ALCOR LIFE EXTENSION FOUNDATION

CRYONICS

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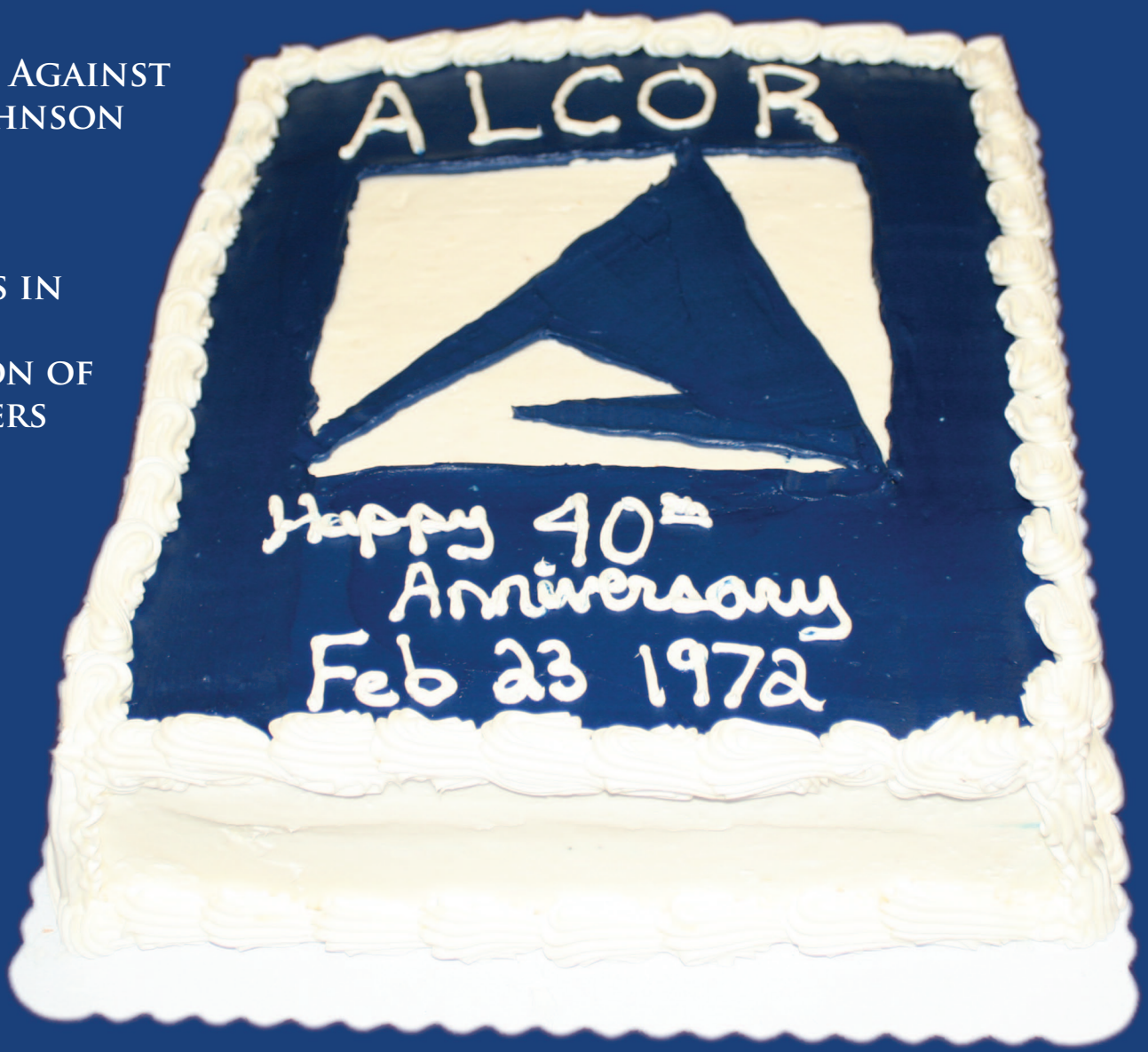

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Cover Photo:
Alcor 40th Anniversary Cake

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Cryonics Life Insurance with Inflation Considerations
Alcor member and insurance agent Rudi Hoffman contributes this timely article about how to think about the rising costs of cryonics and life insurance. How does inflation affect the price of advanced medical procedures? What kinds of life insurance exist? How to read those long life insurance policy illustrations? Read Rudi's article for more information on these topics.

6 Lawsuits Against Larry Johnson End
The Alcor Life Extension Foundation reports on the latest developments in the legal case against ex-Alcor employee, and co-author of the book '*Frozen*,' Larry Johnson.

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One of the most promising developments in Alzheimer's research is the progress that is being made in early detection of this debilitating brain-destroying disease. If modern imaging technologies can predict the onset of Alzheimer's disease before cognitive decline sets in, more aggressive and forward-looking therapies aimed at preservation of personal identity may be within reach.

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Alcor Life Extension Foundation
CRYONICS

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FROM THE EDITOR

As evidenced by recent exchanges on the Alcor Member Forums, our members have a wide variety of suggestions for how to close the substantial funding gap that has been produced by Alcor's practice to date of not raising cryopreservation minimums for existing members. If there is one area of strong agreement, however, it is that all members who are underfunded for today's cryopreservation minimums and who can afford to change or upgrade their life insurance, should do so. This will not just reduce Alcor's funding shortfall but it will also allow the member to secure new cryopreservation and storage technologies that cannot be offered without charging an additional amount. Surplus funding can also be allocated to a personal revival trust or to Alcor's hardship fund to help members with poor funding and/or challenges to pay annual dues.

The March-April issue of *Cryonics* magazine features an extensive review of life insurance options by Alcor member and life insurance agent Rudi Hoffman. Rudi introduces the topic by presenting the disturbing long-term effects of (medical) inflation. Not all of Alcor's services may be subject to the kind of cost increases we see in medicine but it is prudent to plan using conservative assumptions. After this sobering introduction, Rudi runs us through the various forms of life insurance, their pros and cons, and how to read those long, intimidating policy illustrations. We at Alcor hope that many of you will make efforts to update your cryonics funding to make it easier to solve the underfunding problem and to assist with the really hard cases.

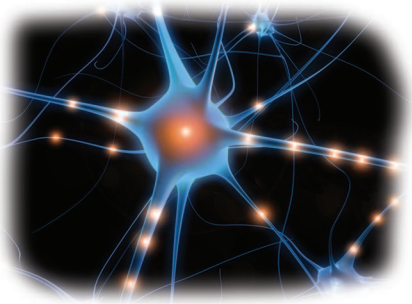
The recent January-February issue, which focused on brain-threatening disorders and cryonics, was well received and I am glad to offer another article by Mike Perry about recent developments of early diagnosis of Alzheimer's disease. Mike will be one of the presenters at a *Cryonics Northwest* and *Institute for Evidence Based Cryonics* symposium on cryonics and brain threatening disorders in Portland, Oregon, on July 7, 2012.

This issue also includes an update about Alcor's legal fight against Larry Johnson, his co-author, and the publisher of the book *Frozen*. Mike Perry concludes this issue with a review of FM-2030's "posthumously" published book on immortality and a review of Rebecca Skloot's *The Immortal Life of Henrietta Lacks*.

SAVE THE DATE! The 40th anniversary Alcor Conference will be held from October 19 to October 21 at the *Scottsdale Plaza* hotel in Scottsdale, Arizona. Watch the Alcor website, Facebook, the Alcor Member Forums, and this magazine for announcements of speakers and events. If you are a young Alcor member, you may also want to attend the annual Teens and Twenties meeting in Florida.

If you have not registered for the Alcor Member Forums do not hesitate to do so. Activity on the forum has really picked up and there are many interesting exchanges about pressing Alcor topics.

Aschwin de Wolf



Symposium on

Cryonics and Brain-Threatening Disorders

Saturday • July 7, 2012
Presentations start at 9:00 am

Kaos Softwear, 414 NW 6th Ave,
Portland, Oregon 97209

Entrance is Free

Speakers include:

- Aubrey de Grey, Ph.D. – The SENS Approach to Repairing the Aging Brain
- Chana de Wolf – Neurogenesis in the Adult Brain and Alzheimer's Disease
- Ben Best – Drugs, Supplements, and Other Treatments to Mitigate and Prevent Alzheimer's Disease
- Mike Perry, Ph.D. – (Early) Diagnosis of Alzheimer's Disease
- Max More, Ph.D. – Survival, Identity, and the Extended Mind

Please RVSP at https://www.facebook.com/events/341429765900433 or send an email to contact@evidencebasedcryonics.org.

CEO Update

By Max More

The Alcor-40 2012 Conference

Planning for the Alcor 2012 40th birthday conference is proceeding. After looking at several venues, I have settled on the *Scottsdale Plaza* in Scottsdale. The date is the weekend of October 19-21, 2012. It's been five years since the last conference, so this will give our community a chance to renew personal connections and catch up on recent progress at Alcor. Keep an eye on *Cryonics* and *Alcor News* for developments.

Alcor in Europe

In previous updates, I set the goal of restoring Alcor's ability to provide an effective response and cryoprotection to our members overseas, starting with Europe. To that end, Aaron Drake and I left on Wednesday January 18 for a six-day visit. The intention was to meet with individuals and organizations that might work with us in improving our European capabilities, to get to know them firsthand, assess their resources and commitment, listen to our remaining European members, and start developing concrete plans.

Long-term Alcor member (and fellow co-founder of Mizar, later Alcor-UK), Garrett Smyth, kindly picked us up at Heathrow airport on Thursday morning and made us welcome in his home. Alcor member and Cryonics-UK organizer Tim Gibson drove us to the offices of Rowland Brothers, in Croydon, South London. There we met with Steve Rowland and his father Tony, as well as general manager Gary Bruce, and embalmer Geoff Taylor.

Rowland had previously worked with Alcor (in 2009) to transport a patient from England to Scottsdale. All four individuals expressed eagerness to work with us in future. We had hoped that they would store a neuro dry ice shipper for us, but they went beyond that and offered to store a fully-constructed whole body dry ice shipper, as well as a refrigerated stock of M22 and any other equipment and supplies. This would remove that burden from Alcor members in England, while making it possible to reliably and quickly access the supplies from a convenient location.

Mr. Taylor said that he would be willing and able to perform a neuroseparation as needed. He also said that he has a network of embalmers on which we could call. Steve Rowland assured us that his company can get to anywhere in Europe within six hours. Having recently heard interest from Hong Kong, I inquired about responding to that location. Steve said they would work with Universal Funeral Parlor – a company whose sign I noticed during my recent visit. Rowland will check on nearby sources of dry ice and requested a step-by-step guide to the procedures we would want from them. We will send them a new ice bath, after reviewing previous designs and deciding whether further improvements are feasible, taking into account the various airlines' limitations. Finally, Rowland made an intriguing and no doubt controversial suggestion: they would like to offer cryonics as an option along with their existing services.

The next day, we made our way by train from London to Sheffield, to observe the first of two days of training at a meeting of Cryonics UK. About 20 people from England and elsewhere in Europe attended – apparently a larger than normal turnout. The training session was led by Tim Gibson and EUCRIO's COO. Both were well practiced, knowledgeable, and competent based on what I observed. Tim was also remarkably tidy and well-organized. Among those I spoke with were Cryonics UK's treasurer, Graham Hipkiss and technical advisor Alan Sinclair. Although the attendees were a mix of Alcor and CI members, there was clearly a positive response to our visit. Several people said that, if we show that we can properly support our members abroad, they will retain their membership (which they might otherwise drop), or renew it (if they had switched to CI or dropped membership in any US cryonics organization).

While the training session continued on Sunday, we traveled to Manchester to catch a flight to Porto, Portugal. We were met at the airport by Nuno Martins and his brother Diogo, who are EUCRIO's CEO and CIO. The Martins took us to nearby Braga where they showed us EUCRIO's equipment. Already an extensive collection (including a ready-to-use whole body dry ice shipper), Nuno strongly welcomed any suggestions we had for improving the kit and for making it maximally compatible with Alcor's. For instance, they will reorganize the Pelican cases, include a King airway, upgrade to stronger body bags, acquire a Baxa infusion pump, and so on.

It was evident that the Martins and their team had done extensive research into the regulations, requirements, and airline rules throughout Europe. They have developed a team of volunteers as well as contractors. They may be fully operational within a few months.

Back in London, just before taking our return flight, we met with a director who is a cryonicist and who wants to make a movie in which cryonics plays a prominent and positive role.

Alcor's lawsuits against Larry Johnson have been ended by his bankruptcy and various concessions. In 2009 Alcor sued authors Larry Johnson, Scott Baldyga, and publisher Vanguard Press in New York for their book *Frozen*, which purported to be about Alcor. The lawsuit was filed to obtain damages for the false and defamatory content of the book, to enforce prior court orders and agreements which publication of the book directly violated, and to protect the privacy of Alcor members. Bankruptcy papers filed by Johnson end Alcor's ability to collect damages related to this lawsuit from Mr. Johnson, unless there is a subsequent violation of terms by Mr. Johnson. All court orders remain in force to prevent future violations.

In connection with the end of litigation, Larry Johnson has issued this public statement:

"When the book *Frozen* was written, I believed my conclusions to be correct. However information unknown to me and a more complete understanding of the facts furnished by ALCOR contradict part of my account and some of my conclusions. In light of this new information from ALCOR, some parts of the book are questioned as to veracity.

"For example my account of the Ted Williams cryopreservation, which was not based upon my first-hand observation as noted in my book, is contradicted by information furnished by ALCOR. I am not now certain that Ted Williams' body was treated disrespectfully, or that any procedures were performed without authorization or conducted poorly.

"To the extent my recollections and conclusions were erroneous, and those recollections and errors caused harm I apologize."

False allegations of mistreatment of member remains were the centerpiece of sensational publicity sought by Mr. Johnson in 2003, and subsequently during his promotion of the book *Frozen* in October 2009. Yet they were just a few of the many falsehoods contained in the book *Frozen* and the surrounding publicity. The lawsuit against the book's coauthor, Scott Baldyga, and publisher, Vanguard Press, continues in New York. Alcor is seeking money damages against Mr. Baldyga and Vanguard Press for aiding and abetting violation of court orders, ignoring valid court injunctions, and otherwise assisting in the distribution of false information about Alcor.

Alcor CEO, Max More, stated, "We are very pleased that Mr. Johnson has publically retracted his allegations about Alcor. Alcor feels vindicated from the falsehoods perpetrated by Mr. Johnson. Alcor is a professional cryopreservation facility dedicated to the well-being and privacy of its members." ■

Cryonics Life Insurance with Inflation Considerations

By Rudi Hoffman

Background on Cryonics Funding

By now, most members and potential members reading these words are aware that Alcor is anticipating enacting an historic—and no doubt much discussed—new pricing model. This will almost certainly impact nearly everyone reading this article, even members of other cryonics organizations or those intending to sign up with a cryonics organization in the future.

After almost four decades of "grandfathering" the original rate which was in effect the day one became an Alcor member, Alcor is developing an incentive program which encourages—some would say requires—that the money needed to cover CURRENT cryopreservation costs be available at the time you "die" and the service is provided.

The reasons and rationales justifying this new program are many and are available on the Alcor website. The details and number of serious calculations performed behind the scenes—the "handwringing" over this issue—goes back decades, and is not the focus of this article. The summary is simply this: Due to technological enhancements and inflation, the actual costs of providing "state of the art" cryopreservation have increased. Eventually these costs go up considerably. Alcor has made a decision to continue to provide the best practices and procedures available. This means that the new higher costs must be paid, and this funding has to come from somewhere to make a sustainable organization. Rather than contribute a lower amount to the Patient Care Trust Fund, or subsidize shortfalls from the Alcor Endowment Fund, the Alcor Board has determined that Alcor cryopreservation pricing must have an intrinsic structure that acknowledges the reality of increasing costs.

Here is what this means to you.

Let's assume for a moment that you signed up with Alcor in 1994, the year the author of this article signed up. The cost of whole body cryopreservation was $120,000. If I had to be cryopreserved right now, Alcor would provide me with a service legitimately and currently costing $200,000. Recall, this includes adding $110,000 to the Alcor Patient Care Trust.

The new pricing model, to be instituted probably in 2012, says I will need to have a total of $200,000 going to Alcor to secure a state of the art cryopreservation. If I only have $120,000, they will still provide the best protocols and service they are capable of. However, prior to "dying" while remaining a member, I will be charged an additional amount, over and in addition to my regular Alcor dues, which will go into a pooled fund designed to help pay the difference between my funding amount and the actual, then CURRENT, funding amount.

For members who signed up at various points in time with Alcor since 1972, the metrics are pretty simple. For example, if you signed up as a "neuro" when the cost was $35,000, you now need to fund for at least $80,000, the current neurovitrification cost at Alcor. Ideally, you should acquire a substantially higher amount of life insurance coverage, for reasons which are explained below.

The "Rule of 72" and How To Plan For Your Future Cryopreservation Needs

This short explanation may seem like a digression at first, but we'll soon find out it is not.

It is called "The Rule of 72." It is astoundingly simple, but powerful.

You can determine the future cost of a compound interest calculation by dividing the number 72 by the interest rate. The result indicates the number of years it will take to double the original amount.

For instance, let's say we are buying an item which today costs $200,000—like a whole body cryopreservation at Alcor. Let's further assume that medical inflation increases costs by 7.2% a year. While no one knows for sure what inflation rate to expect in the future, you are almost surely aware of current macroeconomic events which make ongoing inflation virtually inevitable. It is extremely unlikely, given actual numbers of people signing up for cryonics throughout the planet, that the economies of scale available for commodities like electronics are going to happen in cryonics like they do for your iPhone.

Medical Inflation Rates

By way of a data point of hard reality, the health insurance premiums I pay went up 30% and 17% per year for the last two years. So 7.2% as a working figure for increasing costs of specialty medical interventions is not unreasonable. Although, to be fair, this is higher than the historical price increases Alcor has experienced, based on the analysis done by Robert Freitas.[1] However, it is substantially lower than worldwide medical inflation, which is estimated to average 10.5% a year.

Taking this 7.2% into the number 72,

1 Robert Freitas, Jr., "Scenario Analysis using a Simple Econometric Model of Alcor Finances," Alcor Website Library, October 15 (2010).

we come up with the number 10. This simply means it will take ten years for the buying power or cost of an item to double. In other words, at 7.2% a year inflation rate, a service costing $200,000 will double to $400,000 in—you guessed it—ten years.

Ten years from then it will double again—to $800,000.

Needless to say, the reality of compound interest—and inflation is a type of compound interest—is both exciting and frightening. And, like other facts of nature, this simple fact of nature is inexorable, uncompassionate, uncaring, and exists completely independent of anyone's opinion. The mathematical reality of compound interest is as certain, as mindless, as absolutely undeniable as gravity.

Ignoring the effects of compound interest or gravity is inadvisable. Mathematical and physical reality does not CARE how precious you are, how you have sacrificed for years to pay cryonics dues for your family, how deserving and sincere you are, how loyal to the cause, how your spouse won't let you spend more on cryonics, how badly the kids need braces or shoes, how you have become old or uninsurable—insert your personal contingency and situation here.

While the mathematics of compound interest and randomness may not care about you, the decision makers at Alcor actually do. So there are options for hardship cases, along with mechanisms to attenuate increased costs for long term members unable to handle rising costs at Alcor.

If you plan on living another thirty years as you read these words, and you are serious about cryonics, you are at this very moment facing a serious—indeed a life threatening—challenge. It has been acknowledged for decades at Alcor that there is a fundamental problem with the grandfathering issue. But current Alcor management is choosing to address this enormous financial problem head on and to deal with it honestly instead of pretending it does not exist.

Again, what does this mean for you, in practical terms, about how much life insurance you should have to ensure adequate funding with Alcor and/or other cryonics organizations?

Superfunding Suggestions

There can be no single "one size fits all" answer to this question. But there can be some broad parameters. If you are young or middle aged and/or can afford it, It is not unreasonable to have one, two, or even three million dollars of total coverage. Increasingly, we are seeing far sighted cryonicists establish a combination of levelized premium universal life policies with renewable and upgradable term policies to provide for both future cost increases as well as to take care of their loved ones.

I personally own $2,300,000 of insurance on my life. Not because I am hugely wealthy, or there is some magic way for insurance brokers to obtain life insurance. I pay my premiums like anyone else, and total insurance costs are a substantial portion of our household budget. This life insurance, however, provides for my current and future cryonics costs, takes care of my beloved wife, and, most importantly, is designed to go into a series of three Cryonics Trusts.

Does this mean you should become discouraged and depressed if you cannot even think of affording this substantial coverage, and do nothing?

Of course not.

While most of us probably cannot afford any far future contingency or cost of future cryopreservation, we certainly CAN recognize that funding above and beyond current cryopreservation minimums is prudent. Alcor has long recommended overfunding, and a 50% overfunding at current rates would amount to $300,000 for whole body members and $120,000 for neuro members.

It does not take a rocket scientist, economist, or financial genius to simply see that, in this circumstance, "more is better." Given the realities of compounding, having at least double the current minimums is certainly prudent. Recall, excess funds can be directed to your loved ones, causes you care about, and even your own personal revival trust. The Patient Care Trust funded by Alcor with each cryopreservation, is a "pooled" fund, designed to provide care in perpetuity for all cryopreserved members. If you want the possibility of being resuscitated from cryopreservation with personal funds, you should create a personal cryonics trust, which is generally funded with the financial leverage of life insurance.

We will deal with creative insurance and funding concepts in a later section. But if you remain reasonably healthy, the odds are good that there are ways to secure more life insurance now, while you are still relatively young and insurable. Annuity funding is appropriate for uninsurables, but this presumes one can reposition the lump sum of cash required to make current funding minimums. Again, it should be noted that Alcor is planning to look at "hardship" situations on a case-by-case basis.

This brings us to some practical considerations like, "How can I even think of affording the kinds of coverage that the gods of compound interest suggest I should have? Are there ways I can systematically engineer a policy or policies to address this inflation issue?"

This brings us to:

TYPES OF LIFE INSURANCE

We will start with some basics— Life Insurance 101.

- **Term Life Insurance**

Term life insurance is, as the name implies, life insurance that is level or in place for a TERM, or period of time. Popular choices include life insurance where the cost, also known as the premium, is LEVEL for fifteen, twenty, or even thirty years. It is pure death protection, generally builds no internal cash values, and the policy will indeed pay the full life insurance proceeds, known as the "face amount" of the policy—if you can arrange to die at the right time, that is.

Not surprisingly, given the fact that people tend to die in the later years of life, not the earlier years, term life insurance is relatively inexpensive for younger persons.

Term insurance is perfect in some situations, especially when we desire coverage for a period of time that can be known in advance. For instance, you are raising a family and you need a huge sum of life insurance to replace the income source you represent to your family. To replace this income, a lump sum of ten or twelve times your annual salary is needed, and it makes sense to fund this need with affordable term life insurance. There is a definite point in time—some twenty years out—when your kids will be raised, your mortgage paid down, your liabilities and financial responsibility to your family largely fulfilled, at

which point this "backup" source of funds is no longer necessary.

Or, perhaps you borrow $500,000 on a thirty year mortgage for a house. Your mortgage holder or bank trusts you to pay the loan if you live, but wants life insurance on your life to pay the mortgage off if you die. There is a clear cut end point, a definite period of time the coverage is needed, a definable "term" of liability. In broad parlance, the need can be defined as "temporary" and term life insurance is completely appropriate for this "temporary" need.

A Range Of Quality—What Do I Look For In Term Insurance?

Like nearly everything in life, there is a "range of quality" in term life insurance. Ratings and long term stability of the carrier, whether the carrier will allow ownership or joint ownership by a cryonics organization, rates, and quality of administration are among the metrics to consider. Availability and costs of riders, such as a disability waiver of premium, which waives the premium upon disability of the payer, may be a desirable option as well. Most, but not all, term policies can be "renewed" at the end of the term period. Most, but not all, term policies can provide guaranteed upgradability to a permanent or levelized premium policy with no evidence of insurability.

Is Term Insurance Appropriate For Cryonics Funding?

While not ideal for the reasons outlined above, term life insurance may be used to fund the cost of life insurance for cryonics. Depending on life situations, term insurance may be the only way an individual with cost concerns can afford to become a fully funded cryonaut. And, it often makes sense to ADD a large term policy in addition to a permanent policy to guarantee a cryonicist the ability to have more coverage when needed.

As an example, John is a 28 year old PhD student living on a $20,000 annual stipend. He wants to sign up for cryonics, but cannot afford the premium investment for a $300,000 Universal Life policy. So he buys a $300,000 term policy, and qualifies as a Preferred Nonsmoker. In addition to providing $300,000 of coverage, this term policy also guarantees that John can buy $300,000 of permanent coverage at the same Preferred Nonsmoker health category, no matter what happens to his health, anytime over the next ten years. This is called "guaranteed upgradeability" and is an important thing to ask about when shopping for term insurance.

Can I Pay A Net Of Zero For My Life Insurance?

There are even new term policies which enable you to get every penny you put in the policy back after a period of twenty or thirty years, called "cashback term." These programs are becomingly wildly popular because they fill a space between traditional term and some type of cash value building policy. Obviously, the premium on these term policies is higher than conventional term policies which give you nothing back unless you die. The increased cost ranges from 50% to 100% above the cost of straight term. However, the actual number crunching reveals that the distinction in cost amounts to a guaranteed, tax free, risk free return of six to seven percent. Since this is substantially higher than equivalent risk free, or extremely low risk, investments available elsewhere, it makes sense for many analytical individuals to consider this remarkable new innovation.

Additionally, cashback term, like universal life, will pay itself for a period of time once the policy has been in force long enough to accumulate some internal cash value. This makes the policy much more "robust" in real world environments where even responsible people occasionally may miss a policy premium.

There is also the psychological factor. Many people would rather pay in $30,000 over twenty years and get the full $30,000 returned, than pay in $20,000 over twenty years, get nothing back, and be penalized for living by paying the much higher term renewal rate. This makes sense especially for cryonicists, who tend to be life extension enthusiasts who expect to live an extraordinary length of time.

Situations and circumstances differ among individuals, which is why there is no "one size fits all" generic best policy, or even type of policy. Beware of populist and non-nuanced articles or purveyors of advice who confidently prescribe any single type policy or program to everyone.

The Dirty Secret Of Term Life Insurance—And How Insurance Companies Make Money On It

While most Alcor members know that the rates for the same amount of insurance coverage will increase at the end of the term, they are shocked, dismayed, repulsed, and downright annoyed when they find the actual extent of this premium increase. The rate does not just double, quadruple, or quintuple. No, you are getting older, and the insurance company wants to shake you off the policy before you do something rude like die during their coverage period. This increase is further compounded by the fact that the insurance company knows that folks who renew their insurance premium without evidence of insurability probably can't get coverage elsewhere, so they really jack up the rates upon renewal to reflect this reality.

As a consequence, according to the industry organization called the "Life Insurance Marketing Research Association" (LIMRA), some 97% of term policies do not result in a death benefit. This leaves a shockingly low 3% of term policies paying claims—not because the company reneges on the death benefit, but because the term policy has been dropped before there was a death claim!

It turns out the mathematics and variables actuaries use to determine rates are not just mortality at given ages, reserve requirements, reinsurance costs, time value of money, and costs of administration and policy acquisition. The so called "lapse ratio" is a major driver of premium cost. Basically, insurance companies don't want you to drop your policy in the early few years. The actual costs of underwriting, medical tests, medical review, field force compensation, and administration can represent up to five years of annual premium. So, naturally, brokers are encouraged to write "persistent" business that documentably stays on the books. However, the insurance company would also like it if you would be polite enough to drop their policy before you actually generate a claim. This is the basis of the astoundingly high renewal premium costs for term life insurance in the later years.

Is Cheap Term Better?

Ironically, the "cheap" term rates hyped on internet spreadsheets can wind up the most costly of all insurance. In addi-

tion to risk of non-renewability, disingenuous pricing due to health ratings, and being non-cryonics friendly, many initially cheap policies have even higher renewal rates. And the worst decision of all, of course, is a policy which escalates in premium in the later years, forcing the client to drop it before a claim occurs and is actually needed.

The best life insurance for anyone to have is the one that is in force when you "die." The problem, of course, is that we do not know when that day is. And you WANT that day to be a long way off, in the later years when renewal term premiums can rise to costs in the hundreds of thousands of dollars.

- **Permanent Insurance**

The other broad type of life insurance goes under the name of "Permanent" coverage. Not surprisingly, this is coverage that is designed with "levelized" premium. While obviously more costly in the early years than term life insurance, this premium is engineered to stay level and to never increase. Most of the Universal Life policies utilized for funding human cryopreservation issued since the year 2000 have a "guarantee rider" which GUARANTEES the premium to never increase, even if the client lives to age 120. In actual fact, the premium often stops at age 99 or even before, with the death benefit staying in place even with no further premiums paid.

One can pay higher premiums and accumulate enough money in the "cash value" of the policy that the policy enters a blessed state called "Paid Up" insurance. Especially in recent decades, wealthy people have repositioned money to life insurance due to the safe, creditor protected, tax free growth available in permanent policies. A "Single Premium" policy is the logical extension and exemplar of this, in which an individual pays enough into his policy to never have to pay again. And the death benefit remains in force for as long as need be, even if that is age 118 or older.

Single Premium Policy, Modified Endowment Contracts, And Taxability Of Life Insurance

A "Single Premium" policy can be thought of as the ultimate permanent policy. Because not everyone is able to reposition a lump sum sufficient to generate a single premium policy, there is also an option to pay the policy up over a seven year period. This so-called "Seven Pay Premium" also fulfills the requirements of the tax laws which determine the taxability of life insurance. In fact, life insurance has some tremendous tax advantages because the cash value of a life insurance contract grows with no taxes paid on the growth. Additionally, if you "borrow" the money out of your policy, (i.e., make a loan against the internal cash value) there are no taxes paid when you take the money out. So we have both tax-free growth and tax-free withdrawal of the cash values inside a permanent policy.

This benefit is so significant that prior to some tax reform acts in the 1980s, the Internal Revenue Service (IRS) claimed that life insurance was an "abusive tax shelter." The IRS promulgated several sets of guidelines to remedy this perceived tax shelter abuse. These guidelines specify when a policy is taxed as life insurance and when it is taxed as an annuity.

Universal Life Insurance Basics

Universal Life is a permanent policy which provides lower costs and more flexibility than Whole Life Insurance.

Universal Life is a more flexible form of permanent insurance than the old fashioned "whole life" policies which were the industry standard from about 1900 to 1980. Regretfully, many of the early Universal Life policies sold in the 1980s were predicated on the then-extant interest rates ranging as high as 14%. When the prevailing interest rates plummeted in the 1990s, these policies, whose internal interest rates were tied to interest rate monitors like the LIBOR, imploded and caused great havoc among consumers and regulators.

The Universal Life policies available today are a function of a remarkable product evolution process, which have generated verifiably more consumer-oriented and secure programs. For instance, the aforementioned "guarantee rider" is a component of many policies which memorializes in writing that the policy will be maintained in force at a given premium with the death benefit guaranteed. And this guarantee is under not just ideal conditions of high prevailing interest rates or favorable mortality costs—but even in the worst case scenario of ultra low credited interest rates combined with maximum internal cost of insurance due to such contingencies as world wars or pandemics.

Illustrations

You have perhaps seen an illustration for a life insurance policy. Rather than a simple rate card, as the old way policies were sold, nearly all policies today are a bit more complicated. In fact, they are complicated enough to require a multi-page illustration to explain them. These illustrations are about 16 pages on the short side—and some run to 90 pages! This is just the illustration, remember. There is also an application which also ranges from 15 to 45 pages in length.

Fortunately, newer illustrations are actually better than older illustrations. As a function of consumer and regulatory pressure, and more importantly the evolutionary, iterative processes of an extremely competitive free market, newer policies are not just better, they are easier to understand. By law, they have less industry jargon, every term of art is explained, and they are actually pretty fun to study.

Bucket of Money Analogy

A Universal Life policy has three basic components. We can think of the simple analogy of putting money into a bucket. Each month we throw our premium into the cash bucket, representing the cash value of the policy. That is, the Universal Life policy has a bucket for accumulating money, which grows in our name for our policy.

However, there is a small bit of money dipped out of this bucket. Some companies charge a premium charge before the money hits the bucket, sometimes called, not surprisingly, the "premium expense charge." And there is another cost—the actual internal cost of the life insurance, which is dipped out of the bucket. The internal cost of insurance, called "COI," is usually pretty small in the early years. And there are actually two separate schedules. One is the rate schedule of COI that the company charges now, expects to charge in the future, and, for all practical purposes, is the actual internal COI rate schedule.

It is certainly possible that over the period of time a permanent policy is to be in force, the following could occur: We could experience catastrophic social upheaval, major world conflicts, pandemics, or other

Alcor Member Forums

Discussion board of the Alcor Life Extension Foundation

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

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

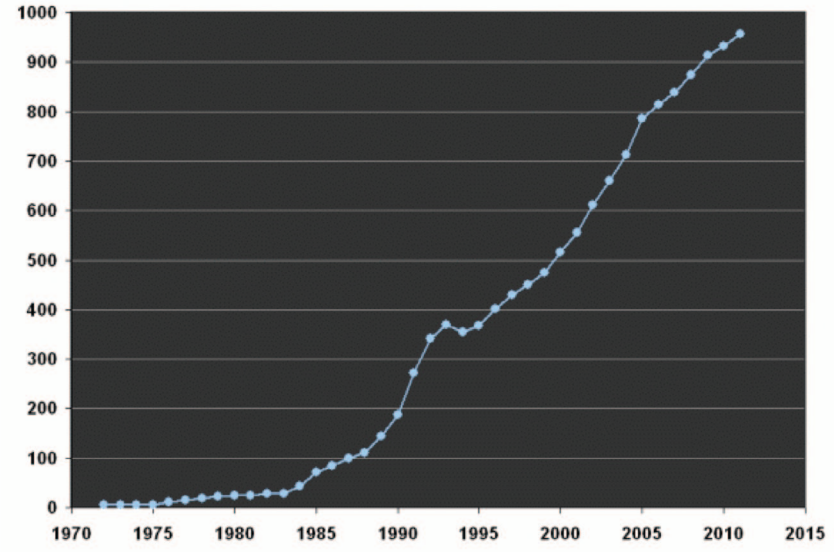
Other features include pseudonyms (pending verification of membership status) and a private forum.

http://www.alcor.org/forums/

Membership Statistics

2011	01	02	03	04	05	06	07	08	09	10	11	12	
TOTAL	930	932	935	943	945	948	955	944	947	951	958	957	**957**
FINALIZED	3	7	8	10	4	6	10	4	4	6	7	2	**71**
REINSTATED	1	2	0	0	2	0	0	0	0	1	1	1	**8**
CANCELLED	6	7*	4	2	3	2	3	14	1	2	0	3	**47**
CRYO-PRESERVED	0	0	2	0	1	1	0	1	0	1	1	1	**8**
NET GAIN	-2	+2	+2	+8	+2	+3	+7	-11	+3	+4	+7	-1	**+24**

Alcor members are people who have completed full legal and financial arrangements for cryopreservation with Alcor. As of December 31, 2011, Alcor has 957 members and 110 patients. Below is a chart with 2011 membership growth statistics and a graph showing the number of Alcor members and patients at year end since inception.



perturbations.. These are what some would call "black swan" events which is risk managers' shorthand for the "unexpected unexpected." Should situations like this warrant it, nearly all modern insurance companies have a fallback "worst case" schedule of internal cost of insurance that they COULD utilize.

So we have the three variables: (1) the amount of premium we put in; (2) the rate of return of the money as it accumulates in the bucket; and (3) the internal cost of insurance—in essence—the internal "wholesale" risk cost of you dying in any given year.

Now that we have these three variables, we can program the computer to produce a year-by-year analysis of what the policy will do!

But what assumptions do we use? What interest rate for the money in the bucket? Which internal cost of insurance table?

As a practical matter, the company software will show two illustrations. The first, usually located in a table of columns on the right side of the page, is what the policy would do for you at the actual interest rate of cash value the company is offering today, as well as the current, actual internal COI.

Also illustrated, in three or so columns on the left side of the page, is what happens if the company were only crediting their contractually guaranteed minimum interest rate, each and every year. Additionally, a second, "worst case," scenario is predicated here—these "guaranteed" columns also assume that the insurance company had to do something else. Go to their internal "maximum charge schedule." Something that (to my extensive knowledge of the industry) has never actually happened.

These "guaranteed" columns assume both the lowest interest rate credited each year that the insurance company guarantees—and also that the MAXIMUM internal cost of insurance (COI)! is charged. The reason insurance companies do not actually USE their higher internal COI rates is because all their healthy consumers would promptly jump ship and get their coverage elsewhere. Technically called "adverse selection," insurance companies obviously go to great lengths to avoid such an egregious condition.

Comparing Universal Life Illustrations

We should acknowledge a harsh and ugly fact about Univeral Life illustrations. They are almost certainly wrong starting the second year of the policy, because we don't KNOW what the future interest rates will be. And modern policies, unlike old fashioned "whole life" policies, have a "variable" interest rate structure sensitive to prevailing interest rates. Is this a bad thing?

No, this is actually good—as in good for you and me—as consumers who want our policies to reflect the best possible interest rates credited to our cash value in our policies. But this rate credited to our cash value growth must enable the company to pay for their costs of doing business, provide adequate reserves to meet regulatory requirements, and remain in business long enough to pay your claim on that day, decades away, when you need them to do so.

What Is Variable Universal Life Insurance And Index Universal Life Insurance?

Insurance companies have developed innovations enabling the crediting of cash growth not just to reflect current, environmental fixed interest rates, but also to have some exposure to the stock market or equities. Variable life, or variable universal life, enables the client to select a portfolio of mutual funds which drive the growth of the cash value. This may seem like a good idea given the long term rates of equities historically being higher than fixed or guaranteed returns. While Variable Universal Life (VUL) policies may have a place, they are generally not acceptable for cryonics funding.

The reason for this is straightforward. The stocks and mutual funds making up the equity portion of the policy can fluctuate wildly in value over time. This, in turn, means that the internal cost of insurance is withdrawn from the fluctuating values with the inverse of "dollar cost averaging." Your internal policy costs are withdrawn from your cash accumulations, meaning that more stock is liquidated when the relative share price is lower. The result of this, as the millions of people who bought VUL policies during the market upswing of the 1990s (and kept the policy through the volatility of the 2000s) found out to their chagrin, is a policy implosion. Unless more money is put into the policy, the policy death benefit goes away. The policy has both zero cash value and zero death benefit!

Not the ideal policy for the kind of secure, worry-free cryonics funding most people want and that cryonics organizations prefer.

Index Universal Life

Index Universal Life is an attempt to provide some higher growth rates to the cash value of a policy, while still providing a "floor" of 0% or perhaps 1% even if the stock market, as measured by a stock market index like the S&P 500, takes a dive and goes negative. The cash value is actually not invested in the market. Instead, the insurance company uses an index as a determiner of growth credited to your policy, if and only if the change in the year is positive. Since there is a "floor" on the downside of the market in declining years, there obviously must be some equivalent tradeoff of growth in the years the market goes up. This is accomplished by having a maximum, or "cap," that is credited, or crediting only a percentage of the actual growth of the index, or other various ways of enabling the insurance company to give you most of the upside without any of the downside of market fluctuations.

Bonus Interest Credits On Policies

It should be noted that some insurance companies may have a competitive current interest now—and also offer additional incentives as the policy ages—such as an extra percentage point of interest after being in the policy for ten years. This strategy of enhancing cash value is distinct from the exposure to index returns, and often competitive with Index Universal Life while being somewhat more straightforward. This "reward the persistent client" structure within the Universal Life program both encourages persistency as well as making the illustrations look better. Recall that illustrations with fixed, as opposed to stock market sensitive, rates are run showing the current interest rate, even on the non-guaranteed side of the illustration. And prevailing interest rates currently remain counterintuitively low. Bank CDs are in the 1-3% range, savings and money market funds at 1/2 to 3%, and the Federal overnight rate close to 0%.

What this means as a practical matter is that a Universal Life policy currently illustrating a 4.5% interest rate could actually be a better transaction over time than a Variable UL or Index UL being illustrated at a higher interest rate. Long term integrity, a track record of doing the right thing for existing clients, and contractual guarantees are all variables one should consider when comparing policies.

The Report Card: Universal Life Gets an "A" — and a "B" — and a "C"

Most Universal Life policies incorporate the cash value of the policy into the face amount of the death benefit. In other words, the death benefit of the policy stays level while there is some growing cash value inside the policy. This means, for instance, if you have a $300,000 face amount policy, your beneficiaries get $300,000 if you "die." But what if you have $23,000 in the cash value? Your beneficiary is still going to get $300,000.

Is the insurance company ripping you off? Paying the claim, but stealing your portion of cash instead of paying it to your beneficiaries? Actually, not really. The cash value is required to keep the premium and the face level at a given premium level. However—it IS possible to have a UL policy in which the cash value goes in ADDITION to the face of the policy. By selecting what is called "option B," your cash value, adds to the face amount and death benefit of the policy as it grows. But, it turns out, there are tradeoffs. And, depending on your circumstance, these tradeoffs may be significant.

Think about this. The insurance company has an INCREASING total liability. Along with an INCREASING risk of you dying each year. So the premiums charged to generate an "option B" universal life program are higher. By how much? Depends on age and other factors, of course—but here is an actual, real world example for your edification.

Example of Universal Life with Option B — Actual Costs

Recently, a very smart, very analytical engineer called for some quote options for cryopreservation funding. In fact, he did risk analytics and was responsible for purchasing, of all things, insurance on rocket launches and their payloads. The premiums on these policies are in the hundreds of thousands of dollars, so this guy understands that legitimate risk offloading comes with equivalent pricing.

He is also deeply aware of increasing costs for specialty technology, and was concerned, as we all should be, about how future cryopreservation costs would be impacted by inflation and new technologies.

In his forties, the "option A" universal life he was looking at for $300,000 would cost about $207 a month. And this includes the "guarantee rider" enabling a death benefit of $300,000 irrespective of future interest rates or societal conditions.

If he elected the "option B" choice, his premium is around $400 a month. However, it does accumulate a higher cash value. And this cash value does indeed go to increase the death benefit of the policy, enabling it to have an INCREASING death benefit mathematically designed to increase at rates commensurate with inflation rates!

There is, it must be noted, one additional tradeoff one normally makes with "option B." Unless overfunded quite heavily, the "guaranteed to age 120" component is not there. This means that, should both those "worst case" scenarios occur every year and funding is not adjusted, the policy could go away before age 120. On those left handed three columns, we can wind up seeing some "zeros" in the later years. While sometimes hard to explain to clients, in the real world these zeros would not occur, because the funding can be adjusted to make sure the policy remains in force.

Option C in Universal Life

Option "C" simply allows one to have an increasing death benefit with the cash value going in addition to the face of the policy for a period of time, and leveling the total death benefit off starting at some selected age. For instance, in the example above, the premium would still be a bit lower than Option B, perhaps $350 a month. And the face amount would rise each year to a maximum of $500,000 and stay at that level till a claim occurred.

Are These "Inflation Adjusted Policies" Good For Me?

Like other basic "what's the bottom line" questions in life, the answer is "it depends." At your age, health, and financial picture, an "Option B" Universal Life could be a PERFECT choice. Or it could be an unaffordable program which is not optimal at all in your situation, where a high face upgradeable term would be better. You need to have some illustrations run and talk over them with a knowledgeable planner or broker to see what makes the most sense for you.

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What If I Am Uninsurable?

You may not be. Modern underwriting can generally cover people with controlled diabetes, blood pressure, or even a history of cancer or heart problems. Alternately, annuity funding does not require any underwriting, but the actual cost of cryopreservation is required.

An Example, with Actual Costs, of Good Cryonics Planning

A 35 year old software engineer elects to buy a $500,000 universal life policy and qualifies as a preferred nonsmoker. He pays $230 a month, but this premium will never go up. He also adds an upgradeable 20 year cashback term policy for $250,000 for another $60 a month. He makes his wife the beneficiary of the coverage not currently needed for his cryonics. He plans to "upgrade" part of his term policy to a levelized premium Universal Life policy every 5 years as he can afford to do so. Even though he technically only needs $200,000 for his current Alcor full body cryopreservation, he is planning ahead. At the same time he is showing his love for his family by having sufficient life insurance to replace his income.

Conclusion

Cryonics planning and funding, like other components of life, is more of an ongoing process and attitude of enhancement over time as opposed to a single one time event. No one ever claimed that having a realistic, technically advanced, medically credible, financially secure opportunity to overcome permanent physical death would be easy, cheap, or simple. To have a chance at a vastly extended life, in addition to large amounts of luck, each of us must commit to periodically reviewing and upgrading our cryonics funding arrangements. ■

Progress in Early Detection of Alzheimers Disease

By Mike Perry

Alzheimer's disease (AD) is the most common form of dementia. There is no cure, it worsens as it progresses, and it is uniformly fatal, though typically requiring 7-14 years to run its course from what up to now have been the first detectable, identifiable symptoms. (Symptoms may show up earlier than this but could be from other disorders.) People over 65 are mainly affected by AD, though the less-prevalent early-onset variety can appear much earlier.[1] The percentage of population with the disease increases rapidly with age; one source estimates that 5.5% of Americans between age 65 and 74 have it, increasing to 17.4% for those between 75 and 84, and up to a whopping 46.2% (nearly half) for persons 85 and over.[2]

Because of its lengthy progression Alzheimer's is one of those diseases that could pose a special difficulty to cryonicists, who want to be preserved with mental faculties intact. It is critically important, absent a cure for the disease, that cryopreservation occur during the earlier stages, before the disease has progressed to the point of causing dementia. In the case of faster-progressing diseases such as many cancers, refusal of food and fluids has been an acceptable means of hastening clinical death to avoid the further progression of the disease and also to avoid autopsy—and this option has been exercised by some Alcor members.[3] But it is not clear what would happen for an Alzheimer's patient in the early stages of the disease who wanted to pursue this course, with catastrophic impairment still years away yet inevitable. Prospects for slowing or curing the disease meanwhile remain grim. There is concern that efforts by pharmaceutical companies to develop effective treatments may be abandoned. (There are treatments for the symptoms of AD—for example, to keep one's mind functioning at a high level longer—but they do not slow, halt, or reverse the disease.)

Though the outlook for slowing or stopping the disease is presently somber, it is not totally bleak, and it could substantially improve within a few years. For the best treatment it is essential that diagnosis of the disease be made as early as possible, ideally before any outward symptoms occur. Unfortunately, there is no reliable test of this sort at present, and a reliable diagnosis is possible only when mild cognitive impairment (MCI) involving difficulty remembering recent events and the like has occurred. Current diagnostic techniques involve a combination of neuropsychological testing, interviews with family members and caregivers, and methods based on brain imaging and other testing. It is essential, of course, that AD be distinguished reliably from other diseases which could present very similar symptoms (in this case, also MCI) at an early stage; the wrong treatment could be harmful or at best, ineffective.

One fairly new technique, known as PiB PET[4] ("Pittsburgh compound B," developed at Univ. of Pittsburgh, plus "positron emission tomography"[5]), has been developed for directly and clearly imaging Alzheimer's beta-amyloid (Aβ) deposits in vivo using a tracer that binds selectively to the Aβ deposits. The PiB-PET technique uses carbon-11 PET scanning. Recent studies suggest that PiB-PET is 86% accurate in predicting which people with MCI will develop AD (with dementia that is more severe than MCI) within two years, and 92% accurate in ruling out the likelihood of developing Alzheimer's. Though the results are encouraging, it would be desirable to extend the time interval before AD strikes in full force, so that treatments could be started as early as possible.

Studies of AD in animal models have yielded some promising results based on a kind of immunotherapy (more later). Though these results haven't yet translated into useful human therapies, new possibilities are raised by a recent success with early detection of AD in humans[6] based on biomarkers, which is the main subject of this report. The sooner the disease is detected, the less damage it will have done, which provides more opportunity for therapeutic intervention, including the sort that has already shown success in animals.

In the study referred to, 134 aging patients, initially with MCI ("baseline"), were followed over approximately a decade by a research team at Lund University, Sweden, headed by Physician Oskar Hansson. The study focused on biomarkers—substances present in spinal fluid and linked to AD. A certain combination of markers, low levels of Aβ and high levels of the substance tau, indicate a high risk, about 90%, of developing AD dementia over a 9.2-year period. Those who had memory impairment but normal values for the markers did not run

a higher risk of getting AD than healthy individuals. Oskar Hansson previously carried out a study showing that pathological changes can be seen in the brain of an AD patient five years before the diagnosis. The new study has nearly doubled this time span.[7]

The biochemistry of AD is still far from fully understood. Different theories compete, and deeper understanding may be needed before a cure is found. The Hansson results are encouraging for the extra "lead time" we can now expect to have in studying and combating the disease as it manifests itself in different patients. A larger time window appears to be opened to try approaches that have already shown success in animals. Some further details of the study are of interest, for which a bit of additional background on AD will be useful.

The normal brain uses a substance known as amyloid precursor protein (APP) in a rapid-fire fashion in which APP molecules are created and then destroyed.[8] (Just what the APP is used for is not entirely clear, perhaps for such functions as regulation of synapse formation, neural plasticity, and iron export.) By the time AD starts to develop in a patient the clearing away of the used APP molecules has somehow gone awry. Fragments known as β-amyloid or Aβ begin to pile up in aggregates or heaps known as senile plaques. More specifically these fragments take the form of the aggregation-prone 42-amino acid isoform (equivalent form) of Aβ known as Aβ42. Senile plaques average around the size of larger-size neurons (around 50 micrometers) and are thought to be neurotoxic.

In addition to senile plaques the pathologic characteristics of AD include neurofibrillary tangles: insoluble, twisted fibers found inside the neurons containing damaged (hyperphosphorylated) tau protein or P-tau. Normal, undamaged tau protein is important to stabilize microtubules in the neurons, which in turn are essential to their functioning. P-tau does not stabilize the microtubules but instead the structure collapses. Normal tau and P-tau together make up the total tau or T-Tau; the concentrations of T-tau, P-tau and Aβ42 are important in the Hansson study reported here.

According to the amyloid cascade hypothesis, accumulation of Aβ as Aβ42 in the brain drives the neurodegenerative process in AD. This accumulation is believed to start decades before cognitive decline. It might be detected by a reduction in cerebrospinal fluid (CSF) levels of Aβ42 and elevated retention of positron emission tomography tracers for amyloid in the brain. According to this theory, the initial, asymptomatic phase of AD is followed by neuronal dysfunction and neurodegeneration, which are reflected by increasing levels of CSF tau and regional cerebral atrophy, which in turn can be visualized by magnetic resonance imaging. Direct evidence supporting this temporal sequence of events in humans affected by AD is still scarce, however, and the theory must be considered provisional. (Some very recent evidence suggests also that AD lesions, Aβ and neurofibrillary tangles, spread like an infection from one affected region of the brain to another, rather than popping up independently in different places, starting in a key memory center known as the entorhinal cortex.9)

AD patients generally undergo a period of MCI in the early or prodromal stages of the disease, before dementia (the "true," currently diagnosable AD) sets in. There may be difficulty remembering recent events and acquiring new knowledge but the mind is otherwise largely intact and early memories are not much affected. The later dementia stages involve increasing loss of functionality and cognitive performance, including long-term memory degradation and loss of language and motor skills, leading finally to death.

Though MCI is associated with prodromal AD, it is actually a heterogeneous syndrome. Only 30%-60% of patients have prodromal AD. The rest will have a benign form of cognitive impairment, including some reversible forms (depression being one), or another neurodegenerative illness. For the 134 MCI patients involved in the Hansson study, the breakdown is as follows (rounded figures): 54% developed AD dementia, 16% developed other dementias, and the remaining 31% were cognitively stable. It should be noted that the median clinical follow-up time for the study was 9.2 years. "Given that AD is a slowly progressive disorder," the authors note, "it probably takes at least 10 years before most patients with prodromal AD develop dementia and can be diagnosed as having clinical AD." Their research appears to be the first that provided nearly this amount of follow-up time; previous studies having much shorter times (typically only 1 to 3 years) must have greatly underestimated the prevalence of prodromal AD.

To complete the study cerebrospinal fluid (CSF) from each patient was collected at the start ("baseline") by lumbar puncture and stored at –80°C until all follow-ups had been completed. The CSF samples were then thawed and concentrations of three biomarkers: Aβ42, P-tau, and T-tau were determined. (Values of these concentrations ranged from tens to hundreds of nanograms per liter.) It should be emphasized that the CSF samples were taken at the beginning of the study, before the results of the follow-ups could be known. It was found that the ratio *r* of Aβ42 to P-tau was a very good predictor of who would develop AD. The participants (including 39 controls with no MCI along with the 134 patients) were rather sharply divided into two groups, one with *r* values around 10-12, the other with values about half that size or less. 91% of those with the smaller *r* values went on to develop AD dementia (positive predictive value), while 86% of those with the larger values did not (negative predictive value; some did develop other dementias).

The authors of the study note that, in comparing early to late converters from MCI to AD (0-5 years versus 5-10 years), there is significant variability in the baseline concentration of both P-tau and T-Tau, but levels of Aβ42 are uniformly low for both groups and distinguishable from levels for non-AD converters. (The ratio of Aβ42 to P-tau still distinguishes better than Aβ42 alone.) It appears that CSF levels of Aβ42 go low and plateau early in AD-converters whenever conversion may occur, but that levels of P-tau and T-tau, while eventually

increasing for both groups, take longer to rise in late converters.

In any case, it appears that the basis of a useful diagnostic technique has been achieved, though of course more work is needed to verify and possibly refine the results. The authors note that it would be desirable for clinical use to boost the predictive accuracy to above 95% and express hope that this might be accomplished through combination with other diagnostic aids such as thorough clinical assessment and brain imaging.

Meanwhile AD still is largely untreatable. Identifying it in its early, relatively benign stages will not by itself bring about a cure but should increase the options for developing one. Starting more than a decade ago some hopeful results were obtained with animal models of AD.[10] These used immunotherapeutic approaches based on vaccination with Aβ42. Vaccinated animals showed reduction in AD neuropathology though the results have so far not been carried over to humans. But as the authors of the more recent study note, this may be because of the failure, so far, to deal properly with the long developmental period of human AD. It appears that a new corner has been turned in the fight against AD, and new hopes are raised that it will fairly soon be treatable. ■

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Countdown to Immortality

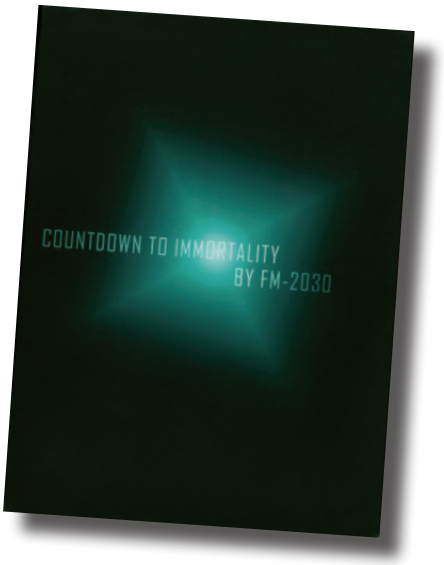
By FM 2030, foreword by Aubrey de Grey *[Amagansett, New York: Amagansett Press, 2011]*

BOOK REVIEW BY MIKE PERRY

FM 2030 (neé Fereidoun M. Esfandiary) was a well-known futurist and cryonics advocate who succumbed to cancer in 2000 while finishing *Countdown to Immortality,* and is now in cryostasis at Alcor. His editor Flora Schnall has done final work on the manuscript and readied it for publication. *Countdown* is the fifth in a series of books about the future and its possibilities. (The other books were: *Optimism One* [1970]; *Upwingers* [1973]; *Telespheres* [1977]; and *Are You a Transhuman?* [1989].) Throughout these volumes FM offers a consistent vision of a future worth reaching and sharing, life without end in a paradise of our own making, created through technological advances. Those who live long enough will be cured of aging and diseases by medical breakthroughs and can then partake of the wonders of future life as a matter of course. Those like the author himself who must instead face clinical death can, and should, choose cryonics.

The title of the present, short volume recounts the excitement of watching a space launch, with the pervasive feeling that the moment of "liftoff"—in this case, attainment of indefinite lifespan with elimination of aging and terminal illnesses—is just about to occur. The breakthrough event, which must happen through scientific means and not by assistance from a "higher" power or other outside source, is dismissed as fantasy by many, whether they are religious believers or not. Instead there is a pervasive attitude that death is "natural" and something we should not feel impelled to challenge. Recognizing this, the author early on addresses the deathist mindset. "First," he warns us, "we have to stop lying to ourselves. We have to stop denying what is deepest in our beings—the longing to live forever." Once we accept that we want and ought to have immortality, we can consider rational steps to attain it.

Preparations we can undertake today are summarized in an eleven-point checklist in the front matter, under "measures over which each of us has control." The first of these again underscores the importance of motivation: "Develop the will to live forever. Update your attitude to aging and death." Right after this is: "Sign up with a cryonic suspension organization. In case of death you will be placed on hold." Next is advice to be part of a community of immortalists like yourself, always carry a cell phone, learn emergency first aid, always have emergency vital information with you, adopt a life-extending lifestyle with exercise and good dieting, and so on. On the next page is another eleven-point list: "measures that have to be taken collectively." Nine of these are "a crash program" to accomplish such goals as to extend life expectancy and lifespan, create protective "immortality" clothing, streamline our bodies, develop standby bodies, and "develop the capability to transform our brains' content to versatile modules that can enable us to go on living forever."



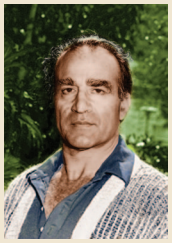
The main part of the book, the "countdown" proper, recapitulates the checklists with a 14-step pathway that starts with "the will to live forever" and culminates with "immortality at last." Stages along the way include increases in life expectancy and lifespan, reconstructed and replaceable bodies, and more durable brains. In addition are lifestyle-changing advances such as personalized flying machines. It is not clear that every such advance will happen just as predicted—in fact it seems doubtful. But the main feature of, in some technological manner, overcoming death, with accompanying, liberating lifestyle changes and great technological advances all around, is solidly in line with immortalist thinking everywhere. To say it is *guaranteed* to happen is going too far, but still we have hope and confidence in varying degrees that it will, it being a matter of whether certain technologies can be developed and certain destructive tendencies in societies and nations can meanwhile be curbed.

In fact FM *does* make many categorical assertions in his work, such as the second sentence on page 1: "Millions of us alive today will be around forever." This may be objectionable to some, including those who do not share his views, but the speculative nature of his claims can be understood and allowed for. His polemical style, with many one-sentence paragraphs and frequent boldfacing of entire paragraphs, will be another barrier to some. For example, the first main section of the book, which is titled "The Desire to Live Forever" and occupies pages 1-13, has a total of 121 paragraphs (not counting subheadings), of which 79 are a single sentence each and 43 are boldfaced. For me this kind of formatting seems like an advertising gimmick and is tedious and offputting. But it is a minor blemish alongside the grandeur of his thinking and his courageous commitment to a concept of life as it ought to be, and can become. (And I won't deny that it may be an effective way of presenting things to some—even if I am not one of those people.)

There are also a couple of philosophical difficulties with FM's position that I think deserve mention. The first concerns his commitment to living forever, alongside his conviction that one must change. "I am not who I was ten years ago," he tells us, "and certainly not who I will be in twenty years." (His commitment to change in fact is connected with his name change to FM 2030—in that year he would be 100 and he thought it would be a great time to be alive, plus he wanted to distance himself from naming conventions.) So, does this mean he—and presumably others—cannot long endure, even if aging is conquered and death as defined today is abolished? Clearly we *must* change in some ways to avoid stagnation, for example, by acquiring new memories, knowledge, or skills. But what are the boundaries that would ensure in a reasonable sense that *we* still survive and are not simply replaced by others who do not share our identity? This is a deep philosophical issue that is mostly ignored here as it is elsewhere. It is worth noting that FM, who was the son of an Iranian diplomat, lived in many countries during his childhood and keenly felt the need not to identify too strongly with any one cultural setting but instead be fully "cosmopolitan" for the type of future he envisioned. (But did he go too far? One's cultural heritage can have value without imposing on that of others in any way.)

A second problem, also mostly ignored here as elsewhere, concerns the contention that "some will live forever." FM makes it clear that not all will be so fortunate, and in particular, anyone who dies and is not cryopreserved but instead suffers the usual decay or incineration. Such people are gone forever, he believes, and this belief is widely shared in the cryonics community. If this is so then it definitely puts a damper on my enthusiasm for the brave new future that FM is proposing. (I feel the loss of loved ones who were not cryopreserved just as he reports in the case of his mother.) The "one chance" prospect—that cryonics is the only hope you have for defeating death if it comes to you—is invoked to argue that you'd better consider cryonics. I think a better view is possible, one that would be nonmystical and still uphold the choice of cryonics while offering hope for others too, even the long dead—but again it gets into deep philosophical waters.[1]

In short, FM's book is not perfect but cryonicists and transhumanists should find it worthwhile. It's an easy, fast read (notwithstanding my quibbles over formatting), and might make a good focus for discussion groups. ■



About the Author

"I am a 21st century person who was accidentally launched in the 20th. I have a deep nostalgia for the future."—FM-2030

Son of a high-ranking diplomat, FM lived in twelve countries in the first eleven years of his life. He played basketball in the 1948 Olympics for Iran, attended the University of California in Los Angeles, and taught at the New School for Social Research in New York City, at the Florida International University in Miami, and at UCLA. A visionary, a social critic, an eternal optimist, a futurist with a hailstorm of ideas, a humanist, he was larger than life. In 2000, aged 69, he was cryopreserved at Alcor where he rests, waiting to lead us into the future.

Edited excerpt from the Introduction by Flora Schnall

[1] For more on this subject see my book, *Forever for All*, esp. the chapter, "Biostasis as the Better Way," http://www.foreverforall.org/pdfs/foreverforall.pdf .

The Immortal Life of Henrietta Lacks

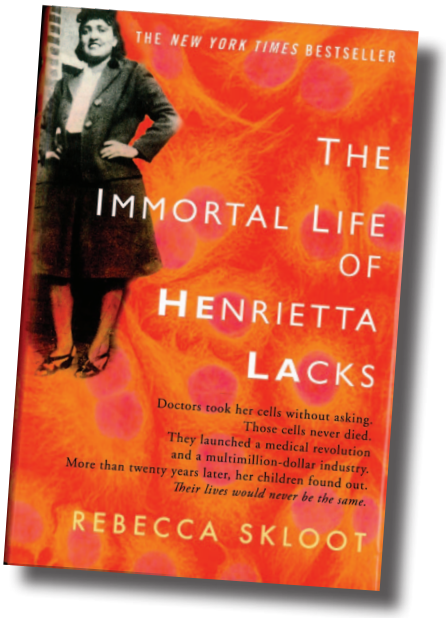
By Rebecca Skloot

BOOK REVIEW BY MIKE PERRY

The book here reviewed is about "immortality"—though not the kind we would want for ourselves or anybody we care about. However this one particular sort of long-lasting life, a growing mass of cancer cells, should be of interest to immortalists anyway because of the remarkable impact it has had as a laboratory resource, leading to better disease treatments and prevention, and shedding light on aging and its possible cure. In addition the author has uncovered a gripping human drama that has long been obscured.

In February 1951 a 30-year-old black woman named Henrietta Lacks was treated for cervical cancer at Johns Hopkins Hospital in Baltimore, Maryland. A small vial containing radium was attached to the affected area in hopes its radiation would kill the cancer and cure the patient. Prior to the treatment a dime-sized slice of the hard, grape-sized tumor was removed for further study. The tissue was cut into small cubes and each supplied with a nutrient broth made from chicken blood to see if the cells could be cultured, a difficult feat for most human tissues, healthy or otherwise. Researchers in this case were pleasantly surprised: the tumor cells were hardy and robust. Supplied with enough nutrient, a mass of the cells would double every 24 hours. Over the following decades, the HeLa cells, as they were named, would proliferate in laboratories across the globe and help with some of the most important advances in medicine. An early milestone was the development of a polio vaccine based on research using HeLa cells that started in 1952. Later, chemotherapy, cloning, gene mapping, cryobiology, in vitro fertilization, and zero gravity studies would all benefit. In the 1990s HeLa cells would be instrumental in the discovery of telomerase, an enzyme able to reverse some important effects of aging. (The production of telomerase, which occurs in malignant cancers like HeLa though not in most normal human tissues, is the reason that these cells are "immortal" and proliferate indefinitely rather than being subject to a limit on the number of times they can divide.) Estimates vary widely as to just how many HeLa cells have been produced, but it seems that the total mass must far outweigh the original donor!

The woman who started it all had limited income and had to be treated gratis at one of the few available public-ward hospitals that would handle "colored" cases. At first the prognosis appeared good. The tumor shrank, and with further radium treatment, disappeared. Unfortunately, the benefit didn't last long; tumors like the original, some of them much larger, soon spread throughout the patient's body and she died painfully after only eight months. Because it was a charity case and because of the conventions of the time, the patient was not informed of the culturing and proliferation of her cells, and her family didn't find out until more than two decades later.



Some years after that, in 1987, the author was in a high-school biology class. "HeLa cells were one of the most important things that happened to medicine in the last hundred years," her teacher said. "HeLa" stood for Henrietta Lacks, the original donor, "a black woman," but her teacher could tell her nothing more. Intrigued, she began a research effort that led to a career in writing and finally, this engaging book. In the course of her investigation, Ms. Skloot also became acquainted with the surviving Lacks family, learned about the life of the pretty woman who mostly up to then had been deliberately anonymized, and formed a special, enduring friendship with her daughter, Deborah.

Born Loretta Pleasant in Roanoke, Virginia in 1920, the future Mrs. Lacks first lived in a small shack by a train depot that was shared with her parents and eight other siblings. When she was four her mother died giving birth to her tenth child. The father, who hobbled about with a cane, was unwilling to care for children on his own so they were divided up among relatives in his home town of Clover, Virginia, "where his family still farmed the tobacco fields their ancestors had worked as slaves." Loretta, who at some unknown point became Henrietta or "Hennie," was brought up by her grandfather, along with some other young relatives. One of these was a cousin named David "Day" Lacks, whom she eventually married. In December 1941 the Japanese bombed Pearl Harbor, and the country was placed on a war footing. Soon the two young Lackses with their two children moved north to the Baltimore area where jobs were becoming plentiful in a revitalized steel industry. Three more children would be born, the last while the mother was battling her terminal illness. One of the three (not the last) was Deborah whose help was particularly valuable in reconstructing the family history.

The book offers an odd juxtaposition: a story of medical triumphs interlaced with the fortunes and misfortunes of a family who could not afford the very treatments that were made possible with the unwitting help of one of their own. Were they mistreated? Some, particularly researchers who used the cells, said no. Taking tissue samples was a routine part of treatment, particularly if the patient couldn't pay. You didn't need to specially inform them or get their consent—such concessions were implicit in the bargain they'd struck by way of getting the freebie; to ask for more would hinder research. The medical establishment, on the other hand, could not be specially generous to the heirs of a random charity case, even one they had specially benefited from. Others thought differently—Henrietta's cells were her property and she had been dealt with unfairly, along with her family.

Today the situation with these matters is largely as it was in Henrietta's time. Laws have not changed much and cell samples are taken routinely and used in research without informing the patient or obtaining consent. The public more or less favors the possible benefits of research more than allowing patients more rights over their own tissue samples. It's interesting to ask how immortalists might view the matter. I haven't heard any groundswell of opinion against present practices of taking tissue samples and any research that might follow. Such samples for the most part don't mean much to us in terms of personal survival, or at any rate, we don't feel threatened if a few are taken in the course of some treatment, and we are glad if some useful research should follow. A more serious issue concerns what happens after legal death. For us, proper handling of our remains for preservation takes precedence, and sometimes does conflict with practices acceptable to the public at large. ■

About the Author

Rebecca Skloot is an award-winning science writer whose articles have appeared in *The New York Times Magazine; O, The Oprah Magazine; Columbia Journalism Review;* and elsewhere. She has taught nonficition in the creative writing departments at the University of Memphis and the University of Pittsburgh, and science journalism at New York University. This is her first book. She has established a charitable scholarship fund for descendants of Henrietta Lacks (HenriettaLacksFoundation.org). *(From the dust jacket.)*

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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.

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

At Alcor:
Alcor Board of Directors Meetings and Facility Tours – Alcor business meetings are generally held on the first Saturday of every month starting at 11:00 AM MST. Guests are welcome. Facility tours are held every Tuesday and Friday at 2:00 PM. For more information or to schedule a tour, call D'Bora Tarrant at (877) 462-5267 x101 or email dbora@alcor.org.

CALIFORNIA

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

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

DISTRICT OF COLUMBIA

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

FLORIDA

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

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

Cryonics Northwest holds regular meetings for members of all cryonics organizations living in the Pacific Northwest.

For information about upcoming meetings and events go to: http://www.cryonicsnw.org/ and http://www.facebook.com/cryonics.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 Chana de Wolf: chana.de.wolf@gmail.com

Washington:
The contact person for meetings in the Seattle area is Regina Pancake: rpancake@gmail.com

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!

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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:

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