Alcor Life Extension Foundation
A Non-Profit Organization

CRYONICS

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ALCOR LIFE EXTENSION FOUNDATION
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CRYONICS

COVER STORY: PAGE 16

Member Profile: David Brandt-Erichsen

You might think a person born with a passionate interest in space and the future would be a natural for cryonics. However, if that person was also born a skeptic it might take a while to come around to the idea.

On the cover: A View of the Patient Care Bay
Photo Credit: Mike Meyers

Alcor Life Extension Foundation
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CRYONICS

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EDITORIAL

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

A HYBRID MODEL FOR STANDBY? By Aschwin de Wolf

In 2003 Charles Platt organized a week-long standby training in Arizona to teach a gathering of long-time and new Alcor members basic and advanced standby procedures. This well-attended meeting was one of the most ambitious gatherings to educate U.S. and international Alcor members in the knowledge and skills to participate in a case, from communicating with hospital staff to remote blood washout. Retrospectively, the timing of this event was problematic. For right then there were two ongoing developments that would largely render this model of doing cryonics procedures obsolete: the creation of *Suspended Animation* in Florida and the hiring of medical professionals at Alcor.

The rationale behind this transition is eminently understandable. If resources permit, why not run cryonics cases with medical professionals instead of motivated members and volunteers? If cryonics is a medical procedure, should it not also be conducted by medical professionals? As we look back on the rise of medical contracting in cryonics, however, I think some caveats and sobering observations should be made.

As Charles Platt astutely observes in his article *"The Most Challenging Procedure"* in this issue of the magazine, consistently deploying successful standbys in cryonics is a monumental challenge. Unless an organization has the resources to employ multiple medical professionals (paramedic, perfusionist, etc.) full-time, a typical case becomes a complex juggling act to ensure enough medical professionals (who often are meaningfully employed elsewhere) can be at the bedside at the right time. In addition, medical professionals may have the skillsets to perform a subset of cryonics procedures but not all elements of a cryonics case are routinely taught in medicine. Case reports sometimes reveal a lack of understanding about the rationale of cryonics procedures and how to prioritize them in specific circumstances. Engaging medical contractors in extensive education about cryonics procedures and its subtleties is necessary but time-consuming and costly.

One unfortunate consequence of the medical professional contractor model of cryonics is that it can lead to the decline of member engagement in casework, neglected readiness resources and people at the main cryonics organization, and the atrophy of local cryonics groups. Cryonics organizations are especially vulnerable to this outcome when they agree to exclusively contract with an organization for their standbys. This is quite troubling from a community perspective but it also threatens the basic local standby infrastructure that that even professional standby organizations often need to draw upon to be effective.

In mainstream medicine there is a need for non-professionals to perform "first aid" before professionals arrive. In cryonics there is an even stronger need for such "first aid" because the professionals often are deployed out-of-state and may arrive too late. In such cases, local cryonics first aid responders will be forced to conduct the most important stabilization procedures such as rapid cooling and circulation. If professional standby organizations are not willing to take "post-mortem" cases, a compromised local cryonics infrastructure can be (literally) deadly.

What I want to propose here is to move toward a "hybrid" model of cryonics standby. The first layer of such a standby is the employment of several medical professionals at the cryonics organization who remain available for local and remote casework. The next layer is the establishment (or rejuvenation) of vibrant local member groups that can do basic cryonics first aid procedures and aid the cryonics organization or contract standby organizations. The third layer is to have in place a number of non-exclusive contracts with professional standby organizations to conduct casework or assist in Alcor-run cases. When this hybrid model is pursued with accountability and sound quality control, the benefits of both models of cryonics can be reaped. ■

CEO Update

By Max More

CONSTRUCTION/EXPANSION

Major projects always take longer than you expect. That's true even when you take this observation into account. When we started on the major job of expanding and upgrading much of the inside of the Alcor building, we expected the work to be completed in August. Practically all of it was completed by mid-September but we still await the final inspection. Only then can we move everything to its proper place and truly be done.

Why all the construction work? The central reason was the impending need to expand the Patient Care Bay. Although we could cram in more dewars, it was becoming increasingly difficult to maneuver. As the number of cryopreservations-per-year grows, we need to plan ahead for an accelerating demand for space. We also wanted to improve the functionality of the existing space and improve its appearance for the many visitors and media people who come to see it. The functional improvements include adding a jib crane hoist on the south side with a height of 120 inches and a reach of 80 inches.

In the past when we had to transfer patients from cooldown to long-term storage, we had to open the roof hatch and hook up two hoists. This meant we had to get up on the roof and the PCB was exposed to the elements, whether high heat or rain. Part of the work involved adding an insulated and secure appurtenance structure over the existing roof-mounted gantry to allow permanent mounting of electric hoists. The fill system was expanded to reach the new space in unit 105. We kept the non-insulated copper when calculations made it clear that super-jacketed insulation would not be cost effective, given that we use the lines only a tiny fraction of the time. We underwent a liquid nitrogen safety systems review including revising the exhaust and supply air and oxygen sensors and alarms.

View of Patient Care Bay. Photo Credit: Mike Meyers

As the number of cryopreservations-per-year grows, we need to plan ahead for an accelerating demand for space.

With an eye on aesthetic and emotional appeal, we created a high-tech look for the floors (covering the old floors with stained concrete) and walls and made good use of strip-LED and gobo lighting to produce a super-modern and clean look. By the end of August we had finished another crucial aspect of the plan. Until now, visitors could see into the Patient Care Bay only through a relatively small bullet-resistant window.

The Upgraded, Brightened, Reception Area. Photo Credit: Mike Meyers

We created a secure viewing hallway at the north end of the suite connecting Suite 107 (the conference room) to the Suite 105 office area. In addition to beautiful epoxy flooring and controlled lighting, the hallway features 8 feet high banker's glass through which visitors can see much better into the patient storage area without being able to access it.

To expand the PCB into Suite 105 we had to cut through part of the metal-reinforced wall between 106 and 105, block off the garage door in 105 with thick ballistic steel paneling, and cover the east wall of 105 with steel sheets. Not all of 105 became an extension of the PCB. The north end now includes a chemical storage and mixing area, and a supply and tubing assembly room. The wall between the 105 part of the PCB and the rest was blocked off a wall in which were embedded steel security sheets. Alcor took over Suite 104.

Board Room. Photo Credit: Mike Meyers

We park the newly-acquired sprinter van at the south end in the same large space as the wood shop and machine shop. At the north end of 104 are new offices for our Medical Response Director and Technical and Readiness Coordinator.

We created a secure viewing hallway at the north end of the suite connecting Suite 107 (the conference room) to the Suite 105 office area.

To complement the work on the east end, we painted in the reception area, and replaced the outdated flooring with a consistent look all the way back through the conference room. The partition in the reception area was moved back – with the fax machine and other equipment being consolidated into what used to be Steve Graber's office – opening up the brighter, more modern area which is the first thing visitors see.

ANNUAL MEETING

The Annual Meeting was held on Saturday September 16. Here are the results of the elections at the 2017 Alcor Annual Meeting:

DIRECTORS

All directors were unanimously reelected:
Mike Anzis
Andy Aymeloglu
Ralph Merkle, Ph.D.
Mike O'Neal, Ph.D.
Michael Riskin, Ph.D., CPA
Michael Seidl, Ph.D., J.D.
Brian Wowk, Ph.D.

OFFICERS

President: Max More was reelected unanimously.
CFO/treasurer: Michael Perry was reelected unanimously.
Secretary: Michael Perry was reelected unanimously.
Bonnie Magee is now VP of Finance

Viewing Room. Photo Credit: Mike Meyers

Viewing Room. Photo Credit: Mike Meyers

CRYOPRESERVATION MINIMUMS UNCHANGED

At the 2017 Annual Meeting, cryopreservation minimums were left unchanged, remaining at the levels set in 2005 for Neuro and 2011 for Whole Body. These minimums remain:

Neuro: $80,000 (or $100,000 to receive a waiver of the $180/year Comprehensive Member Standby fee).

Whole Body: $200,000 (or $220,000 to receive a waiver of the $180/year CMS fee).

How are our minimums doing over the long term, especially when compared to overall inflation? Starting in 1991 and going to 2018 (27 years), we see an annualized increase of 2.51% for Neuro, and 1.91% for WB. At these rates, cryopreservation minimums double in nominal terms every 28 years for Neuros and every 36.6 years for Whole Body members. Over the same period, general inflation averaged 2.3%.

At the 2017 Annual Meeting, cryopreservation minimums were left unchanged, remaining at the levels set in 2005 for Neuro and 2011 for Whole Body.

MEDIA AND PUBLIC EDUCATION

We've done numerous group tours in recent months. These included 15 pre-med students from Mesa Community College, around 20 students from Chandler/Gilbert Community College, and another group from Arizona State University. We did interviews as close as the local channel 15 ABC news and as distant as Germany, Tokyo, Columbia, the Netherlands, and Thailand. ■

The Most Challenging Procedure

By Charles Platt

Remote standby can be a vital requirement in a cryonics case, yet performing the procedures with consistent success, over a significant period of time, is a goal that no cryonics organization has ever been able to achieve. In this article I will suggest some reasons why, and I will compare the available options.

THE NEED FOR STANDBY

When the heart stops beating, the blood no longer delivers oxygen and glucose that neurons need for normal function. The patient loses consciousness within a few seconds, and after five to ten minutes a cascade of toxic cellular reactions tends to cause injury that is irreversible by any known medical intervention.

During the next 12 to 24 hours the blood is likely to start clotting. This will make cryoprotective perfusion impossible and severe damage inevitable when the temperature of the patient is reduced below zero Celsius for long-term maintenance.

We may hope that future science can repair multiple types of brain injury, but preventing the injury preemptively seems a better option. Therefore, if a cryonics member dies in a remote location, ideally a team should have been called to the bedside with appropriate medications, a portable ice bath, and the ability to administer chest compressions. The patient should then be relocated as quickly as possible to a cooperative environment such as a local mortuary, where the blood may be replaced with organ preservation solution prior to shipment of the patient to Alcor.

This classic standby-transport model was developed by Jerry Leaf and Michael Darwin decades ago. Unfortunately, it is logistically challenging, expensive, and often requires the team to make rapid decisions that can have serious consequences.

Initially there is the urgent need to obtain cooperation from hospice or hospital staff so that death can be promptly pronounced, bearing in mind that a cryonics organization cannot interfere with a patient before pronouncement. Relatives may be present, and they are likely to have mixed feelings, at best, about cryonics. Nurses may be skeptical and uncooperative, hospitals may refuse to allow procedures, and the documents necessary to ship a whole-body case will vary from one county and state to another.

The stressfulness of the situation is exacerbated by the knowledge that the patient's condition will deteriorate rapidly during any delay. Even if all the initial hurdles are negotiated, cases have still turned out badly because of problems such as flight cancellation, vehicle breakdown, or a mortuary not having a transport container big enough for an unusually tall or obese patient.

THE VOLUNTEER MODEL

Up to about 15 years ago, Alcor's standby-transport procedures were led by one or two fulltime employees with help from volunteers. These volunteers were drawn partly from local groups of Alcor members who maintained equipment and medications in storage and were trained periodically in basic procedures.

The volunteer model has advantages. Most importantly, a nationwide network increases the chance that someone located locally can respond very quickly, using equipment that is already in the area. The help will be inexpensive, and cryonicists will be highly motivated to protect the interests of other cryonicists, especially if they know each other personally.

On the other hand, cryonicists do not always have good social skills and can be intolerant and abrasive toward family members or hospital staff who are suspicious of "amateurs." Also, a cryonics organization may feel that its members will lack confidence in standbys staffed by people who lack qualifications.

Volunteers also tend to have erratic availability because of conflicting obligations. Membership of a local group may change over time, as some leave the area and others arrive. The training that members received months or years previously is likely to be forgotten if it is not reviewed frequently, and equipment may be unavailable in an emergency. "The standby kit is locked up in our storage unit, but I'm not sure who has the key" is the kind of statement that a team leader may hear when he calls a regional group for help.

Maintaining kits scattered around the country also requires inventory control at Alcor, which sounds simple in theory yet has never been sustained in practice. Medications expire and equipment becomes outdated. When Alcor acquired the LUCAS electrically-driven chest-compression device, it retired the Michigan Instruments "Thumper" that had been used in cases through the 1990s; but I would not be surprised if at least one old Thumper is still out there, ready to surprise a team member who will be completely unfamiliar with its nonintuitive setup procedure.

Even if a cryonics organization stays on top of inventory control and can afford to buy new equipment for multiple local groups, it may not have the time and money to send an employee around the country swapping out old equipment and convening volunteers to for retraining.

THE PROFESSIONAL MODEL

Negative factors associated with the volunteer model prompted David Hayes and David Shumaker to create a new for-profit company, Suspended Animation, Inc, which would specialize in standby service as an independent contractor for the Cryonics Institute as well as Alcor. Hayes and Shumaker believed that a specialist organization could develop better capabilities than a membership organization where standby work is just one task among many.

SA was generously capitalized by the great benefactors of cryonics, Bill Faloon and Saul Kent. In 2004 I took over as fulltime general manager of the company, and established a new home for it in Boynton Beach, Florida. We designed and built new equipment, converted two vehicles for case work, and hired employees who seemed at least cautiously enthusiastic about the concept of cryonics. These fulltime employees were then trained in all aspects of standby work.

They were still "amateurs" in that they lacked medical qualifications. Therefore we also contacted local paramedics whom we paid to attend training sessions. They pledged to be available if a case occurred.

Imagine my surprise when I received notification of a case around 10pm one night, and all seven of the paramedics on my call list came up with excuses for staying home. I found myself depending entirely on three of SA's fulltime nonmedical employees. One of them failed to answer his phone, so we went to his home and woke him up. He had to respond, because it was a condition of his employment. I lacked that kind of leverage when dealing with independent contractors for whom cryonics would never be their primary source of income. (Despite these unpromising circumstances, the case turned out relatively well.)

The lesson was simple and obvious: employees will be more reliable than non-employees. Yet the concept of professionally qualified personnel remains tantalizingly attractive, especially to prospective members of a cryonics organization.

PREDICTING THE UNPREDICTABLE

After I quit from SA and resumed my primary career as a writer, Catherine Baldwin took my place as the general manager and pursued the professional model with renewed determination. She accumulated a long call list of surgeons and perfusionists who were available on a contract basis. Surely, if there were enough of them, someone should always be available.

Probably, but for how long? Standbys are notoriously unpredictable. When experienced physicians or hospice nurses state that a person is "near death," the estimates will be inconsistent and can be surprisingly wrong. In the history of cryonics, some standbys have lasted beyond three weeks. I doubt that any practicing physician will be available to stay at a remote location for that length of time. The best one can hope for is to rotate staff on an ongoing basis, but this will incur the expense of multiple air fares in addition to substantial hourly rates.

For a few years, Alcor addressed the standby problem by employing a fulltime paramedic, Aaron Drake. Alcor also had access to three personnel from a biomedical laboratory in California, one of whom was an MD. All were available on demand, all were Alcor members, and all were experienced in cryonics case work. This was a relatively ideal situation, and enabled Alcor to continue handling cases in Arizona while SA was under contract for cases elsewhere. Alcor was also able to respond to any remote cases which SA was unwilling to accept.

But circumstances relating to standby work seldom stay the same for long. At the time of writing, Aaron Drake has left Alcor and is planning to offer standby service as an independent contractor. One of the three experienced personnel at the California laboratory has ended her employment there, and her availability for future cases is unknown. Meanwhile, at SA, Catherine Baldwin has left her position. At Alcor, Josh Lado is an EMT who has succeeded Aaron Drake. Although he has not yet acquired experience in local standby work, he has participated in a field neuropreservation procedure and has assisted in surgical procedures in Alcor's operating room.

Alcor still has employees who have participated in multiple cases, and it should have a contractual arrangement with Aaron Drake's new company by the time this magazine is published. In addition, SA still has a nonexclusive contract with Alcor. There is a possibility of paramedics and EMTs from Laughlin, Nevada participating in future cases, but firm arrangements have not been made. Alcor claims eleven volunteers in the Phoenix area who have received some training for assisting with standby, but most have full-time jobs or other commitments that may interfere with them participating in a cryonics case.

BACK TO OUR ROOTS?

If you look in an issue of *Cryonics* magazine from the 1990s, you'll find probably 10 or 12 local groups listed at the back. Today, almost all of them are inactive. In 2003 I ran a training session for Alcor attracting more than 30 people and lasting for almost a week; so far as I know, this was not only the largest event of its type, but also the last, as the volunteer model has become obsolete. Alcor's president and CEO, Max More, confirms that the organization prefers to use people who have EMT or paramedic qualifications and can train regularly but also recognizes the need for cryonics first response by local members and family.

I respect his outlook, but I also feel some nostalgia for the volunteer model, because I have seen its advantages first-hand. While I was directing cryopreservation services for Alcor in 2002, I relied heavily on volunteers in California who never failed to respond and sometimes took heroic measures to move a patient as quickly as possible. I estimated that they shortened the warm ischemic time for three of our patients by periods ranging from six to 12 hours, almost certainly making an important difference to the outcome.

For cases that occur in eastern states, local help can make an even bigger difference, as it is logistically impossible for SA or Alcor to deploy a standby team 2,500 miles in less than about 12 hours, door-to-door. Bear in mind that performing a remote standby requires assembly of team members (often in the middle of the night), travel to Sky Harbor airport, baggage check, air travel on the next available flight (which may not be available for three or four hours), probable change of aircraft midway, rental of a van locally to deploy equipment, and setup of equipment at a hospital or hospice. It is not a trivial matter. If a private jet is used, it simplifies and expedites standby deployment and patient transport, but funds for this are often unavailable.

The volunteer model may also have benefits that no one could have predicted. I recall a deployment in the Los Angeles area where almost twenty volunteers showed up and camped in the home-hospice of a woman whom I will refer to as Mary. Her daughter, Ann, was much loved in the cryonics community, and everyone was determined to see that Mary got the best possible care. Also, at that time, participation in a standby was regarded as a special privilege for volunteers, none of whom received any payment.

As so often happens, there were unexpected developments resulting from human factors. Ann's brother came to the house, and we discovered with dismay that he disliked the concept of cryonics and was deeply suspicious of it. We learned that he was spreading misinformation to the hospice staff, who became untrusting and suspicious of the cryonicists. Cooperation from hospice nurses is vital in a standby, and we were in danger of losing it.

Fortuitously, an MD on the standby team came up with an idea for treating Mary with a different drug. Her primary care physician agreed to try it, and Mary made an unexpected, immediate recovery. After a few days, the standby was cancelled and the hospice staff were disconcerted to find that the cryonicists had saved the patient's life. The equipment went back to Alcor, and everyone went home. A month later, Mary was enjoying herself playing slot machines in Las Vegas.

How would this case have turned out if volunteers had not been used? On the plus side, the hospice nurses would have been more trusting of medically qualified personnel. However, the MD who suggested the alternate medication was a volunteer, and his personal friendship with Ann made him highly motivated to think outside the box to save Mary's life. I wonder if a contract surgeon or perfusionist would have taken that kind of initiative, bearing in mind that they would be retained only for specific tasks associated with stabilization after death is pronounced.

THE BEST OPTION

Having assessed some positive and negative factors associated with the volunteer model and the professional model, I tend to feel that the perfect system for standby-transport work does not yet exist, and may never exist until a cryonics organization is doing enough cases and has enough money to employ a complete standby team on a fulltime basis. Even then, a large membership will increase the risk of simultaneous cases, requiring two fulltime standby teams rather than one. (I wrote about the probability of simultaneous cases many years ago for *Cryonics* magazine. The risk increases faster than the number of members, initially at least.)

What should Alcor members do in the meantime? The easiest standby-transport involves minimal travel, which means that anyone suffering a terminal illness with a gradual onset will benefit by relocating as close to the facility as possible. Alcor has an excellent working arrangement with a local hospice, where cooperation is virtually guaranteed. Almost all the cases on this basis have turned out well.

By comparison, cases requiring remote deployment have usually encountered problems. Sometimes the problems have been overcome successfully, but not always.

For anyone who wants to minimize the brain injury that tends to occur rapidly after the heart stops beating, the lesson seems clear.

RESPONSE FROM JOSH LADO, DIRECTOR OF MEDICAL RESPONSE AT ALCOR FOUNDATION:

I support a hybrid volunteer/professional model for standby. I want to see both utilized together to do the best for each of our members. I want to move away from the idea of training groups of volunteers to respond and more toward having each member of the volunteer group having a small kit they can respond with as "cryo-medics". Each of these individuals will have a small pouch that will be stored in a refrigerator at home. The pouch will contain medications from Alcor's abbreviated medications list, instructions for administering them, personal protective equipment such as gloves and eye protection, and reference information for the volunteer as well as information for the hospice or hospital staff detailing why this volunteer is administering the medications and doing chest compressions. This kit will also have a tamper zip tie so volunteers know that no one has tampered with it and pictures can be sent back to Alcor to show proper upkeep of the kit for inventory purposes.

I believe these kits, placed not only across the US but also the world, could help more members get better cryopreservations when sudden death occurs. These volunteers will be able to respond quickly and administer blood thinning medications to allow Alcor to get to the patient and preform field neuro surgery and do our best to preserve the brain.

Volunteers also know their area. They could be helpful telling us where to get dry ice, a funeral home friendly to Alcor, or other logistical issues that come up.

I also see the advantages of professional teams. Hospitals have undergone significant changes recently. Some are still struggling with implementing all aspects required under the Affordable Care Act, and now function as tightly regulated businesses. Professionally qualified team members are best able to interact with hospital administrators.

However, I never want to leave volunteers out of the picture within Alcor's standby response. As Charles Platt stated, "I relied heavily on volunteers in California who never failed to respond and sometimes took heroic measures to move a patient as quickly as possible." The passion of a volunteer will seldom be matched by someone who is collecting a paycheck. The volunteer's passion can be the difference between getting the best care for an Alcor patient or just getting the job done.

I want what is best for every Alcor patient. ■

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

The Ninth Annual *Young Cryonicists* Gathering

Teens & Twenties 9 2018: Getting to Know You - You Getting to Know Each Other

Fri-Sun; May 4-6, '18 Hollywood, FL Host: *Life Extension Foundation* SCHOLARSHIPS AVAILABLE

★★★

Greetings to *ALL Young Cryonicists*,

You are receiving this invitation because you are the future of 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 in their late teens through age thirty *(18-30) as of May 8, 2018* - may apply to attend.

Younger Cryonicists With Parent(s):

Thirteen through seventeen year olds may attend when accompanied by their parent(s) or guardian(s).

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.* Therefore, I have designed a diverse range of "getting to know you" activities. *IF* you would enjoy participating in these various getting acquainted activities, *THEN* this is for you.

Enjoy this exciting & fulfilling weekend.

SCHOLARSHIPS:

Life Extension Foundation, through a generous education grant, is offering 40 *scholarships* that pay for ALL of the following:

- U.S. airfare to/from Fort Lauderdale, FL (up to $1000 for origin outside the U.S.)
- Hotel accommodations for Friday & Saturday nights - plus Thursday & Sunday nights (specifically) for scholarship 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 all details and application forms.

http://www.alcor.org/T2_9_2018_details.pdf

Forever,

Cairn Erfreuliche Idun
Founder/Director: T2

PS Come Early. Stay Late.

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

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

I look forward to getting to know you.

Bring in a NEW member and save a year of dues!

Membership growth has been slowly accelerating since bottoming out in 2013. But we would benefit from faster growth. Alcor is now at a point where we could enjoy considerable economies of scale: We could manage many more members with minimal or no increase in staffing costs. That would enable us to *reduce membership dues* while building up our resources. A modest acceleration in membership growth would move us into a virtuous circle where growth enables reductions in dues which further spurs membership growth. Growth will also make it easier to hire highly skilled people in medical and technical areas.

The most effective way to bring in new members has been through direct encouragement by existing members. Many of us realize this, but may not make it a priority to nudge our friends a little more to sign up and potentially save their lives. How can we spur more members to gently persuade those they care about to move ahead with making cryonics arrangements? Perhaps some financial incentive will help.

Anyone who is primarily responsible for getting a new member to sign up will, at their request, be given a one-year waiver of membership dues.

For an existing member to receive the dues waiver, they must (a) be credited by the person who has signed up; (b) ask for the waiver; (c) not be otherwise profiting from the signup; (d) wait until the new member has completed all essential cryopreservation paperwork and has paid at least six months of dues; and (e) the new member must not be a member of their family. If the member signs up two new members, they are eligible for a two-year waiver of dues. If the new member is a student, the existing member is eligible for a waiver of six months of dues.

Who do you know who could do with some encouragement to sign up? Please, give it some thought, then help yourself and help the organization by helping to stimulate membership growth. Bring in one new member per year, and you will never pay dues again!

ALCOR
ALCOR LIFE EXTENSION FOUNDATION
The World's Leader in Cryonics

This 1988 portrait by space artist Mark Maxwell depicted Alcor member David Brandt-Erichsen doing what he would love to do in the future.

Member Profile
David Brandt-Erichsen

By Nicole Weinstock

You might think a person born with a passionate interest in space and the future would be a natural for cryonics. However, if that person was also born a skeptic it might take a while to come around to the idea.

Such was the case with David Brandt-Erichsen, now age 70, who spends much of his time maintaining five websites. The story of these websites, combined with the story of two books that had the greatest impact on his view of the future, can be used to tell his story.

David Brandt-Erichsen has been an Alcor member for 30 years.

Website: alcor.org

David has been an Alcor member for 30 years. Not one to just join an organization, David wanted to volunteer to help out. In the early 1990s he served as a Sign-Up Coordinator helping people fill out their Alcor paperwork, and since 1998 has served as a Trustee of the Alcor Patient Care Trust.

When the Alcor Website Working Group was created in 2003, consisting of volunteers who provide in-house control over the website update process, David was a part of that group and remains so today as the primary person who updates the web pages. Probably more than 90% of the words on the Alcor website were placed there by him. Though not a web designer (much of the design work was hired out), he spent hundreds of hours scanning, copy editing, formatting, and uploading material for the very extensive library of cryonics information on the site.

David first heard about cryonics in the 1970s when he was working in the field of molecular biology. "Being intimately familiar with the complexities of living systems, I dismissed the idea because I could not see any possible way to get around the problem of freezing damage." So what changed his mind?

Book: *Engines of Creation*

Before this book came out, David had known its author Eric Drexler for some time because they were both on the Board of Directors of the L5 Society (see below). "Eric had a reputation for always being correct on technical matters, and I kept hearing through the L5 grapevine that he was working on some ideas about molecular machines, but I was very skeptical because I could not imagine how such things could be built." After much delay, the book finally came out in 1986 and David was first on his block to get a copy because he wanted to find out just what the fuss was all about.

"In the very first chapter it hit me: *Living systems are proof nanotechnology works.* We *ARE* nanomachines, therefore nanomachines are possible."

That was it for David. The concept of nanorepair machines provided a credible solution to the problem of freezing damage. He was going to sign up for cryonics. (*Engines of Creation* is now available online via the Alcor website Library.)

Book: *Colonies in Space*

In 1977, David ran across this book by T. A. Heppenheimer in a bookstore and it immediately grabbed his attention. He had

David displays results of an experiment while working as a research assistant in molecular genetics at Oregon State University.

always been interested in space to the point of feeling that he was born too early. "When I was seven years old, I was glued to our little 10-inch black-and-white TV when Walt Disney's *Man in Space* series came on. It was based on Wernher von Braun's vision of moving into space, and its image of the first trip to Mars with not one but a flotilla of spaceships is indelibly burned into my brain to this day. At age nine, I was so enthralled by the movie *Forbidden Planet* that it remains my favorite movie of all time. During the first Moon landing I thought that the calendar should be reset to year zero on July 20, 1969. I still think that."

But David assumed that a book on colonies in space would only consist of speculation about hundreds of years in the future, so the large $8 price tag stopped him. A year later it was offered for $1 from a book club, so he got a copy, which then sat on the shelf for another year. One day he picked it up for no particular reason and started reading. "The first chapter was generic stuff about man's place in the universe—nothing new." Then he read Chapter Two.

"I was thunderstruck! This was not a book of speculation about the distant future. It was nothing less than a detailed blueprint for moving human civilization into space, beginning immediately and using current (1970s) technology." The ideas were based on the work of Princeton physicist Gerard K. O'Neill (see David's accompanying article).

"I immediately knew that I wanted to get involved with this, to somehow help make it happen, even to make it my life's work. But how?" David had no engineering skills, nor really any skills that he thought he could bring to bear on this. There was a footnote in the book about an organization that had been formed to promote these ideas, the L5 Society, so he started by joining that.

Not one to just join an organization, David wanted to volunteer to help out. He started a chapter in the San Francisco Bay Area where he lived at the time. He developed a slide show and gave talks to schools and civic groups. When he took a research job at Oregon State University, he started a chapter there and got the university to invite speakers on the subject. When he got the chance, he moved to Tucson where the L5 Society was headquartered. He worked his way up the ranks of the organization and has served as an officer or board member for more than 25 of the 38 years he has been a member.

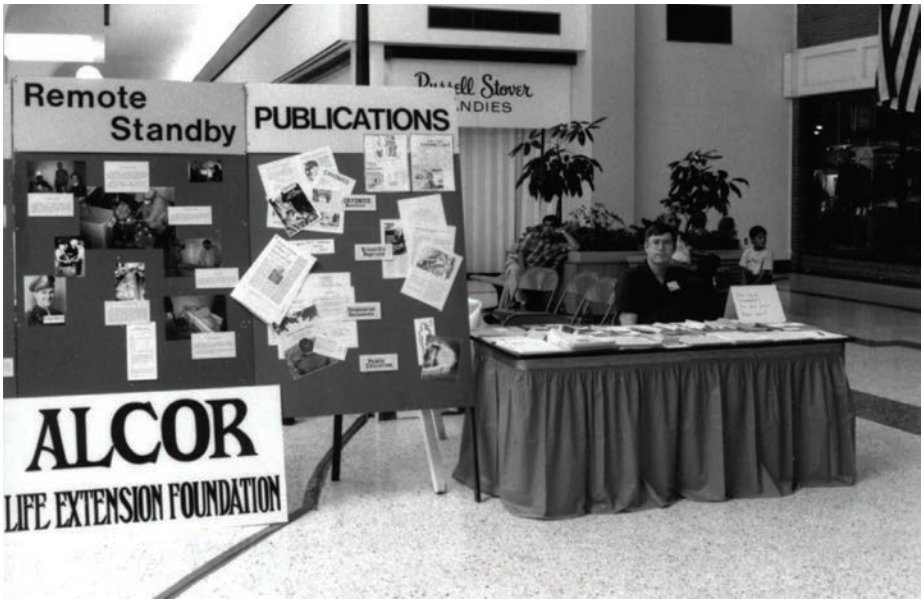
David has a plaque on his wall "for outstanding contributions to the political effort of the L5 Society on behalf of America's space station program, and for the important role this played in obtaining full funding for the initial year of the program." The wording was based on an actual statement from NASA acknowledging the effort.

In the late '80s the L5 Society merged with an organization started by Wernher von Braun, becoming the National Space Society. It moved to Washington DC, but David has remained in Tucson to this day.

David with Oregon Governor Vic Atiyeh during the signing of a Space Week proclamation in the early 1980s.

Website: space.nss.org

In addition to being on the Board of Directors, David is a member of the volunteer website team for the National Space Society (NSS), serving as a primary maintainer of that site. As with the Alcor site, he spent hundreds of hours creating a large library of information about space settlement and space solar power for the NSS site. "One item I am particularly gratified about is that I contacted Mr. Heppenheimer and got permission to put



David mans an Alcor table during Space Week at a mall in Tucson in the early 1990s.

Looking for arches brings David to many beautiful and seldom-seen places. He took this photo in a very remote part of Canyonlands National Park (before regulations prohibited walking on arches in the park).

online the entire book *Colonies in Space*. My hope is that the material on this site may someday inspire the next Elon Musk or Jeff Bezos, but even if that happens I'll probably never know."

Website: naturalarches.org

For about two decades David has been the webmaster for the Natural Arch and Bridge Society (NABS), which he refers to as "a small organization that has a large amount of fun."

David had always loved Utah's canyon country and gradually developed a focus on natural arches. He was also a hiking guide for the Southern Arizona Hiking Club, and in 1991 he led a group of Tucson hikers for a week in the Moab area where they visited 65 arches, and he never had more fun in his life. So when he ran across a NABS brochure in the Moab Visitor Center, he joined right up.

David's favorite natural arch is Spiderweb Arch in Arizona, which is very remote and seen by few.

David and his wife's wedding invitations showed the couple in Antelope Canyon, Arizona (the northern section that requires ropes to get through).

Not one to just join an organization, David wanted to volunteer to help out. He organized several NABS outings, edited their newsletter for seven years, and even played a role in confirming the longest natural arch in the world: 400-foot Fairy Bridge in China. David has visited more than 600 natural arches. "Looking for arches always takes you to beautiful places you might never have thought to go to otherwise. An arch as a goal at the end of a hike is the frosting on a very good cake."

In 1989 he led a week-long Hiking Club trip to Glacier National Park. "One of the hikers," David says with a smile, "was a cute Filipino girl who worked as an ICU nurse in Tucson." They got to know each other during the week while tired and dirty, rather than in a typical dating situation (where people are always on their best behavior!). They immediately started dating upon returning to Tucson, and later married. For the wedding, David choreographed a planetarium show which 150 people attended. "Slides from our hiking trips were projected on the dome, and then a star show took the audience to the Moon. We were married in the middle of a moonscape, followed by a recessional with a laser light show. The planetarium had a killer sound system, and the whole thing was accompanied by a custom music mix designed to produce goose bumps. It must have worked because several people commented it was the best wedding they had ever seen." David and his wife are celebrating their 27th anniversary this year.

Website: choicesarizona.org

David is webmaster of this site dedicated to changing Arizona law to recognize medical aid in dying as a fundamental civil right.

"Freedom-fighting is in my genes" said David, who is a direct descendant of famed abolitionist and women's rights leader Lucretia Mott, whose statue stands in the U.S. Capitol building and whose face is destined to appear on the ten dollar bill in 2020 for the centennial of women earning the right to vote. "So it was intuitively obvious for me to seek to establish the one major right we don't have in this country: the right to control the circumstances of our own death. This is of course particularly important for cryonicists, who want a standby team on the scene at the time."

So David joined the Hemlock Society (now Compassion & Choices), the oldest and largest "right-to-die" organization. He is a life member who does not want his membership to expire any time soon. Not one to just join an organization, David wanted to volunteer to help out. For 15 years he was on the board of either the Tucson Chapter or the Arizona statewide organization (the state organization has since disbanded). He is no longer active other than maintaining the fairly static

Famed abolitionist and women's rights leader Lucretia Mott was David's great, great, great grandmother; this picture was handed down to him through the family.

website because "the chances of changing the law in Arizona are about the same as a snowball's chance on a Phoenix sidewalk in June."

David's mother was an artist who made this portrait of him when he was a young child.

Several states now have "death with dignity" laws that allow a terminally ill person to get a prescription for a lethal medication that they can take themselves, so it's just a matter of time before Alcor has a member who wants to take their perfectly legal lethal prescription with an Alcor team standing by.

"This would be great for the member, but there could also be potential for political backlash worse than the crisis we had in 2004 when the Arizona legislature threatened to place Alcor under regulation by the Funeral and Embalmer's Board. I worry about such possibilities."

Unfortunately these laws are of no help in a number of cases, particularly Alzheimer's. "Of the really bad things that can happen to a cryonicist, Alzheimer's is statistically the most likely by far. For years I have been trying to come up with a plan for what I could do if I were diagnosed with Alzheimer's. Suicide is out because it results in autopsy, and suicide also cannot be done with a standby team present without implicating them."

The only plan he could come up with is voluntary stopping of eating and drinking (VSED). "It is legal," says David, "but it takes two weeks, which means it would have to be done while still competent enough to carry out a plan that takes two weeks. It won't work if you forget what you are doing. That means it would probably have to be done a year or so before I would really want to. That is a terrible plan!"

If anybody has a better plan, David would certainly like to hear it! "Another problem with VSED," he adds, "is that it is tricky if you are not yet terminal because you can get in trouble if the wrong people get wind of it. I know of cases where rational elderly people who were badly suffering were involuntarily committed because wanting to end their life was considered by itself to be proof of mental illness. I do know of a case where a person in the early stages of Alzheimer's successfully concluded VSED, but it was not in a cryonics setting and I am unsure how well it could be adapted."

This is a particularly vexing issue for David, who laments that "we do not live in a free country if the law forces you to slowly turn into a drooling vegetable rather than be voluntarily cryopreserved before that happens."

Website: elverhoj.org

David comes from an artistic family: his father was a sculptor, his mother an artist, and his elder sister switched from science to playing the harpsichord. "The artistic genes seem to have skipped me. The only thing I can do is draw flies and play the stereo, but at least I do the latter quite well. I have no idea where the space genes came from."

David grew up in the small Danish town of Solvang, California, where his father had built a Danish-style house called Elverhoy ("hill of the elves")—building it by himself on a shoestring budget over a period of four years. "The house was filled with my parents' art work: a statue of a rearing horse in the front courtyard, an intricately carved redwood front door, and a lot of carvings, paintings and sculptures in the interior." After his parents passed away the house was turned into a museum, taking on the Danish spelling as Elverhøj Museum. David has been the volunteer webmaster of the museum's website for many years: "Maintaining this website gives me a sense of connection with my parents and the town in which I grew up."

From his past artistic surroundings, David's own future was shaped in large part by his interest in the future of humanity. He signed up with Alcor because he wants a chance to see and participate in the creation of a civilization in space, something he otherwise would not be able to do. And quite frankly, as he humorously puts it, he would "simply prefer sticking around rather than not sticking around!" He astutely reframes the field, noting that "Cryonics is really a modern technical form of Pascal's Wager, but a form of the wager that I'm willing to take. If it doesn't work, I'll be out the cost of the life insurance but won't care, and meanwhile I have enjoyed the intelligent company of other Alcor members."

"In the words of H. G. Wells," summarizes David, "The Universe or nothing, which shall it be?" ■

The home where David grew up in Solvang, California, is now a museum.

Our Future in Space

By David Brandt-Erichsen

An orbital space settlement can provide an Earth-like environment for a million or more inhabitants. Richard Bizely, bizelyart.com.

Humans originated in Africa and gradually spread out to the other continents, eventually resulting in today's global civilization of some 7.5 billion people. We can expand into space on a similar scale, eventually resulting in a solar-system-wide civilization of several trillion people.

If you calculate the available land area in space—Mars, for example, has about the same total land area as the Earth—you might question the above statement. However, planets and moons are very inefficient uses of mass in supporting a civilization, and the mistake of thinking that they are required is sometimes referred to as "planetary chauvinism."

ORBITAL SPACE SETTLEMENTS

A landmark paper that showed that planets are not required to support a thriving civilization was published in *Physics Today* in 1974: "The Colonization of Space" by Gerard K. O'Neill. (This and many of the references in this article can be found at space.nss.org/space-settlement-library). O'Neill, a physics professor at Princeton University, envisioned large rotating space habitats with an Earth-like environment on the inner surface, with artificial gravity produced by the rotation. O'Neill was one of the first people to ask the question: given current technology (back in 1969), how large could such a structure be built in zero gravity? When the calculations came back with an answer in the tens of miles, O'Neill thought he was onto something significant. A key idea in O'Neill's thinking was that such large structures could be built out of material mined from the Moon or asteroids to avoid the high cost of launching out of Earth's much stronger gravitational field.

Between 1969 and 1974, O'Neill worked out some of the technical details, mostly by himself. By late 1974, O'Neill had linked his ideas with Peter Glaser's Solar Power Satellite (SPS) concept. SPS's are large solar collectors in space that would beam energy for use on Earth or in space. O'Neill suggested that they be manufactured out of nonterrestrial material, providing an export product potentially valuable enough to make an O'Neill settlement economically self-sustaining.

In 1973, George Hazelrigg, also of Princeton, suggested to O'Neill that the Earth-Moon L4 and L5 Lagrangian libration points might be ideal locations for the large orbiting settlements that O'Neill envisioned. (The idea of locating a large structure at a libration point can be traced back further to the 1961 novel *A Fall of Moondust* by Arthur C. Clarke.)

L4 and L5 are points of gravitational equilibrium located on the Moon's orbit at equal distances from both the Earth and the Moon. An object placed in orbit around L5 (or L4) will remain there indefinitely without having to expend fuel to keep it in position. The orbit around L5 has an average radius of about 90,000 miles, which leaves room for a very large number of space settlements just at this one location—enough even to house the entire Earth's population! Orbital settlements can be built or moved anywhere in space, and materials in the asteroids are sufficient for construction of orbital settlements with a total land area over 3,000 times the land area of the Earth.

O'Neill can in some respects be likened to Columbus. Both men brought news of a New World, news that would inevitably change the course of history. In both cases, the New World was distant and expensive to get to, but full of natural resources waiting for its inevitable economic development. In the case of the New World of space, the basics of how to do this have been known for some time. The big unknown is how long it will take.

THE L5 SOCIETY

A year after O'Neill's *Physics Today* paper was published, a couple from Tucson, Arizona, Keith and Carolyn Henson, used O'Neill's mailing list to form the L5 Society to promote these ideas. The L5 Society was founded partly because of Arizona Congressman Morris Udall, who at the time was a serious candidate for President. Carolyn Henson arranged for a meeting between O'Neill and Udall, and Udall emerged quite enthusiastic about the idea. Udall asked for public recognition of his support, and a newsletter was needed for this. The first issue of the *L5 News* was published in September, 1975. Consisting of just four pages, it included a letter of support from Udall. The newsletter also said that "our clearly stated long range goal will be to disband the Society in a mass meeting at L5."

Each early issue of the *L5 News* contained reports of new studies and progress in the field, but excitement over the L5 scenario probably peaked in 1977. That year produced the third consecutive NASA summer study on Space Settlements and Industrialization Using Nonterrestrial Materials. (The study was published in 1979 as NASA Publication SP-428, entitled *Space Resources and Space Settlement*.)

1977 was also the year that two major books came out on the subject: O'Neill's classic work, *The High Frontier*, and T. A. Heppenheimer's *Colonies in Space*. L5 members had naively thought that once the word got out about these ideas, everyone would immediately jump on board and say "let's do it." But that didn't happen. By 1980 funding for space settlement studies pretty much ended. In 1987, the L5 Society merged with the Wernher von Braun-founded National Space Institute to form the National Space Society, where the dream lives on. O'Neill did not live long enough to achieve his hope of retiring in space. He died prematurely in 1992 after a long battle with leukemia. (Keith Henson tried to get him to sign up with Alcor, but to no avail.)

Underestimating the enormous weight of political inertia that would need to be overcome to amass the resources needed to initiate such a venture, many early L5 members thought that they would really get the chance to personally live in space within their lifetimes. They had a slogan "L5 in '95" and it meant 1995, not 2095! At the 1995 International Space Development Conference in Cleveland, I was giving a speech and observed that we had originally hoped to get to L5 by now, but only made it as far as Cleveland!

ENTREPRENEURIAL SPACE COMPANIES

The biggest reason for the lack of major progress in space over the past several decades is the high cost of getting into space. In my opinion, for all its great accomplishments NASA is currently on the wrong path with its Space Launch System, which I call "the monster cost pork rocket to nowhere." It will never get us anywhere because it is just too expensive to use. The sooner that program is cancelled, the better.

But things are now starting to look up in a big way thanks to the efforts of entrepreneurial space companies, most prominently Elon Musk's company, SpaceX, which he founded specifically to "make humans a multiplanetary species." (Yes, Musk is a planetary chauvinist, but I will forgive him!) SpaceX is the first to build a rocket designed to cost, and in doing so their current Falcon 9 rockets have already lowered costs significantly and captured half of the launch market. The next step is making them re-usable, a process well underway. The first stage is designed to come back and land for re-use, and as of

SpaceX prototype composite fuel tank for BFR. Musk is really doing this, folks!

this writing the last 16 launches in a row were successfully landed. SpaceX is also the first private company to orbit a spacecraft (Dragon) and return it to Earth. The Dragon spacecraft is currently being used to bring cargo to the International Space Station and Dragon 2, when ready, will carry astronauts as well. (The Dragon 2 spacecraft uses the same control panel as the Tesla!)

In September 2017, Musk announced that he will be gradually phasing out the Falcon rockets (including the upcoming Falcon Heavy) and the Dragon spacecraft and use the profits from them to funnel the company's entire resources into a new rocket temporarily called BFR (Big Falcon Rocket). Construction will begin in mid-2018 and it will take about five years to develop. The rocket engines have already been fired on the test stand, and a prototype composite fuel tank has already been built for testing (see photo). It will be a fully re-usable two-stage design about the size of the Saturn 5 Moon rocket but with greater lifting power and the lowest use cost of any rocket ever made. It will be able to launch 150 tons of payload to orbit and return 50 tons from orbit. The second stage is a spacecraft that can refuel in orbit and carry 100 passengers to land on Mars. (It is designed to be capable of landing on any solid surface in the solar system.) Musk's stated goal is to get a million people to Mars and he refers to the planet as "a good fixer-upper."

Other companies are involved as well. Amazon founder Jeff Bezos is putting a billion dollars a year of his personal Amazon fortune into his company Blue Origin, which is also building reusable rockets and as of this writing is well under way in constructing a 750,000 square-foot rocket factory near Kennedy Space Center. Although they have not yet reached orbit, they have flown (and re-flown) re-usable suborbital rockets and are selling their own rocket engines to legacy aerospace companies. Also, Bezos obviously has business acumen. Bezos' stated vision is "millions of people living and working in space" so he is more in alignment with O'Neill's vision than is Musk.

Three other companies are particularly worth mentioning. Bigelow Aerospace, founded and financed by hotel chain owner Robert Bigelow, wants to build space stations and space hotels with inflatable modules, three of which are currently in space for testing (one of them is attached to the International Space Station). Two companies, Planetary Resources and Deep Space Industries, plan to mine the asteroids, particularly for platinum group metals to sell on Earth and for water to sell in space for rocket fuel (hydrogen and oxygen) as well as for oxygen for breathing and, of course, just plain water. The leadership of Deep Space Industries is heavily infiltrated by former L5 members.

FARTHER OUT

Interstellar settlement: Orbital settlements could eventually be used as interstellar vessels. Furthermore, as humans spread farther out into the solar system, even Kuiper Belt objects can be used for material to build orbital space settlements. Still farther out, objects in the Oort Cloud could be used. The Oort Cloud extends as much as two light years from Earth, and if the nearest star has a similar Oort Cloud, they may overlap, providing "stepping stones to the stars." Other stars may or may not have livable planets, but it doesn't matter because all that is needed is rubble (asteroids) to support a larger population in orbital settlements than what could be supported on planets.

Other technologies: Nanotechnology could greatly reduce the cost and increase the reliability of all aspects of space systems, and Eric Drexler has stated that the strongest materials built with nanotechnology could allow continent-sized orbital settlements. Transhumanism could at least in part adapt humans to the space environment rather than adapting the environment to humans (greater resistance to radiation would be nice, for example). And a space elevator could greatly affect the economics of space. (A space elevator would ride on a cable stretching from the Earth as far as 60,000 miles into space, requiring materials stronger than any that now exist.)

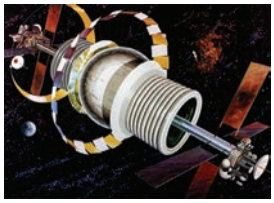
CONCLUSION

It is not certain that the human race will move into space, but there are many drivers to do so: the fact that most of the material and energy resources of the solar system are in space, the historical trend of life filling any available niche, and, yes, the very human desire to boldly go where no one has gone before. The future is likely to be an exciting place, and a major reason for my signing up for cryonics is because I want a chance to see that future and be a part of it. ■

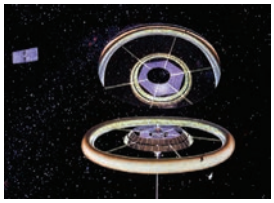
ORBITAL SPACE SETTLEMENT DESIGNS:

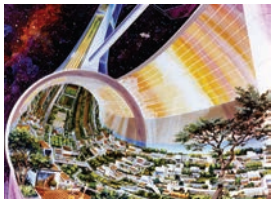
Kalpana One
Diameter: 1/3 mile
Population: 3,000
(Bryan Versteeg, spacehabs.com)

Bernal Sphere
Diameter: 1/3 mile
Population: 10,000
(Rick Guidice, NASA)

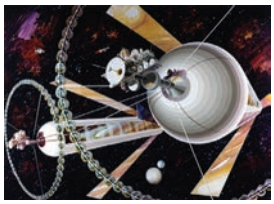


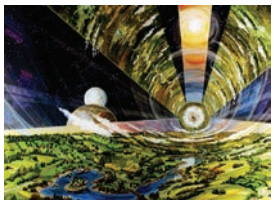
Stanford Torus
Diameter: 1 mile
Populaton: 10,000
(Don Davis, Rick Guidice, NASA)





O'Neill Cylinder
Diameter: 4 miles
Population: over a million
(Rick Guidice, NASA)





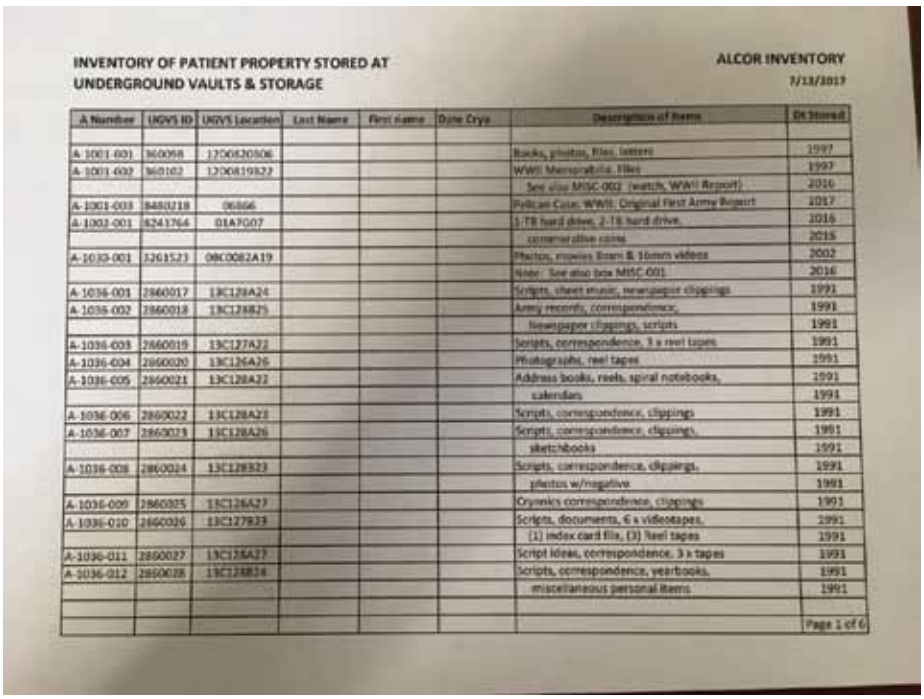
Alcor Memory Boxes

By Linda Chamberlain

In the early 2000s, Alcor started a project to allow Alcor members, and family and friends of patients to store memory items that might be useful when the patient is resuscitated. It has been some time since Alcor has reminded its members about this project.

Alcor's Memory Boxes are meant to serve as a time-capsule or a scrap book to help the individual member augment their memories when they are revived. We encourage members to give thought to what they would like to have waiting for them when they are resuscitated. No one knows better than you what you will want to have with you. So put together items while you are still able and keep adding items as the years pass. By keeping your Box or Boxes at your home or some location convenient you will be able to review the items in your Box every year or so, removing items that are no longer relevant, adding other meaningful things. At this time, Alcor does not have a way to store these memory Boxes for members while they are still living.

Some of the most popular items that have been placed into storage are such things as letters, cards, photographs, diaries, journals, notebooks, books, clippings, army records, directories, recipes, video tapes, cassettes, medical records, flash drives, and external drives. Have you ever gone to visit family members and sat down with a photo album and had the experience of having memories flood back into your consciousness as a result of a particular photo? An experience you thought you had forgotten?



INVENTORY OF PATIENT PROPERTY STORED AT UNDERGROUND VAULTS & STORAGE

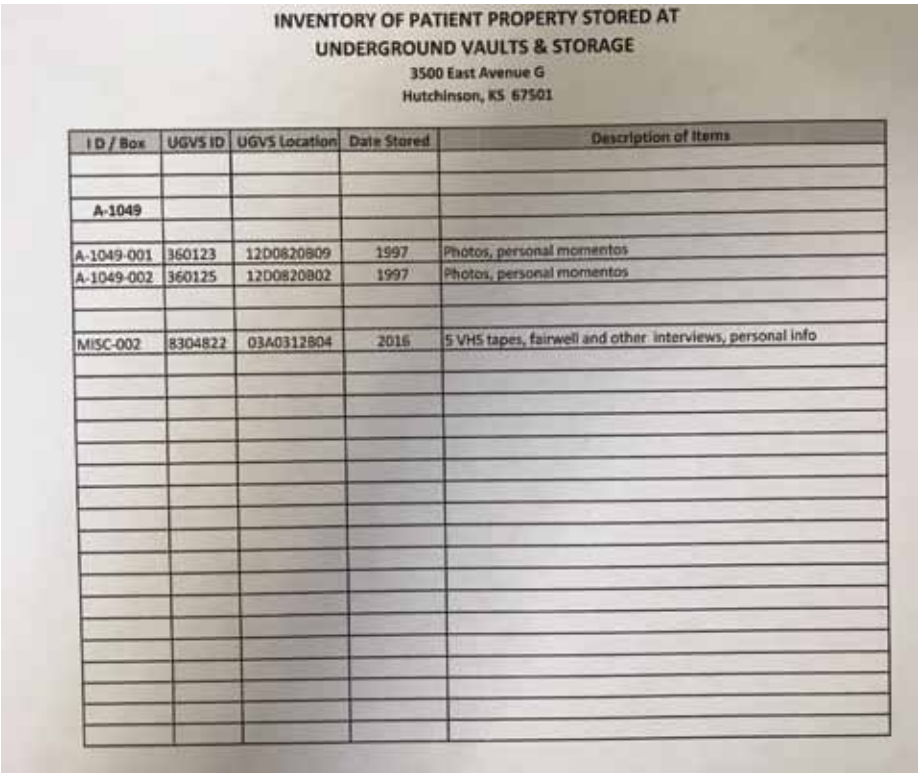
ALCOR INVENTORY
7/13/2017

A Number	UGVS ID	UGVS Location	Last Name	First name	Date Cryo	Description of Items	Dt Stored
A-1001-001	360098	1700820606				Books, photos, files, letters	1997
A-1001-002	360102	1700819327				WWII Memorabilia, Files	1997
						See also MISC-002 (watch, WWII Report)	2016
A-1001-003	8480218	06866				Pelican Case, WWII, Original First Army Report	2017
A-1002-001	8241764	01A7G07				1-TB hard drive, 2-TB hard drive,	2016
						commemorative coins	2016
A-1030-001	3261523	08C0082A19				Photos, movies 8mm & 16mm videos	2002
						Note: See also box MISC-001	2016
A-1036-001	2860017	13C128A24				Scripts, sheet music, newspaper clippings	1991
A-1036-002	2860018	13C128B25				Army records, correspondence,	1991
						Newspaper clippings, scripts	1991
A-1036-003	2860019	13C127A22				Scripts, correspondence, 3 x reel tapes	1991
A-1036-004	2860020	13C126A26				Photographs, reel tapes	1991
A-1036-005	2860021	13C128A22				Address books, reels, spiral notebooks,	1991
						calendars	1991
A-1036-006	2860022	13C128A23				Scripts, correspondence, clippings	1991
A-1036-007	2860023	13C128A26				Scripts, correspondence, clippings,	1991
						sketchbooks	1991
A-1036-008	2860024	13C128B23				Scripts, correspondence, clippings,	1991
						photos w/negative	1991
A-1036-009	2860025	13C126A27				Cryonics correspondence, clippings	1991
A-1036-010	2860026	13C127B23				Scripts, documents, 6 x videotapes,	1991
						(1) index card file, (3) Reel tapes	1991
A-1036-011	2860027	13C128A27				Script ideas, correspondence, 3 x tapes	1991
A-1036-012	2860028	13C128B24				Scripts, correspondence, yearbooks,	1991
						miscellaneous personal items	1991
							Page 1 of 6

UV&S Alcor Inventory

That is what the Memory Boxes are about; helping you to recover memories after your resuscitation by having available resources that might stimulate memories. One mother sends her cryopreserved son a letter every year on his birthday. We place those letters into a Memory Box for that member.

We do keep an inventory here at Alcor when items are sent for storage, and the individual specific inventory is kept in the individual patient record as well as on our server.



INVENTORY OF PATIENT PROPERTY STORED AT
UNDERGROUND VAULTS & STORAGE
3500 East Avenue G
Hutchinson, KS 67501

ID / Box	UGVS ID	UGVS Location	Date Stored	Description of Items
A-1049				
A-1049-001	360123	12D0820809	1997	Photos, personal momentos
A-1049-002	360125	12D0820802	1997	Photos, personal momentos
MISC-002	8304822	03A0312804	2016	5 VHS tapes, fairwell and other interviews, personal info

UV&S Patient Inventory

Alcor does make available to every member and patient, without charge, one acid free Memory Box about the size of a standard banker's box (H10" x W12" x L15") for memorabilia to be stored underground at a commercial storage site called Underground Vaults and Storage (UGVS) in Kansas. Additional Boxes are a one-time charge of $250 each for perpetual storage.

UV&S is located in an extremely geologically-stable salt mine and stores items 650 feet below ground in Kansas. They have been in business since 1959 providing secure storage for a large range of both corporations and small businesses

UV&S acid free box

UV&S Building Kansas

(like Alcor) as well as state and federal government departments, courts and attorney offices.

UV&S inside

Their website (www.undergroundvaults.com) describes their facility this way:

"A well-planned, located and constructed underground storage facility is virtually impervious to natural and manmade disaster. Its atmosphere is cool, dry, and

UV&S inside

UV&S inside

stable. It hides sensitive information from prying eyes, and is infinitely customizable. Though items may be stored miles away, the storage company must meet client needs for fast and secure access.

"Our premiere salt mine facility offers unrivaled protection. Wrapped in a 400 ft. thick rock salt cocoon, located 650 ft. below the earth's surface, and accessible only by vertical freight elevator, it is one of the largest and most secure storage facilities in the world. Two limestone mines facilities offer drive-up dock access, proximity to larger cities, and refrigerated storage.

Pelican Case

"When disaster strikes, you'll know your items are safe with Underground Vaults and Storage."

UV&S is not limited to storing acid-free Boxes. They can also store larger items and irregular items, such as locked pelican cases or even museum artifacts. The cost for such things would need to be paid for by the member or family, but Alcor is happy to help with the details.

If you would like to begin working on your own Memory Box, or perhaps would like to contribute items to a Box for an Alcor Member already in stasis, or if you have any questions, please send me an email at linda@alcor.org or call me toll free at 877-462-5267 extension 115. ■

UV&S Museum Artifacts

Table of Contents

"Society's failure to take cryonics seriously is a tragedy that is probably costing countless lives. Alcor, notably via its magazine, is leading the fight to change that."

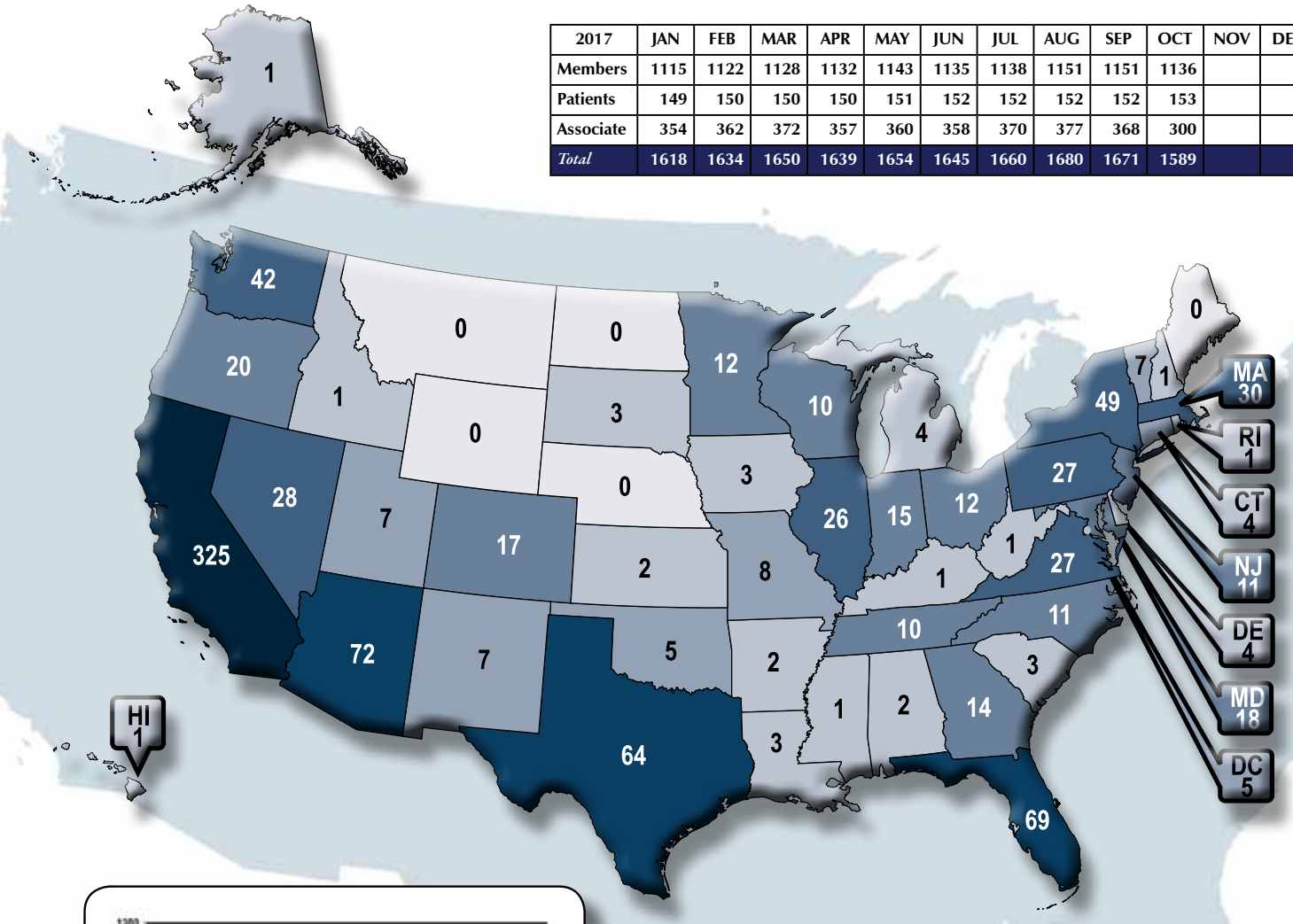
– Aubrey de Grey, Ph.D.
Biomedical Gerontologist and Chief Science Officer of the SENS Research Foundation

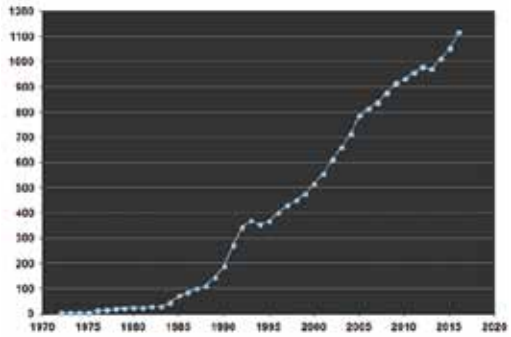
"Alcor appears to be the leading organization in the application of cryonics in medicine. I'm proud to be a part of this effort."

– Michael D. West, Ph.D.
Stem Cell Scientist and Chief Executive Officer of BioTime, Inc.

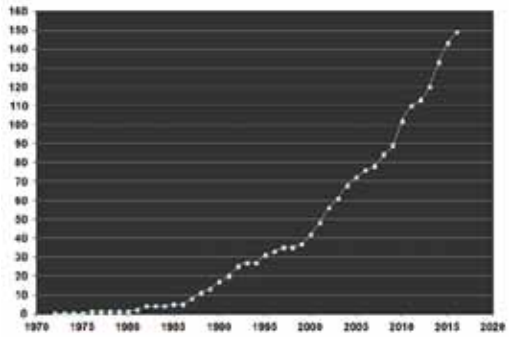
Membership Statistics

2017	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Members	1115	1122	1128	1132	1143	1135	1138	1151	1151	1136		
Patients	149	150	150	150	151	152	152	152	152	153		
Associate	354	362	372	357	360	358	370	377	368	300		
Total	1618	1634	1650	1639	1654	1645	1660	1680	1671	1589		





Number of Alcor members



Number of Alcor patients

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

International Members & Patients

Country	Members	Patients
Australia	13	3
Brazil	1	0
Canada	55	2
China	0	1
Germany	14	0
Hong Kong	2	0
Israel	1	1
Italy	3	0
Japan	5	0
Luxembourg	1	0
Mexico	4	0
Monaco	1	0
Netherlands	1	0
Norway	1	0
Portugal	5	0
Singapore	1	0
Spain	1	0
South Korea	5	1
Thailand	5	1
United Kingdom	31	3
TOTAL	150	12

REDUCE YOUR ALCOR DUES WITH THE CMS WAIVER

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

Instead of paying $180 per year in CMS dues, Alcor also provides members the option to cover all CMS-associated costs through life insurance or pre-payment. Members who provide an additional $20,000 in minimum funding will no longer have to pay the $180 CMS (Comprehensive Member Standby fund) fee. This increase in minimums is permanent (for example, if in the future Alcor were to raise the cost of a neurocryopreservation to $90,000, the new minimum for neurocryopreservation members under this election would be $110,000). Once this election is made, the member cannot change back to the original minimums in the future.

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

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

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

Become An Alcor Associate Member!

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

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

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

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

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

CRYONICS NEWSLETTERS:
SOME HISTORICAL HIGHLIGHTS

By R. Michael Perry

PART 1: LIFE EXTENSION SOCIETY

Cryonics has now been in existence more than fifty years. Groups advocating it have come and gone, while at least some individuals have tenaciously labored to keep things going, develop better preservation protocols, and address concerns relating to the world at large. During this time newsletters of the different groups have served as a means of conveying news and cross-communication between the various people and groups involved. In more recent times electronic media—emails and discussion forums and such—have partly usurped the functions of newsletters, yet their importance continues. Here we take a look at cryonics newsletters through the years, starting from the beginning. This will be a multipart series; Part 1, offered here, will cover the earliest newsletters, those of Ev Cooper's Life Extension Society, which started in 1964. Newsletters are an important historical source for their times and circumstances, and accordingly there is some overlap in this series with earlier articles that have delineated historical events. Yet the intention here is to adopt a different focus and look more into the details of the publications which are interesting in their own right, apart from the events and other details they record. I've subtitled this series "some historical highlights" to suggest something short of a full, comprehensive coverage or even an "evenly balanced" abridgment. Instead I try to select according to what seemed most interesting; someday a book or books should be written with more complete coverage.

STARTUP[1]

Cryonics started in the 1960s, an important milestone being the publication of Robert Ettinger's book, T*he Prospect of Immortality*, by Doubleday, Inc., in June 1964. This book exposed a large segment of the public to the cryonics premise, that a patient undergoing clinical death might be restored to healthy consciousness someday, if the body is stored meanwhile at cryogenic temperature where the decay process is halted. Advanced future medicine would then be used to resuscitate the patient and cure any diseases or debilities they might have, including aging, as well as repair any damage from the preservation process itself. Those who took the idea seriously felt the need of an organization to actually offer this service when it would be needed for them or a loved one. A book widely read that promoted the idea, like Ettinger's *Prospect*, was a good start, but not nearly enough.

Fortunately Ettinger had a colleague, Evan Cooper, who independently arrived at the idea of cryonics (as it would later be called) and who also felt the need for an organization to promote the idea. In 1962 Cooper finished a book of his own: *Immortality: Physically, Scientifically, Now*, written under the pen name Nathan Duhring, advocating cryopreservation, and then learned of Ettinger's parallel efforts. (Ettinger's first version of *Prospect* was finished at almost the same time as Cooper's book, then revised and expanded for commercial publication.) A mimeographed edition of Cooper's book was privately circulated, and an informal gathering was held to discuss his ideas near the end of 1962. About a year later, the weekend of Dec. 28-29, 1963, a conference organized by Cooper was held near his home in Washington, D. C., in which the Life Extension Society (LES) was started under his direction, to serve as a coordination center and clearinghouse for the fledgling movement. Cooper himself became the editor of the LES mouthpiece, *Life Extension Society Newsletter*, and the presumed author of unsigned articles. The newsletter's title initials LESN might have been interpreted acronymically as "lesson" but no one seems to have noticed this possibility. At any rate, this first cryonics-related periodical, offered initially at $1 per year, publication schedule "irregular," made its debut in January 1964, several months before *Prospect* was commercially published. (The newsletter throughout its publication was printed on letter-sized sheets stapled at the upper left corner.) The very beginning is instructive for, well, showing how one begins the very first newsletter devoted to a whole new movement with (to us now involved at least) a most inspiring theme; in this case it relates to the conference just concluded:[2]

> "The last weekend in 1963 rang down and out with perhaps the world's smallest conference and

time's most imposing title: *The First International Conference on the Scientific Prospects for Physical Immortality.* The number [present at the event] depends on how adept you are at counting shadows, waitresses, correspondents, and broadcast recorders. Twenty registered, eighteen paid, while fifteen were able to attend."

As for "paying," the conference registration fee of $3 was noted in a one-page announcement that had been circulated beforehand. So what did this conference cover and who was speaking?

"Larry Jensen opened the morning [session, beginning the] conference by affirming that practical aging control, for all the promise of present research, lies in the distant future. Therefore, we should get down to business on a freezing program for those who wish a plan for preservation in the event of any immediate deaths. The person so preserved would then wait until reanimation and aging control procedures had been developed, even if it took centuries. First, as the problem is largely one of information distribution, Larry specifically suggested that we make available a brochure, or short information sheet, on both the idea and the best information available at present on freezing procedures. Second, that we form a foundation as an aid in effecting the preservation and extension of life. Third, that a summary of the conference be sent to science writers. …"

Who was Larry Jensen? The newsletter explains: "Larry, who teaches at Castleton College[, Castleton, Vermont,] where they call him the ice man, is one of the original formulators of the freeze and wait theory. He has helped spread the idea on radio broadcasts, wrote to President Kennedy in May, gave a talk at Green Mt. College, where the response was highly positive, and has taken out $10,000 in extra insurance to guarantee a very cool resting place in the event of death."

"Bob Ettinger led the afternoon session," we are told next, "which was primarily a continuation of the morning's attempt to find and agree on a program." Mention is made of Bob's forthcoming book, *The Prospect for Immortality* (title slightly misquoted), and that, during the conference, "[t]here were the usual differences of opinion both days with such strong-minded individualists." Nevertheless, "the name Life Extension Society was adopted until and unless a better one can be found." A committee consisting of Ev Cooper, Bob Ettinger, and Larry Jensen, "was appointed to investigate the more formal creation of a foundation."

Committee "appointed to investigate the more formal creation of a foundation." From left: Evan Cooper, Robert Ettinger, Larry Jensen. All three were personally interested in cryopreservation and Jensen reportedly had made arrangements for it but only Ettinger was actually able to go through with it, many years later.

Please post or publish a notice of conference.

AN INVITATION TO THE FIRST INTERNATIONAL CONFERENCE ON THE SCIENTIFIC PROSPECTS FOR PHYSICAL IMMORTALITY. (indefinitely extended longevity)

Saturday & Sunday, December 28th & 29th. Washington, D.C., USA

WHO IS INVITED: Every person is invited who is seriously interested in the subject and who might make a contribution to others in discussion or in presenting a paper. In many individuals a new and startling idea automatically evokes a negative response. For a productive conference who should like to sidestep centers of this "We-Can't" school of thought. We haven't been neglected by that school so simply believe more will be accomplished now by the creative, optimistic, problem solving, science and humanity oriented types of people. We also want to strengthen -not debasen- the natural bonds between science and humanism, between scientist and layman.

CONFERENCE & BACKGROUND: This will be a very informal conference, not elaborately planned, and probably small in numbers. Our intentions are to carry on and expand upon last year's discussions of the suggestion that if the human body is frozen at death and properly stored, reanimation is conceivable in the distant future, assuming the continued progress of science. Freezing was considered a research stop-gap device for the individual while science gradually achieves techniques of aging control. The discussions then centered around two readings: R.C.W.Ettinger's The Prospect of Immortality, 1962, a 79 page study slated for publication by Doubleday, and Nathan Pusey's Immortality: Physically, Intellectually, Now, 1962, 187 pages, $255.00, obtainable at the Library of Congress or through Interlibrary loan.

PAPERS & PROBLEMS: We solicit ideas on any relevant problems and especially papers on devices for practically instantaneously freezing the human body and preserving it with maximum constancy and safety for long periods of time.

REGISTRATION: +to let us know how many are coming+ is $3.00/ which includes lunch on Saturday. The conference, and 20th Century Books, are both non-profit scientific educational programs. If possible send in your registration immediately +December 15th at the latest+.

Please make a reservation for my participation in The First International Conference on the Scientific Prospects for Physical Immortality. December 28th & 29th 1963.
Indicate your preferences for workshops and discussions:

- Prospects of aging control.
- Low temperature studies relevant to preservation.
- Literature & books relevant to physical immortality.
- Social consequences of freezing, storing, & physical immortality.
- Other(indicate)_____

Name _____
Address _____

(Please mail registration & check to: 20th Century Books 1500 Harvard N.W. Washington 9, D.C.

Vol 1 No. 1 January 1964

LIFE EXTENSION SOCIETY NEWSLETTER
Washington, D.C.

THE CONFERENCE

The last weekend in 1963 rang down and out with perhaps the world's smallest conference and time's many amusing titles: The First International Conference on the Scientific Prospects for Physical Immortality. The number depends on how adept you are at counting shadows, waitresses, correspondents, and broadcast recorders. Twenty registered, eighteen paid, while fifteen were able to attend.

Larry Jensen opened the morning conference by affirming that practical aging control, for all the promise of present research, lies in the distant future. Therefore, we should get down to business on a freezing program for those who wish a plan for preservation in the event of any immediate death. The person so preserved would then wait until reanimation and aging control procedures had been developed, even if it took centuries. First, as the problem is largely one of information distribution, Larry specifically suggested that we make available a brochure, or short information sheet, on both the idea and the best information available at present on freezing procedures. Second, that we form a foundation as an aid in effecting the preservation and extension of life. Third, that a summary of the conference be sent to science writers.

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Bob Ettinger led the afternoon session which was primarily a continuation of the morning's attempt to find and agree on a program. (Bob's book The Prospect for Immortality, is being published by Doubleday, presumably under the same title, and will be to the reviewers in May and the bookstores in June. This most likely will be the greatest stimulus to the movement we feel. There were the usual differences of opinion both days with such strong-minded individualists. However, the name Life Extension Society was accepted until and unless a better one can be found.

A committee of three: Bob Ettinger, Larry Jensen, and Ev Cooper, was appointed to investigate the more formal creation of a foundation.

It was suggested that Dr. Joseph Still, or some other willing expert, be asked for their opinion on the best freezing procedures. This information will be printed on well-behaved cards and for the information brochure and revised in the light of new facts.

From top to bottom: invitation to the First LES Conference, 1963; cover page of first LES newsletter.

Other article titles in the first issue include *"Aging Control," "Kidney Transplants," "Resuscitation,"* and *"Complete Organisms from a Single Cell."* Finally, there is the article quoted below, which well encapsulates the hopes and dreams of its times, yet remains relevant today.[3]

"REQUEST FOR INTELLECTUAL AND MORAL SUPPORT

"We would greatly appreciate the attention of the scientific community (especially, but not exclusively) to the theory of freeze-and-wait, with the possibility of eventual reanimation and the establishment of aging control. Inasmuch as ordinary people won't consider a new idea until it is approved by those they believe to be authorities, or is partaken of by their friends, we should like to compile a list of those who consider the theory a reasonable project of investigation and action. Would you write us sending your support, your criticism, or your rejection?

"We ask this as we wonder if scientists—and others who know of the theory—don't have a moral obligation to make the best effort possible in supporting and spreading the idea? If 1% of the world's population dies per year this seems to mean that as many as 30 million per year go to their deaths unnecessarily.

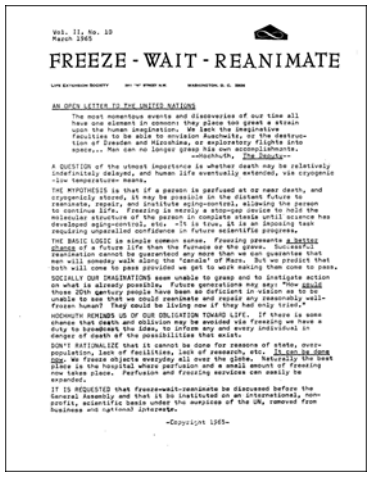
Shouldn't they at least be presented with the information that there may eventually exist a longer, even richer, life for themselves if they will have their bodies frozen at death? If so, many things can be done: One, your intellectual or scientific support is needed if you agree. Two, many individuals are needed to specifically state [their intentions of,] and arrange for their eventual[,] freezing. Three, some pioneers are needed to inaugurate a breach in the dead hand of customary burials. These would be people who are currently at death's door and would opt for the frozen burial.

"It goes without saying that none of this could conceivably be final. Let us follow the scientific evidence and always be willing to change. But let us not—because of a pathetic conservatism or a failure of nerve and imagination—let that minority of optimistic individuals, who might avail themselves of freezing, slide to oblivion because we cared not enough of individual human life to support the idea and to inform others."

ETTINGER'S BOOK; LETTER TO THE UN; SUDA'S CAT BRAIN EXPERIMENT

After the January, inaugural issue of LESN there was an issue in March, then, in August the periodical went monthly, which it remained with occasional exceptions (June and July, or July and August might for instance be combined into one issue). The August issue reports "big news of the summer": the publication, June 5, of Ettinger's *Prospect of Immortality*, "a marvel of lucidity and forceful writing," and "a great event toward the defeat of death."[4] In January 1965 there was a change of title to the more inspiring and dramatic *Freeze-Wait-Reanimate (FWR)*, which remained in place until publication ceased with the September 1969 issue.

For over two years the LES newsletter would be the only periodical devoted to the cryonics premise. An important feature added in the second issue (March 1964) was a letters column where readers were invited to share their views—and many did. A year later (March 1965) Cooper published on the cover page an "open letter to the United Nations." The letter requests "that freeze-wait-reanimate be discussed before the General Assembly and that it be instituted on an international, nonprofit, scientific basis under the auspices of the UN, removed from business and national interests."[5] (While the letter does not appear to have been taken seriously by its intended audience, it no doubt helped to sustain interest and camaraderie among the devotees.)



Vol. II, No. 10
March 1965

FREEZE - WAIT - REANIMATE

LIFE EXTENSION SOCIETY 801 "H" STREET N.W. WASHINGTON, D. C. 2000

AN OPEN LETTER TO THE UNITED NATIONS

The most momentous events and discoveries of our time all have one common denominator: they place too great a strain upon the human imagination. We lack the imaginative faculties to be able to envision Auschwitz, or the destruction of Dresden and Hiroshima, or exploratory flights into space... Man can no longer grasp his own accomplishments.
—Hochmuth, The Results—

A QUESTION of the utmost importance is whether death may be relatively indefinitely delayed, and human life eventually extended, via cryogenic -low temperature- means.

THE HYPOTHESIS is that if a person is perfused at or near death, and cryogenically stored, it may be possible in the distant future to reanimate, repair, and institute aging-control, allowing the person to continue life. Freezing is merely a stop-gap device to hold the molecular structure of the person in complete stasis until science has developed aging-control, etc. -If it is true, it is an imposing task requiring unparalled confidence in future scientific progress.

THE BASIC LOGIC is simple common sense. Freezing presents a better chance of a future life than the furnace or the grave. Successful reanimation cannot be guaranteed any more than we can guarantee that man will someday walk along the 'Canals' of Mars. But we predict that both will come to pass provided we get to work making them come to pass.

SOCIALLY OUR IMAGINATIONS seem unable to grasp and to instigate action on what is already possible. Future generations may say: "How could those 20th century people have been so deficient in vision as to be unable to see that we could reanimate and repair any reasonably well-frozen human? They could be living now if they had only tried."

HOCHMUTH REMINDS US OF OUR OBLIGATION TOWARD LIFE. If there is some chance that death and oblivion may be avoided via freezing we have a duty to broadcast the idea, to inform any and every individual in danger of death of the possibilities that exist.

DON'T RATIONALIZE that it cannot be done for reasons of state, over-population, lack of facilities, lack of research, etc. It can be done now. We freeze objects everyday, all over the globe. Naturally the best place is the hospital where perfusion and a small amount of freezing now takes place. Perfusion and freezing services can easily be expanded.

IT IS REQUESTED that freeze-wait-reanimate be discussed before the General Assembly and that it be instituted on an international, non-profit, scientific basis under the auspices of the UN, removed from business and national interests.

-Copyright 1965-

The March 1965 Freeze-Wait-Reanimate cover featured Cooper's "open letter to the United Nations."

Many important early events were chronicled in the newsletter, including the successes with revival of frozen cat brains (September 1965 and later), the wild cryonics conference in January 1966, the first human freezing that spring (May issue), and the first freezing under controlled conditions, that of James Bedford, in January the following year.

The partial revival of frozen cat brains was particularly important in making the case that cryonics might work.[6] The September 1965 *FWR* opens with the stirring headlines, "*Astounding Advance in Animal Brain Freezing and Recovery*" ... and goes on to discuss the work of Suda of Kobe University, Japan. This was the famous series of experiments in which cat brains were chilled to -20°C and later rewarmed with clearly recognizable brain wave activity. Cooper commented, "... it is increasingly certain that the human brain can be frozen, stored and revived" and went on to speculate:

"We shudder to think of our brain estranged from its cave, its home, its comfortable brainpan. We find it virtually impossible to imagine. Nevertheless, if our survival really depended upon it, many of us would submit to such an operation…."

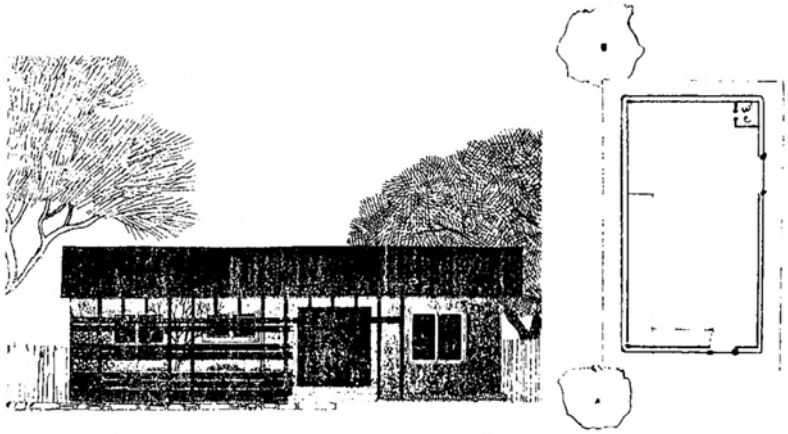
After several more paragraphs of discussion of Suda's results and the possibilities of freezing and reanimation a thought that must have been percolating in Cooper's mind finally bursts forth:

"If we let our imagination go way-out, we can consider the storage of the brain alone, to be reanimated later, and placed in a body which has been grown from one of the original body cells. This arrangement should be especially appealing to those who worry so much about space and the cost of refrigeration."

There, then, is essentially the full-blown rationale for what in cryonics is now called neuropreservation, preserving the brain or head only, apparently a by-product of the successful freezing and arguable reanimation of isolated brains. (The freezing was not to the temperature of liquid nitrogen, to be sure, nor is it expected that the brains could have survived for centuries rather than the partial survival after 203 days that was achieved in the main experiment reported in the article, but it was an important advance nonetheless.) Probably the neuro idea had been considered before; Ettinger hints at it in *Prospect*[7]; still this seems to be the first clear exposition in print of the basic concept, with some dramatic scientific backing. The idea recurs from time to time in *FWR*, but its reception was unenthusiastic. Later (1968) Cooper responds at some length:[8]

"…Almost everyone is pussyfooting about this restricted freezing alternative for fear of offending sensibilities. But the scientific and practical factors for such a restricted preservation appear overwhelming as an *alternative* if and only if there cannot be preservation in *toto*. The cost might be a tenth or less of the in *toto* method. Considering this to be an emergency method before aging control becomes practical, isn't it probably the only possible way the many poor throughout the world could be preserved? Space saving might be anywhere from 1/7 to 1/25th [i.e. a factor of 7 to 25]. The saving of a part might be more acceptable, for the remainder can

be suitably arranged for traditional rites. Many doctors would be much less reluctant to perfuse and freeze a part than they would the whole. They are used to saving specific parts, even the part containing one's previous identity, for analysis.



With some obvious changes they have the general pattern of Suda's experiments to follow outlined in the world's foremost scientific journal: *Nature*. This procedure reduces the problem to its simplest base. It saves the one essential organ. Stewart's experiments [cloning from carrots] indicate that an identical body could be produced in the future. It would seem there is no technical problem in this that could not be solved satisfactorily to any reasonable person. There is an initial fear reaction aroused because it is so novel. Lastly the problems of perfusion and cooling are reduced in magnitude and complexity. This possibility at least deserves unemotional discussion *as an alternative* ... when more encompassing preservation is not possible."

(Unfortunately a number of years were to pass before the neuro option would be taken seriously, and many whole-body patients with inadequate funding would be lost.)

OBTAINING LAND FOR AN LES FACILITY

Another focus in the newsletter is that LES was not intended to be merely a discussion group but instead was to have actual facilities for patient storage and laboratory work, in effect, to be what today would be called a full-service cryonics provider. This is a recurring theme, shown for example in the April 1967 *FWR*. The cover story consists of an appeal to readers by Cooper for suggestions as to how the proposed laboratory should be constructed, accompanied by some illustrated thoughts of his own:[9]

"The above sketches are not to indicate that we have property and facilities as yet, for we haven't. What they indicate are some of the basic lines along which we are planning. Our request is for ideas from our readers, given these basic outlines.

"We wish we could report that we have obtained land for a laboratory. We have come very close to purchasing in the past and feel very close to it at present. Even though we have no land actually in possession, we can plan our building and immediate surroundings. If we think and plan ahead now we can more than likely obtain ideas from our readers that we might not think of or hear of by ourselves.

"If you can send us some useful ideas, hints, or information those ideas may save us money in construction and headaches in the future. Don't hesitate to send your ideas merely because you may not be an expert. Tests were once conducted on who was more creative with a pair of pliers, housewives or mechanics. As you can guess, the housewives proved more creative.

"Our goal is to make our research unit and storage center as functional as possible, at least cost, yet attractive to the eye.

"Our givens, though not inflexible, are more or less as follows. We assume our land to be as much as several acres or more, cleared except for 15 or 20 large trees scattered at random with wooded area in background and on one side. The basic building would be cement block, approximately 28' X 54' with nine foot walls, two doors, and possibly glass brick for the entrance of light. The roof can be flat, shed type, or shallow hip. The roof can overhang. The floor will be a cement slab. The land is assumed to be relatively level.

"We very much need ideas on how to make a more or less standard cement block building attractive. If you have any suggestions how to use decorative building block, a covered walkway, or an interesting arrangement for driveway and small parking lot, please send them. If possible, make a sketch of your suggestion that we might show to the builder.

"More difficult than making the exterior attractive is to produce a basic building design that is safe and functional. However difficult, the problem remains to design a cryobiological laboratory which would include provision for the low temperature storage of humans. Safety for those frozen and maintenance of temperature are the prime considerations. How would you arrange it?

"So, if you have an idea, a suggestion, a plan, or information on <u>any</u> aspect of the above problems, please send it."

In the same issue we see that an LES supporter, the physicist Gerald Feinberg, attended a monthly meeting of the organization, at which "the discussion revolved around problems as to how a cryogenic storage area might be made safe from vandalism or any conceivable failures to maintain temperature." (Dr. Feinberg was a sometime contributor to the LES newsletter and wrote a pro-cryonics article for the science journal *Physics Today* which was reprinted in the December 1966 *FWR*.)[10]

In the July-August, 1967 FWR there is a proposed building design with a sketch from a reader, together with a recounting by Cooper of a frustrating setback in obtaining a use permit in Fauquier County, northern Virginia:[11]

"LES APPLICATION FOR A USE PERMIT IN FAUQUIER COUNTY TURNED DOWN

"This is the season for very sad tales of woe from naive and incompetent organizers. The LES proposal and defeat came about in four stages, somewhat as follows.

"First stage: A real estate agent calls saying he has just the land for LES, already zoned industrial (industrial zoning usually covers any unusual use), and all we have to do is simply ask for a building permit which is issued as a matter of form.

"Stage two: The matter of form suddenly becomes a public meeting with all manner of questions from a seemingly friendly board with an interested journalist in the background. At the same time we discover the land under consideration is actually rural land up for zoning. Later still it was reported to have become industrially zoned land.

"Stage three: An article or two are published in local papers. A letter of objection comes in to the papers from a man in a very small village two miles away from the rather isolated land in question. The objection seems to be that LES is a small, slightly suspicious, furtive society, run by questionable people, hiding doctors and scientists who are themselves suspicious because they are reluctant to expose themselves, and, lastly, the society is financially questionable. That LES was to pay cash for land and building (probably a rare occurrence in that county), made no dent. The added suggestion was that if freezing and storing humans was such a good idea, NIH should be doing it. This latter suggestion is an interesting argument coming from a traditionally conservative community which usually decries the government doing everything, laments the loss of individual initiative, individual innovation, etc., etc.

"We speculate that the thought never passed the minds of the Board, that an individual, and/or a group so interested, has the inalienable right to experiment. A community should not only not hinder experimenting, if it doesn't hurt others, and if it might lead to the extension of life, but such a community has a positive obligation, if it is intelligent, to promote such experimentation, if nothing more than for its own ultimate welfare.

"Last stage: The request to build a laboratory on this rather isolated piece of ground in a farming and woodland area two miles from the nearest village is rejected. The net effect, in this writer's very biased opinion, is that some scientific and social progress has been delayed. It is even possible that some life will not be extended that could have been extended if facilities had been available sooner."

In any case, Cooper's efforts to acquire land and build a facility did not stop here, as we shall see.

A FATEFUL TURN OF EVENTS[12]

Backtracking for a moment, we noted that at the first talk at the first, 1963 conference the speaker, Larry Jensen, made the point that, as Cooper related later, "we should get down to business on a freezing program for those who wish a plan for preservation in the event of any immediate deaths." This set the tone for the whole movement that followed. *It was important that freezings actually occur.* Cooper recognized this as keenly as anybody, and wanted to assist, offering, in the newsletter in 1965, "to freeze the first person for free" who expressed a wish for it, with the offer extended even beyond this generous limit to include other free freezings.[13] In other ways LES surged forward, staging annual conferences and circulating its newsletter to largely create the first cryonics community.

Finally there had been a freezing. In April 1966, the embalmed body of a woman in Phoenix, Arizona, was placed in liquid nitrogen storage—but relatives had her buried a few months later, which ended the matter. In January 1967 James Bedford of Glendale, California, the second freezing and arguably the first "true" cryonics case, had been preserved with enough funds that finances were not a problem at the time. In neither of these cases was LES or any of the cryonics societies that had come into existence (mainly, those of Michigan, California, and New York), called upon for any long-lasting, substantial contribution, financial or otherwise.

Then there came a fateful turn of events, the third freezing, that of Marie Phelps-Sweet in late August 1967. (Though at the time she was married to Russ Le Croix Van Norden, Marie liked to be known as Miss Sweet or Marie Phelps-Sweet.) Like Bedford's freezing earlier that year, this event also happened in California, though it was well covered elsewhere, including the pages of *FWR* in Washington, D.C. But with Ms. Sweet, who had been a popular figure in the movement and clearly desired freezing for herself, there was both widespread interest in her cryopreservation and an acute shortage of funding to pay for it. Cooper was reminded of his promise two years before of a free freeze but realized he was unprepared and could do essentially nothing. Some other frictions also developed over the handling of Ms. Sweet, that culminated in a "very nasty letter" from Ettinger, "accusing the President of LES [Cooper] of poor judgement, bad motives, stupidity, irresponsibility, etc., etc.,—a letter that a paranoid would consider a veiled threat."[14]

Hurt and embarrassed by the turn of events (not just the letter), Cooper decided, on very short notice, to cancel the LES Conference that had been scheduled for October 1967 and had been widely publicized through his own newsletter and elsewhere.[15] Among other things, he felt that LES had a primary mission to acquire land and establish facilities for human cryogenic storage. He had been doggedly pursuing this goal already, as we have seen. With efforts now redoubled, and some financial assistance from an unnamed source, farmland in Maryland was acquired, and he started to build a laboratory. Progress was made over the next several months, but the effort forced Cooper to neglect the more mundane chores in his organization such as answering correspondence and getting out the newsletter, and he became marginalized in the movement.

Meanwhile there was a conference in March 1968, organized by the Cryonics Society of New York. It was the first gathering of its type outside the sponsorship of LES and was attended by many in the movement and outside it as well. It is duly noted in the LES newsletter though Cooper, hard at work and preoccupied

with the farm site, didn't attend or even answer correspondence.[16] Instead he was also meanwhile preparing to resurrect the conference he had been driven earlier to cancel.[17]

The "fifth annual" LES conference was finally held in June 1968, at the Willard Hotel in Washington, D.C. Major players such as Ettinger did not attend, yet for the moment it looked as if matters might improve for LES, and the movement as a whole might benefit greatly. For with the multi-acre farmland and the start there on laboratory facilities devoted to cryonics 100 percent, LES had something no one else had, something sorely needed. Cryonics patients with limited funding could be expected to accumulate, now that freezings had begun and there was one such case already (Ms. Sweet). So far there was little in the way of a place to put them, and also scant facilities for much-needed research.

The report on the conference in the June-July 1968 *FWR* begins on an upbeat note despite the small attendance:[18]

> "A very small 'fifth annual' LES conference began at the Willard Hotel near downtown Washington on [Saturday, June 8, 1968,] the morning after Robert Kennedy's body was taken to Arlington Cemetery. Though only 24 persons attended there was little noticeable gloom and the participants began an informal but spirited attack on the freezing and life extending problems of the present and future."

The report continues with highlights of the conference, before flashing back to the beginning:

> "Ev Cooper opened the meeting with a survey of the present situation and problems. One of the problems is to find a volunteer executive director or executive secretary to handle correspondence, office work and allied aid to the growth of LES. It was decided in discussions later to advertise both inside and outside of LES until we found a suitable person. Anyone knowing of such a person, please write?"

The main presentations were interesting, and historically informative about LES at this stage:

> "The highlight of the conference was a paper given by Ted Brown[, "]The Mechanism of Freezing Damage in Cells.["] A careful evaluation of the various theories was presented. A practical result of the paper and discussion afterwards was a suggested change in LES perfusion and freezing instructions. It is believed that DMSO should be introduced in a cold solution after the body has been cooled to 10°C. If possible the increasing concentration of DMSO should not exceed 20% of the balanced physiological saline. Ted Brown is a student of biophysics at The Graduate School of Johns Hopkins University. He has run a number of cryobiological experiments and is an LES coordinator for Baltimore.
>
> "E. Wesley Walton, LES Corresponding Secretary, presented a paper[, "]Aspects of Identity and Death.["] His prime contention was that the identity of a person is congruent with the person's entire body including the brain. Thus the person's identity will be carried forward into the future by freezing, assuming the reanimation reestablishes the person's original body and brain. In the discussion following Walton's presentation there was considerable difference of opinion on 'copies.' Supposing it is possible to freeze a person this year, is an identical copy of that person (produced in the more distant future) the same as the original person? Some thought that possible perhaps and as good as the original person. Those more demanding felt an exact copy could never be made, or if it were and the person knew he was a copy, then he would never be the same.
>
> "Judie Walton read a short work that Marie Phelps-Sweet had written before she died and was frozen. It was a plea for people to concern themselves with what might be scientifically possible for extending life such as cryogenic preservation.
>
> "In less formal discussion, among the many comments and suggestions by others, Paul Segall, a graduate student of biology at NYU, gave an almost impassioned account of possible aging control through tryptophan experiments. Previous researchers have found that tryptophan restricted diets seemed to halt aging or maturation. Paul plans if possible to do some tryptophan experiments of his own. His hypothesis is that aging is the sequential unfolding of the genetic instructions and tryptophan or other substances should be able to halt this genetic unfolding at a desired time and thus halt aging, or more accurately senescence."

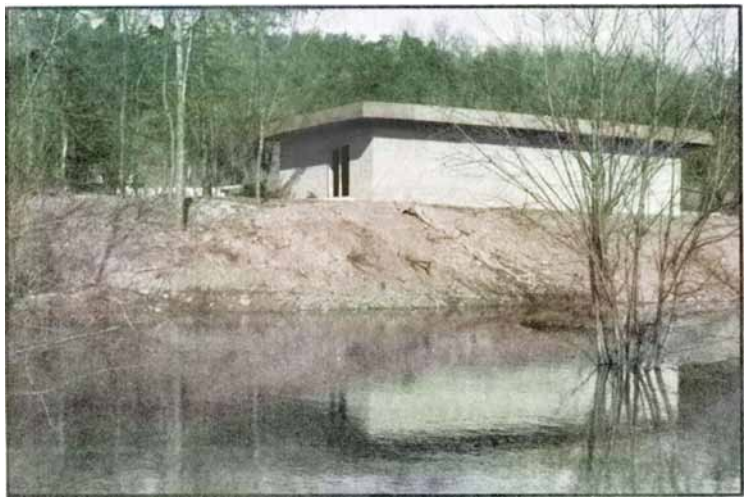
Next day there was a tour of the new facility under construction:

> "Sunday, those interested and able to stay, shared transportation and drove about 75 miles into upper Maryland where the new LES building is located. There was informal picnicking, viewing of the incomplete building and the approximately 19 acres of land which includes a house and buildings of a very old farm. Except for five or seven acres of pasture the land is fairly heavily overgrown or wooded with a large stream perhaps 30 to 75 yards across, depending on where it is measured, bordering one side of the property. Almost any type of wild life indigenous to the general area can be found on the property. This brings up several other points of recommendation discussed at one or the other of the days of the conference. The importance of research was stressed quite heavily and found general accord with nearly all the participants. Thus a general decision was made to stress completion of the laboratory part of the LES building and begin carrying out cryobiological experiments as soon as possible. Also in line with the preservation of life and research was a continuing discussion of the possibility of cryogenically storing tissue, cellular, or/& egg specimens of all species in danger of extinction. The expectation is that with sufficient genetic material these endangered species could be reconstructed in the future provided they were cryogenically stored in the meantime. The cost of such storage is expected to be slight. It might aid in the extension of life

of other species as well as extend the richness of life for our own species."

Though attendance at the conference was slight as noted, it and LES were not ignored by the rest of the cryonics community. One attendee was Karl Werner (the "man who named cryonics") who then was the vice president of CSNY. Werner's very positive and interesting, illustrated report on the property, printed in the rival newsletter *Cryonics Reports*, was in some ways more informative than that in *FWR*:[19]

> "The Life Extension Society (LES) recently completed construction on the basic shell of its proposed laboratory and storage facility. Located in northern Maryland, the 19-acre LES site is in the midst of steep forested slopes, a meadow, streams, a river, and abundant varieties of wildlife. A winding, mile-long dirt road leads one into total seclusion—the ideal location for concentrated research. Here people can be stored in the future to await their reanimation with total serenity.
>
> "It all began with requests for a storage facility from LES members and a generous loan donated specifically for purchase of land and building. Evan Cooper, President of LES, found the location after many months of searching. Construction then commenced on a small scale with Ev and various construction workers laboring day after day to complete the structure. Ev has spent many 12-hour days guiding the construction.
>
> "Although it is unfinished, what has been completed to date is a positive example of what is to come. The building, approximately 30' x 50' and 10' high, has a handsome overhanging flat roof. A ten-foot deep cellar space, approximately 25' x 25', will facilitate subsurface storage.
>
> "To complement the structure, Ev has enlarged a stream into a large pond with many islands. The building stands just above the pond and to one side of a meadow on which a large transport helicopter might land. The vast site contains ample space for additional buildings, making it an ideal site for Life Extension Society headquarters. Ev is hopeful that the building will be completed within the next year. Perhaps the sixth annual LES conference will be held in this building."



LES laboratory building and pond, early spring, 1969.

THE END OF LES[20]

Work continued on the property but there was much to do and progress was slow. Cooper made frequent appeals for help in the newsletter, particularly for an executive director to handle the affairs of LES at a managerial level, as well as for others for more mundane chores. All work must be volunteer, Cooper decreed, not out of principle but necessity:[21]

> "We make a plea for volunteers for dues would have to be raised too much, at our present size, to hire help. Many organizations have found that in their beginning stages they can rely on volunteers and they know the person volunteering is interested in the idea and not in it for the money. The problem is locating the person with sufficient time and the willingness to help.
>
> "There is not much that LES can offer except to take part in this very unusual, often exciting, futuristic endeavor. The old farmhouse at the LES 'center' is available. Anyone interested must be warned that it is extremely primitive, yet it does have an air conditioning unit, refrigerator, and electric stove. Wildlife, especially birds, abounds. The LES lab is a hundred yards or so away. The land … [has] streams, pond and other buildings some of which may be suitable for camping out (for those who are young and hardy)."

To get an idea of the financial picture: as of March 1967 non-discounted subscriptions to the newsletter were $2/year with order of 1,000 subscribers, so it appears that annual revenues may have totaled about $2,000, about $15,000 in 2017 dollars.[22] This, needless to say, would be a meager sum indeed to support a paid staff and handle other expenses, along with operating a cold-temperature laboratory and a cryonics facility in a multiacre, wilderness area. Cooper himself reportedly lived on a small, fixed income, apparently an inheritance. [23]

Time passed and the fortunes of LES dipped lower. The monthly newsletters started appearing late. In one of the last issues of *FWR* (dated April 1969 but actually appeared probably around September that year) the still irrepressible Cooper expresses gratitude for the volunteer help his organization had received:[24]

> "If we did not find an exec[utive] director as yet, we did gain some marvelous assistance from LES members and friends this summer. Thanks go to Loretto Leger who spent a good part of her vacation making the old LES farmhouse more livable. Harriet Wellisch used part of her vacation to come from New York and help with art work and the newsletter. Al Lefebvre has been indefatigable during his vacation

and several days or nights every week remodeling an LES building, helping with the lab, and with office work. Thanks go for various help at various times to John, Kathy, Bill, Danny, Marge and Ernie. If the membership was neglected during the summer (not unusual) the land and buildings were put in better condition thanks to all the above, and occasionally we had a bit of fun in the process. —Apologies to those we may have forgotten and to those more at a distance who have volunteered but we didn't find the time to correspond properly and put them to work on projects."

Ms. Wellisch wrote a touching account of her visit and impressions of the LES property which appeared in the next issue, under the title "Reflections on an Untamed Eden" (here very lightly edited):[25]

"In September [1969], I took a trip to Washington[, D.C.] (part vacation and part in answer to the call for volunteers). I advised Mr. Cooper that I could type, took a bit of shorthand, and was an artist—of sorts. Ev thought I might do a few sketches of the farmhouse, etc., take some photos and perhaps write a commentary for *FWR*. Literate I may be, but literary I am not—so bear with me as I attempt to relate my little venture to you.

"It was early in the morning. Loaded down with sketch pads, pencils, camera, *et al*, I folded myself into Ev's Volkswagen and off we went. It was a long trip from Hyattsville, Maryland where I was staying, to the farm. To say I was thrilled would be an understatement, even Ev's description of how primitive the area was failed to dim my excitement.

"A rough, narrow dirt road, surrounded by lush uncultivated greenery led to a small padlocked fence thrown across the road. Past this and we were on LES land. Our first stop was to pick up a feline of unknown parentage, who wandered onto the land one day and took possession of the property as only a cat can. Cat (well, what else would you call him?) gave me the once over and decided that I was acceptable—thus with Cat purring contentedly in my lap, we drove to the farmhouse.

"I fell in love with the house at first sight. It is an ancient two story building (with a wing recently added). Tilted at a crazy angle, it is a ramshackled, weathered, eccentric building with a rustic look that is charming—warped logs, falling timbers and all. Inside there is a stove, sink, refrigerator, some furnishings and dominating the front room, a huge pot-bellied stove. It might not be the most comforting place, but it is so delightful. The best thing of all—at least to a city gal like me—is the outhouse. The only thing missing is a crescent in the door. The house is surrounded by a tangled mass of trees and undergrowth with a liberal sprinkling of aromatic mint, which grows with a persistent abundance, giving the air a refreshing minty breath.

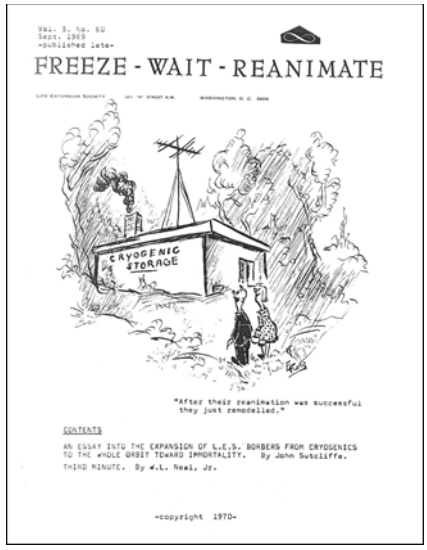
"I took a few photographs, made a few sketches and continued on to the lab, located about a hundred yards from the house. With Cat leading the way, we took a circuitous route, so that Ev could show me the pond. He explained that when properly dammed, it was filled with clean water. Now it was polluted with an edge of white mold (actually slime, but mold sounds so much nicer). Nevertheless, with the gnarled trees growing right down to the water's edge, it was a romantic picture.

"We walked around a no-path path. The forest was alive with the movement of creatures—some like the leopard frog, I was quick enough to spot before they went into the undergrowth—and yes Virginia, there is a pileated woodpecker!

"The lab is a deceptively simple building which stands out in a clearing overlooking the pond. One thing is apparent, both here and at the farmhouse, a tremendous amount of work has been done. Unhappily, because there are not enough volunteers the work is progressing slowly."

The last issue of the LES newsletter, dated September, 1969 but probably from early 1970 (copyrighted that year), has no indication that it would be the "last issue" or that LES was terminating. It also has no articles by Cooper but mostly consists of a long piece by John Sutcliffe who was a contributor in England: *"An Essay into the Expansion of L.E.S. Borders from Cryogenics to the Whole Orbit toward Immortality."* Rambling and studded with typos and grammatical glitches, it is nevertheless an upbeat, hopeful piece, reviewing the accomplishments of LES and offering advice for future priorities and achievements. A paragraph near the beginning conveys its determined if headstrong optimism:[26]

"The light of the LES beacon in its near decade of existence has been a glimpse of tomorrow, the LSD of mind expansion in the battle with a backward innocent world. A world that tries for absolution of its ignorance with blood and fire. It is an evolution that in its final analysis is a war of control of [man] himself for his future, like a halfblind man blowing his foot off in the half light of intelligence with a science and technology he barely cares to fully understand in implication, and [so he] kills in his fear those who offer humanity a hope for a little struggle or a light to the way ahead. There is however one true absolution that man has, that the authorit[ies] of his world try to den[y] him in their greater ignorance and pretense of intelligence: he can [benefit from] experience and learn to modulate future actions."


Vol. 5, No. 60
Sept. 1969
-published late-

FREEZE - WAIT - REANIMATE

LIFE EXTENSION SOCIETY 201 "N" STREET N.W. WASHINGTON, D. C. 2000

"After their reanimation was successful they just remodelled."

CONTENTS

The last issue of the LES newsletter was upbeat despite the terminal condition of the organization

In the end, all the effort was not enough, despite many who tried in various ways. Cooper never obtained the level of help he needed, there was never another LES conference, and by mid-1970 the organization had effectively ceased to function. Cooper gave up his activities in cryonics, and concentrated on another passion, sailing, which he avidly pursued. He was lost at sea in 1982.

AFTERTHOUGHTS

A few months after Cooper's disappearance Mike Darwin corresponded with his ex-wife Mildred Cooper. An excerpt from her response dated June 2, 1983 provides a further glimpse into Cooper's enigmatic character:[27]

> "Ev had a formidable store of knowledge and was extremely well-read and had the ability to remember and to analyze and synthesize ideas. He was the nearest thing to a genius that I have ever known—but yes, he was simple in many ways. He believed the best of the world although about government he was somewhat paranoic, I think. He had much physical courage but when it came to meeting someone head on in a practical matter he would shy away—for example, if someone was overcharging or when the humane society was objecting to the freezing of Bel he avoided them—maybe wise, but I thought he was fearful of a confrontation. [Bel was a black, female, lab-mix dog, cryogenically frozen, then exhibited at the January 1966 LES Conference. She sparked some controversy and someone said a pig would have been better, there weren't that many pig lovers in America.[28]]
>
> "I guess he was not obsessed with the idea of freezing. Perhaps if he had been he couldn't have left for the sea. But when I remember the terrible load he was carrying—practically building the Lab with his own hands—and having the walls cave in twice—with mounds of mud to remove each time and all the correspondence and newsletter work—it was much too much for one man. Plus the fact that our marriage was coming apart."

According to the Bible, "the love of money is the root of all evil." Mark Twain, the great American humorist, satirist, and a rather wise man, revamped it to: "the *lack* of money is the root of all evil."[29] The scriptural saying undoubtedly has some validity, but you have to credit Twain's version too. Much of the problems plaguing early cryonics organizations and wannabees can in fact be attributed to lack of money; LES is clearly a prime example. If Cooper had had more funding he could have had hired help rather than just volunteer help which had to earn its living through other means than LES work. True, Cooper could probably have persevered and kept his organization going despite the financial hardship, by cutting back on the monthly publication schedule of the newsletter, and otherwise restricting his operations, even if the land had had to be abandoned. (The organization could have served a useful purpose even without providing storage facilities or conducting cryobiological research, as much as Cooper wanted it otherwise.) Cooper certainly deserves credit for all that he did do, including publishing the first newsletter in the new cryonics movement and keeping it going as long as he did, with all the hardships that had to be endured.

Yet finally Cooper must have reached a limit to his commitment, as his former wife suggests. Sail-boating was not a new hobby at this point[30] and he decided to abandon his cryonics activities and concentrate more fully on this more manageable and more immediately rewarding pastime. In any case, the downfall of LES after its encouraging beginning is a sobering lesson. Cryonics is not an easy idea to implement. Some of us, at least, must be obsessed with it, and probably dedicate a good portion of our lives to it, regardless of hardship, if we expect it to succeed. ■

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5. FWR 2(10) (Mar. 1965) 1.
6. FWR 2(16) (Sep. 1965) 1-2.
7. RE1, 37.
8. FWR 4(43) (Feb. 1968) 7; MP2.
9. FWR 3(34) (Apr. 1967) 1-2.
10. FWR 3(34) (Apr. 1967) 2; GF1; GF2; PT.
11. FWR 3(37) (Jul.-Aug. 1967) 1-2.
12. MP8 (background).
13. FWR 2(15) (Aug. 1965) 1-2.
14. FWR 3(39) (Oct. 1967) 3.
15. CR 2(9) (Sep. 1967) 2, 7; FWR 3(35) (May 1967) 8; FWR 3(36) (Jun. 1967) 5, 6; FWR 3(37) (Jul.-Aug. 1967) 1, 6; FWR 3(38) (Sep. 1967) 10.
16. FWR 4(44) (Mar. 1968) 7; SK1.
17. FWR 3(40) (Nov. 1967) 9; FWR 3(41) (Dec. 1967) 2; etc.
18. FWR 4(47) (Jun.-Jul. 1968) 5-7.
19. CR 3(7) (Jul. 1968) 136; MP9 (background on Karl Werner).
20. MP3; MP4; MP5 (background).
21. FWR 4(52) (Dec. 1968) 2.
22. FWR 3(33) (Mar. 1967) 10; IC.
23. RE2.
24. FWR 5(56) (Apr. 1969) 6.
25. FWR 5(57) (May 1969) 2-3 (unedited version reprinted MP4).
26. FWR 5(60) (Sep. 1969) 2.
27. MC (reprinted MP5);
28. FWR 3(20) (Jan. 1966) 1-3 (background on freezing of Bel).
29. LM; MT.
30. SK2.

China's AI Awakening

While many in the West fret about AI eliminating jobs and worsening wealth and income inequality, China seems to believe it can bring about precisely the opposite outcomes. China is now embarking on an unprecedented effort to master artificial intelligence, and companies are investing heavily in nurturing and developing AI talent. If this country-wide effort succeeds—and there are many signs it will—China could emerge as a leading force in AI, improving the productivity of its industries and helping it become a leader in creating new businesses that leverage the technology. And if, as many believe, AI is the key to future growth, China's prowess in the field will help fortify its position as the dominant economic power in the world. China's AI push includes an extraordinary commitment from the government, which is planning to pour hundreds of billions of yuan (tens of billions of dollars) into the technology in coming years. Its plan calls for homegrown AI to match that developed in the West within three years, for "major breakthroughs" by 2025, and for Chinese AI to be the envy of the world by 2030.

LINTAO ZHANG/GETTY

Will Knight / MIT Technology Review
10 Oct. 2017
https://www.technologyreview.com/s/609038/chinas-ai-awakening/

Learning Improvement through Transcranial Stimulation

HRL Laboratories, LLC, researchers have determined how non-invasive transcranial direct current stimulation (tDCS) could increase performance of associative learning. The researchers found that when applied to the prefrontal cortex, tDCS affects a wide portion of the brain, causing changes in functional connectivity between different brain areas that increased learning speed in macaques. This new understanding of what tDCS does to the brain and its confirmation of tDCS as a learning aid comes in the context of controversy over previous reports that seemed to show no effect on neuron firing rates in cadaver heads, which was generally believed to be the mechanism of interest. tDCS-based behavioral results have also been questioned on statistical and methodological grounds, but those analyses have been criticized. The new HRL study confirmed behavioral changes that sped up learning with tDCS and found that learning improved regardless of neuron firing rates.

HRL Laboratories, LLC
12 Oct. 2017
http://www.hrl.com/news/2017/10/12/hrl-and-mcgill-scientists-confirm-transcranial-stimulation-effects-and-determine-a-key-mechanism

Scientists Identify New Molecular Pathway that Controls Aging

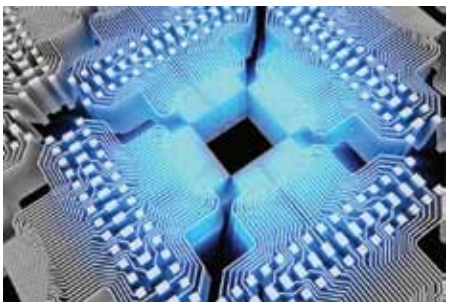
A team of researchers led by Case Western Reserve University School of Medicine has discovered a conserved molecular pathway that controls lifespan and healthspan in mice and nematode worms *Caenorhabditis elegans*, a common model organism in biological research. "We find that by artificially increasing or decreasing the levels of a family of proteins called Kruppel-like transcription factors (KLFs), we can actually get *C. elegans* to live for longer or shorter time periods," said study first author Dr. Nelson Hsieh, from Case Western Reserve University School of Medicine. "Since this same family of proteins also exists in mammals, what is really exciting is that our data suggests KLFs also have similar effects on aging in mammals, too." In the study, Dr. Hsieh and colleagues showed that *C. elegans* with excess levels of KLF proteins lived longer and healthier than normal worms. In addition, mice with excess levels of these proteins demonstrated a delay in blood vessel dysfunction associated with aging.

Sci-News.com
16 Oct 2017
http://www.sci-news.com/biology/molecular-pathway-aging-05324.html

Google's Quantum Computing Plans Threatened by IBM Curveball

Just when it was looking like the underdog, classical computing is striking back. IBM has come up with a way to simulate quantum computers that have 56 quantum bits, or qubits, on a non-quantum supercomputer—a task previously thought to be impossible. The feat moves the goalposts in the fight for quantum supremacy, the effort to outstrip classical computers using quantum ones. It used to be widely accepted that a classical computer cannot simulate more than 49 qubits because of memory limitations. The memory required for simulations increases exponentially with each additional qubit. The closest anyone had come to putting the 49-qubit limit to a test was a 45-qubit simulation at the Swiss Federal Institute of Technology in Zurich, which needed 500 terabytes of memory. IBM's new simulation upends the assumption by simulating 56 qubits with only 4.5 terabytes. The simulation is based on a mathematical trick that allows a more compact numerical

representation of different arrangements of qubits, known as quantum states.



Alfred Pasieka/Science Photo Library

Mark Kim / New Scientist
20 Oct. 2017
https://www.newscientist.com/article/2151032-googles-quantum-computing-plans-threatened-by-ibm-curveball/

Researchers Demonstrate 'Mind-Reading' Brain-Decoding Tech

Researchers have demonstrated how to decode what the human brain is seeing by using artificial intelligence to interpret fMRI scans from people watching videos, representing a sort of mind-reading technology. The advance could aid efforts to improve artificial intelligence and lead to new insights into brain function. Critical to the research is a type of algorithm called a convolutional neural network, which has been instrumental in enabling computers and smartphones to recognize faces and objects. "That type of network has made an enormous impact in the field of computer vision in recent years," said assistant professor Zhongming Liu. "Our technique uses the neural network to understand what you are seeing." Convolutional neural networks, a form of "deep-learning" algorithm, have been used to study how the brain processes static images and other visual stimuli. However, the new findings represent the first time the algorithm has been used to see how the brain processes movies.

Purdue University News
23 Oct. 2017
https://www.purdue.edu/newsroom/releases/2017/Q4/researchers-demonstrate-mind-reading-brain-decoding-tech-----.html

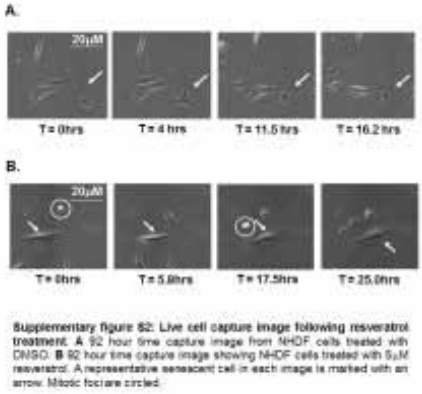
Scientists Decipher Mechanisms Underlying the Biology of Aging

A team of scientists at the University of California San Diego has helped decipher the dynamics that control how our cells age, with implications for extending human longevity. As described in a study published in PNAS, a group led by biologist Nan Hao employed a combination of technologies in engineering, computer science and biology to analyze molecular processes that influence aging. As cells age, damage in their DNA accumulates over time, leading to decay in normal functioning and eventually to death. A natural biochemical process known as "chromatin silencing" helps protect DNA from damage. Among the molecules that promote silencing is a family of proteins known as sirtuins. Yet at the same time, scientists have found that excessive silencing could derail normal cell physiology. So is chromatin silencing or not silencing the answer to delay aging? The answer derived from the new study: Both. "When cells grow old, they lose their ability to maintain this periodic switching, resulting in aged phenotypes and eventually death," said Hao. "The implication here is that if we can somehow help cells to reinforce switching, especially as they age, we can slow their aging…"

UC San Diego News Center
2 Nov. 2017
http://ucsdnews.ucsd.edu/feature/scientists-decipher-mechanisms-underlying-the-biology-of-aging

Old Human Cells Rejuvenated in Breakthrough Discovery on Aging

A new way to rejuvenate old cells in the laboratory, making them not only look younger, but start to behave more like young cells, has been discovered by researchers at the Universities of Exeter and Brighton. A team led Professor Lorna Harries, Professor of Molecular Genetics at the University of Exeter, has discovered a new way to rejuvenate inactive senescent cells. Within hours of treatment the older cells started to divide, and had longer telomeres—the "caps" on the chromosomes which shorten as we age. This discovery, funded by the Dunhill Medical Trust, builds on earlier findings from the Exeter group that showed that a class of genes called splicing factors are progressively switched off as we age. The University of Exeter research team, working with Professor Richard Faragher and Dr Elizabeth Ostler from the University of Brighton, found that splicing factors can be switched back on with chemicals, making senescent cells not only look physically younger, but start to behave more like young cells and start dividing.



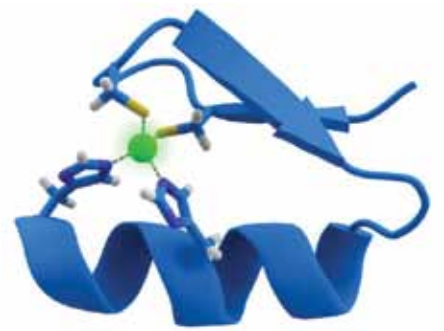
Rejuvenating old cells

University of Exeter
7 Nov. 2017
https://www.exeter.ac.uk/news/featurednews/title_620529_en.html

Man Receives First In Vivo Gene-Editing Therapy

In a first, a man has received a therapy aimed at editing the genes inside his body. The *Associated Press* reports that 44-year-old Brian Madeux, who has a genetic condition called Hunter syndrome, was treated with zinc finger nucleases (ZFNs) targeting a deficient gene in his liver on Monday (November 13) at a hospital in Oakland, California. "This is the first time someone could have a new gene put into their liver," Sangamo President and CEO

Sandy Macrae told *The Scientist* in May. "It's a privilege and a responsibility to do" these trials. "It's kind of humbling," Madeux tells the *Associated Press* about being the first to receive such an in vivo gene-editing treatment. "I'm willing to take that risk. Hopefully it will help me and other people." Hunter syndrome is a rare condition in which people lack an enzyme that breaks down complex polysaccharides. To correct it, ZFNs are directed to cut the gene for albumin in liver cells, where the functional copy of the enzyme's gene is then incorporated. The therapy was developed by California-based Sangamo Therapeutics.



Zinc finger motif
WIKIMEDIA, THOMAS SPLETTSTOESSER

Kerry Grens / *The Scientist*
15 Nov. 2017
https://www.the-scientist.com/?articles.view/articleNo/50957/title/Man-Receives-First-In-Vivo-Gene-Editing-Therapy/

Optogenetic Therapies Move Closer to Clinical Use

Early in 2016, a woman went to a clinic in Dallas to have a genetically modified adeno-associated virus injected into her eye. The woman was blind due to the degenerative disease retinitis pigmentosa, and the virus carried the gene for a light-responsive algae protein called channelrhodopsin. The goal was to induce her retinal ganglion cells—normally only downstream of cells that detect visual input—to make channelrhodopsin and become light-sensitive, giving her a rudimentary visual sense. That patient is thought to be the first in the world to have received a therapy based on optogenetics, the principle of using genetic modifications and light stimuli to precisely manipulate cells' behavior. The technique enables researchers to turn the activity of certain genes in specific cells on or off at the flick of a switch, and has been a boon to biology research. Its fine-tunability also makes it an attractive tool for those searching for more-effective treatments for blindness and other conditions.

ISTOCK, COSMIN4000

Shawna Williams / *The Scientist*
16 Nov. 2017
https://www.the-scientist.com/?articles.view/articleNo/50980/title/Optogenetic-Therapies-Move-Closer-to-Clinical-Use/

Cell-Weighing Method Could Help Doctors Choose Cancer Drugs

Doctors have many drugs available to treat multiple myeloma, a type of blood cancer. However, there is no way to predict, by genetic markers or other means, how a patient will respond to a particular drug. This can lead to months of treatment with a drug that isn't working. Researchers at MIT have now shown that they can use a new type of measurement to predict how drugs will affect cancer cells taken from multiple-myeloma patients. Furthermore, they showed that their predictions correlated with how those patients actually fared when treated with those drugs. This type of testing could help doctors predict drug responses based on measurements of cancer cell growth rates after drug exposure, says Scott Manalis, senior author of the study. "For infectious diseases, antibiotic susceptibility testing based on cell proliferation has been extremely effective for many decades," Manalis says. "Unlike bacteria, analogous tests for tumor cells have been challenging, in part because the cells don't always proliferate upon removal from the patient. The measurement we developed doesn't require proliferation."

Anne Trafton / MIT News Office
20 Nov. 2017
http://news.mit.edu/2017/cell-weighing-method-could-help-doctors-choose-cancer-drugs-1120

CRISPR Tools Grow in Sophistication

CRISPR, a tool advancing the field of functional genomics, changed the game with knockouts instead of knockdown, and facilitated more robust phenotyping mapping. As the technology continues to mature, tool suppliers are pulling their weight and offering variations of new guide RNAs (gRNAs) and libraries. Many of these new tools were discussed at Global Technology Community's 7th Genomics and Big Data Summit in Coronado, CA, in September 2017 and at the CRISPR & Precision Genome Editing conference in Berlin in November 2017. Detecting gene-editing outcomes is of paramount importance. Next-generation sequencing (NGS) is one method; NGS provides all the information needed to know what is happening at a gene locus. But preparation of libraries—as well as genome analysis—take time and expertise. Another approach, droplet digital PCR (ddPCR), provides very sensitive and precise quantitation of homology-directed repair (HDR), point mutagenesis, and nonhomologous end-joining (NHEJ)—without the need for markers or artificial reporters.

Mary Ann Labant / Genetic Engineering & Biotechnology News
15 Nov. 2017
https://www.genengnews.com/gen-articles/crispr-tools-grow-in-sophistication/6200

Innovative Microscope Poised to Propel Optogenetics Studies

A newly developed microscope is providing scientists with a greatly enhanced tool to study how neurological disorders such

as epilepsy and Alzheimer's disease affect neuron communication. The microscope is optimized to perform studies using optogenetic techniques, a relatively new technology that uses light to control and image neurons genetically modified with light-sensitive proteins. "Our new microscope can be used to explore the effects of different genetic mutations on neuronal function," said Adam Cohen from Harvard University, USA, and the leader of the research team that developed the microscope. "One day it could be used to test the effects of candidate drugs on neurons derived from people with nervous system disorders to try to identify medicines to treat diseases that do not have adequate treatments right now." The new microscope, called Firefly, can image a 6-millimeter-diameter area, more than one hundred times larger than the field of view of most microscopes used for optogenetics.

The new Firefly microscope is optimized to perform optogenetic studies examining many neurons at once. Each bright spot here represents a neuron from a genetically modified mouse. Image Credit: Vaibhav Joshi, Harvard University.

The Optical Society
29 Nov. 2017
http://www.osa.org/en-us/about_osa/newsroom/news_releases/2017/innovative_microscope_poised_to_propel_optogenetic/

New Software Can Verify Someone's Identity by Their DNA in Minutes

In the science-fiction movie Gattaca, visitors only clear security if a blood test and readout of their genetic profile matches the sample on file. Now, cheap DNA sequencers and custom software could make real-time DNA-authentication a reality. Researchers at Columbia University and the New York Genome Center have developed a method to quickly and accurately identify people and cell lines from their DNA. The technology could have multiple applications, from identifying victims in a mass disaster to analyzing crime scenes. But its most immediate use could be to flag mislabeled or contaminated cell lines in cancer experiments, a major reason that studies are later invalidated. The discovery is described in the latest issue of the journal *eLife*. "Our method opens up new ways to use off-the-shelf technology to benefit society," said the study's senior author Yaniv Erlich. "We're especially excited about the potential to improve cell-authentication in cancer research and potentially speed up the discovery of new treatments."

Kim Martineau / Columbia News
29 Nov. 2017
http://science.fas.columbia.edu/news/new-software-can-verify-someones-identity-by-their-dna-in-minutes/

Discovery Puts the Brakes on HIV's Ability to Infect

Viewed with a microscope, the virus faintly resembles a pineapple—the universal symbol of welcome. But HIV, the virus that causes AIDS, is anything but that. It has claimed the lives of more than 35 million people so far. In a study led by the University of Delaware and the University of Pittsburgh School of Medicine, researchers discovered a "brake" that interferes with HIV's development into an infectious agent. This mechanism prevents the capsid—the protein shell covering the virus—from forming. The finding, which was published in *Nature Communications,* was made by an interdisciplinary research team from UD, the University of Pittsburgh School of Medicine, University of Illinois, National Cancer Institute, DFH Pharma and Vanderbilt University Medical Center. The results are based on seven years of excruciatingly detailed studies of the structure and dynamics of HIV early and late in its life cycle. The movements of the virus molecules were measured experimentally and simulated in quadrillionths of a second.

University of Delaware / Eurekalert!
30 Nov. 2017
https://www.eurekalert.org/pub_releases/2017-11/uod-dpt113017.php

Interrupted Reprogramming to Convert Adult Cells into Progenitor-Like Cells

A modified version of induced pluripotent stem (iPS) cell methodology, called interrupted reprogramming, allows for a highly controlled, potentially safer, and more cost-effective strategy for generating progenitor-like cells from adult cells. As demonstrated November 30 in the journal *Stem Cell Reports*, researchers in Canada converted adult mouse respiratory tract cells called Club cells into large, pure populations of induced progenitor-like (iPL) cells, which retained a residual memory of their parental cell lineage and therefore specifically generated mature Club cells. Moreover, these cells showed potential as a cell replacement therapy in mice with cystic fibrosis. "A major block in the critical path of regenerative medicine is the lack of suitable cells to restore function or repair damage," says co-senior author Tom Waddell, a thoracic surgeon at the University of Toronto. "Our approach starts with purifying the cell type we want and then manipulating it to give those cell types characteristics of progenitor cells, which can grow rapidly but produce only a few cell types. …"

Cell Press / Science Daily
30 Nov. 2017
https://www.sciencedaily.com/releases/2017/11/171130122856.htm

Best-Yet Quantum Simulator with 53 Qubits Could Really Be Useful

We're two qubits closer to useful quantum computers. That might not sound like

much, but in the quantum computing arms race, several groups are edging past one another as they aim to eventually make a universal quantum computer. A group of researchers at the Joint Quantum Institute has created a quantum simulator using 53 quantum bits, and with it have done scientific simulations that don't seem possible with classical computers. The design for this simulator could lead to a true quantum computer one day. Most quantum simulators are built to run one specific program, but the team thinks it should be possible to tweak their device to run multiple programs, rather than having to build a separate simulator for each program. "This is real quantum hardware. This can be turned into a quantum computer without much changing," says Christopher Monroe at the University of Maryland, whose group built the 53-qubit simulator out of a chain of charged atoms trapped in electric fields.

Mark Kim / *New Scientist*
29 Nov. 2017
https://www.newscientist.com/article/2155132-best-yet-quantum-simulator-with-53-qubits-could-really-be-useful/

Fighting Myocardial Infarction with Nanoparticle Tandems

How can damaged cardiac tissue following a heart attack best be treated with replacement muscle cells? A research team under supervision of the University of Bonn is now presenting an innovative method on mice: Muscle replacement cells, which are to take over the function of the damaged tissue, are loaded with magnetic nanoparticles. These nanoparticle-loaded cells are then injected into the damaged heart muscle and held in place by a magnet, causing the cells to engraft better onto the existing tissue. Using the animal model, the scientists show that this leads to a significant improvement in heart function. With an interdisciplinary team, Prof. Dr. Wilhelm Röll tested the innovative approach on how to ensure that the injected replacement cells remain in the desired location and engraft onto the heart tissue. The experiments were performed on mice that had previously suffered a heart attack. The journal *Biomaterials* presents the results in advance online; the print version will be published in the near future.

ScienceDaily / University of Bonn
1 Dec. 2017
https://www.sciencedaily.com/releases/2017/12/171201122935.htm

A Roadmap to Revival

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

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

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

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

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

Ralph C. Merkle, "**The Molecular Repair of the Brain**," *Cryonics* 15(1) (January 1994):16-31 (Part I) & *Cryonics* 15(2) (April 1994):20-32 (Part II).

Ralph C. Merkle, "**Cryonics, Cryptography, and Maximum Likelihood Estimation**," First Extropy Institute Conference, Sunnyvale CA, 1994, updated version at http://www.merkle.com/cryo/cryptoCryo.html.

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

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

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

Robert A. Freitas Jr., "**The Alzheimer Protocols: A Nanorobotic Cure for Alzheimer's Disease and Related Neurodegenerative Conditions**," *IMM Report* No. 48, June 2016.

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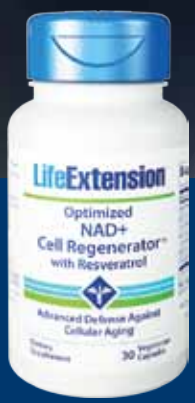

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MEETINGS

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.

PHOENIX: 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 Bonnie Magee at bonnie@alcor.org.

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

CALIFORNIA

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

SAN FRANCISCO BAY: Alcor Northern California Meetings are held quarterly in January, April, July, and October. A CryoFeast is held once a year. For information on Northern California meetings, call Mark Galeck at (650) 772-1251 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.

NEVADA

LAS VEGAS: A new group for the Las Vegas areas has been started for those interested. Contact Gilda Cabral at gcabral@korns.com or Mike Korns at mkorns@korns.com for details on upcoming meetings.

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.

NEW YORK CITY

Alcor members in the NYC area can contact Javier El-Hage at javier.elhage@gmail.com for information about local meetings which are held once a month at a midtown location.

PACIFIC NORTHWEST

Alcor Pacific Northwest organizes meetings for Alcor members in the Pacific Northwest. Meetings are usually held in the Portland area but other locations are possible, too. The contact person for the meetings is Aschwin de Wolf: aschwin@alcor.org. See also: https://www.facebook.com/alcor.pnw/

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.

BRITISH COLUMBIA (CANADA): CryoBC, a special interest group within the nonprofit Lifespan Society of BC (http://www.lifespanbc.ca/) holds meetings for cryonicists in the Vancouver area. To be notified of meetings join the CryoBC mailing list: https://groups.yahoo.com/neo/groups/cryobc/info.

TEXAS

DALLAS/NORTH TEXAS: Please join us at www.meetup.com/North-Texas-Cryonauts/ or contact David Wallace Croft at (214) 636-3790.

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

JAPAN

Cryonics meetings are held monthly in Tokyo. Send queries to grand88@yahoo.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.

UNITED KINGDOM

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

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

What is Cryonics?

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

How do I find out more?

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

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

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

How do I enroll?

Signing up for cryopreservation is easy!

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

Not ready to make full arrangements for cryopreservation? Then ***become an Associate Member*** for $5/month (or $15/quarter or $60 annually). Associate Members will receive:

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

To become an Associate Member send a check or money order ($5/month or $15/quarter or $60 annually) to Alcor Life Extension Foundation, 7895 E. Acoma Dr., Suite 110, Scottsdale, Arizona 85260, or call Marji Klima at (480) 905-1906 ext. 101 with your credit card information. You can also pay using PayPal (and get the Declaration of Intent to Be Cryopreserved) here: http://www.alcor.org/BecomeMember/associate.html

ALCOR
LIFE EXTENSION FOUNDATION
The World's Leader in Cryonics
www.alcor.org

Call toll-free TODAY to start your application:

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