohm, M. (2012). Advanced glycation end products: Key players in skin aging? *Dermatoendocrinol*. 4(3), 259-270. doi: 10.4161/derm.22028
- 13) Suji, G. and Sivakami, S. (2004). Glucose, glycation and aging. *BioGerontology*. 5(6), 365-373. doi: 10.1007/s10522-004-3189-0
- 14) Westman E.C., et al. (2008). The effect of a low-carbohydrate, ketogenic diet versus a low-glycemic index diet on glycemic control in type 2 diabetes mellitus. *Nutrition & Metabolism*. 5, 36. doi:10.1186/1743-7075-5-36
- 15) Prins, M. L. (2008). Cerebral metabolic adaptation and ketone metabolism after brain injury. *Journal of Cerebral Blood Flow and Metabolism*, 28(1), 1-16. doi:10.1038/sj.jcbfm.9600543
- 16) Faria, M.H. et al. (2007). Ketone bodies metabolism during ischemic and reperfusion brain injuries following bilateral occlusion of common carotid arteries in rats. *Acta Cir Bras*. 22(2), 125-9. doi: 10.1590/S0102-86502007000200009
- 17) Sato, K. et al. (1998). Do Ketone Bodies Contribute to Protection against Damage Caused by Bothmyocardial Ischemia and Reperfusion Injury? *The Ischemic Heart: Progress in Experimental Cardiology*. 1, 501-509. doi: 10.1007/978-0-585-39844-0_39
- 18) Klement, R. J., and Kämmerer, U. (2011). Is there a role for carbohydrate restriction in the treatment and prevention of cancer? *Nutrition & Metabolism*. 8, 75. doi:10.1186/1743-7075-8-75
- 19) Seyfried, T.N. et al. (2012). Is the restricted ketogenic diet a viable alternative to the standard of care for managing malignant brain cancer? *Epilepsy Research*. 100(3), 310-326. doi: 10.1016/j.eplepsyres.2011.06.017
- 20) Maurer, G.D., et al. (2011). Differential utilization of ketone bodies by neurons and glioma cell lines: a rationale for ketogenic diet as experimental glioma therapy. *BMC Cancer*. 11, 315. doi:10.1186/1471-2407-11-315

Options for Safe, Secure and Legal Asset Preservation for Post-Resuscitation Access

The Sixth Annual Young Cryonicists Gathering

Teens & Twenties 6 2015: Getting to Know You - You Getting to Know Each Other - All While Being Updated On the Latest Scientific Research

Fri-Sun; April 24-26, '15 Las Vegas NV Host: Life Extension Foundation **SCHOLARSHIPS AVAILABLE**



Greetings to *Young Cryonicists*,

You are receiving this invitation because you are among the future leaders in cryonics.

All attention will be focused on:

our getting to know you and
you getting to know each other.

PLUS: an update on the latest emergency
response technologies and revival strategies.

Who is Eligible?

Fully signed up young cryonicists from all
cryonics organizations aged 13-30 as of
April 26, 2015 - may apply to attend.
Cryonicists aged 13-17 must be accompa-
nied by their parent(s) or guardian. In
Vegas those under 21 must room with
someone over 21.

Parents/guardians of attendees aged 18-19
are also encouraged to accompany their
child. All attending parents will be put in
touch with each other should they choose
to have their own "get together" during the
"young cryonicists" gathering.

Program

Some individuals are social butterflies.
This is not so for everyone. And we want
everyone to meet everyone. There-
fore, I have designed a diverse range of
"getting to know you" activities. If you
would enjoy participating in these vari-
ous getting acquainted activities, all
while being updated on the latest scien-
tific research, then this is for you.

Enjoy this exciting & fulfilling weekend.

SCHOLARSHIPS:

Life Extension Foundation, through a gener-
ous education grant, is offering 40 scholar-
ships that pay for **ALL** of the following:

- ◆ **U.S. airfare** to/from Las Vegas (or up to
\$1000 for origin outside the U.S., \$1350 for
Australia)
- ◆ **Hotel** accommodations for Friday and
Saturday nights. Plus Thursday and
Sunday for attendees who room together.
- ◆ **Meals** and beverages on Friday night, all
day Saturday, & Sunday breakfast & lunch
- ◆ **Registration** fee - \$350 - also covered

Please click on this website for a full
packet with details & application forms.

http://www.alcor.org/T2_6_2015_details.pdf

Forever,

Cairn Erfreuliche Idun
Founder/Director: T2

Bill Faloon: The Life Extension Foundation

Some attendees to T2 enjoy spending extra
time in Las Vegas - especially since their
flight is already paid for via their scholarship.

This is at their own expense for
additional food and lodging.

We look forward to getting to know you.



Item # 01430

Advanced Resveratrol Formula

In 2003, the **Life Extension Foundation**® introduced a standardized **resveratrol** extract shown to favorably alter genes implicated in the aging process—many of the same genes that respond to **calorie restriction**.

Since then, we have identified additional compounds that simulate calorie restriction's ability to trigger youthful **gene expression**—the process by which genes transmit signals that slow certain aspects of aging.

Compelling evidence reveals that certain compounds found in berries, such as **pterostilbene** and **fisetin**, possess potent "longevity gene" activators that work in synergy with **resveratrol**. For example, **fisetin** (found in strawberries) has been shown to **stabilize** resveratrol in the body by shielding it from metabolic breakdown,¹⁻¹⁰ thus extending its beneficial effects.

CAUTION: If you are taking anti-coagulant or anti-platelet medications or have a bleeding disorder, consult your healthcare provider before taking this product.

References

1. *Cell*. 2006 Dec 15;127(6):1109-22.
2. *Endocrinology*. 2008 Jan;149(1):84-92.
3. *Crit Care Med*. 2004 Oct;32(10):2097-103.
4. *J Agric Food Chem*. 1999 Apr;47(4):1416-21.
5. *Arch Pharm Res*. 2002 Oct;25(5):561-71.
6. *Nutr Cancer*. 1999;35(1):80-6.
7. *Anticancer Agents Med Chem*. 2006 Sep;6(5):389-406.
8. *Nature*. 2006 Nov 16;444(7117):337-42.
9. *Nature*. 2004 Aug 5;430(7000):686-9.
10. *Xenobiotica*. 2000 Sep;30(9):857-66.

High-Potency Resveratrol with Synergistic Activators

Life Extension® members gain access to standardized **trans-resveratrol** combined with botanical extracts that favorably influence longevity gene expression. Unlike many commercial formulas, Life Extension standardizes to **trans-resveratrol**, which researchers contend is the most active constituent.

A bottle containing 60 vegetarian capsules of **Optimized Resveratrol with Synergistic Grape-Berry Actives** retails for \$46. If a member buys four bottles, the price is reduced to **\$31** per bottle. The suggested dose of one capsule a day provides:

The suggested dose of one capsule a day provides:

Trans-Resveratrol	250 mg
Grape-Berry Actives	85 mg
Quercetin	60 mg
Trans-Pterostilbene	0.5 mg
Fisetin	10 mg

To order Optimized Resveratrol with Synergistic Grape-Berry Actives,
call 1-800-544-4440 or visit www.LifeExtension.com
Be sure to mention code PIM501X.



Society for Venturism

End Death Convention 2014

PART 2 (CONTINUED FROM LAST ISSUE; TIMES ARE APPROXIMATE, BASED ON THE PRINTED PROGRAM).

By Michael Perry

Saturday, Nov. 8. morning session, 9:30 a.m.-noon (conclusion).

A Regional Approach to Cryonics: Jordan Sparks, President, Oregon Cryonics.

Jordan talked about his newly-founded cryonics organization, Oregon Cryonics, based in Salem. It offers low-cost alternatives to conventional cryonics including brain-only cryopreservation and chemical preservation.

Jordan joined Alcor in the 1990s, then migrated to the Cryonics Institute where he was a director for six years. Oregon Cryonics was incorporated in 2005. The plan was to fund the operation through Jordan's successful dental software business. Before much could happen, however, the financial meltdown of 2008 put things on hold for five years. Then Jordan's brother Nathan took over the dental business so Jordan could devote full



From left: Ben Best, Jordan Sparks.

time to OC as its CEO. They now have one pet patient and three employees, Luke Parrish (Office Administrator), Mathew Sullivan (Operations Manager and Facility Engineer), and Matthew Deutsch (Patient Caretaker and Groundskeeper).

OC emphasizes regional cryonics: servicing a local area only, which has the advantage of rapid response. Plans are to eventually expand by starting regional offices in other areas. Another plan is to use light aircraft for rapid patient transport—Jordan has a pilot's license. It is much easier to do than commercial, he says, the pilot only has to "feel it is safe." He adds, "I'm well aware of the risks," but feels the benefits outweigh them.

Cryonics services: OC only does neuropreservations, either whole head (\$25,000), or brain only (\$14,000). They will also do chemical brain-only preservations (\$2,500) and will consider "free" for hardship cases. Chana Phaedra and Aschwin de Wolf of Advanced Neural

Biosciences in Portland (see Chana's report, in Part 1) have been hired as independent contractors to assist in cases.

Second Cryonics Movie: John Hardy.

John presented his movie, *New*, which deals with problems faced by a couple who are resuscitated after cryopreservation. In the end their coming back to a state of perfect health and vitality has a cost: they are no longer married and live separate lives though otherwise enjoying many wonders.

First afternoon session, 1:00 -3:30 p.m.

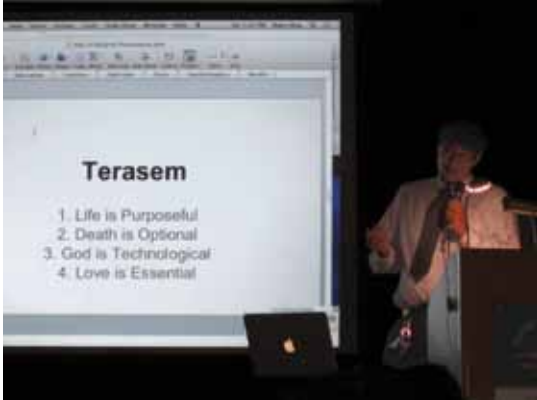
Spiritual Transhumanism: Jason Xu, Community Organizer for Terasem, Silicon Valley.

Jason talked about his experiences as a community organizer for the Terasem Transreligion, which is devoted to "spiritual transhumanism," finding meaning in life through human progress which will lead, it is hoped, to such advances as radical life extension. More generally, transhumanism has a broad range of ideas about how humans should modify themselves using future technology. Terasem endeavors to focus this interest to meet spiritual needs. Their principles are summed up as (1) life is purposeful, (2) death is optional, (3) God is technological, (4) love is essential.

In college Jason found religion "filled a void for social interaction." It was "a lot more involvement than in transhumanism." But then he discovered Terasem, through a video, *The Enemy Within*, a spoof starring a real android, Bina48, created by Terasem



Jordan Sparks
Credit: Roen Horn.



Jason Xu explains about Terasem.

founder Martine Rothblatt. Robots like Bina48 are “soulless killing machines” the world had better watch out for—but it’s all in fun.

So now he asks, “do we need religion in daily life?” His answer is personal—by example. He reports that he prays with Muslims weekly, does Zen meditation, and goes to church occasionally, “for social support.” He notes that transhumanist spiritual events are too rare, every 2-6 months, which is “why I joined Terasem.” Another benefit he sees is “to escape work and family.”

Through regular meetups Jason’s organization endeavors to “perform rituals dedicated to an eventual transhumanist paradise.” Spirituality is emphasized along with rationality in transhumanism and friendly contacts with traditional religious groups. Jason talked about “transhumanism as a salvation theology.” He says, “I don’t see any conflict between being part of Terasem and being part of any religion.”

Gene Engineering Is the Most Powerful Tool for Life Extension: Maria Konovalenko, Science for Life Extension Foundation.

Maria presented her group’s proposal to develop a gene therapy that will radically extend human lifespan. They are insistent: “Gene engineering is the most powerful existing tool for life extension.” She noted that this approach has increased the lifespan in a certain strain of *C. elegans* tenfold and nearly doubled that of a certain variety of mice. These, however, were special, mutated organisms which could be relatively easily modified genetically to produce the observed lifespan extensions. With humans it will not be so easy. What is needed is an efficient and safe method to deliver genes with viruses.

Her organization’s research plan is to test

twenty genes, and find five “most efficient” ones—metabolones, aging biomarkers, et cetera, using a mouse model. (“Mice genes are in people too.”) They will test old animals (“that’s what *we* are”) and hope to achieve synergistic effects by several therapies in combination. (Much additional technical detail here is omitted.)

As for the damage that accumulates with aging, Maria says evidence points to genes as the culprit. She is “pretty sure” her group’s approach to reverse aging and radically extend human lifespan is going to work. But funding is needed, to the tune of an estimated \$2-5 million for the initial study. Crowd funding is a possibility. “We would like to build a core of like-minded people for supporting this experiment.” Asked if she had contacted Calico (the Google-supported antiaging initiative), she said, not yet. Nor has her group studied the remarkable case of Brook Greenberg who essentially remained an infant throughout her life (dying at twenty from a children’s bronchial disorder). Asked about Aubrey de Grey’s antiaging work, she said that her group’s approach and his “could be combined.”



Maria Konovalenko speaks about her anti-aging initiative. Credit: Roen Horn.

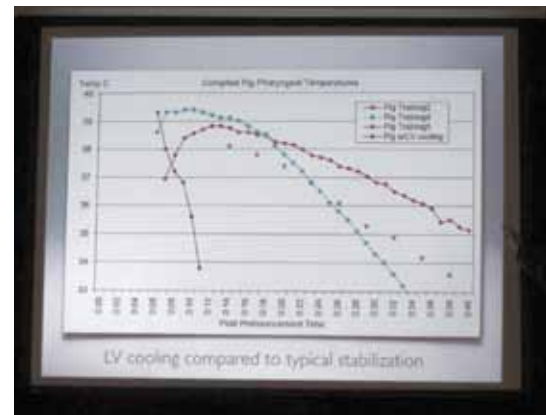
Present and Future Care of Cryonics Patients: Catherine Baldwin, Chief Operating Officer, Suspended Animation, Inc.; Alcor director.

Catherine’s organization, Suspended Animation, Inc. (SA), deals with standby and stabilization: care of cryonics patients from the time and place of clinical death up to when they arrive at or are placed in the condition in which they will receive long-

term care at their cryonics organization. Currently SA’s services are used by the two main cryonics organizations in the U.S.: Alcor and the Cryonics Institute, particularly for cases that are far from the respective organizations’ facilities. Her talk gave an update on current “field stabilization” care and a discussion of future directions for early-stages care of cryonics patients.

Lots of bad things start to happen at clinical death, which cooling can slow, stop and sometimes even reverse. Cooling is “good for your brain,” and now has mainstream uses, in treating stroke, for instance. Emergency medical procedures “to get you to the ER” somewhat recapitulate SA’s procedures. “Our patients have to be stabilized for a very long transport,” up to 8 hours or more.

SA’s response to a cryonics emergency is to assemble a team, send them out to the location, give cardiopulmonary support and speed cooling with ice to try to minimize ischemic damage. The blood is replaced with an organ preservation solution. Relatively few people are involved in cryonics, thus SA is rather like a small hospital with a limited budget, unable to afford full-time surgeons, perfusionists and other trained personnel. Instead companies provide these professionals on a contract basis. SA’s professionals are trained in quarterly sessions, using a pig model for surgery, perfusion and the like. SA now has professionals in 13 states, along with state-of-the-art equipment including a modernized, lighter sternal saw, a bypass machine, and two vehicles supporting surgery and perfusion. They have a brand new facility in California; they also moved out of their older facility, in Florida, to a newer one nearby.



Catherine Baldwin reports on SA research with liquid ventilation cooling.

What's next? There is ongoing work with portable liquid ventilation, following the efforts of Charles Platt previously reported. Mainly they are working on miniaturization of equipment. With a pig model 10 minutes of cooling equaled about 35 minutes with just surface cooling, not as impressive as reported by Platt, but good enough that "this is one area that will dramatically change the way we care for cryonics patients."

One other area of SA research is gene expression and biomarkers. The goal is a general characterization of what is happening with oxidative stress, cell death, et cetera in cryonics patients. It might also have mainstream medical interest.

SA is also interested in the possibility of premortem procedures. Today clinical death is a horrible process. It would be much better if meds could be given beforehand. In the medical mainstream you have "extended criteria donors" for organ transplant. Certain medications can be given before death is pronounced; there is no reason a similar procedure could not be followed in cryonics cases. Possibly cooling before pronouncement could also occur. "I won't give up" on this, she vows, or other innovations, including working with smaller clinics that deal with organ donors. She is ready to face the consequences as long as it benefits cryonics. "If this future vision of mine comes true I'd be out of a job."

"One other area of SA research is gene expression and biomarkers. The goal is a general characterization of what is happening with oxidative stress, cell death, et cetera in cryonics patients."

Religion and the Scientific Quest for Immortality: Mike Perry, Ph.D., Alcor Care Services Manager, Venturist Vice President.

Does religion have a place in a world and a future where death is to be conquered scientifically? If suitably formulated, definitely yes, I claim. My formulation of religion emphasizes a non-theistic

approach such as is found in Buddhism, and respect for the principle that extraordinary claims require extraordinary evidence. That such an outlook could still be "religious" follows by regarding religion as "a state of being grasped by an ultimate concern"—following the liberal 20th-century theologian Paul Tillich. The more usual notion of religion, that it *must* involve belief in supernatural agents or a supreme Being, I maintain is inaccurate, naïve and limiting.

"SA now has professionals in 13 states, along with state-of-the-art equipment including a modernized, lighter sternal saw, a bypass machine, and two vehicles supporting surgery and perfusion."

Buddhism teaches an Eightfold Path to enlightenment: (1) right understanding, (2) right aspirations, (3) right communication, (4) right occupation, (5) right effort, (6) right action, (7) right mindfulness, (8) right concentration. These, coupled with our "ultimate concern" of overcoming mortality, could serve as a starting point for a powerful new religious outlook. It could help provide direction and motive for what will no doubt be a difficult transition: from the limited beings we are today to the godlike entities we are striving to become.

There could also be great perils with developing technology. We worry about AGIs, godlike in their own right, which we might create to assist our noble quest. They could bring great and unprecedented benefits, but could also misbehave and bring catastrophe. We want to have assurance that at least the latter does not happen. One possible approach might be that AGIs themselves would be given religious instruction to firm up their commitments and help ensure that they stayed friendly, loving and helpful, as indeed we ourselves must also strive to be.

Second afternoon session, 4:00-5:00 p.m.

A Life in Cryonics: David Ettinger, Attorney, Son of Cryonics Founder Robert Ettinger.

David spoke about growing up in a home where his father, Robert, was the main founder of the cryonics movement, and about his father more generally. Robert early on showed multiple talents. A competitive swimmer, he also experimented with rocketry—and set fire to his parent's house. He attended college, but dropped out and "bummed around" for a while, winding up as a U.S. Army drill instructor in World War II. Toward the end of that conflict, in Germany, he suffered a severe leg wound which affected him the rest of his life. "War was pretty fun," he said, "until I got shot." But after that, "nothing scared him."

Around this time he "saw the cryonics idea" and thought people would soon be doing it. They didn't, so in the early 1960s he wrote *The Prospect of Immortality*—"still the best introduction to cryonics."

He had "bad" qualities, including "an awful, corny sense of humor." As an illustration David recalls a joke his father used to tell. What's green, hangs on the wall, and whistles? Answer: a herring. What? A herring isn't green! You couldn't paint it green? It doesn't hang on the wall! You couldn't hang it on the wall? It doesn't whistle! So, it doesn't whistle.

As for cryonics, Robert would say, "Freezing is a terrible thing. The only thing worse is not being frozen." And in response to the slow acceptance of cryonics, "Many are cold but few are frozen." David concludes, "humor [is] often the best way to be effective, [this] I learned from my father."

A second "bad" quality: "he dressed like a bum." Sweaters had holes in the elbows, he had a shabby suit, et cetera.

He wanted to help people, was the soft touch, said "I will personally guarantee it," if all the funds weren't there. He skimped on buying his own house to have money to donate to his cryonics organization, the Cryonics Institute (of which he was the principal founder).

He had no respect for authority, and was not reluctant to be bluntly dismissive about things many regarded highly. "I am convinced that in a few hundred years the words of Shakespeare, for example, will interest us no more than the grunting of swine in a wallow." He was on the Johnny Carson Show about eight times. When

Johnny asked about the “population explosion” he said he refused to consider that question anymore.

He said he was one of the laziest people around, but in fact he was always working. When he was 90 he had hip surgery, had to spend six weeks in rehab, got back home, immediately said, “back to work,” and meant it.

Courage was his defining characteristic in many ways. He took the primary role in freezing his mother and his wife (Elaine, mother of David). When he was finally going down at 92 he needed somebody there to get him pronounced as soon as possible so the team including David could get started as soon as possible. David’s wife appealed to authorities that Robert was a World War II veteran, and asked if they would help. They did. Normally people aren’t that concerned about prompt pronouncement of death, but this time they were and his cooling started within one minute of arrest.

Why haven’t more people adopted cryonics? His conclusion: fear.

As the talk ended Robert Ettinger’s longtime friend Robert Nelson, speaking from the audience, offered this tribute: “He was the kindest, most courageous, loving human being I ever met in my life.”



Roan Horn
Credit: Roan Horn

Eternal Life Fan Club: Roan Horn

Roan briefly talked about his new startup group, the Eternal Life Fan Club. “We’re living in a nightmare,” he says. “— because of death, our greatest enemy, our greatest foe, what makes life meaningless. My motto

is: ‘don’t die.’” Cryonics can give people hope, he notes, but another thing that can do that is to avoid death to begin with. To do this we need to cure aging, reach longevity escape velocity. Live prudently, safely. Safeguard our health as a precious possession.

As for religious views: “I’m an atheist. We live in an indifferent universe. Ernest Hemingway said, ‘Life is a dirty trick. A short journey from nothingness to nothingness.’ Karl Marx said, ‘Religion is the opiate of the masses.’ People believe in an afterlife. Wishful thinking. Strive for eternal life. I don’t think anything is more important than your existence.”

For all that, he is not signed up for cryonics. He says that if he had the money to sign up, he might instead donate it to Aubrey De Grey’s antiaging initiative, SENS.

Evening session, 7:30-9:00 p.m.

Questions from the Audience: Don Laughlin, Entrepreneur, Convention Host.

Don, who was born in 1931, has owned and operated casinos for most of his life, including the one at the Convention Center in Laughlin (named after him of course). Here he recounted his life experiences and answered questions from the audience. What follows is a lightly edited transcript excerpted from notes and is the gist of what was said as I tried to write it down but not always verbatim, and not always in the exact order stated. I’ve also condensed some material by removing the statements of questions when these can be inferred. Don’s statements are in quotes, questions from the audience are in italics without quotes, and my additions are in square brackets.

“If you gamble we hope you win— unless we do.”

“I was born and raised on a farm in southern Minnesota. We had no electricity until the ’40s. I started real young. I never got into sports because I was always trying to make a buck. I was a trapper, when women could wear furs. I got into slot machines—they were illegal but were everywhere. When I was a high school student I was 15-16 years old. The principal said, ‘You either get out of school or get rid of those machines.’ I said, ‘I guess I’ll get out of school.’ I was making a lot more money than the principal.”



Don Laughlin answers questions.
Credit: Roan Horn

How was Laughlin picked as the name of this town?

“There was no mail delivery down here, so we called [the right people and spoke to a Mr.] O’Neill, and he agreed we needed a post office. ... The P. O. Department didn’t like gaming names. Laughlin’s a good Irish name, why not?”

What do you enjoy the most about life?

“I love to work. A lot of people don’t like to work. The harder you work the luckier you get.”

How many kids do you have?

“I have three.”

Have you had any mystical experiences?

“I thought I saw a couple of flying saucers.”

Do you worry about personal danger?

“I suppose if you’re well known there’s some danger. I have a concealed weapon. I hope I never have to use it.”

Are you out of the closet as a cryonicist?

“Yes. Everybody knows it. I don’t keep any secrets. I think cryonics is a gamble but I think it has a better than 50-50 chance. Research is the lifeblood of an organization. Cryonics needs a lot of money for research. If I was to take all my money out of hotels and put it into cryonics—I’ve never thought of that. It would be to advance cryonics.”

How did you get involved in cryonics?

“I heard about the movie maker who was interested in cryonics—only he wasn’t. But I visited Alcor, Mike Darwin showed me around.”

How large is the cryonics community in Laughlin?

“Only [my assistant] Dal Newman [and myself]. We have standby equipment

recommended by Alcor. We donate a substantial amount of money every year to Alcor.”

What about your family?

My family is not signed up for cryonics. They have no interest in it.”

Why don't more people sign up for cryonics?

“The average person is probably religious. If you're religious, you don't need cryonics.”

Have you always been nonreligious?

“No, I was raised Catholic. I got the hell beat out of me if I didn't go to church.”

If you could have any question answered, what would it be?

“How can I live forever?”

A Scientific Investigation of Cryonics: The Fate of the Brain in Situ: Gregory Fahy, Ph.D., Vice President and Chief Scientific Officer, 21st Century Medicine, Inc.

Noted cryobiologist Greg Fahy offered us a hard look at cryonics, based on some recent work of his using a pig model. (Pigs are roughly human-size mammals, which makes them a good choice to study procedures used on humans.) His research was very painstakingly done, and his conclusions were backed by numerous charts and graphs with associated, carefully reasoned arguments. Overall, the news is good: the cryonics premise (that good preservation of brain structure raises hopes of the eventual resuscitation of the patient) seems well-validated.

In his introductory remarks Greg noted he was recently asked by fellow cryobiologist John Baust to write an article about cryonics. “I could not write the article—not enough data.” Rabbits had



Greg Fahy.

been studied, showing good preservation of brain structure, but human-size animal models were lacking. This led to Greg's research at 21st Century Medicine using a pig model. The overall aim: to determine if the results of rabbit perfusion with M22 (the main cryoprotectant used in Greg's previous studies) can be achieved in human-sized subjects. Here is a summary of the main results:

1. Can brain fracturing be avoided? Very probably!
2. What about brain preservation assuming 1 hour warm ischemia beforehand: bad + good but mostly good.
3. Instead of [2], 24 hours cold ischemia: worse.
4. 1 hour warm ischemia + 24 hours cold ischemia ([2] + [3]): again some bad but more good.

Bottom lines: Under baseline conditions (no ischemia) the cryonics premise is very well validated. Under warm + cold ischemia there are some problems but overall the results look good. In general, “good” means excellent brain histology, synapses well-preserved, et cetera, while “bad” means spotty pockets of brain edema, where information loss is also expected. Greg also reported on experiments in which the brain was kept biologically viable for 24 hours (unlike the main study, which was all postmortem), with excellent preservation as might be expected.

Side notes: Greg said Baust doesn't want his article anymore. And after the talk, with its mountains of detail both verbal and graphic, Rudi Hoffman quipped from the audience that he “thought it would be a little more technical.” Humor has its place, but I think we also felt an important milestone of verification had been passed, granted we still have a long way to go.

Sunday, Nov. 9. Morning session, 9:15-11:30 a.m. This was not more presentations but a circle discussion with input by all attendees. We talked mainly about how to make cryonics better and get more people to sign up. Ideas ranged widely, some focusing on technical and others on social issues. A few highlights are all I can report. Peter Voss said it was really important to have growth, and has been involved in trying to reach “deep

pocketed” individuals. Ben Best said the main problem with cryoprotectants today is toxicity. Dan Crevier noted cryonics was an idea whose time has not yet come, so we need to reach the small minority who are receptive. Jordan Sparks wanted to cut expenses and “make the barrier to entry very low.” Cairn Idun noted that we need more women in cryonics. I expressed strong encouragement of Jordan's intentions and also specifically advocated an outreach to people who cannot afford even low-cost cryopreservation (chemical is better than nothing).

“Greg also reported on experiments in which the brain was kept alive for 24 hours (unlike the main study, which was all postmortem), with excellent preservation as might be expected.”

CLOSING REMARKS

In all the Convention appears to have been a great success. There was much media attention, which is unreported for lack of space. The talks were many and varied, with subjects ranging from the very personal to the highly technical. Perhaps it is significant that no fewer than four of the talks had to do in some important way with the touchy subject of religion (the speakers: Lincoln Cannon, Neal Van De Ree, Jason Xu,



From left: Cairn Idun with futurist writer Desiree Duffy.



Robert Nelson with book.

Attendees could reserve free table space in the Starview Room's exhibition area to display their free literature; sell books, DVDs, dietary supplements and other life extension related products; and talk to people one on one about their company or organization. One attendee who used this option was Robert Nelson, noted for his role in the freezing of James Bedford in 1967, and the later, controversial loss of cryonics patients at Chatsworth, California. Nelson's recent book, *Freezing People Is (Not) Easy* was on display (though not available for sale, due to an oversight) and he was there to answer questions. Another table event was a drawing, held Saturday night, for an ancient Roman coin.

myself). Certainly the spiritual needs of those who would conquer death through science are real.

Tentatively, the next Venturist Cryonics Convention will be in 2016 in view of Alcor's planned conference in 2015. ■



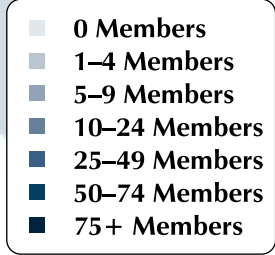
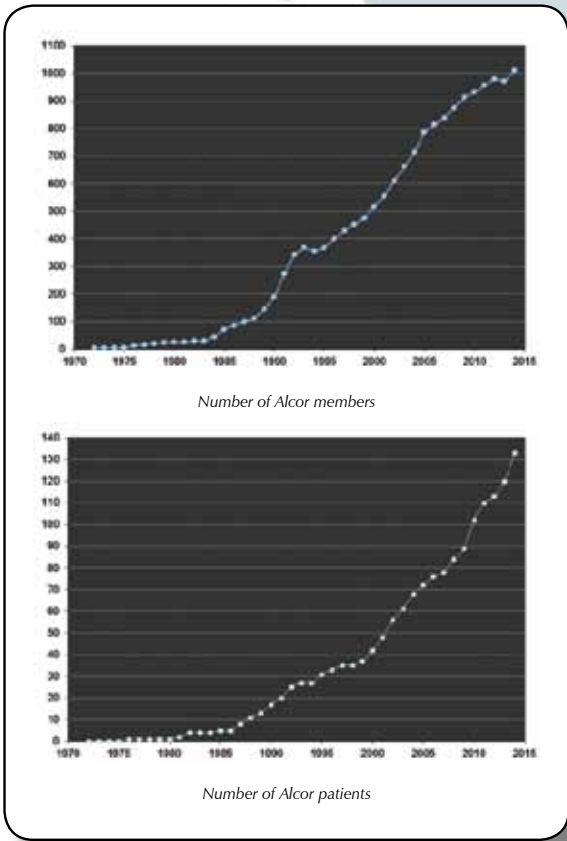
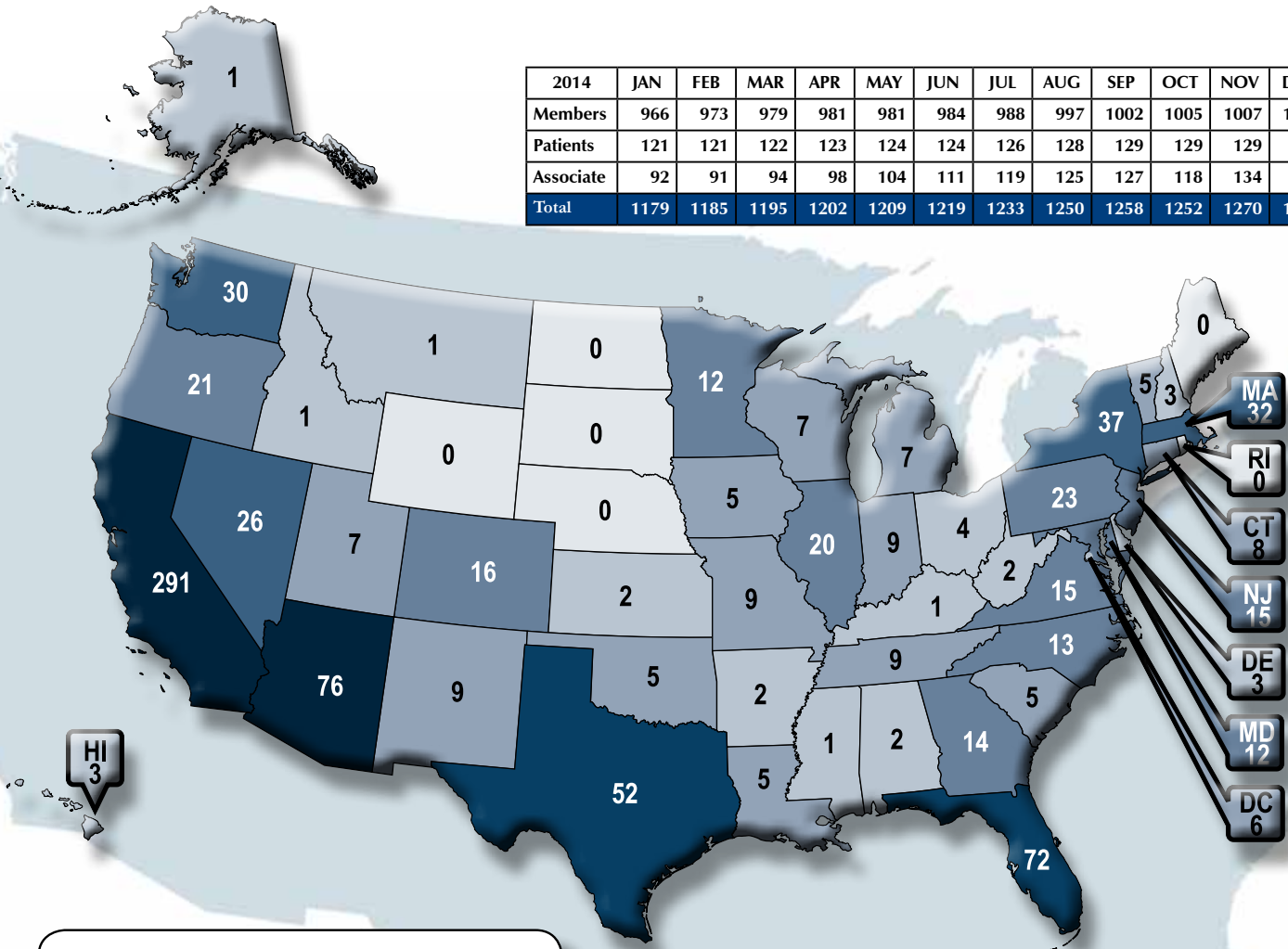
Rudi Hoffman in lotus position, group shot detail.
Credit: Desiree Duffy.



Group shot.
Credit: Desiree Duffy.

Membership Statistics

2014	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Members	966	973	979	981	981	984	988	997	1002	1005	1007	1010
Patients	121	121	122	123	124	124	126	128	129	129	129	133
Associate	92	91	94	98	104	111	119	125	127	118	134	144
Total	1179	1185	1195	1202	1209	1219	1233	1250	1258	1252	1270	1287



International

Country	Members	Patients
Australia	10	3
Canada	43	2
Germany	5	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	3	0
Norway	1	0
Portugal	4	0
Singapore	1	0
Spain	3	1
Thailand	3	0
United Arab Emirates	1	0
United Kingdom	23	2
TOTAL	112	9



Item # 01907

AMPK Activator

A New Paradigm in Controlling Aging

AMPK is an enzyme that serves as the body's "master regulating switch." It inhibits multiple degenerative factors by *revitalizing* aging cells.¹

Found in every cell,^{2,3} **AMPK** promotes **longevity factors** that have been shown to extend life span in numerous organisms.^{1,4} Increasing AMPK signaling "turns off" many damaging effects of aging, thus enabling cells to return to their youthful vitality.⁵

Life Extension® scientists have compiled years of research to create **AMPK Activator**, a specialized *dual-extract formulation* that supports **AMPK** activation for health optimization. This natural formula supports AMPK enzymatic activities required to safely support a more youthful cellular environment.

Importance of AMPK

Greater **AMPK** (*adenosine monophosphate-activated protein kinase*) activation has been shown to help target damaging factors of aging.⁵ Studies show **increased** AMPK activity supports reduced fat storage,⁶ new mitochondria production,⁷ and the promotion of healthy blood glucose and lipids already within normal range.⁴

Gynostemma Pentaphyllum

An extract of the plant *Gynostemma pentaphyllum* was traditionally used in Asian medicine to promote longevity and scientists now know why — *G. pentaphyllum* promotes **AMPK** activation.⁸⁻¹⁰ In one of many studies showing a wide variety of benefits, researchers documented a one-inch reduction in **abdominal circumference** in overweight individuals who took **450 mg** daily of *G. pentaphyllum* extract for 12 weeks.¹¹

Trans-Tilioside

Trans-tilioside, extracted from plants such as **rose hips**, also boosts **AMPK** activation, but triggers different downstream metabolic benefits

References

1. *J Mol Med (Berl)*. 2011 Jul;89(7):667-76.
2. *J Proteome Res*. 2011 Apr 1;10(4):1690-7.
3. *Circ Res*. 2007 Feb 16;100(3):328-41.
4. *Physiol Rev*. 2009 Jul;89(3):1025-78.
5. *Age (Dordr)*. 2014 Apr;36(2):641-63.
6. *Clin Sci (Lond)*. 2013 Apr;124(8):491-507.
7. *Proc Natl Acad Sci USA*. 2002 Dec 10;99(25):15983-7.
8. *Bioorg Med Chem*. 2011 Nov 1;19(21):6254-60.
9. *Carbohydr Polym*. 2012 Jul 1;89(3):942-7.
10. *Biotechnol Lett*. 2012 Sep;34(9):1607-16.
11. *Obesity (Silver Spring)*. 2014 Jan;22(1):63-71.
12. *Diabetes Res Clin Pract*. 2011 May;92(2):e41-6.
13. *Prev Nutr Food Sci*. 2013 Jun;18(2):85-91.
14. *J Nutr Biochem*. 2012 Jul;23(7):768-76.
15. *Bioorg Med Chem Lett*. 2007 Jun 1;17(11):3059-64.

than *G. pentaphyllum*.¹²⁻¹⁴ Among its many benefits, a low human equivalent dose of **56 mg** daily *trans*-tilioside has been shown by researchers in preclinical studies to promote healthy blood glucose levels and body weight already within normal range.¹⁵

The suggested daily dosage of **AMPK Activator** is to take two capsules with the first meal of the day and one capsule with the second meal. Three vegetarian capsules provide:

ActivAMP™ <i>Gynostemma pentaphyllum</i> extract (leaf)	450 mg
Rose hip extract	1,120 mg
Standardized to <i>trans</i> -tilioside	56 mg

Anti-Aging Discovery That Cannot Be Overlooked

Scientists uncovered the cell-energizing effect of **AMPK** in the 1970s. Since then, an exponential volume of data (over 7,500 published studies) has documented the critical role that **activated AMPK** plays in maintaining life-sustaining cellular functions.

Those seeking to meaningfully extend their healthy life span should ensure they optimally **activate** their cellular **AMPK**. The reason this is so important is that in response to aging, excess calorie consumption, and/or low levels of physical activity, AMPK activity markedly **declines**.

A targeted way of **reversing** cellular depletion of this critical enzyme is to take the **new AMPK Activator** formula that comprises a dual-extract, plant-based formulation.

A bottle of 90 vegetarian capsules of the **new AMPK Activator** retails for \$48. If a member buys four bottles, the price is reduced to **\$33** per bottle.

ActivAMP™ is a trademark of Gencor.

ORDER NOW!

Toll-free 1-866-820-4967

www.LifeExtension.com

Be sure to use Discount Code PIM501X to get these savings.

Philosophy and the Problem of Mr. Branden's Death

[Originally contributed to the cryonics mailing list, CryoNet, on June 22, 1991]

By Hugh Hixon

From the earliest known musings of philosophy, the existence of death, with its inevitability and finality, has posed a particularly intractable problem. Why should Man, the self-aware Lord of Creation under the gods, be subjected to eternal oblivion; and particularly, why should the individual philosopher (who would be king) suffer this fate? (Any philosopher worth his salt makes his way in the world by spitting into the wind, so the possession of an ego of some proportions is entirely understandable.)

Whatever logical contortions they may put themselves through, the honest ones have come to understand that their lot is one with the beasts and insects; so they elevate death to the status of an axiom and make their peace. A most bitter peace, withal, but one gets that sort of thing in the quest for the truth.

So here come the immortalists, and particularly, the cryonicists. We are the technologists, the dirty-fingernailed artisans, without a thought for the thoughts of these great men. (One is invariably reminded at this point of the comment that, "A civilization that exults philosophy, because it is an intellectual profession, and denigrates plumbing, because it is a dirty, manual THING, will soon find itself in trouble, as neither its philosophy nor its pipes will hold water.") And what do we do with this philosophically intractable problem of death?

WE CREATE A TECHNOLOGICAL SOLUTION!, of course. So much for the musings of philosophers.

And then there's the emotional aspect; a philosopher's thoughts are more dear to him than his children; they ARE his children! And to these parents, their children, immaculately conceived and carefully nurtured in their minds, can do no wrong.

"A civilization that exults philosophy, because it is an intellectual profession, and denigrates plumbing, because it is a dirty, manual THING, will soon find itself in trouble, as neither its philosophy nor its pipes will hold water."

So it's entirely understandable that philosophers in general, and Mr. Branden in particular, should have some trouble with us. They have created a room in their house for Death, and carefully furnished it and arranged it, and closed the door and locked it. But it's always there, and they know with bitter certainty that someday they will pass through that door, and not come out. And we go clomping through

the house in our muddy boots, and pop the expensive lock off the door with a crowbar, and look in this room, and we turn to the philosopher and we say, "So where's your problem?" And they get the idea that we may be snickering up our sleeves at them, and that we will never, never understand the GRAVITY of their thoughts on this thing. So it's understandable that they may be a bit upset and defensive and backwards with our cavalier solution to their personal Gordian Knot.

I suppose they're right; we DO snicker a bit. But in the end, death is the common enemy of all of us, and though we have set ourselves on the path of Choice, that even those dearest or most valuable to us may choose death of their own free will, we know that each and every death diminishes us. And! We! Don't! Like! It!

So have some sympathy for Mr. Branden; he's trying to deal with what has classically been an intractable problem the best he or anybody else knew how before Robert Ettinger, whom he's probably never heard of.

But don't let him get in your way! The important thing is to be able to say, in the year 2991, "I once met Nathaniel Branden." If he isn't available to agree with you, HE didn't solve the problem. ■

Preserving Minds, Saving Lives: 35 Years of the Best Cryonics Writing of The Alcor Life Extension Foundation

Available for Pre-Order NOW!

Featuring stimulating articles from the pages of CRYONICS Magazine by Steven Harris, Hugh Hixon, Saul Kent, Mike Darwin, Stephen Bridge, Thomas Donaldson, Aschwin de Wolf, Brian Wowk, Michael Perry, Ralph Merkle, and many others.

Here are some of the classic articles that shaped cryonics thought and Alcor policy over the past three decades.

Why We are Cryonicists

Notes on the First Human Freezing

Dear Dr. Bedford

How Cryoprotectants Work

How Cold is Cold Enough?

The Death of Death in Cryonics

The Society for The Recovery of Persons Apparently Dead

Frozen Souls: Can A Religious Person Choose Cryonics?

But What Will the Neighbors Think?!

Systems for Intermediate Temperature Storage for Fracture Reduction and Avoidance

You can't really understand cryonics today unless you can appreciate how we got here. The philosophy, the history, the science and technology, the debates, the PEOPLE of cryonics—it's all here in one indispensable volume.

Quantity: _____ Hardcover @ \$35.00 _____ Quality paperback @ \$20.00 = \$ _____

Add \$3.00 for Shipping (\$15.00 for non-US/Canada orders) = \$ _____

TOTAL: \$

CREDIT CARD INFORMATION

Card type: Discover Visa MasterCard AMEX

Name on card: _____ Billing Zip Code: _____

Credit card number: _____ Expiration date: _____

Signature: _____

SHIPPING INFORMATION

Name: _____

Address: _____ City: _____ State: _____ Zip: _____

Phone: _____ Email: _____

(Optional)

Send this form to:

Alcor Life Extension Foundation

7895 East Acoma Drive Suite 110

Scottsdale, Arizona 85260.

You can also order via PayPal by sending payment to bonnie@alcor.org or by calling Alcor at 1-877-462-5267 Ext. 114

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 on odd-numbered months. Facility tours are held every Tuesday 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:

We meet at least quarterly for training, transport kit updates, and discussion. For information: Steve Jackson, 512-447-7866, sj@sjgames.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:

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

LifeExtension

Foundation for Longer Life®



You're going to great lengths to avoid death. Why not do something to prolong life.

Join the Life Extension Foundation® now so you can live a longer, healthier life. We'll give you all the support you need, starting with cutting-edge medical information.

You get it three ways. Through our monthly *Life Extension Magazine*® ... filled with cutting-edge research findings and global medical breakthroughs even your doctors may not know about. Through our *Disease Prevention and Treatment* book, filled with breakthrough protocols on over 130 different diseases of aging. And with free phone access to our **knowledgeable Health Advisors** (naturopaths, nurses, nutritionists, even personal trainers). They're available every day of the year to address your health concerns and guide you in structuring a personal regimen of diet, exercise and nutritional supplements designed to extend your healthy life span.

As a Life Extension® member, you'll save far more than money with **preventive blood screening** to head off health problems ... and **advanced nutritional supplements** that are light-years ahead of the commercial marketplace. These are formulas guaranteed for purity, potency and efficacy that you simply won't find anywhere else. All formulated to keep your body functioning youthfully for more years than you ever thought possible.

So while you're busy planning for the future, try spending a moment to prolong it. Call 1-866-820-4967 toll-free or visit www.LifeExtension.com/PIM501X to join the Life Extension Foundation now.

LifeExtension

Foundation for Longer Life®

1-866-820-4967 • www.LifeExtension.com/PIM501X

Your \$75 annual membership dues will fund innovative anti-aging research that will ultimately benefit you.

