CRYONICS

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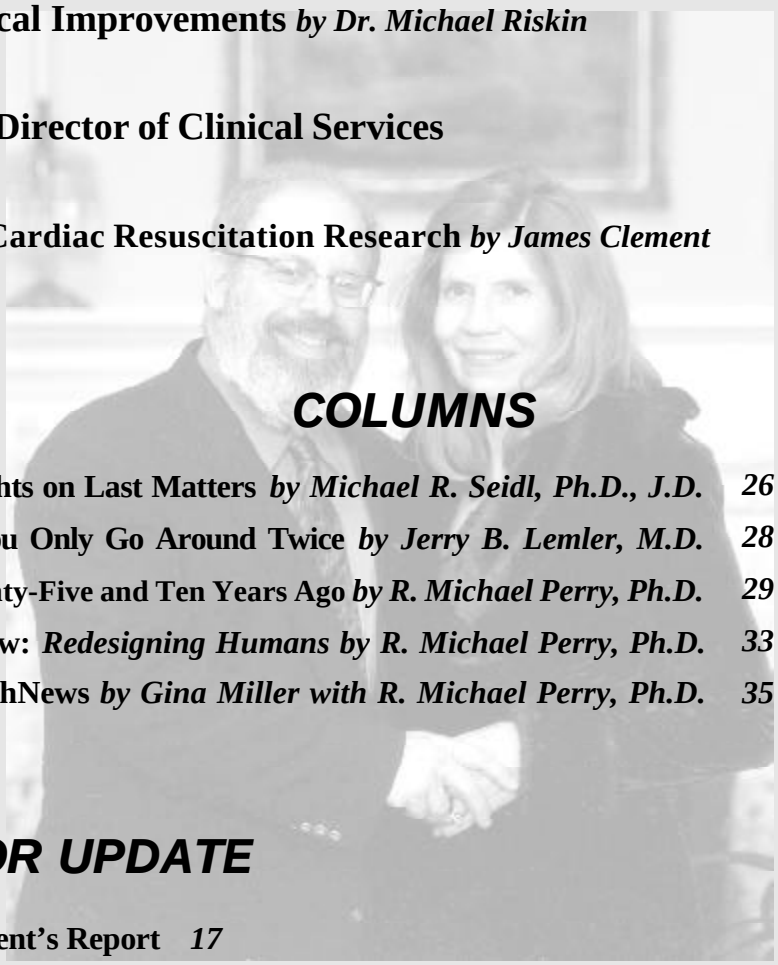

COLUMNS

ALCOR UPDATE

Alcor: The Origin of Our Name

In September of 1970 Fred and Linda Chamberlain (the founders of Alcor) were asked to come up with a name for a rescue team for the now-defunct Cryonics Society of California (CSC). In view of our logical destiny (the stars), they searched through star catalogs and books on astronomy, hoping to find a star that could serve as a cryonics acronym. *Alcor,* 80 Ursae Majoris, was just what they had been looking for. It not only had some acronymic "fit" for cryonics but was also symbolic for its historical use as a test for eyesight and was located in a very well known constellation.

Alcor, a companion star of Mizar in the Big Dipper's handle, is approximately 5th magnitude, barely within the threshold of human vision. Additionally, it is quite close to Mizar from an angular standpoint, and dimmer. Only with excellent vision can one tell there are two stars rather than just one. For thousands of years, people in the Middle East have used Alcor as a critical test of visual sensitivity and focus. If you could see Alcor, you had excellent vision indeed. In the early days of cryonics, few people could see the need for a rescue team or even for cryonics itself. Symbolically then, Alcor would be a "test" of vision as regards life extension.

As an acronym, Alcor is a close if not perfect fit with *Allopathic Cryogenic Rescue.* The Chamberlains could have forced a five-word string, but these three seemed sufficient. *Allopathy* (as opposed to *Homeopathy)* is a medical perspective wherein *any treatment that improves the prognosis is valid. Cryogenic* preservation is the most powerful method known to halt the rapid, entropic disorganization of people following clinical death. *Rescue* differentiates a cryonics approach from (yet to be developed) proven suspended animation. The acronymic interpretation of Alcor is therefore *use of a cryogenic procedure, though unproven, to preserve structure and potential viability, since failing to do so allows further disorganization to occur and reduces the probability (prognosis) of reversal and reanimation at any future time.*

Some of these thoughts were presented at a CSC dinner meeting in the autumn of 1970. A number of people who have subsequently become members of the Alcor Life Extension Foundation were present at that gathering. Over the months that followed, it became increasingly evident that the leadership of CSC would not support or even tolerate a rescue team concept. Less than one year after the 1970 dinner meeting, the Chamberlains severed all ties with CSC and incorporated the "Rocky Mountain Cryonics Society" in the State of Washington. The articles and bylaws of this organization specifically provided for "Alcor Members," who were to be the core of rescue team activity. Difficulties in securing nonprofit status in Washington then led to reincorporation in California, this time under the name "Alcor Society for Solid State Hypothermia." In the late 1970s, to further broaden the organization's objectives, the present name (Alcor Life Extension Foundation) was adopted.

Despite many transitions, the symbolism of the name remains. How long will it take for more people to see that "Ashes to ashes and dust to dust" is a meaningless destiny... to see that it is possible to reach for a distant tomorrow and perhaps to attain it... to *see* Alcor for what it really is: a vehicle with which to attempt that fantastic voyage!

—Reprinted from *Cryonics,* August 1984.

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Visit us on the Web at www.alcor.org

How to Join Alcor

Your research is finally complete. You browsed our web site (www.alcor.org), presented your questions to our Membership Administrator (jennifer@alcor.org), and toured our facility. Now you are ready to establish your membership with Alcor Foundation. Congratulations and welcome!

Upon receipt of your application for membership and application fee, Alcor will send you various membership documents (samples available upon request). After reviewing these documents, you will need to execute them in the presence of two signing witnesses. Perhaps a representative of your local bank can notarize the single document that also requires this official witness. After returning all of your documents to Alcor for approval, you can expect to receive one original copy of each for your personal records.

Most people use life insurance to fund their suspension, although cash prepayment is also acceptable. If you do not already have an insurance policy, Alcor recommends that you apply for one at your earliest convenience, as the underwriting process can last several weeks. Jennifer Chapman, Alcor Membership Administrator, can provide you with a list of insurance agents who have previously written policies for this purpose. These agents can assist you with satisfying Alcor's various funding requirements, such as naming Alcor as the owner and irrevocable beneficiary of your policy and ensuring that your benefit amount is sufficient.

With your membership documents completed and your funding approved by Alcor, you will be issued emergency identification tags engraved with your personal Suspension Number. This is your confirmation that Alcor will provide you with suspension services, should our emergency technicians ever receive a call on your behalf. Certainly, Alcor hopes that you will not need our services anytime soon, but as a member of Alcor you can feel confident that our organization will care for you and your future. Please call 480-905-1906 ext. 113 today to request your application.

TO ALL ALCOR MEMBERS AND THOSE IN THE SIGN-UP PROCESS

Please! Please! Please!

When you move, or change phone numbers (work number as well), change e-mail addresses, or undergo any medical procedure where general anesthesia is used, please inform us as far ahead of time as you can.

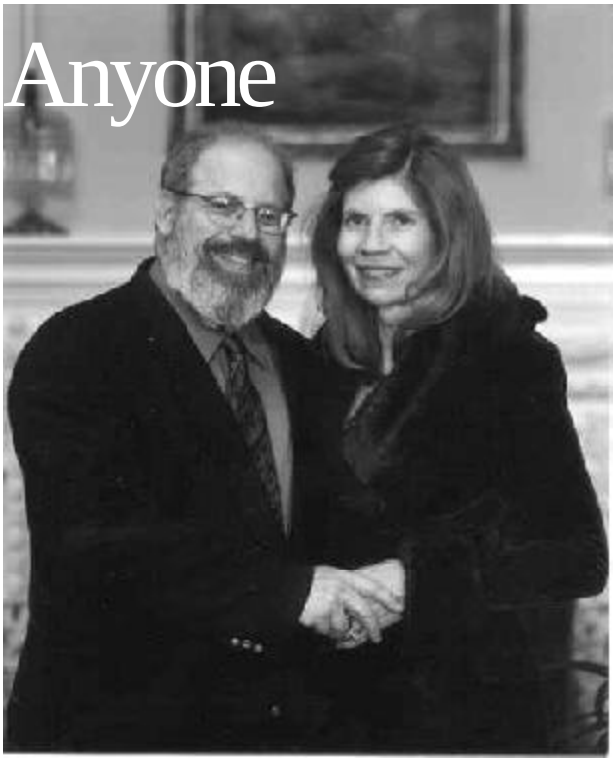
Too many times we have tried to contact our members and found out the contact information we have is no longer valid.

Other times we find out well after the fact that a member has undergone a medical procedure with life threatening potential.

Help us to serve you better!
Keep in touch!

No Longer Behind Anyone

by Dr. Jerry B. Lemler



Regrettably, as the misfirings of the neurons of my cerebellum are beginning to betray my balance, I am reminded of how my precipitous diagnosis of potentially terminal cancer may preclude me from answering the riddle of the Sphinx. In my early adulthood, such failures bothered me to a greater degree. Be it known (living in New York City at the time) I auditioned for several TV quiz shows (Jeopardy!; The Who, What, or Where Game; Three on a Match; The $10,000 Pyramid), but alas I never made it on the stage—not even long enough to bomb out and receive a home board game version of the real thing. Now, however, as I face the possible end of my life, it is ironic that the home version is no longer the consolation prize—home hospice care would become the winner's award. And, as the returning champion, after a brief interlude, I hope to defend the title when I come back! Look out Bob Barker. I may just yet, "Come on down!"

I do not intend to offer you a lengthy recitation of my accomplishments while serving as Alcor's CEO. Such a proclamation would be correctly judged as pretentious and self-serving, and those of you who have come to know me understand that while I never shy away from the cameras and microphones, I am not into self-aggrandizement—only advancing the cause of cryonics and the Alcor Foundation. If this truly is my time, I can, however, exit while taking justifiable pride in knowing that I've set the table to elevate Alcor into the finest and most competent premier human cryopreservation organization in the history of the world.

Yet, much more remains to be accomplished. I take great solace in knowing that our current and projected cast of characters will carry out our mission(s) with both aplomb and diligence.

As an abreaction to recent Alcor administrations, my actions and decisions as your CEO have been assiduously monitored quite closely, even to the point of resuming monthly meetings of the Board of Directors. I have (for the most part graciously) accepted their well-intended interventions.

As I compose this article on the morning of April 15, 2003, my son, Lieutenant Russell and his wife (former fellow West Point cadet) Lieutenant Carlys Romano Lemler have arrived (thanks to the Red Cross) to visit with me. It is likely Russell and Carlys will accompany me to the M. D. Anderson Cancer Center in Houston, Texas, for whatever definitive treatments can be offered—thanks to my personal and Alcor's great benefactors, Future Electronics of Montreal, Province of Quebec, Canada. I am ever so grateful to the Future team (Rodney Miller, Martin Gordon, Gina Galardo, etc.) for allowing me this opportunity to give this disease a fighting chance toward remission.

My vision for Alcor (near-term is all I can legitimately project) is as follows: our technical competence has been vastly improved by my decision last September to offer the amazing Charles Platt the job of Director of Suspension Services. What Charles has (virtually single-handedly) accomplished in such a brief span of time has been nothing short of spectacular. Additionally, by Charles bringing on board our new Director of Clinical Services, decorated paramedic Larry Johnson, I was proudly able to promote Mr. Platt to the position of Chief Operating Officer of the foundation. These two outstanding gentlemen, of both ability and compassion will be directing not only my own suspension (whenever it should occur) but quite possibly yours as well. Their managerial efforts, coupled with our new roster of 13 Phoenix-area professional paramedics and a revitalized and recently trained ACT volunteer network located throughout the country, represents the highest quality cryosuspension service delivery system of any organization at any time in history. My unbridled thanks goes out to Charles for all he has done, is presently doing, and I trust will continue to do in the future.

The highly skilled lab specialist, Todd Huffman, has recently joined the Alcor staff, moving from the southern California rescue unit coordinators position (replaced by the most able Regina Pancake) to become our new Manager of Laboratory Services. So much of the future growth in the research and laboratory enhancement activities rests in the gifted hands and mind of this young man.

I'd like to thank the bright and affable Alcor ACT member Dave Hayes. Dave was responsible for setting up an appointment for Michael Riskin and myself to visit the administrative officials of Vitas Hospice (the largest such organization in Florida), where just yesterday I received a call from their Intake Coordinator informing me that Vitas will accept all terminally ill Florida Alcor members into their program, permitting our res-

cue teams and their suspension equipment to be placed at bedside—much akin to the arrangement I secured for us here in the greater Phoenix area a couple of years ago.

Although Jessica and James Sikes have recently departed work at the facility, I thank them for all of their efforts, both administratively and technically. They remain, I promise you, loyal Alcor supporters in every way.

Mathew Sullivan, our recently promoted Director of Suspension Readiness, is a tireless performer of his duties. Mathew, to the exclusion of virtually any and all personal pleasurable activities, lives and breathes to ensure Alcor is ready for the next cryosuspension. Mathew dropped out of Ohio University in his senior year to move to Arizona. Knowing no one out west and having no prospect of employment (at the foundation or otherwise), he spent countless hours volunteering his (unpaid) efforts at Alcor before eventually securing full-time employment at a local Home Depot, just because of his unmatchable dedication to the cause. Thank you, Mathew, for your incredible efforts.

Dr. Mike Perry, in addition to his duties of patient care, has become the discipline of cryonics' archivist. Mike has not only assisted me with any number of my *Cryonics* magazine articles in the last two plus years, he also has the uncanny ability to locate the most remote scientific papers known to mankind.

Jennifer Chapman (also of Tennessee) preceded me at Alcor by a few months. Her attention to detail in the Membership Department is legendary, and thanks to her diligence, I was able to proudly recommend her to become an Advisor to the Alcor Board of Directors.

I'd also like to recognize our Accounting Manager, Katherine Waters. In just the brief time she has been with the foundation, she has amassed an amazing amount of financial information necessary to keep our cash flow at reasonable levels

Joe Hovey is truly an amazing man. For decades he has watched over the day-to-day financial affairs of the foundation. He and I have spent many hours engaged in challenging intellectual pursuits, most of which, naturally, have concerned themselves with how to raise more capital for the organization. I am truly going to miss this repartee and look forward in the future to resuming such discourse.

I owe a great debt to Dr. K. Eric Drexler. Had I not (quite by accident) read his seminal work *Engines of Creation* back in February of 2000, I would have little hope for the future. Thank you, Eric!

The vivacious Lisa Lock has been a stalwart of an editor of our *Cryonics* magazine. Rarely, she and I have disagreed on style or substance, and in nearly every case, I (fortunately) have yielded to her greater expertise. A year or so ago, I had the pleasure of visiting Lisa and her husband, Board Member Michael Seidl, in their home in Wilmington, Delaware, for an Alcor get-together. It was great to not only see them, but to have been able to return to my former home of Wilmington, where our family lived for four years while I was completing my psychiatric residency training program. Also, serving as my editor on *Alcor Life Extension Foundation: An Introduction* (ALEFI), Lisa's acumen was nothing less than exemplary. Lisa, you're the greatest!

Regrettably, I never got to know Steve Van Sickle all that well. Steve has a brilliant scientific mind and has unsparingly lent his proficiency to us on any number of Alcor projects, and I trust he will continue to do so in the future.

I'd also like to thank our Public Relations Counsel, Bill Haworth, for guiding me through the media feeding frenzy of last year. This most effusive man exerted a calming and stabilizing influence on me when I most required it.

In the introductory book I authored (ALEFI), I chronicled the story of how I first encountered my now good friend and colleague, Dr. Robert Newport. This most articulate man has indeed become a good friend and confidant to me since that time.

None of what I'm writing in this article would have been possible without the financial support of Board Member Saul Kent. Saul took a chance on sponsoring me nearly three years ago, and he has maintained his commitment ever since.

One of the goals before I completed my so-called first life cycle was to visit all 50 United States. Unless I beat this cancer (which I'm still proposing to do), I came awfully close. When I last met with Board Member Carlos Mondragon of Portland back in March of this year at the facility, I mentioned this fact to him. (As a former president of Alcor himself, Carlos has been an invaluable source of advice to me, as has Steve Bridge). Carlos invited me to come to Oregon (the final destination) and together plan an Alcor event. I dearly hope to be able to make this journey, but in any case, I thank him for not only the invitation, but for being my friend and solid supporter.

I regret (also) I never got to know Board Member attorney Michael Seidl of Delaware more than I did. I not only relished our always productive conversations, but I am an avid reader and admirer of his *Cryonics* magazine column "First Thoughts on Last Matters," usually adjoining my own regular column, "You Only Go Around Twice." Michael is one heck of an Alcor supporter, superb writer, and even at a distance a valued personal and professional friend.

I can't count the many hours Hugh Hixon and I have spent time together engrossed in conversations on a multitude of common interests. It was through Hugh I became aware of the horrific flu epidemic of 1918 (first of several books he loaned me). Additionally, he was instrumental in the politics that led to my ascendancy to the CEO position back in September of 2001.

I would be remiss if I didn't mention my appreciation for the other current Jerry at the facility, Mr. Searcy. Jerry and I got "sick" a few months ago at about the same time, and I wish him a speedy recovery from his current ailments. Jerry has, in his volunteer capacity, never complained about doing the scut work—carrying boxes, stuffing envelopes—in effect whatever needed to be done, Jerry did it, sometimes with and sometimes without his well-known penchant for grumbling.

Dr. Kat Cotter has become a special friend of the Lemler family. This multi-talented woman has lent her support to so many Alcor-related efforts they are too numerous to chronicle within these pages. I only hope that in the future, she will resume her efforts, which in the past served us all with her skill and dignity.

Dr. Ralph Merkle was truly an inspiration to me, once I had made the decision to sign up with Alcor. His introductory address at our Asilomar Conference (barely 10 days after placing my bracelet on my wrist) gave me confidence this notion of ours might just work. Nothing I have heard from this brilliant and remarkable man since that time has diminished my hope or resolve. As I travel to the M.D. Anderson Cancer Center later today or tomorrow, I carry with me his paper, "The Molecular Repair of the Brain." Thank you so much, Ralph, for the inspiration you have given to me and to us all.

Dr. Michael Riskin, simply put, is the best friend I have ever had in my lifetime. He has spent countless hours with me on Alcor business and in discussions of plans for the foundation, often to the exclusion of his own family and business obligations. He and I were "fast adopters" of cryonics, as Charles Platt labels the few of us who learn about the concept and immediately embrace it.

Though we vehemently disagree on some important topics (he prefers The Ramones to my Neil Young, and he'll take Bach over the obviously more sophisticated Mahler), we do see eye to eye when it comes to wanting nothing more than to guarantee the Alcor cryopatients maximum security, and offer our current members optimal suspension capabilities. My proudest achievement is our jointly created soon to be implemented Universal Standby Program.

Michael, I'm going to Houston with the thought in mind that our work together is not yet finished. I am, with every fiber of my being, hoping to return to complete the many projects we have on the drawing board. Should, however, this not be possible, my challenge to you (which you have graciously already accepted) is stated below.

I met Paula Ann Hicks of Alcoa, Tennessee, on March 31, 1968, at the University of Tennessee, in Knoxville, and we fell in love later that fall. We were married at her home on August 29, 1970, and have been blessed with two loving and outstanding children, Jessica Diane (May 16, 1975) and Russell Paul (July 6, 1979). Each child has taken vows with two remarkable people, James Sikes and Carlys Romano, the latter of whom is expecting our first grandchild in September of this year.

Throughout our married life of more than 32 years, Paula has followed me through six states, a multitude of professional positions, and even signing up for cryonics.

No matter what deficiencies any of you ascribe to me in my performance as your CEO, it is universally accepted that I have become the primary, most effective public spokesperson for our organization. I am now without any reluctance, and with the able assistance of individuals such as Michael Riskin and Charles Platt, passing this baton on to my bride, Paula.

Little has been publicly disseminated about this remarkable woman, who has (by her own choice) elected, until recently, to accept a background role at alcor. Her tireless work as an algebra teacher allowed me to concentrate full-time on my medical school studies; in addition to maintaining a wonderful home for our family and raising our two children during my numerous work-related absences, she was a highly efficient office manager of our six high-volume medical clinics in Tennessee, generating more than $3 million annually in business, while overseeing 24 employees.

Concurrently, she single-handedly established the first-ever public library in the city of Harrogate, Tennessee; served on the Animal Control Board of Claiborne County (Tennessee); worked as a professional fashion model for the Rasnic Agency (of Knoxville); and was awarded the Christian Cooperative Ministries Outstanding Benefactor Award for two consecutive years.

But, there's more. Paula also initiated our clinic's annual high school scholarship award to local deserving seniors to pursue their education in health-care-related fields of study, and she established the Paula Hicks Lemler Endowment at her alma mater, the University of Tennessee, which to this day continues to allow selected outstanding College of Education students from underserved rural Tennessee counties the ability to pursue their own educational goals. In the midst of all these activities, Paula also studied for the rigorous Tennessee building contractors exam, passing on the first attempt, and obtaining her license.

Then, suddenly, one day in October 2000, her husband asked her to move away from her Tennessee home and join him in Arizona. Not one to ever endorse idleness, since her arrival in Scottsdale, besides her Alcor activities, Paula is both a volunteer docent at the Phoenix Desert Botanical Gardens and a volunteer aide at the Heard Museum. Somehow, in addition to her love of gardening around our xeroscape-house, she finds the time to belong to a mystery book club, reading (at minimum) two books a week. Lastly, she has just been elected to the Board of Directors of the Venturist Society.

Should the need arise, Paula is most able, willing, and eager to vault herself back into public life. Please, I beseech you, our Alcor family, to assist her in any way you can in this noble effort. If I am incapacitated in any way, her remarkable story will have a compelling impact on the majority of mainstream people—those, who have in the past been reluctant to join us because they couldn't identify with our super scientists or futuristic philosophers, etc. These people will listen to Paula's plight, just the way she tells it from the heart, and they will, I have no doubt, respond and take appropriate action to save themselves.

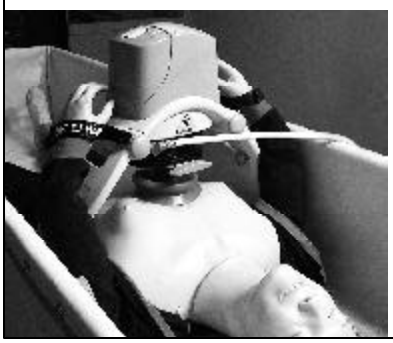
Sooner AND Later,
Jerry B. Lemler, M.D.

The photograph of Paula and Jerry Lemler on the cover of this issue was deliberately chosen with great care. It pictures the Lemlers on Thanksgiving Holiday, November 2000, at the Greenbrier Hotel in White Sulphur Springs, West Virginia, barely one month after the doctor accepted the offer to come to Arizona to begin work at the Alcor Foundation. Ironically enough, it would also be the couple's last vacation together, other than the five days they spent visiting their son and new daughter-in-law (both lieutenants stationed in the Army) in October 2002. While the Greenbrier trip was, in part, a welcome respite from his non-stop busy medical practice, it was also a working vacation of sorts. During the holiday weekend, Dr. Lemler, technically assisted by his daughter, Jessica, authored the entirety of chapter seven of our foundation's membership book, *Alcor Life Extension Foundation: An Introduction* (ALEFI), the details of the composition chronicled on page six of the monograph.

Allocating Our Resources

by Charles Platt
Director of Suspension Services, Alcor Life Extension Foundation

On March 1st, 2003, Alcor offered a six-day training course consisting of classes teaching every conceivable aspect of cryonics. The many topics included basic standby/transport procedures; case studies from which we can draw lessons about the future; a brief introduction to cryobiology and resuscitation medicine; role-playing in hospital environments; legal issues; mortuary procedures; and hands-on practice with equipment such as our new LUCAS cardiopulmonary support device and the ATP (Air Transportable Perfusion kit). In addition we offered a "standby nightmare quiz" to stimulate some of the thought processes and simulate some of the problems that may occur during field work.



One of the service enhancements that we made last year was to acquire a LUCAS cardiopulmonary support device direct from its Swedish manufacturer. This LUCAS was the first of its kind to be imported to the United States, where it has not been FDA-certified for use in conventional medicine but can be applied in cryonics cases. According to a paper published in the Journal of Resuscitation, *the suction cup on the LUCAS, impelled by its high-impulse gas-driven piston, has achieved unmatched cardiac output. The LUCAS may gradually replace the Thumper units that we have used to administer cardiopulmonary support for more than a decade.*

We were joined by 24 students, including at least six who had never participated in Alcor training before and four who journeyed all the way from England. The event was hosted at Creekside Lodge, a luxury motel near Mayer, Arizona, owned by former Alcor vice president David Pizer. The environment was ideal, and we hope to locate more Alcor events there in the future.

On the final day of training I invited everyone to suggest future objectives for Alcor. I'd like to share this list (plus some additional items) with readers of *Cryonics* magazine to give everyone an idea of the dilemma we face when we try to decide how to allocate our limited resources. Obviously we can't do everything. The question is, what should we do first? I have my own ideas about this, which I will discuss at the end of this article.

The list below is not prioritized. It is presented in arbitrary sequence, alphabetized by the first letter of the first word in each paragraph.

Desirable Objectives: A Probably Incomplete List

1. *Additional surgeons.* We're very happy with the two surgeons who are on call for us in Arizona, but we fear an emergency in which both of them might be unavailable. We would like to find a third backup surgeon whom we could call if the first two can't respond. Probably we need a retiree, since an active professional will have an existing case load that will limit his availability.

2. *ATP enhancements.* Our ATP requires diligent supervision by an experienced operator who will notice pressure fluctuations and adjust pump speed accordingly. We can imagine a feedback device that could do this automatically. Another enhancement for the ATP would be a source of compressed carbon dioxide to purge the tubing circuit before we prime it with washout solution. Since carbon dioxide is soluble, it would eliminate the problem of removing air bubbles. Unfortunately pressurized gas bottles are not a popular item in baggage on airlines, but we may be able to use spray cans of carbon dioxide that are sold by specialty photographic stores for cleaning lenses. This type of spray looks no different from a can of hair spray. However, we need to verify that the lens-cleaning carbon dioxide contains no additives and will work in conjunction with our ATP tubing.

3. *British capability upgrade.* Alcor lost some British members a couple of years ago as a result of strict policies regarding insurance. Those discouraging policies have been discontinued, and today we have a core group of very enthusiastic British members. Rebuilding our capability in Britain is an obvious impera-

tive that will require training, supplies, and possibly some financial help in setting up a facility.

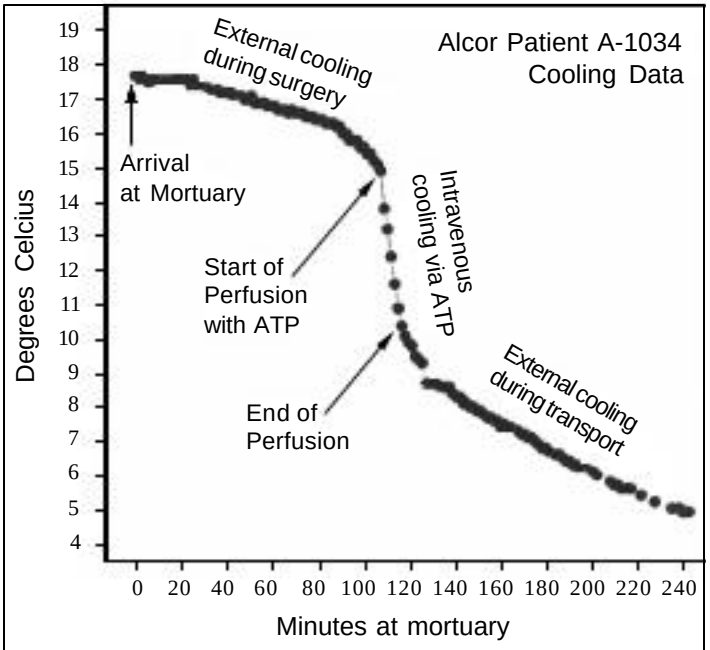
4. *Buddy support network.* If an Alcor member in a remote location experiences a health crisis, logistics will limit our ability to be there promptly. Other members in the same general location could provide interim emergency help if they are willing to do so, and if they know that their fellow Alcor member exists. Clearly Alcor could play a useful role, setting up an informal network of members who can help each other. The problem is that many of our members have requested confidentiality. We would need to contact each person individually to obtain consent.

5. *Cadaver practice.* While eight cases per year seems a substantial number for an organization that used to average only one or two, we could still benefit from more practice in standby work and operating-room procedures. Alcor can obtain cadavers for medical practice if we are willing to pay a substantial fee and divert our staff from other tasks. We have to decide whether this is sufficiently important to justify the time and money.

6. *Case history updates.* Alcor compiles a history of each patient who enters cryopreservation. DuaLogRs are used in the field to record patient temperature; LabView software records pressure, cryoprotectant concentration, temperature, and other parameters during cryoprotective perfusion; we usually make two videotapes (one from a fixed camera near the ceiling, and another from a handheld digital camcorder) in our operating room; we have a 5-megapixel digital camera to get high-resolution closeups; and a scribe makes a manual record of patient data, augmented with notes describing important events. This mass of disparate information must be assimilated and organized so that a comprehensive report of each case can be written. Since Alcor has failed to keep pace with this obligation as other needs have taken precedence, we have a backlog of raw data waiting for attention.

7. *Compounding medications.* Critical Care Research is a California laboratory with unique experience developing drugs that reduce ischemic injury after cardiac arrest. Alcor now has a licensing agreement to use these drugs, but some of them must be compounded under sterile conditions. We have the equipment to do this, but we lack staff who possess the necessary skill. We have made three unsuccessful attempts, so far, to obtain this help. We need a compounding pharmacist who is available to work at our lab for just one or two days, three or four times a year.

8. *Cooling upgrade.* Last year Hugh Hixon developed an effective system using perforated tubing and a helmet to distribute icewater over a patient in a portable ice bath. This system will replace the spray cooling device that can create a potential infection hazard when we deal with patients suffering diseases such as hepatitis C. We need to make multiple copies of Hugh's new cooling system for use in future cases. Also we need to obtain a sump pump that works directly from a 12-volt DC source, so that we can eliminate the inverter and heavyweight cabling that we are using currently when our 110-volt pump is running in a vehicle.



The dramatic effect of intravenous cooling via the Air Transportable Perfusion kit (ATP) is shown by this cooling curve from a case in December 2002, courtesy of Sandra Russell at Critical Care Research. Since each temperature drop of 10 degrees Celsius reduces the metabolic rate by about 50 percent, prompt application of the ATP is a high priority in any case where there will be a significant transport time. Our new STASIS vehicle, and a van which has been purchased for conversion in Southern California, will help to minimize delays between legal death and femoral washout.

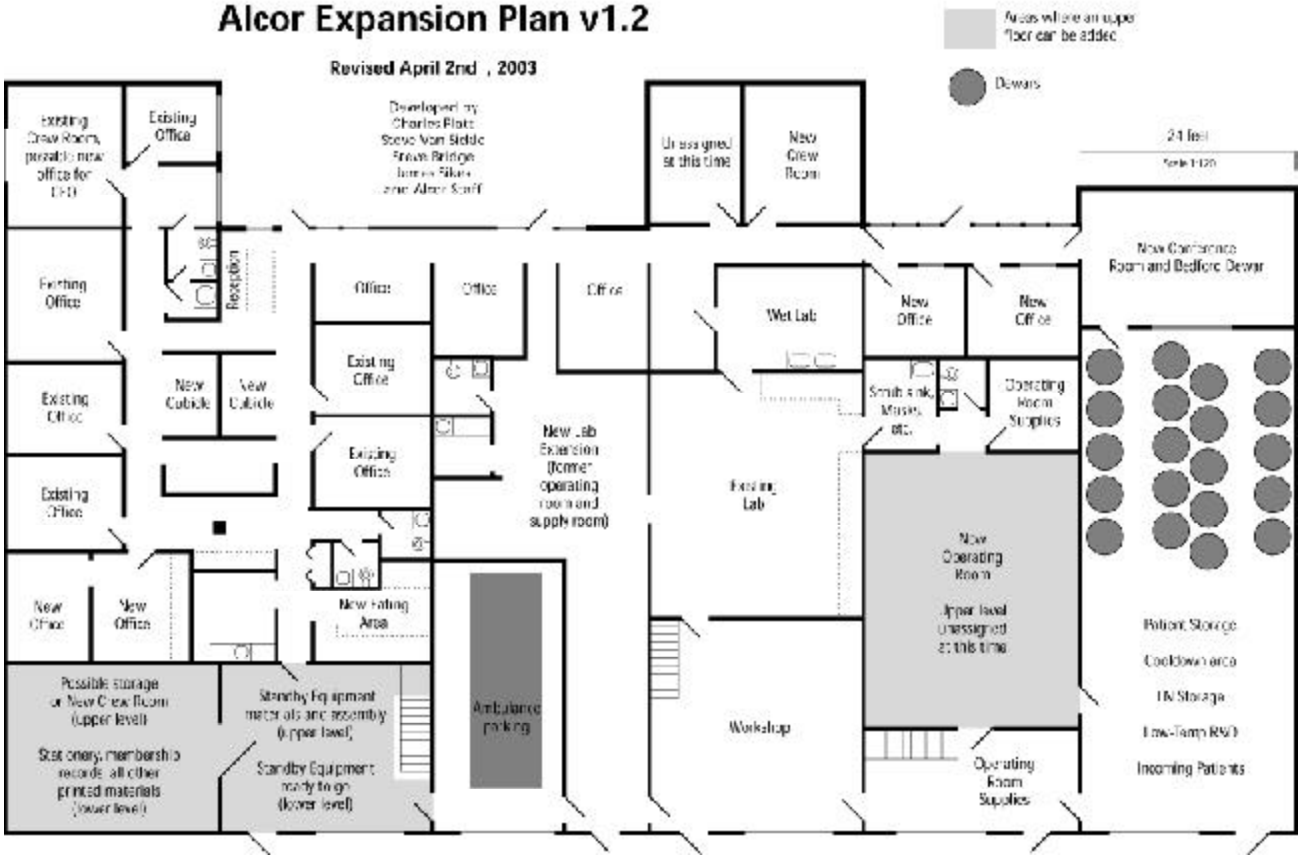
9. *Cost cutting.* As a nonprofit corporation operating under section 501(c)3 of the federal tax code, Alcor's finances are open to public scrutiny. Anyone who reviews our balance sheet will find that the money we receive from membership dues is inadequate to cover our expenditures. Traditionally Alcor has used gifts and bequests to offset our deficits, and currently we have more than enough cash on hand. Still, prudence suggests that we should cut costs so that we are less dependent on donations. Inevitably, cost-cutting is neither easy nor popular.

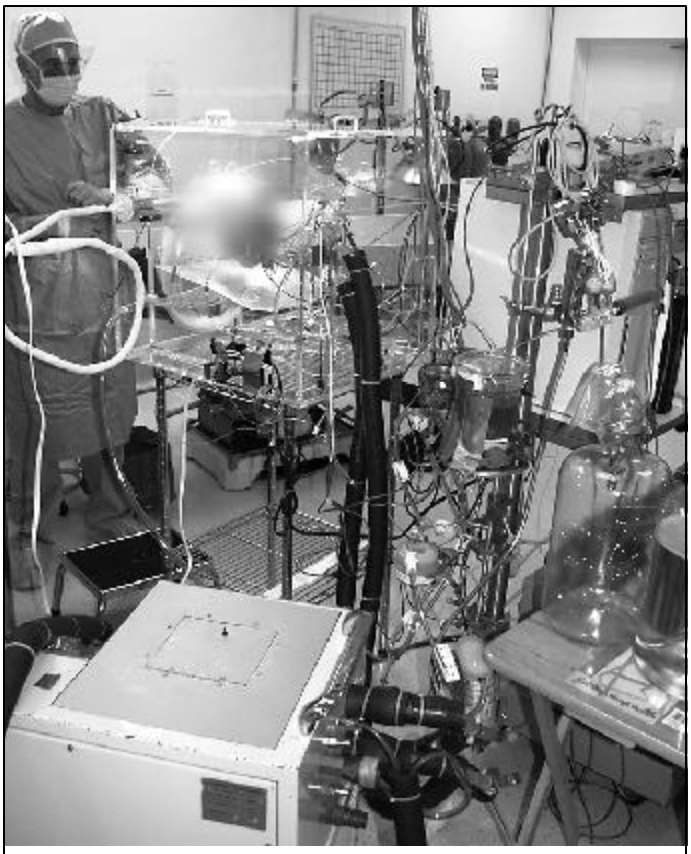
10. *Crisis training.* Some of our students at Creekside Lodge complained that we were too nice to them. Actual case work would have placed them in a stressful situation where everyone feels the pressure of time, mistakes may occur, and equipment can fail. We are contemplating additional training in which students will have to cope with random simulated disasters. Also we are considering the best way to teach operating-room procedures to students who have requested this.

11. *Database upgrade.* Alcor stores member documents in a set of massive, lockable, fireproof file cabinets. Only a small subset of the information in these documents has been copied into our computer database. Transcribing the rest would be a simple task (although time consuming), but first we have to resolve other issues about the way in which we store and manipulate data. Ideally, prospective members should be able to enter personal information via our web site, from where the information would transfer automatically into the database and into signup documents ready for signature. Also we should record and track every information request from potential members, to enable methodical follow-ups. Creating this system will require a variety of computer skills ranging from web site design to familiarity with Microsoft applications such as Access.

12. *Facility expansion.* Alcor is running out of space for patient storage and laboratory work. Our lab was never intended for mass production and refurbishment of med kits, ATPs, and other equipment that we use in each cryonics case. Now that we are contemplating an average of eight or nine cases per year, we need a production line to maintain our readiness, and we need a larger operating room that can handle two cryonics cases in quick succession. Naturally we must plan the facility expansion so that our capabilities will not be impaired during construction work.

Alcor's building in Scottsdale, Arizona, is divided into 11 units, each containing about 2,000 square feet. Currently Alcor occupies five of these units, while the remainder are rented out. Under our expansion plan, we'll be moving our patient Dewars into the sixth unit later this year, while floor area allocated for operating room and laboratory will be doubled.





Our current operating room has served us well but is overcrowded even for one case. In the future our new operating room should have sufficient space for two cases. The picture here shows tubing and reservoirs that are used for ramped perfusion with vitrification solution. In the foreground is a Blanketrol cooling unit that may be phased out in the near future. Behind it is a transparent-walled box known as the neuro enclosure, where a neuropatient (whose face has been blurred out) undergoes perfusion. Behind our surgeon is an operating table where procedures are conducted when a patient arrives at our facility. To the right is a computer running LabView data acquisition software.

13. *Fieldwork flow chart.* Several standby team members have suggested that Alcor should create a flow chart or logic diagram depicting the decisions that must be made in transport situations. While no two cases are alike, some considerations (such as health problems that can limit the treatment we apply postmortem) can be charted in advance.

14. *High-risk map.* In a perfect world we would have at least one employee constantly making phone calls and updating the health records of all our members so that we have advance warning if someone is likely to become a high-risk case. In reality we can attempt a more limited version of this task, in which we compile a map showing the locations of our most elderly members or those who have well-established health problems such as diabetes or heart disease.

15. *Hospital affiliation.* We have established good relations with a hospice in the greater Phoenix area, but we do not have a similar understanding with a hospital. This should be pursued so that in the future, if someone with a terminal condition wishes to relocate in our area, we are ready to suggest a cooperative institution.

16. *Ice bath redesign.* Many years ago, Alcor's first portable ice bath was built by David Pizer from PVC pipe and a plywood baseboard. Alan Sinclair in England has refined the concept to facilitate rapid error-free assembly, but it still has a home-made look that could undercut our desire to present a professional image to medical facilities. Fred Chamberlain and Hugh Hixon developed a lightweight "bag" design that is easier to transport, has been used in several cases, but is insufficiently robust. A design for a foldable ice-bath platform has been created in 3D imaging software, but a prototype has not been built.

17. *Intermediate-temperature storage.* Cryonics patients have been stored traditionally at –196 degrees Celsius in liquid nitrogen because this system is simple, requires no power input, entails very little maintenance, and is relatively cheap. Unfortunately we are virtually certain that fracturing occurs as a result of thermal stresses when a vitrified cryopatient is taken down below the "glass transition point" of the vitrification solution. Storage at –135 or –140 degrees Celsius could eliminate fracturing while still preventing deterioration of the patient. We are waiting for advice from some experts in this area, after which we will decide whether to offer an intermediate-temperature patient storage system that would entail additional cost but would probably minimize the risk of fracturing.

18. *Inventory control.* When Alcor was processing only one or two cases per year, we had no trouble keeping track of supplies for standby work, surgery, and perfusion. Now that the caseload has increased and some of our procedures have become more complex, we need a properly designed inventory control system to eliminate the risk of unexpected shortages. It should also track the contents of regional standby kits, expiry dates of meds in the kits, and other data.

19. *LAN Enhancements.* Our local-area computer network works reliably but could have better security features. Our DSL internet connection is slower than it should be. We have not assessed the possible costs, yet, of these upgrades.

20. *MARC replacement.* Alcor's mobile advanced rescue cart, beautifully built by Hugh Hixon, is extremely heavy because it is designed to perform multiple functions. Last year, when we were doing a standby for a patient in the Scottsdale area, we were unable to use the cart because we couldn't move it over a couple of stone steps in the access route to the patient's home. Possibly, we should develop a simpler, lighter, more mobile patient transport device.

21. *Med kits*. Medications recommended to us by Critical Care Research require a new protocol and packaging. Regional teams should be trained to use the medications, some of which must be refrigerated, while others must be mixed on-site less than two days before the patient experiences legal death. This entails a major revision of our field procedures.

22. *Outreach*. Currently Alcor has no plan in place and no employee responsible for outreach to potential members on a grassroots level. Our public-relations activities (often referred to as "marketing," although this is not really the correct term) have been aimed at the mass audience. Last year, for instance, Alcor received unprecedented coverage in the Science section of the *New York Times*. This kind of publicity is very gratifying and probably helps to enhance general public awareness of cryonics, but unfortunately we have seen no evidence that it attracts new members. Our competitors have received much less coverage in the mass media but have claimed a faster growth rate. Possibly Alcor should pursue the kind of low-level outreach that is used by small political parties and special-interest groups. This would entail projects such as a monthly newsletter, small ads in niche publications that are likely to reach potential members, direct mail, and audiotapes. Ultimately we would work toward creating an infomercial.

23. *Paperwork parties*. About 100 people are in Alcor's signup process. If we sponsor regional paperwork parties, this could provide the impetus to encourage procrastinators to follow through.

24. *Patient status monitor*. Various attempts have been made to design a monitor that will sound an alarm if a patient's vital signs deteriorate. This is a seemingly simple task, but in practice a unit can give false positives or false negatives, may fail unpredictably, or will be rejected by noncompliant patients who find it intrusive or inconvenient. Some new designs from conventional medical equipment suppliers have been marketed recently. We need to evaluate them.

25. *Social events*. Some students told us that they would prefer more intensive training, with classes in the evenings as well as during the daytime. They agreed that the bonding that occurs during after-hours socializing can be important subsequently when trainees collaborate in field work, but they suggested that Alcor could sponsor or encourage separate social events on a regional basis.

26. *State law survey*. Every state has its own requirements for certifying legal death and permitting a cryopatient to be moved across a county or state line. Alcor is just beginning to tabulate these multiple regulations. Also we hope to acquire copies of death certificates from every state, after which we will try to assemble personal member information corresponding with the data that is required on death certificates. Since a case can be substantially delayed if we are unable to complete a certificate, we need to be properly prepared. Unfortunately this will be a very time-consuming project.

27. *Transport manual*. For our March training sessions we distributed a compilation of documents including new instructional material, excerpts from previous transport manuals, and checklists and tables. This set of 300+ pages was assembled at short notice during the preceding three weeks. Ideally we should create a properly integrated version with supplemental material for distribution to all of our regional volunteers.

28. *Truck/ambulance conversion*. Low-temperature engineer Tim Carney has been working as an independent contractor to convert our newly acquired truck into a multipurpose ambulance that will enable us to do surgery in the field. This is an ambitious project that is taking longer than we expected. We may need to divert some time from it to our facility expansion.

Alcor's existing ambulance is shown here during a standby north of Scottsdale last year. This aging vehicle is due to be phased out and has been complemented with a Chevy Suburban that is large enough to carry a noncollapsible ice bath while we transform our new truck into the "STASIS vehicle."

In January of this year we purchased a box truck (shown on the next page in the dealer's parking lot) that is currently undergoing conversion into an ambulance that will enable procedures in the field. As our Standby/Transport Ambulance for Surgical Intervention and Stabilization (STASIS vehicle), it will reduce ischemic time and can be deployed across an area of up to 1,000 miles in radius in cases where we have advance warning of legal death.

29. *Web site upgrades.* Alcor's web site fulfills its function but was built using FrontPage software, which does not create efficient code. Examination of the HTML has revealed some significant errors. Unfortunately the site is maintained by an outside hosting service, which charges a fee for changes and upgrades. Ideally we should control the site directly, some of its content should be updated, and a library of plain-text archives should be added.

30. *Whole-body vitrification.* The vitrification solution that Alcor uses successfully on neuropatients has been tested only once on a whole body—that of a small dog. During the perfusion process, undesirable side effects were observed. We don't know whether these side effects were unique to that animal or whether we should expect similar problems in human cases, requiring us to revert to glycerol cryoprotectant when a whole body is involved. The supplier of our vitrification solution was planning to perform tests to resolve this issue, but the tests have been delayed. Suspended Animation, Inc., has suggested co-sponsoring some tests that we would pursue collaboratively. This is obviously of urgent interest to our whole-body members. We also need a rapid-cooling system to enable vitrification of whole-body patients. Currently the development of this system is incomplete.

During 2002 we took tissue samples from several cryopatients. (Each sample was taken from the neck area.) Many of the samples provided visual confirmation that vitrification had been achieved. In this photograph, the darker area was found to be a caramel color and showed strong evidence of vitrification, while the thin white surface layer appeared to have frozen. We hope to obtain electron micrographs to confirm this preliminary inspection. Research into whole-body vitrification is now a high priority at Alcor.

Priorities

I have omitted some additional projects that are already in progress at Alcor, such as training paramedics for field work and obtaining an ambulance or van for local transport in the Los Angeles area. If we only consider the new goals itemized above, which ones are most important?

The best way to answer that question is by going back to basics. To provide cryonics service, we need three resources: people, supplies, and a facility in which the people and the supplies can be employed efficiently. Our current facility lacks sufficient space for the work to be done, and our inventory system is inadequate to keep track of our supplies. Therefore I believe that facility expansion and inventory control have to take precedence over all the other items in the list—although whole-body vitrification is extremely urgent.

Developing an inventory system is my first personal priority at Alcor. Initially it will be relatively simple, using peel-off labels. After testing this system and making any necessary modifications, we'll migrate to a bar-code version.

Facility expansion is relatively easy in that Alcor owns additional units in the same building, and the unit next to our current space is empty. This unit is almost completely undivided and will become our new patient storage area, while the current patient storage bay will become a production facility for standby equipment, and the operating room will be relocated in a large space that is currently underutilized as a conference room. During the next six months, I hope that most of this work will be completed with minimal impact on everyday operations and no interruption of Alcor's ability to provide service for members in need.

As for the other objectives in the list above—all of them are important, and some will be pursued in parallel with facility expansion and inventory control. The items that offer the most potential benefit for the smallest investment of time and money will have a high priority.

Some of our members have criticized us, from time to time, when Alcor seems unresponsive to a specific suggestion or request. If you're wondering why we don't do something that you feel is absolutely obvious, please bear in mind that we have 30 potential projects competing for our attention, plus a few more that I may have forgotten to mention. Cryonics involves an exceptionally wide variety of tasks, skills, resources, and functions. Allocating resources among these multiple priorities will always be a major challenge. l

Financing Member Service Technical Improvements

By Michael Riskin, Ph.D., CPA
Chairman of the Board, CFO, Vice President

The Alcor Life Extension Foundation consists of two primary operational subdivisions, each with their own discrete financing and revenue/expense procedures and controls. These two subdivisions are responsible for:

1) Long-term patient care, under the auspices and management of the Patient Care Trust (PCT) and its Board of Directors; and,

2) The "Everything Else" infrastructure, which includes administration, rescue/suspension services, membership growth, research, and institutional stability.

Number One, long-term patient care with its own portfolio of investments and expenses, is financed and covered by its discrete asset base. This asset base includes cash, equities, real estate, and capital equipment. It increases in total value through new patient funding and the subsequent generated revenues/long-term growth of that funding that exceeds patient care operating expenses.

The total net PCT assets continue to exceed the offsetting deferred liability balance sheet account, a recorded liability balance that is increased overall, for every patient, every time there is an increase in the new member suspension funding minimums. This concept, originated by former president Carlos Mondragon many years ago, gives us a fundamental fix on where the PCT resources stand as compared to the currently expected long-term liability for extended care. The bottom line is that PCT resources should exceed its anticipated costs for an indefinite time well into the future.

In addition, when Alcor receives moneys that represent member-prepaid suspensions, it is similarly accounted for as a liability. In contrast, another major cryonics service provider records such fund transfers as current revenues, available to be spent on any number of unrelated expenses, even though the money is not actually theirs until the member dies. In fact, all prepaid suspension funding is fully refundable to the member up until the time actual suspension or long-term services are provided, and it needs to correctly be accounted for as a refundable deposit. This is another example of Alcor's cautious principles and procedures when safeguarding members' funds.

Number Two, "Everything Else," is financed solely via membership dues, donations, and member payments for rescue/suspension services that cover standby through cool-down expenses. (Long-term care and expense commences immediately after cool down and is included in Number One, above.)

Donations provide the majority of net annual operating revenues and come from the generosity of the supporting membership via ongoing contributions or trust bequeaths. Those donations are the primary source of funding for the ongoing technical upgrades that make Alcor the world's premier provider of cryonics services.

Technical upgrades and enhancements do not just mean purchase of capital equipment. The most important component of Alcor's rescue/suspension service, by far, is the personnel that develops and provides it. In the last six months alone (as of the writing of this article in April 2003) Alcor has added three new full-time professional personnel, dedicated solely to the development and delivery of these enhanced services. This is in addition to the contracted team of 13 (at last count) cryonics trained independent paramedics, available on call for standby and other emergency services.

Last year, Alcor formed the SOTA (State of the Art) fund, primed by the trust-based donation of a member now in long-term care. Since then, many other members have generously contributed to this fund as well. Have you also considered Alcor in your long-term financial planning?

Feel free to contact me directly, with any questions or concerns about any Alcor matters. I can be reached at drmriskin@aol.com and 714-313-9129.

Have a great summer,

Michael

An interview with Larry Johnson

Director of Clinical Services

Cryonics Magazine recently caught up with Alcor's new Director of Clinical Services, Larry Johnson, in his office at the Scottsdale Central facility. Here is an interview with our newest employee, concerning his background and various facets of his new position.

CM: Larry, tell us a little bit about yourself, for instance, where are you from originally, about your schooling and background?

LJ: I grew up in Albuquerque, New Mexico, and was born and raised in that area. Once I was through high school, I became interested in emergency medicine, primarily the paramedic field, which interested me quite a bit. I actually had some buddies who were paramedics on ambulances, and had ridden out with them as I was going through high school, and as soon as I graduated, I went to the University of New Mexico School of Medicine—they had formed the EMS Academy for the Education of Emergency Medical Technicians and Paramedics, so I went there—this was back in the late 70s. I have been a paramedic for 25 years as of this April. My background is pretty much that—it's emergency medicine. I started out as an EMT, worked my way up to paramedic, and have held various positions, everything from a street paramedic to a field training officer to a supervisor to a director of clinical services education. I was a program director for an air medical helicopter service in Dallas. It was one of the first in the nation to employ an all-paramedic crew on their aircraft. I basically developed and implemented that program myself along with the help of a couple buddies of mine, and ran that program successfully, which is still successful today.

CM: Specifically, what were you doing immediately prior to coming here to work at Alcor several weeks ago?

LJ: I was actively working as a field paramedic in Las Vegas, Nevada, providing emergency care for the 911 system up there.

CM: And how long had you been doing that?

LJ: I was with Las Vegas right at a year. As I stated before, I am originally from the Southwest, my mother is in Las Vegas, my dad actually lives here in Phoenix, and I had moved from Texas to be a little bit closer to family, and that is what kind of drew me to the Las Vegas/Phoenix area.

CM: I know in a conversation we had several weeks ago, you were telling us about some of your experiences with the Waco incident. Could you relate to our readers some of what that was all about?

LJ: Waco was the fiasco several years ago. I was working as a flight paramedic for Care Flight Dallas, which is the second largest air medical service in the country, and we had gotten a call one morning to fly out to Waco, that there was some sort of outbreak or something against the ATF out there. As we were loaded into the helicopter, we were briefed with more information as to what had actually gone on and what had happened out there, and it was quite an experience—it was extremely stressful. I originally flew out the first set of ATF officers who were initially shot, and then I was called back several weeks later, actually when the compound had caught fire, and I was there to fly those injured individuals out.

CM: Thanks. I'm not sure anything we have here at Alcor is going to be quite that exciting, but can you tell us what it was that attracted you to answering the advertisement that Alcor had placed in a variety of publications? You saw the ad, of course, and responded, but what was going on in your mind? What did you think about when you saw the ad, and had you heard of us before?

LJ: I actually did hear of Alcor probably a couple years before. It was actually perfect timing. I was really at a period in my life here several months ago where I was really tired of the same old thing. As I stated earlier, I've been a paramedic for 25 years, so I got to the point where I wasn't feeling too challenged, I was pretty bored with my job, and I have found that a buddy of mine was aware of how I was feeling but he also knew I was interested in all types of sciences and that I wanted to get into something kind of new and he knew I was interested in research. He was actually the individual who first saw the ad that Alcor was running, and he had gotten on the phone to tell me about it. I

went ahead and got online, checked it out, and contacted Charles Platt.

CM: I know you are married and your wife's name is Beverly. What were her thoughts about the possibility of the two of you coming down here, moving to Scottsdale, and you taking this position with Alcor?

LJ: She's always been real supportive of what I want to do in regard to my career. She could see that I was really getting tired of what I was doing in the field as a paramedic, and I am one of those individuals who can become bored easily if I am not challenged and it shows in my actions. She knew I was at a point where I needed something new, and I had talked about it for so long that I didn't feel that challenge. So, I guess another thing she could see is the paramedic game is really for young individuals. It's a young person's career. I'd get home at the end of a 12-hour shift after running 14 or 15 911 calls, and I'd look like I'd been beaten to death. I'd come right home, get in bed, and sleep on a heating pad all night. So, I was getting a little old for that field. I'm very thankful for the experience I've had, I just can't think of any other way I could have gained the clinical experience and the clinical knowledge I have if it would not have been for that career field, and I'm very grateful for that. When this came up, she knows of my interest in research and new sciences, and so she was completely supportive. She's not a stranger to the Phoenix area—she lived in Mesa several years ago.

CM: I know you had just come down here, and very briefly after you started, you were on several Standbys and involved in more than one suspension. What was it like literally having no time to receive any on-the-job training?

LJ: It seems like that's the best way I really learn. I can sit down and listen to lectures and read books, but it really doesn't have any kind of impact on me until I actually get out there and do it, so I was really anxious to get out there and do what I've heard about and what I've read about, so it was a very good experience for me, and I look forward to more of these types of experiences.

CM: Larry, I know you have suggested and chosen (with our agreement) the title of Director of Clinical Services. What made you choose this particular title, and what does it mean? What should Alcor members know that this title means?

LJ: Director of Clinical Services is a title that is very well known in the medical profession, and I think with that title I can help build some bridges and relationships with what we're doing in this particular field versus what is going on in the medical business. I think it's a title that other medical professionals (i.e. nurses, physicians, those types) can relate to. So I truly believe that will help bridge that gap.

CM: Well it certainly is no longer a job requirement, but my understanding is you are planning on joining Alcor as a member, and what's driving you to do that? Was that almost from the get-go, or has anything that you have seen or done here since you've started working here augmented your desire to become a member?

LJ: Well it's actually something that's kind of been in the back of my mind for some time even before I came to work for Alcor. I've always been interested, and I've actually done a lot of reading on the subject of cryonics and of nanotechnology, so I was somewhat knowledgeable of that when I walked in the door here. Actually, I just turned in today my membership application to Jennifer. I regret that I didn't get it turned in earlier, but as you stated earlier, as busy as we got a few weeks ago, I never really had time. However, my application is in, and I'm very excited about that, and again my wife is very supportive of my decision.

CM: And to clarify for our readers, today as Larry mentioned is Thursday, March 20, 2003. What have been maybe one or two highlights of your brief tenure here with us? What has maybe even pleasantly surprised you about your work since you've joined us?

LJ: I really enjoy how close-knit everyone is. It's kind of like a small family. I had the opportunity to meet the folks out in southern California—a bunch of really nice individuals out there. I also got to meet several people from around the world at the recent training we had up at Creekside Lodge. It was very friendly, and seems to be a very close-knit family.

CM: And, in all fairness to our readers and to try to remain somewhat objective in this interview, what perhaps has disappointed you more than anything else since you've been with us aside from having your motorcycle stolen?

LJ: I really can't think of anything disappointing as far as my work is concerned right now, as far as Alcor. So far I've been very pleased with what I've seen and with what has been going on. And as you stated, with the exception of having my Harley-Davidson stolen here in north Scottsdale, I feel like everything else has been okay.

CM: In this issue of *Cryonics*, which features our building up of the infrastructure and the professionalization of the network, obviously you are an important part of those programs. What do you see for yourself besides the activities on Standby operations doing for the technical aspects in the field operations or even here at Alcor Central? I know you had mentioned something about a professional paramedic network that you were thinking about developing. Can you share some of that and any other thoughts with us on this matter?

LJ: Actually some of my goals for the next several months include trying to help professionalize this group. In the past I have

been involved in the developing of some professional organizations, and have a little bit of background on that. I'm looking at the possibility and have already started some work in my spare time when I have it, developing a national registry—actually an international registry—for cryonics specialists. The acronym for this is IROCS. I have already written the bylaws, code of ethics, and mission statement. This will obviously take more individuals than myself to make these kinds of decisions, but I have started to lay the groundwork to try to professionalize this business.

CM: Well Larry, I think we've come to pretty much the end of the interview. Can you think of any questions I might have posed but didn't or anything else you would like to share with our readership before we sign off today?

LJ: Just that I'm looking forward with everybody out there in this business. I've got a lot of ideas and a lot of plans that I'm sure everyone will be very pleased with.

CM: Thanks, Larry, for submitting yourself for this interview, and we'll look forward to hopefully a long and healthy relationship and a productive one between you and the foundation!

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Cryonics Gets a Possible Boost from Cardiac Resuscitation Research

After learning that most victims of cardiac arrest (heart stoppage) die not from the injury to the heart, but due to brain damage, researchers at the Argonne National Laboratory (a U.S. Department of Energy laboratory operated by the University of Chicago), working with the Emergency Resuscitation Research Center (ERRC), also at the University of Chicago, decided to look at ways to protect brain cells during the trauma. One answer they came up with was *ice*. Resuscitation without brain injury is difficult after four minutes of cardiac arrest at normal temperatures. However, researchers also know that when cells are cooled, their metabolism and their chemical processes slow dramatically. For example, a skater who falls into an icy pond can be resuscitated even after being submerged for a significant amount of time.

Unfortunately, applying ice to the outside of the body works too slowly, so the team proposed that an ice slurry be injected into the lungs to start cooling down the blood faster. According to the researchers, an ice slurry would effectively cool critical organs of the body rapidly with just a small amount of coolant. This ice slurry would be inserted into the lungs, and EMS personnel would perform chest compressions to circulate the cooled blood, allowing it to reach the brain and preserve brain cells.

In research funded by a $4 million grant from the National Institutes of Health, Argonne researchers used animal studies to discover that a patented ice slurry quickly cools the brain by 2 to 5 degrees Celsius. This process appears to keep the brain cool for about an hour, which would give medics and doctors more time to revive normal blood flow and brain activity. The extra time this procedure buys could reduce the brain damage to little or none.

According to Roger Poeppel, director of Argonne's Energy Technology Division, "Sudden cardiac arrests strike about 1,000 people a day, and the survival rate is at best 2 to 4 percent. If we can improve survival rate by just 1 percent, we will save the lives of 10 people every day."

In cryonics, a person who is already "legally" dead has a mixture of cryoprotectants (antifreeze) pumped through their organs, replacing up to 60 percent of the water inside the cells. The body is then cooled below –130 degrees Celsius, and the tissue chemistry is thereby slowed to a stop. In conventional medical research, vitrification has been successfully applied to embryos, ova, pancreatic islets, skin, and vascular grafts. Work continues to make vitrification reversible in larger systems. Once medical technology advances sufficiently, it is hoped that the cryopreserved person will be unfrozen and then resusicitated without significant brain damage. During the reanimation process, the "cause" of death would be repaired as well.

Although the ice slurry being developed by the Argonne and ERRC researchers does not freeze the brain, the knowledge being gained by them could help cyronicists understand better how hypothermia preserves brain cells and how the resuscitation process should proceed to minimize damage. ERRC is also working on a method for clinicians to monitor free radicals in humans after ischemia (lack of blood supply). Lacking such a monitor, current therapies with antioxidants have no way to determine if the therapy has achieved its goal. A multidisciplinary team consisting of bioengineers from Argonne National Laboratory, doctors, and scientists are now developing a free radical detector device for use by paramedics and doctors that will overcome this obstacle to antioxidant treatments. Further work is needed to refine prototype biosensors for real-time measurements of oxidant stress in people.

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ALCOR Update

President's Report

by Jerry B. Lemler, M.D.

Professionalization, Standardization, Replication

In this issue of *Cryonics*, we showcase Alcor's burgeoning progress in fortifying our technical infrastructure. What at times (to the casual observer) may appear to be but patchwork implementation of the many facets involved in leading toward indisputable competence, the overall design, I promise you, is subsumed under a well-defined master plan.

The First Bug in the Ear

My inaugural plunge into the vagaries of cryonics professionalization actually occurred prior to my arrival in Scottsdale to begin Alcor employment. It was suggested (by then-President Fred Chamberlain in November of 2000) that I should make a courtesy telephone call to Bill Faloon in Ft. Lauderdale, Florida, and introduce myself to him. Forty-five most congenial minutes later, I had been given my first lecture in human cryopreservation. Bill had a crystal clear vision of how he wanted Alcor to develop, and I eagerly listened to his many thoughts. The cornerstone of Bill's conceptualization was the deployment of paramedics as first responders—akin to the EMS system routinely employed across the country in medical emergencies.

J'accuse

While Bill's ideas made perfect sense to me, I was soon to discover (upon assuming my duties in Arizona) a plethora of obstacles impeding any significant shift in this direction. Succinctly stated, they included such formidable barriers as:

1. Institutional intransigence,
2. The inertia of complacency, and
3. A paucity of information dissemination.

Though, of course, they are all interrelated, let's separately examine each of these three limiting factors.

1. *Institutional Intransigence*—There is no argument in denying that the preceding two Alcor administrations prior to the present one should be credited with registering a few accomplishments. Perhaps the most notable of these was the creation and implementation of the ACT (Alcor Cryotransport) Network—a scattered cadre of members/volunteers who submitted themselves for annual weekend-long training sessions in Scottsdale. In consideration for (in most cases) significant dues payment reductions, these volunteers (ranging from the passionate to those merely going through the motions) consented to be on-call and available for Standby and recovery operations, should they be mobilized into service. While this "experiment" began in good faith, it eventually ran into unforeseen trouble, some of which was unavoidable (lack of suspension activities in a two year drought), and some of which was due to administrative mismanagement of the unwieldy network. Ultimately, Alcor Central came to believe it could only rely on a small, faithful group of ACTs, almost exclusively pocketed in the state of California. Quite obviously,

when members outside our most populous state were in significant medical distress and in need of Standby services, the system came perilously close to being crippled.

2. *The Inertia of Complacency*—Admittedly, when I arrived in Scottsdale (February 2001), I found the organization mired in a state of micromanagerial stagnation. The bare bones technical department exhibited low morale, and, by this time, the Chamberlains had alienated many knowledgeable cryonicists to the point where Alcor had become almost entirely internally self-reliant. Back in 2001, I regrettably admit, I was naïve enough to accept from my (only) mentors, Linda and Fred, that our suspension capabilities were nothing less than superb, as they proudly asserted in judging all four cases we performed during that calendar year.

3. *A Paucity of Information Dissemination*—The assimilation of knowledge proceeds along two vital (and necessary) pathways—afferent and efferent. Repetitive actions promulgated without allowing for sufficient afferent input produces problematic behaviors, as is often observed in what we commonly label "bad habits." And, when coupled with the mindset of self-righteousness, it all too frequently can lead one to espouse individual (or more specifically in our case) corporate dogma. This state of affairs is exactly what (mis)management had allowed itself to disintegrate into. Entwined in such a corpus of deluded belief, it became quite facile for Linda and Fred to summon the most primitive of all unconscious defense mechanisms into play—projection, denial, rationalization, and splitting. Unfortunately, they were employed copiously. As but one example, projection took place by blaming disaffected Alcor members for the (few) perceived deficiencies within the organization. Denial reared its inappropriate head in their refusing to admit there existed glaring problems within the foundation. Rationalization was employed over and over again to explain away the festering dissent all about them, from both inside central headquarters and beyond. Finally, splitting occurred when Linda and Fred divided their worlds into an intransigent (us vs. them) duality. If you agreed with their schemes, you were justly rewarded, whereas if you opposed them (as most eventually did), you were either ignored or dismissed.

In turn, this led the Chamberlains to circle the wagons and erect an impenetrable wall around their administrations. The most damaging facet of these machinations was exhibited in the area of information flow. Much needed fresh and compelling ideas were rejected outright, while, in like fashion, Linda and Fred revealed little of their own designs—including sequestering them from Alcor's own Board of Directors. Concomitantly, no effort was made at seeking valuable institutional knowledge, some dating from as far back as the cryosupsension of Jerry Leaf in 1991. From a technological perspective, aside from the implementation of vitrification (November 2000), the organization had ground to a standstill. Yet all the while, including within these pages, issue after issue, Alcor spun a believable fantasy tale of maximum competence.

The Turning of the Tide

The winds of change, however, which had been silently, synergistically brewing throughout the spring and summer, converged in the fall of 2001. They were spearheaded by selected Members and Advisors of the Alcor Board (most notably Michael Riskin, Ralph Merkle, and Bob Newport). I was initially approached as to my interest and availability in possibly ascending to the presidency of Alcor in the early summer of 2001. Having been with the organization but a few months, it was not a position I sought or campaigned for in any way, overtly or otherwise. I did, however, give appropriate assurances that if the Board felt compelled to turn to me for leadership, I would accept the challenge with unbridled enthusiasm.

Leadership styles are multitudinous, and no one pattern can be offered up as evidence of superiority in any given individual. Those of you who have come to know me are well aware of my own particular vogue—one of influence and persuasion. As a Board Certified practicing clinical psychiatrist with nearly two decades of experience, I maintained this posture (therapeutic neutrality) to best serve my patients.

I intentionally digress into this interlude to point out to you that this leadership style is no less effective when judiciously applied than the (seemingly) bolder, more direct and headstrong approach employed by the majority of my predecessors (most notably as exemplified by Linda and Fred Chamberlain and Mike Darwin). The price I pay for adopting this mechanism, however, is that for the most part, much of what I do is performed quietly and engineered behind the scenes, where it can be mistaken for lack of initiative, interest, passion, or results. The seeds I sow today are often not reaped until months in the future, and more than the average amount of patience is required to make it work.

The Big Umbrella

I was elected President/CEO of Alcor on September 9, 2001, with not a single thought as to what would transpire a mere two days later. In addition to formally accepting Linda Chamberlain's resignation as outgoing President/CEO and the resignation of two Board Members (Fred Chamberlain and Gary Meade), the Board elected Saul Kent and Carlos Mondragon as its new Members. Clearly, a new day had dawned for the foundation. Dr. Michael West was approved as both a Scientific Advisory Board Member and Advisor to the Alcor Board of Directors, and Dr. Steve Harris, likewise, consented to become a Board Advisor (he already was a member of the Medical Advisory Board). With Saul and Steve in the fold, the stage was set for building a cooperative, mutually beneficial relationship between Alcor, 21st Century Medicine, Inc., and Critical Care Research, Inc.

Less than two months later, Alcor Board Chairman Dr. Michael Riskin and I were invited to a meeting at 21st Century Medicine Corporate Headquarters in Rancho Cucamonga, California. In the space of but 2 ½ hours, 21st and CCR's senior staff implored us to seek cryopreservation competence. I was absolutely aghast in listening to their belief that Alcor "lacked a sense of urgency." I had been, you see, a victim of this paucity of information dissemination—and, I wasn't alone.

Linda and Fred Chamberlain had, by this time, piloted Alcor into shutdown mode. Hardly any useful information was escaping from Scottsdale, while our Alcor management turned a deaf ear to those on the outside who were most capable and willing to assist. The situation could best be described as a Mexican standoff, as the Alcor suspendees and members were held hostage by an impasse they never knew existed.

Taking Stock

Within a month of our disapprobation in Rancho Cucamonga, we commissioned the Advisory Committee (comprised of 21st Century Medicine, Inc., and Critical Care Research, Inc., scientists, along with Mike Darwin and Charles Platt), to make their recommendations on how best to improve Alcor's entire technical service operations—from Standby and recovery all the way to long-term storage. Alcor management received this comprehensive report in April of 2002 and immediately responded. The Board of Directors did their part by allocating a majority portion ($450,000 of $850,000) of the SOTA (State of the Art) Fund be explicitly utilized for "systems upgrades." As stated in the title of this article, my goals for the foundation became nothing short of: professionalization, standardization, replication.

Caution: Detour Ahead

Regrettably, we were initially sidetracked in putting the pieces of the upgrades program in working order. These circumlocutions were themselves engendered by three separate, yet interwoven, forces—two of which were beyond our ability to control. Initially, Alcor management opted to avail ourselves of the services of the new and for-profit cryosuspension company Suspended Animation, Inc., based in Ft. Lauderdale, Florida. SA personnel, in fact, contributed their expertise on several Alcor cases, although we were (in retrospect) less than satisfied with their pricing structure. Before we had the opportunity, however, to renegotiate a new agreement, their Chief Technical Operative, Mike Darwin, left the company. With specific regards to the upgrades he—and other SA representatives—were charged with developing in Scottsdale, their efforts were largely abandoned in midstream.

Concomitant with SA's arrival at Alcor Central to begin the implementation phase of the Advisory Committee's report, ACT volunteer Dave Shipman appeared on the scene from San Francisco in search of employment. Following several weeks of volunteering his services at the facility, Alcor management and Dave (together) hammered out an arrangement whereby Dave became a paid consultant, assuming the duties of Director of Suspension Services. In all fairness, Dave had warned us of his suspected lack of managerial skills, yet we decided to take a chance and see if he could successfully interact with SA personnel and Alcor technical staff members to forge a cooperative and successful working relationship. Within a few short months, though, it was patently obvious to all concerned parties that this "marriage" was neither producing satisfactory results nor adding to the harmony of the workplace. Accordingly, Dave submitted his resignation, which we accepted without argument.

Finally, there was a simple, inescapable fact we could not have predicted—our suspension load rose dramatically in 2002 (eight cases vs. four the previous year). Gearing up for and performing these in-house activities, and then frantically mobilizing our resources in readiness and recovery, combined with several remote Standby operations, was, in no small way, responsible for diverting both Alcor and SA personnel from their task of implementing the Advisory Committee's recommendations.

The Detractor Becomes the Detractee

Dave Shipman's abrupt departure left a vacancy in the position of Director of Suspension Services. Yet, no more than a few days later, I received a communication from one of our discipline's most severe critics, offering himself as a contractor to perform piecemeal work on some of the more vital Advisory Committee's designated projects. As the principal author of the committee's report, the most able Charles Platt, at first glance seemed to be the ideal person for fulfilling such a role. But I had bigger plans in mind for him.

Seizing the moment, I wrote back to Charles, asking him to consider (subject to Board approval) becoming our new Director of Suspension Services. And, much to my delight (and I must confess relief), he accepted, being confirmed by the Board of Directors at its annual meeting on September 8, 2002.

As I suspected, Charles's bold (and at times, admittedly abrasive) style has ruffled a few feathers along the way. To his abiding credit, though, he has kept such episodes to a minimum, while at the same time maximized his efforts toward achieving the "bigger picture."

I am now, without further apology, but with supreme confidence, delighted to report to you that the Alcor Foundation is poised to offer:

1. *Professionalization*—Charles has secured the services of Larry Johnson as Director of Clinical Services (Chief Paramedic) who will lead a professional 13-member paramedic squad as our coast-to-coast cryonic suspension first responders for Standby and rescue operations, while supervising a revitalized, freshly (re)trained cadre of approximately 25 ACTs.

2. *Standardization*—Charles has edited the "Cryotransport Manual," comprehensively covering all phases of technical operations, from the initial emergency line phone call to the placement of our new patient in long-term storage. These updated standards are being taught at our Creekside Preserve Training Sessions (see page 7) to our network of ACTs.

3. *Replication*—The end product to demonstrate Alcor is capable of competently performing its suspension activities over and over again, even when facing the inevitable quagmire of difficult life-saving split-second decisions.

I acknowledge that the road toward achieving professionalization, standardization, and replication, has been torturous and anything but facile, and although it is not yet entirely complete, I assert without reservations that your Alcor Foundation is presently capable of performing a higher order of human cryoperservation services than any cryonics organization at any time in history. l

The Well-Being of Alcor's Employees

by Dr. Robert Newport

For those of you who believe that psychology is a "pseudo-science," Alcor's policy in employing a psychiatrist as its Ombudsman might be somewhat off-putting, however the communication seminars that Alcor has funded for its employees and volunteers should indicate that it has at least some pragmatic value, if nothing more than some stress-free time away from the office. As everyone has agreed so far, the value is much greater. Probably no single factor has as a great an impact on the success or failure of any enterprise than employee morale. And nothing destroys employee morale more completely than unaddressed interpersonal problems. Skeptics may at this point suggest that employees must always have interpersonal problems with management, especially where the pay is low and the hours long. And this is where I would beg to disagree. Managers are successful when they know how to, and do, communicate clearly with their employees. Teams are effective when the team members know how, and do, communicate effectively with one another. These are facts, and while I can't reference the double-blind studies that so define them, I can refer to everyone's own personal experience—whether it's been in the workplace as manager or employee, on the playing field in team sports, or in relationships with friends and family. It is commonsense that clearly communicating gets better results than not. So what constitutes clear communications? First of all, the obvious: Deal with problems. It is amazing to me, and would be to you too, if you thought about it, that at the exact time that we should be talking about issues we have with people, we shut up. We are afraid of hurting their feelings, or making them angry and worsening an already bad situation, or embarrassing them or ourselves, or creating some legal difficulty (thanks to our protectionist Federal Government!). So, we shut up, and usually the problem continues while we sit with resentment, or fear, or embarrassment because we haven't been able to deal with it, until finally some crisis in a deteriorating work situation or some spark in an interpersonal interchange sets off an explosion. Then things are dealt with, in a much more radical and usually more expensive way than they would have been if we had just been able to bring ourselves to sit down with the person and discuss the problem in a rational way at its first emergence. So why does this happen? Well, the key here lies in the word *rational*. The emotions, which are viewed as irrational, get in the way. Fear, anger, embarrassment—these are all emotions that cause us pain and shut us up. If, however, we change the frame through which we view our emotions, and accept that no matter how painful they may be, they are always logical, then we have a way to approach what I call "rational communications." We have emotions because, and only because, they have survival value. Fear and anger, for instance, are mediated through the rhinencephalon and have been with vertebrate life for millions of years. Sadness and joy, mediated from a little higher up in the limbic system, are attributes of all mammalian life and function in procreation and the rearing of young. Animals (ourselves included) that live in a social organization use all of the basic emotions to maintain social order. In humans, emotions are a reaction to our perceptions and our attitudes, both conscious and unconscious, about those perceptions. So while all emotions have logic, only those that serve to help us meet our goals (in the situation at hand) are rational. As can be seen from the above example, we shut up and don't deal with problems when we believe that our emotions are irrational or that they won't help the situation. And it is true that the manager or teammate who approaches his or her colleague with the anger or frustration or hostility that they feel about the situation, or the person, will surely worsen the problem in one way or another.

In these communication seminars, now numbering six, I teach communication tools that can be used to deal with irrational emotions and solve issues. The basic tool, which I will disclose here, is the premise that by understanding our own emotions as data that are relevant either to ourselves or to the situation or to both, we can address problems rationally and intelligently. By accepting that the other person, while perhaps behaving in an irrational way, does have a point of view, and that his or her emotions, while perhaps irrational, are logical in some way, we give ourselves a foundation (as well as other specific tools that I won't go into here) for opening a dialogue about the problem and achieving a solution, usually without destroying the relationship.

As many of you know, Alcor is in a time of great change, and it is to the credit of the Board of Directors that they have seen fit to support their staff and volunteers with these so very important tools. l

Robert R. Newport, M.D., is a retired psychiatrist with many years of experience in working with people who have been emotionally damaged. He has developed his concept of "Rational Communications" from this experience and from the theoretical work of Albert Ellis, Ph.D., among others. He is the owner of True Power Seminars and serves as Ombudsman at the pleasure of the Alcor Board of Directors. He is a member of the Alcor Life Extension Foundation and a member of its Medical Advisory Board.

Dr. Lemler Speaks to Phoenix-Area Extropians

by Paula Lemler

On February 5th, I accompanied Dr. Lemler to a meeting of the local Extropian Society and had the pleasure of meeting several of their members and hearing a very interesting speech. (But then I think ALL of his speeches are terrific.) Invited by Abe Heward, president of the group, Dr. Lemler accepted and used the opportunity to explain Alcor's methods and inform those attending of the latest technical developments and improvements.

About 15 people gathered at the Jetz Americana Restaurant in Scottsdale, and after some time for socializing, everyone ordered supper. The extropians present were WEIRD, and we enjoyed the experience of getting to know them.

Following the meal, Dr. Lemler was given a microphone and a stool, and he proceeded to detail many of the projects currently under way at the facility, including the many upgrades and expansion of services being implemented with the paramedic training and recent purchase of a new ambulance. Dr. Michael West, CEO of Advanced Cell Technology, was in the audience, and naturally everyone was delighted by his presence. Dr. West supported Dr. Lemler on several specific topics, as friendly discussion followed Dr. Lemler's presentation. The mental stimulation and good-natured laughter made several hours pass quickly, and too soon the evening was over. Thanks to the extropians for inviting us! l

Alcor Vehicles Update

by James Sikes

For several years, Alcor has used a van that was donated to the foundation. It has seen its share of fender benders and isn't much to look at now. The end result is a resident eyesore in the parking lot at Alcor. With the recent publicity enjoyed by the foundation, this wasn't an image that we wanted to project.

The Alcor ambulance was used when purchased in February of 1987. It too has been subjected to the wear and tear of a vehicle of is age.

A Chevrolet Suburban was recently purchased to replace the Alcor van. The Suburban's large cargo area will come in handy when transporting equipment or retrieving a patient from the local airport. An ice bath was specially built for this vehicle. Permanent wiring for a power inverter has been installed and is tucked neatly out of site under one of the seats. This will enable a patient to be transported with ice bath support with additional lighting.

A Ford E-450 will replace the current ambulance. It is a large panel truck (see page 12) sufficiently tall enough to allow work to be done standing up. Currently, it is being insulated and wired for electrical access to help control the temperature inside the box during our hot summer days. Air compressors and generators will be added at a later date as will an air conditioning unit. These modifications and equipment should allow surgical personnel to perform more procedures in the field. l

Alcor Foundation: Paperwork Update Needed

TO ALL ALCOR MEMBERS AND APPLICANTS:
YOUR ASSISTANCE IS REQUESTED IN PROVIDING MORE COMPLETE INFORMATION FOR OUR RECORDS.

The information requested on the Vital Statistics Form on the following page is frequently required at the time of suspension in order for officials to release a patient for transport to Alcor's facility. To minimize any possible delays at the time of suspension, Alcor is updating our member and applicant files to ensure all required data is available. You can help by xeroxing the form that follows, filling in the blanks, and sending completed information to:

Alcor Life Extension Foundation
7895 E. Acoma Dr., Suite 110
Scottsdale, AZ 85260-6916
Attn: Jennifer Chapman

Alcor realizes that much or most of the requested information may have already been supplied by you. For your convenience, the items not currently listed on our application for membership are indicated with an asterisk (*). It is recommended that you complete this form in its entirety if you submitted an application more than five years ago. If you are filling out this form on behalf of a member or applicant, please identify yourself as the informant. Thank you for your efforts.

Sincerely,
Jennifer Chapman
Membership Administrator, ALCOR FOUNDATION
jennifer@alcor.org
Fax: 480.922.9027

VITAL STATISTICS FORM

Please type or print clearly

(Use "n/a" if question is not applicable or "unknown" if you don't know the answer)

Full Name of member or applicant: _____

Alcor number if assigned: _____

Street Addres: _____

City, State, Zip: _____

*County: _____ *Number of years in this county _____

Date of Birth: _____

Place of Birth (City, County, State/Province, Country): _____

Birth Name (if different from above): _____

*Other Names/Aliases if any: _____

Race or Ethnicity: _____

Spanish or Hispanic (as required by some states): _____

Citizen of (country): _____

Social Security Number: _____

U.S. Military Branch: _____ from _____ to _____

Marital Status: _____

Occupation (include number of years): _____

If unemployed, what was occupation: _____

Total years of college education: _____ *Degree(s) completed: _____

Father's name: _____

Father's birthplace: _____

*Mother's maiden name: _____

Mother's birthplace: _____

*Name of informant; if member or applicant, state "self": _____

*Address of informant (if other than self): _____

*Relation of informant to member or applicant (if other than self): _____

Signature of informant: _____

Date: _____

Brief Profile of Board Member Stephen Van Sickle

by Paula Lemler

When first meeting Stephen you can see that he is a nice-looking, quiet, dark-haired man. Others describe him as being an intelligent, thoughtful individual who thinks for himself and can be forceful if necessary. Most of the employees at Alcor know him personally, as he has come several times to visit and work. All have been impressed with his knowledge, compassion, and scientific background. Further delving into his persona reveals he is indeed a caring man who loves life, adopts animals that need homes, and spends much of his time in a laboratory studying the neurobiology of tobacco horn worms.

Could this seemingly calm person who we think we know really have once been the lead driver of armored personnel in Germany with the U.S. Army? The craziest driver of troops in the 1980s? Yes, the very same man who modestly told this interviewer that he was merely "in the Army," left out these most interesting details. Perhaps there are embellishments, also, to be learned about his other former positions of computer programmer and employee of Shell working on offshore seismic oil exploration.

Stephen was born in San Diego but moved around quite a bit. His family lived in New York, Boston, and New Orleans because his father worked for the Associated Press. He considers his home New Orleans. He met his wife, Denise, in that city while in high school, and attended the University of New Orleans. Currently he is a graduate student in molecular biology and a teaching assistant at the University of Wisconsin at Milwaukee. He and Denise, who is a senior administrator at the Golda Meir Library, have two gray cats, Pepper who is a 13-year-old recent acquisition from a no kill shelter, and Percy. Denise was described to me as a "sharp character, a Southern girl who is a lot of fun, with a caustic sense of humor, and she is an accomplished seamstress." She must be persuasive, too, since she "hornswaggled" Stephen into taking Scottish country dance lessons! And he even wears a kilt!

I asked Stephen how he got interested in cryonics, and he told me he read Keith Henson's 1986 book review in *L5 News* of *Engines of Creation*, then saw the book on a bookshelf. He couldn't really afford to buy it, but did anyway, read it in one sitting, and was blown away. Five to six years later he contacted Alcor, and has been with us ever since.

It is fortunate for Alcor that Stephen joined us, and was elected to the Board of Directors about three years ago. His insightfulness and thoroughness have been a great asset to the organization. l

Alcor Membership Status

Alcor has 629 Suspension Members (including 104 Life Members) and 58 patients in suspension. These numbers are broken down by country below.

Country	Members	Applicants	Subscribers
Argentina	0	0	1
Australia	9	1	3
Austria	1	0	0
Canada	14	6	12
China	1	0	0
France	0	0	1
Germany	3	1	2
Ireland	0	0	1
Italy	0	2	3
Japan	0	1	2
Lebanon	0	0	1
Mexico	0	0	1
Monaco	1	0	0

Country	Members	Applicants	Subscribers
Netherlands	1	0	1
Russia	0	0	3
South Africa	0	0	1
South Korea	1	0	0
Spain	2	4	0
Sri Lanka	0	0	1
Sweden	0	0	1
Switzerland	0	0	2
Taiwan	0	0	1
U.K.	13	5	6
U.S.A.	583	76	247
TOTALS	**629**	**96**	**285**

Those Venturist Lemlers!

In April Dr. Jerry Lemler and his wife, Paula, became board members of the Society for Venturism. The Venturist Society was started by David Pizer in 1986 to provide a support group for cryonicists and promote cryonics to the general public. The organization is recognized by the IRS as "scientific, educational, and religious" and has authority, among other things, to conduct weddings and memorial services. Pizer is now trying to establish a cryonics community in a rural setting north of Phoenix, Arizona, under guidance of the Venturist organization (see "The (Cryonics) Grand Opening of Creekside Preserve/Ventureville" in *Cryonics* 23, no. 4). The interest and commitment shown by the Lemlers is much appreciated and should bear fruit in coming years.

The More Things Change...

by Dr. Jerry B. Lemler

In leafing through a few old editions of *Cryonics* magazine, specifically from the 1980s, I came upon a piece written by Dave Pizer from the January 1988 issue, vol. 9, no. 1. The title of Dave's article is "Not in 1987." Here's what Dave Pizer said...

"It was late Christmas Eve, 1987, and we had returned from the wife's folks' house after an evening of gift swapping, feasting, and family fun. I wasn't quite ready for sleep, so I turned on the tv, thinking I would watch something light and amusing to bring on sleep. I couldn't have been less relaxed or amused by what I saw.

"The very first program caused me to sit bolt upright. There on the screen was the Alcor facility. What followed was as disgusting an experience as I can remember. What could have been a story of heroism, honor, and scientific advancement was distorted into an untrue, irresponsible, sensationalized account that, in the end, can only discredit those who chose to misrepresent things so badly.

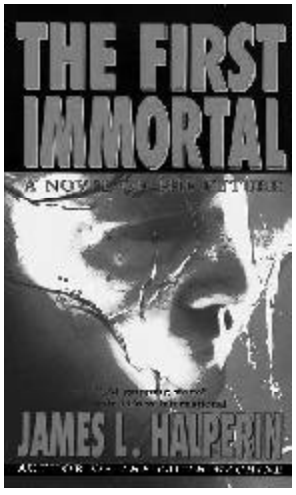
"The announcer described what I knew was a normal cryonic suspension, but he purposely misconstrued the facts and tried to make it look, instead, as if a bizarre murder had been committed. Excitedly he proclaimed, 'A woman was decapitated today, and her head frozen,' and went on to explain how, 'she was probably still alive,' when this happened. Apparently, a healthy woman had been done to death in a painful way, though 'the coroner hasn't decided what charges to file at this time.' Next the scene flashed to Saul Kent, and indicated that here was the man who had done this (awful) thing to his own mother, while Mike Darwin was introduced as 'The President' of this group, Alcor, that helped Kent to do the deed. Mike was quoted out of context, saying, 'We made a mistake. I'll admit we made a mistake.' That's all they allowed us to hear of Mike, though, I was sure he explained the whole procedure in detail that would show it was far more sensible than the report indicated. Placing the woman in cryonic suspension was no 'mistake' compared to what the alternatives—burial or cremation would have been! But the media chose to make it look completely different, and the whole story was clear proof of their obvious bias against cryonics.

"I turned off the set, rolled over, and thought to myself how nice it would have been if the story could have been presented in proper perspective: 'Saul Kent, pioneer in the life extension movement, had his infirm mother removed from life support systems, after doctors had given up any hope for her, and allowed her to deanimate with dignity. Then Mrs. Kent was placed in cryonic suspension, thus offering her a chance to defeat death. Mike Darwin, also a long time leader in the cryonics movement, is President of the Alcor Foundation, which carried out the suspension. Darwin and Kent have devoted their lives to developing strategies and methods that offer people of today the hope of surviving to a future when all may live indefinitely in good health. It just may be that cryonics offers the only real chance for biological immortality, and we at station XYZ salute the Alcor organization and wish Mrs. Kent the best.'

"But of course it wasn't to be, not in 1987. As if to underscore this, after the distorted report on Alcor, there was a tribute to 'the greatest man on earth'—the Pope. Over 1.5 billion people, it was reported, were inspired by the Pope's recent message, which ironically was, 'Don't look for salvation in technology or science.' So, besides discouraging birth control, His Holiness is now telling people not to look for hope in science.

"Maybe in 100 years we'll have the last laugh. The breaking news story could be: 'Mrs. Kent, recently revived from cryonic suspension, went to an all night rock concert after running a 50-mile marathon and taking her autolift for a spin around the moon.'"

As I've heard it said so often, the more things change, the more they stay the same! l



Special Offer!

Complete an Alcor Membership application and receive a *FREE* copy of James Halperin's book *The First Immortal. Contact Alcor Membership Administrator Jennifer Chapman for more information: jennifer@alcor.org*

An engaging story for cryonics enthusiasts and interested novices alike:

In 1988, Benjamin Smith suffers a massive heart attack. But he will not die. A pioneering advocate of the infant science of cryonics, he has arranged to have his body frozen until the day when humanity will possess the knowledge, the technology, and the courage to revive him.

Yet when Ben resumes life after a frozen interval of 83 years, the world is altered beyond recognition. Thanks to cutting-edge science, eternal youth is universally available, and the perfection of cloning gives humanity the godlike power to re-create living beings from a single cell. As Ben and his family are resurrected in the mid-twenty-first century, they experience a complex reunion that reaches through generations—and discover that the deepest ethical dilemmas of humankind remain their greatest challenge....

The Society for Venturism
11255 S.S.R. 69
Mayer, Arizona 86333
www.venturist.org

It is time for all people who wish to live in a better world that readily accepts life extension research and cryonics to band together and work to make this a concrete reality. The Society for Venturism is raising up its banners to share with the world our exciting message, which aims for the achievement of physical immortality. Our initial plans are to help our members be interviewed in the mass media, develop a major new magazine, and to have the membership advantage of sharing our beliefs from the forum of an organization that does not profit when someone gets suspended.

We will accomplish the first by engaging radio and TV talk shows and offering Venturist members to be interviewed—long and often. We hope to flood the talk shows and news shows with interviews of reasonable Venturist members who are willing to persuade others to "take the venture to the future." If you remember, we chose the word "Venturist" because a "venture" is an adventure with some risk. That is what cryonics is about.

We will spread the cryonics message by building the Venturist Magazine into a publication that can be sold in newsstands and will be attractive and informative. Starting with the July 1st issue, the Venturist Magazine will be published every month.

Our unique organization lets others do suspensions and storage, while we concentrate on getting our message out to the world. This is so there is no perceived financial gain for us as cryonics grows. The benefits of our work will go to others.

So far we have discussed building the membership, doing radio and TV talk shows, and building the magazine and trying to get it up to standards where it can be sold in newsstands. After we have progressed in this direction we can implement other benefits to immortalists such as: personal trusts to take it ($) with you; a back-up rescue option in case the patient's primary storage company gets in trouble; meetings and seminars here at the Creekside Preserve.

And in time, Ventureville, our cryonics community planned for development in Mayer, will become a reality as our numbers grow. This will not happen overnight, but in time we will have houses, apartments, and a lodge center to be a beacon to cryonicists everywhere who want to gather together to work on Venturist goals and also to look after one another.

People who use reason to seek their own advantage and do so without harming others, and in fact help others in the process they select to obtain those advantages, are the most noble and honorable. And that is what you will be doing with other fine people when you join the Society for Venturism. Each time the Venturists help motivate another person to sign up for cryonics, the existing cryonics population is strengthened, and the new person is helped by having the personal protection of being signed up for cryonics. Therefore, every time you help someone else through cryonics you are also helping those who are already signed up and those who are already in suspension. Working to increase membership in the cryonics movement is truly a win-win situation.

By becoming a member you will be taking part in a great undertaking which will change for the better the world we live in. Come embark on the adventure!

Membership and Subscribers' Query

(Please xerox this page and mail to the address above)

By not only joining the Venturists but subscribing to the magazine you are showing your support to share the message of physical immortality as an attainable goal with the world.

Please enter my order for a half years' subscription to the magazine for the second half of 2003. Enclosed you will find my payment for July through December, 2003.

USA (6 months)	$12.00____
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We are trying to update our membership and subscription lists. Please help us by filling out this questionnaire and returning it to us as soon as possible. All responses will be kept strictly confidential. Thank you.

1. **Full Membership.** Venturists Full Members must have made arrangements for cryonic suspension in the event of clinical death.
   ☐ Please count me as a full member.

2. **Associate Member.** Venturist Associate members are those who are sympathetic to cryonics, but may not have completed suspension arrangements for themselves.
   ☐ Please count me as an associate member.

3. **Subscriber.** I make no declarations but would like to receive the magazine.
   ☐ Please count me as a subscriber only.

Protecting the God

by Michael R. Seidl, Ph.D., J.D.

I am not ordinarily one to quote comic books—I have, after all, a law degree from a prestigious university on the East Coast as well as a Ph.D. in English. When I quote—and I try not to, since my own words are so much more interesting, he said humbly—it is supposed to be from compelling legal arguments or high, canonical literature. Nevertheless, the dirty secret is out—I am an unrepentant consumer of popular culture. I have a rational explanation for it, of course, which is that high art, literature, and philosophy—generally created and canonized by people sadly over-trained in high art, literature, and/or philosophy—tends to lag behind the times. Great art is generally created and measured by the overeducated, who naturally create and judge based upon the standards by which they were educated, which standards are thus always a generation in arrears.[1] For the really current, we have to turn to pop art. So I have frequently found myself, over the course of my life, gobbling up various forms of pop art, from which I have gratefully and proudly pulled concepts—memes—not yet articulated in the more traditionally respected material I was reading at the same time. Pop art helps me read the present. That is my rational explanation. The practical (irrational?) explanation is that I am self-indulgent, and just as I can justify myself the occasional chocolate éclair, very dry martini, and Cuban cigar, I can justify myself comic books, action films, and MTV. All of which is my way of justifying the quotation to which I am leading.

Some years ago, Alan Moore produced a comic book called *Miracleman*. Some of you may recognize the name—Moore is the author of such comic-book/graphic-novel crossovers into the mainstream as *V for Vendetta*, *Watchmen*, and *From Hell* (the source for the film of the same name starring Johnny Depp). *Miracleman* is a reworking of the old Marvelman (or Captain Marvel) character (some of us know Marvelman from his Saturday-morning cartoon incarnation as "Shazam"). Marvelman was a young newsboy who met a supernatural figure who imbued him with the ability to transform himself into a super-hero of great power by pronouncing the word "shazam." In Moore's reworking, Mike Moran is a paunchy, middle-aged newsman with constant migraines. One day, in a freak encounter, he remembers his "magic" word—"kimota"—and, speaking it, is transformed into a gleaming, impossibly strong, fast, invulnerable, and smart hero—all the things Moran is not and more, virtually godlike in his abilities. Moran then remembers a comic-book-like Marvelman youth of super-heroes and villains, inconsistent with the world in which he lives. In time he learns that he was actually the product of a government experiment, engineered by a sociopathic scientist with technology looted from a crashed alien spacecraft and raised in a lab where he was controlled with artificial memories and environments to test his abilities (this is a comic book—what did you expect?); the technology, as modified, allows him to change places with a genetically engineered, improved version of himself through a mechanical transference of bodies in a flash of kinetic energy when he says kimota. When the government program that created him was shut down, the government tried to kill him with an atomic bomb, which only injured him enough to cause Miracleman to speak his word and change back to his Moran form and to produce his amnesia about his other self. As Miracleman, and eventually with the help of other miracle-beings, he goes on to re-engineer human society into something more benevolent and much more interesting.

First, however, he has one terrible trial to overcome. The scientist who has created him is still alive and possesses a secret word that transforms Miracleman back into simple Mike Moran, a failsafe device to protect the scientist should Miracleman ever learn the truth about his origins. Miracleman does, of course, and the scientist employs his word, of course, and Miracleman is once again Moran, unable to change back for the space of an hour. The scientist (sociopathic, remember) gives Moran a fighting chance, allows him to try to outrun a super-beast that will devour him. So Moran takes off through the jungle along with his companion, a highly-trained government agent turncoat who has helped him uncover his past. The two dash through the jungle, pursued by the beast, until Moran, faced with the imminence of his own death, worn down by all that has happened to him, physically overwhelmed and exhausted, collapses, unable to go on, knowing that his death will mean the death of Miracleman as well. And his companion speaks. He says:

> Mr. Moran . . . listen very carefully . . . you are a fool. You are a weakling and a coward . . . . But inside you there is a god. Inside you there is someone better than us . . . and whatever the cost, you must protect him.[2]

You know the outcome—it is a comic book, after all—Moran survives, transforms back into Miracleman, and defeats the evil scientist.

When the comic book came out, in 1986, I glossed over the above lines; they were part of an action sequence, of no particular philosophic importance to me even in my rationalization of trolling such things for hidden bits of wisdom (there was plenty of other wisdom in *Miracleman,* just not in that passage, for me, at that time). It was not until 1990, when I read *Engines of Creation* and began to think about nanotechnology and cryonics, that the passage began to take on, gradually, more meaning. Nanotechnology, of course, holds out the promise of something like miracleman for all of us—re-engineered bodies, effectively ageless and potentially invulnerable, carrying more efficient minds into an almost inconceivable future. Cryonics holds out the promise of nanotechnology for those of us not lucky enough to avoid clinical death before advanced nanotechnology comes around.

And so the advice to Mike Moran began to resonate with me, to echo in my mind, to haunt me. Protect the god. Protect the god. Protect the god. A comic-book phrase that meant nothing to me gradually became a mantra as, with the aid of a basic understanding of the promise of nanotechnology and the hope of cryonics, I began to see the possibility of such a seed-god in myself. Do not mistake me—I am not suggesting an ability to become God, just a god in lowercase, a god in the sense of Homer's gods, a being beyond human although still possessed of human attributes. The potential for such a being lives in each of us, has always lived in us, with only the necessary technological development necessary to make it so, waiting for advanced nanotechnology to make us better than our current human frailties.

When I put cryonics, nanotechnology, and the above lines together for the first time effectively I found a new ethical system for myself, one where the highest ethical calling is to protect the god in myself, to protect the potential to exceed myself that lives within myself (which potential I have come to refer to, in shorthand, as "the god"). If I protect the god, then something very like myself could still be cogitating and perambulating many upon many years in the future; if I fail to protect the god, I could just die when I die. As ethical systems go, at first inspection, it seems to be comparatively narrow and weak, grounded in self-interest, which is notoriously short-sighted. It is, in fact, not unlike Ayn Rand's objectivism at first blush, grounded in enlightened self interest. The problem with such enlightened self interest as an ethical basis is that it contemplates (perhaps unconsciously) necessary human mortality and thereby limits the range of self-interest; from pure objectivism, my self-interest cannot rationally be contemplated to exceed my own lifespan, and whether nuclear wasteland or utopia arises in the moments after my death can have no rational import.[3] Similarly, even during life, objectivist self-interest can be narrow. So long as I am getting what I want, there is no *necessary* correlation between such an individualist ethic and the advancement or prosperity of anyone other than myself.

Oddly (or perhaps not) a prime ethical articulation that seems so self-interested (in protect myself for myself) has seemingly *necessary* benevolent results in the nanotechnology and cryonics context. Unlike radical, individualist self-interest, protecting the god in a nanotechnology/cryonics worldview requires the cultivation of social relationships and a prosperous society. None of us can advance us to a nanotechnology future alone, and none of us can cryosuspend ourselves. Protecting ourselves most effectively means first protecting ourselves but then encouraging and securing resources that will help bring a nanotechnological future into being and providing for an efficient cryotransport system for those (including possibly us) who suffer clinical death pre-nanotechnology. Protecting the god means a level of interdependency beyond prior human contemplation—it is one thing to trust those we leave behind to properly bury us when we can no longer compel their interest but another entirely to hope that they will care for us as still among the living. Protecting the god in ourselves, as I contemplate it, necessarily requires us, in order to protect ourselves effectively, to take on the burden of fostering nanotechnology and of protecting the clinically dead as if they were living; only by working to normalize that ethic can we encourage the chance of benefiting from it ourselves. Thus, "protect the god" in this context has necessary ethical consequen-ces for us as individuals and the society we inhabit—it is, I believe, the first ethic (as opposed to economic) of individualism in human history that produces *necessary* (as opposed to optional, accidental, or simply imperative) human interdependence.

As this column was coalescing in my mind, I received the terrible news about the medical battle facing Dr. Jerry Lemler, Alcor's President and CEO and my friend. I continue to hope for his full and speedy recovery. But, in the context of this column, I find myself able to say one profound thing about him and one necessary thing to him. First, of him: he is a man, among the few, who has answered the ethical call to protect the god in himself (although he will tell you his goal is to attend Woodstock III); in doing so, and during his short period with Alcor, he has moved Alcor immeasurably further along the road toward effective protection for himself—and thus for us all—than any of us could have expected from anyone in such a short period of time. He is a hero. Second, to him: if the worst becomes so, and this disease cannot be beaten, our future is irrevocably tied to yours, and we will protect your god with the best power we have, with the power we will use to protect our own, which power you have helped create, against the day when we will all get a crack at the magic word and at a very human divinity. And Woodstock III.

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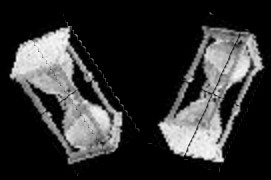
* I welcome comments on these issues and others related to cryonics at mseidl@magpage.com

[1] Thomas Kuhn so describes the evolution of science in his much quoted (but without effect that allows the quoters to escape the paradigms he describes) book *The Structure of Scientific Revolutions.*

[2] Alan Moore, *Miracleman,* Issue No. 6, Eclipse Comics, February 1986.

[3] Pedants could argue that, to the extent I derived personal self-satisfaction from the prospect of moving along human prosperity or utopia that I would be justified in pursuing it under such a system; that is correct. My point is simply that under such a system long-term, utopian goals are a possible correlation with self interest (just as alternative or opposite goals are), not a necessary correlation.



You Only Go Around Twice

by Jerry B. Lemler, M.D.

Send in the Clowns

In case you hadn't noticed, there's a new mutation of the human species amongst us. They've only been around in earnest for a decade or so, and yet (alarmingly) their numbers are undeniably on the rise. Insidiously, they have been replicating themselves, emerging from behind ivy-covered academic bastions of "higher education" and are currently infiltrating legitimate research communities and medical center boardrooms. Perhaps the most troublesome attributes they possess are the smugness of newly discovered undeserved entitlement and an indulgent, hyperbolized P. T. Barnumish notion of self-importance.

You'll see one of their kind popping up on television every now and then, or you'll (no doubt) encounter one of their "authoritative representatives" being quoted in print. There's no denying they make good copy—they have been assiduously trained to ruffle their media feathers to attract the eye of the all-too-supplicating cameramen.

And, let's face the facts here; you and I have aided them—well, collectively, at least. A trauma victim lies battered and dying in the street. "Someone call 911!" is the (appropriate) knee-jerk first response. Then, inevitably, a bystander (realizing the obvious) proclaims, "Get a priest. He needs last rites," no matter the faith (if any) of the soon to be netherworld traveler. This panoply plays itself out in Pavlovian fashion each and every day on the six o'clock news and in the front pages of the dailies. In fact, this facet of our common archetypal existence has undeniably achieved certifiable meme status to the point where few (if any) of us even bother to question its necessity or validity.

An unexpected event occurs, an appropriate initial reaction is launched, and then we summon the "sanctified one" to interpret and confirm the relevance and meaning of the experience for the rest of us. So it goes with no less regularity, sad to say, with significant scientific truths. As a society we have, without question (or even questioning), come to accept the fact that we predictably understand more and more about matters of less and less importance. It's as if we have anesthetized our collective selves from experiencing the emotional immersement of living. And, what better way to promote this numbness than to allow someone else—(better yet) someone who has been "credentialed"—to do it for us?!

Enter: The New Priesthood

The modern-day bioethicist is all too delighted to fill the role of the judgmental punitive parent in our heads that so many of us unanalyzed, regressed, and fixated Oedipal complexed partial failures seem to crave. They inject themselves into the fray at pivotal junctures of our intra-psychic jostlings, ostensibly to counterbalance the incestuous panderings of our renegade Ids. Their doctoral curriculums have supplied them with just enough knowledge of science and medicine to allow them to appear credible, yet at the same time make them dogmatically dangerous.

These sinister purveyors of the "Thou Shalt Not" mantra are beckoned to the scene of a noteworthy discovery (invention, procedure) to proffer their naysayer party-line diatribe, rhetorically reminding us to "stop and reflect while we consider the meanings and implications" of the latest technological achievement.

Inevitably, they query (something like): "Do we really want to accept the notion of an individual human being possibly living for centuries?" or "Is it proper to violate the natural order?"

Let's juxtapose for a moment some pontifications of these "Holy Moly Sees" in anachronistic fashion. "Is it right to remove an organ from a deceased individual and indiscriminately put it into another?" "Should society allow blood from one person to be given to another, especially if they are not related?" "Before we give a sick patient some byproduct of a processed mold, shouldn't we pause to consider the ethical implications of becoming overly reliant on plants for our existence?" "How can it be proper to 'sleep away' the surgeon's scalpel? We must be cautious before endorsing anesthesia as morally justifiable."

My friends, the members of this new breed of bioethicists are little more than excrement, hiding behind the emperor's newest garments (starched white lab coats), fatuously purporting to be self-appointed "experts" in how the rest of us ought to think. They descend on the stage, armed with their fancy degrees and speaking in the articulate jargon of the scientific vernacular.

Do not, I would hold, be duped. They are merely the most vernal in a seemingly never-ending chain of pretenders.

As Neil Young said, "Oh to live on Sugar Mountain, with the barkers and the colored balloons." l

Alcor Then and Again: Twenty-Five and Ten Years Ago

by R. Michael Perry, Ph.D.

Alcor has been in business more than 30 years now, a very long time in cryonics. A previous "Then and Again" column (4th Quarter 2001) dealt with a bit of this long history. Here I'll offer some additional, adjoining history. The focus again will be on a quarter century and a decade ago, with some relevant background as before, keeping in mind that, as so often here, only some major highlights can be covered. In this case the spotlighted years, 1978 and 1993, had some elements in common, in that suspensions and conferences played important parts.

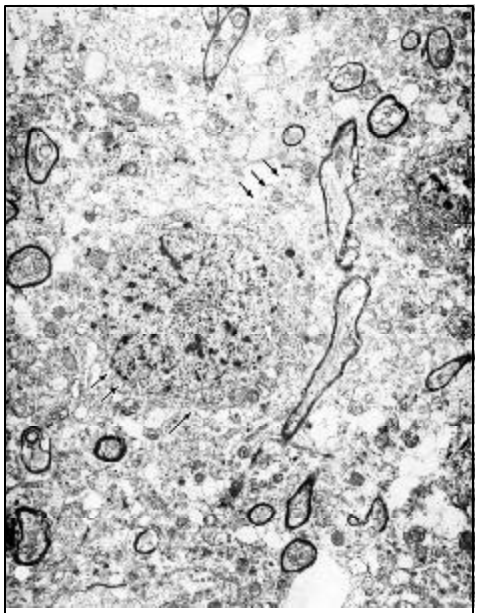
Background for 1978

Alcor in the 1970s was a very small organization that lacked its own suspension capability. The deficiency was supplied at first by Manrise Corporation, which had been organized in 1971 by Alcor's co-founders, Fred and Linda Chamberlain, nearly a year before they started Alcor itself. Trans Time became Alcor's suspension services provider when Manrise merged with Trans Time on October 1, 1977.[1] Trans Time had been founded in the Bay area of California by Art Quaife just a few weeks after the founding of Alcor, located in southern California. The fortunes of the two organizations were tied together for several years, and several Alcor members served on the Trans Time suspension team.

An important event in the summer of 1977 was an experiment on July 25. Filmed by ABC TV, the Trans Time team, led by Jerry Leaf, brought a dog down to near-freezing body temperature and then revived the animal.[2] Though the dog lived only 17 hours, the work was an important precursor to later cryonics experiments, many of them Alcor-sponsored, in which animals subjected to cold clinical death—hypothermic cessation of heartbeat and breathing, as occurred here—became long-term survivors. (Often they were then adopted as pets and did very well.) The revival of hypothermic mammals had been pioneered by a non-cryonicist, Gerald Klebanoff, in the 1960s, but it is significant that this difficult work was now being successfully pursued by a small band of cryonicists with limited, private funding. On the technical level, it demonstrated that survival could occur after "total body washout"—the replacement of blood and body fluids with a chemical solution—"base perfusate"—used in the initial stages of cryoprotection—along with the deep cooling. In other words, the beginning stages of a cryonic suspension were shown to be reversible.

Jerry Leaf at the Trans Time dog experiment, July 25, 1977. From Long Life Magazine *1(5) 138 (November/December 1977).*

Another important, if not so dramatic, experiment occurred two months later, September 24.[3] Again it involved the Trans Time team, and this time the work was funded directly by Alcor. A dog was perfused with cryoprotectant and frozen, as a neuro (head only), to dry ice temperature (–78°C), and then thawed and examined to assess the quality of preservation. Results naturally were not all one could hope for, but overall seemed quite en-



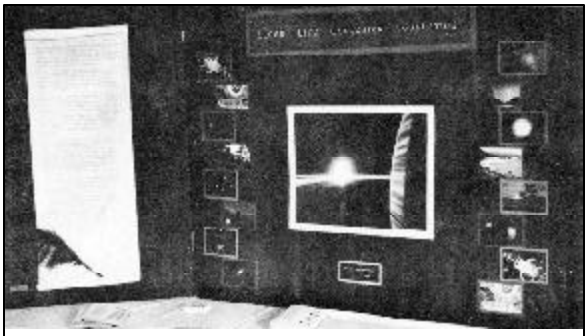
From the Alcor dog experiment, September 24, 1977. Electron micrograph at 8,000x of a nerve cell in a dog brain (cerebral cortex) that was frozen to –78°C and rethawed. Single arrow= intact cell membrane. Double arrow= intact nuclear membrane. Triple arrow=intact fine process of cell, presumably dendrite containing reasonably well-preserved mitochondrion. From Long Life Magazine *2(3) 58-59 (July/August 1978).*

couraging. "Most of the [brain's] micro-structure[s] (cellular, nuclear, and mitochondrial membranes) are well preserved," wrote Alcor's president, Laurence Gale. "The major damage is in the fine cellular organelles (endoplasmic reticulum, microtubules, synaptic vesicles) and here some cells appear to suffer somewhat greater damage than others." The damaged organelles, Gale offered, were not the primary locus of memories, which appeared instead to reside in the more intact structural elements and thus perhaps were already being well-preserved.

1978

The Conference

As 1978 began, there were reasons to be optimistic about cryonics, and Alcor and its personnel had played an important part. It must have inspired a renewed confidence that cryonics would actually work and very likely also encouraged a feeling that now was a good time to celebrate a bit and exchange ideas. A cryonics conference, Alcor's very first, was held March 10–11 at the Hyatt House in Los Angeles.[4] Saul Kent chaired all the sessions and served as the "guiding light."(He also played a prominent or crucial part in many other conferences relating to cryonics and life extension, including the 1993 event reported below.) Saul's long-time associate Bill Faloon would shortly describe the conference as "the most successful life extension symposium in history."[5] Even by today's standards it was impressive on a number of counts.



Alcor's booth at the 1978 conference. From Long Life Magazine *2(3), front cover (July/August 1978).*

Kent predicted as many as 95 people would show up; the actual number was about 300. Among the remarkable cast of speakers were cryonics researchers Jerry Leaf, Art Quaife, and Paul Segal; futurists and free thinkers F. M. Esfandiary (later FM-2030), Keith Henson, Barbara Marx Hubbard, Timothy Leary, and Robert Anton Wilson; and aging/antiaging authorities Roy Walford, Benjamin Frank, Richard Cutler, Benjamin Schloss, and (again) Paul Segal. There was a panel discussion on human cloning. (A book had appeared, *In His Image: The Cloning of a Man* by David Rorvik, claiming—falsely, it would turn out—that a human had been cloned. Actual cloning of mammals from adult cells was still nearly 20 years away, and very likely a human baby has still not been cloned.) As Bill Faloon reported, there was a general feeling that "the attainment of physical immortality is inevitable." Of more immediate significance, especially for Alcor—Jerry Leaf told of his plans to establish his own laboratory for further work to perfect suspension procedures. Jerry had already collected some $100,000 worth of surgical equipment for the purpose.

Other Events

Jerry Leaf's main cryonics operation, Cryovita Laboratories, was set up in Fullerton, close to where Alcor was headquartered. There were two suspensions in 1978 involving Leaf and the Trans Time team, both at the Fullerton facility. (These were not Alcor suspensions but, as usual, used Alcor personnel.) Jerry had planned to have Cryovita up and running in October, but the first suspension, a last-minute, Trans Time case that started from New York in mid-July, hurried matters, and he spent a long night getting everything in readiness.[6] The patient, meanwhile, was packed in ice and airlifted cross-country to Los Angeles, and from there, using the hearse of an assisting, local mortician, out to the Fullerton site. (The mortician, Joseph Klockgether, is still active in the area and is still assisting Alcor with suspensions. At Alcor's conference in 2002 he received an award for his long service.)

Despite the delay and other difficulties (reassurances were needed for local law enforcement officials when a neighbor called on seeing the hearse with the patient drive up to the facility) the suspension in some ways went rather well. The patient, a man in his 70s with cancer, had not clotted, apparently because of heavy bleeding from the hemorrhaging throat tumor that had caused his death, so cryoprotective perfusion was unimpeded. After perfusion the patient was packed in dry ice and air-shipped to Trans Time's storage facility for long-term storage in liquid nitrogen. Jerry Leaf commented afterward: "I had not told Trans Time that Cryovita Laboratories was yet ready to be on standby for cryonic suspensions, and I was pleasantly surprised that everything went so smoothly. The Trans Time suspension team was only partly through the training they were scheduled to undergo, but they all did an outstanding job."[7]

The second suspension, starting in November from Maryland, was more straightforward and less eventful, though still presenting difficulties, particularly, a long delay caused by the patient's unattended death thousands of miles from the suspension facility.[8] A woman in her 60s living alone, with liver disease and heart problems, she had collapsed on her front porch on a cold night with a fatal coronary occlusion and had been found the next morning. Though her husband had previously been suspended, formal arrangements for herself do not appear to have been in place. The necessary paperwork was quickly executed by her son, and her long-term care was entrusted to Bay Area Cryonics Society (BACS, later American Cryonics Society or ACS; at this point BACS also worked with Trans Time). As in the other case, she was packed in ice at a mortuary in her area, flown to Los Angeles, then driven to the Fullerton facility, where cryoprotective perfusion and cooldown to dry ice temperature were completed, with subsequent shipment to Trans Time.

In all, Cryovita marked a major step forward, both in perfusion technology and in providing a suspension capability in the area it served, which included Alcor's headquarters and main membership.

Background for 1993

Alcor's first suspension, that of Fred Chamberlain's father, occurred in 1976. The patient was stored initially with Trans Time, as was Alcor's second patient, who was suspended—in this case by straight freeze—in 1981. Differences developed with Trans Time, however, and, in 1982, Alcor's two patients were transferred to Cryovita's Fullerton facility, which thereby became committed to patient storage. By the time of Alcor's next suspension, in 1985, Cryovita had become Alcor's exclusive suspension services provider, staffed entirely with Alcor personnel, and was no longer providing for Trans Time. Alcor had, in fact, moved into Cryovita's Fullerton location itself and shared its tenancy, a relationship that would continue with the move in 1987 to a nearby location in Riverside.

Noteworthy during this time were a remarkable series of canine experiments, carried out by Alcor and Cryovita under Jerry Leaf's direction, in which animals were resuscitated from deep (but not subfreezing) hypothermia and became long-term survivors. To give credit where it is due, within a few years there were parallel, successful efforts resuscitating mammals by American Cryonics Society working with Trans Time; the one-time allies in northern and southern California had now become rivals. Mention should also be made of the legal crisis at Alcor over the suspension of Dora Kent. Though ultimately resolved in Alcor's favor, it hampered research efforts there after 1987. Cryovita nevertheless continued to work closely with Alcor and to share its space—until Jerry Leaf's untimely demise and suspension in 1991. Simmering disagreements among some of the Alcor membership now erupted (a recurring problem with cryonicists!). Some of the top technical talent left to form their own organizations. Included were Mike Darwin and Steve Harris, M.D., who would, for the next several years, play important roles in cryonics-related research outside of Alcor. Without its founder, Cryovita itself quickly faded to inactivity. (It was eventually absorbed by another company, Saul Kent's 21st Century Medicine, Inc.[9]) Thereafter Alcor provided its own suspension services. Research had seemed about to rejuvenate after the successful resolution of the Dora Kent crisis, but it now ground to a virtual standstill.

1993

Overall 1993 was an eventful year, with a fair share of "interesting times" you'd rather read about than live through, though the long-term effects were, I think, more positive. Many of the important happenings were of a sensitive nature and tended to be underreported, which makes the historian's problem more challenging. Here I've devoted a large share to one event, a small conference in the spring.[10] Many things are left unsaid yet one gathers a general sense of what was happening among the contending factions, which were still trying to work together despite their differences. Following this is a summary of other events.

The Conference

A conference entitled "New Dimensions in Cryonics: Critical Issues for the 21st Century" was held May 28–30, 1993, at the Red Lion Inn in Ontario, California. It was organized by Saul Kent and sponsored by Kent's Life Extension Foundation along with Alcor Foundation, Cryonics Association, Cryonics Institute, and American Cryonics Society. About 50 persons attended, many from the local area, but including others from other parts of the country and elsewhere, including Canada.

In essence, the conference consisted of a series of panel discussions with audience participation and, as expected, many and contrasting viewpoints. After a reception Friday evening, May 28, the conference began in earnest the next morning with a discussion on the best model for a cryonics organization—whether, for example, there should be separation between suspension and storage organizations (opinions remained divided). This was followed by considerations of legal and financial issues.

A mid-afternoon panel then focused on the technical aspects of cryonic suspension and other longevity research, this being possibly the most significant part of the conference. Mike Darwin and Steve Harris spoke about recent encouraging work with hypothermic dogs and suggested that very significant advances in suspension protocols might be achievable at the laboratory at which Mike is employed, P.W. Biomedical Services in Colton, California. One of their goals is reversible cryopreservation of the brain. This would be a fundamental breakthrough, eclipsing all previous progress in cryonics and hopefully leading to widespread acceptance, particularly among the scientific community. Mention was also made of 21st Century Medicine, an umbrella organization set up by Saul Kent to sponsor projects in life extension, including research into cryonics procedures and aging.

An evening banquet was followed by a discussion of how much democracy there should be in a cryonics organization. The issue was particularly relevant in the case of Alcor, the largest such organization, whose board is "closed"—not elected by the general membership. This was another topic on which opinions were sharply divided. Many did favor more or complete democracy; however, others pointed to possible serious dangers in this approach. Cryonics organizations were very small, relative to certain other movements, but still had sizable capital tied up in such operations as patient care. This opened the possibility of some larger organized group infiltrating a cryonics organization and voting to use the funds for other than their original purposes. There was general agreement that there must be protection against this sort of danger, but also a feeling that more member participation would be desirable.

Sunday morning there was a heated discussion on another issue involving Alcor. A member in Florida who was an AIDS patient attempted suicide, and then, though he recovered, resigned his membership and was no longer signed up for cryonic sus-

pension, though of course he was still terminally ill. The difficulty of dealing with the suicidal or otherwise mentally disturbed was acknowledged; no clear solutions emerged.

Next there was consideration of whether relatives should have responsibility for maintaining cryonics patients. Curtis Henderson spoke strongly against this approach, which led to many suspension failures in the early days. A participant who had maintained his mother in suspension for many years then offered a contrasting viewpoint, but it was noted that *he* was a cryonicist, unlike those who had let their relatives thaw. It is clear, then, that cryonicists make far better relatives for maintaining cryonic suspensions, if it must be done that way. The general feeling, however, was that a trustworthy organization is best for long-term maintenance, and that relatives of patients should not be necessary as sources of funding.

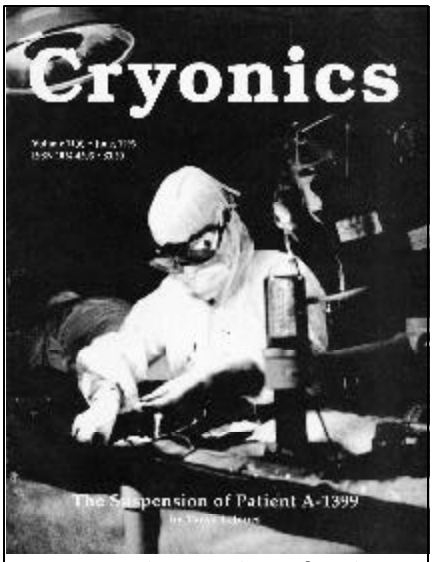
Among the last topics discussed was how independent local cryonics chapters should be, as parts of a larger widespread organization. (At the time, the only organization large and widespread enough to have a serious infrastructure of this sort was Alcor.) As on a number of other issues, opinions were varied and remained divided, in part, in this case, because of very different ideas among the different chapters as to what *their* relationship to the parent body should be.

Other Events

Politically, there was a change of administration in January—Steve Bridge replaced Carlos Mondragón as president,[11] the outcome of a complicated and not terribly friendly struggle involving numerous participants. Steve promised to try to heal the wounds and serve as a "bridge" between the different groups. During the year, plans firmed up for moving out of state, and property in Scottsdale, Arizona, was acquired. (The move itself was completed early the following year.) As for cryonics proper, there were two Alcor suspensions in 1993, both problematic in different ways, and a third, unusual, non-Alcor suspension in which assistance was given in the early stages.

The first Alcor suspension, in February, involved a despondent man in Texas who committed suicide by a gunshot to the head.[12] He had signed up about a year before and had taken out an insurance policy. His insurance would not pay because his suicide occurred within the two-year limit, but he also had other funding just sufficient to cover the minimal suspension that was all that could be done. His brain was recovered on autopsy and transported to Alcor's facility in Riverside. Tanya Jones, then Suspension Services Manager, deserves much credit for her single-handed, heroic effort, flying to Texas, negotiating with the necessary officials, and returning quickly, if unglamorously, with the brain in a plastic bag.[13] Due to clotting it was too late for perfusion, so the brain was straight-frozen. Not recommended. If you want a good suspension, don't be too eager to hurry it along.

The second suspension, in April, was technically much better,[14] despite concerns that were raised, and later laid to rest, regarding a bizarre possibility of bleach contamination in the perfusate.[15] The patient, an AIDS victim in northern California who had chosen the neuro option, was attended by Alcor personnel prior to and following pronouncement, and, it appears, got about as good a suspension as was possible at the time. But another, very different but still serious problem surfaced later. For it developed that the man had lied on his insurance form, saying nothing about his AIDS (or cancer, also present), and the company would not pay.[16] Alcor did not terminate the suspension (very rightly, in my view)—it continues—even though they had legal ground to do so. But it goes without saying that an organization such as Alcor must have funding to remain viable and cannot accept many charity cases like this.



Tanya Jones in protective garb assists at AIDS patient suspension, April 1993. From Cryonics *14(6), front cover (June 1993).*

There was a third suspension later in the year in which Alcor was briefly involved, an unusual and sensitive last-minute case that was very little publicized due to family wishes for privacy. I'll not say more except to note that, after some preliminary assistance from Alcor, the next-of-kin decided to continue the suspension at another facility, and there the matter rested.

Funding is a critically important issue in cryonics, as was particularly evident in the AIDS case, and, along with it, the problem of pricing. How much should an organization charge for its services? You need enough capital for the organization to be viable, but overcharging will likely turn away customers, and lives could be lost. The difficult issue of estimating the full cost of cryonic suspension, including the ongoing, long-term storage cost that must be paid out of interest income from the patient's estate, was tackled by Ralph Whelan in the October 1993 *Cryonics*. The figures arrived at would guide Alcor's pricing philosophy in the years following, and are still influential.

Some Final Thoughts

1993 was the last year that Alcor was based in California.

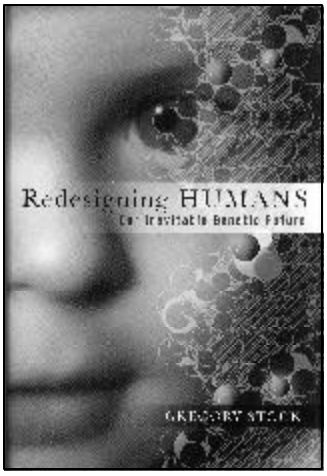
(continued on page 34)

Redesigning Humans
Our Inevitable Genetic Future

By Gregory Stock

Houghton, Mifflin, 2002

Book Review by R. Michael Perry



Stock's book can be said to occupy a middle ground between two other works I've recently reviewed here. All address much the same theme of the role of technology in the near-term future, but come to different conclusions about our likely capabilities and how we should apply them.

Francis Fukuyama *(Our Posthuman Future)* takes the position that, while technology for modifying basic human characteristics could well be in the offing, it must never be used for that purpose. This would rule out any sort of "enhancement" and only condone "therapeutic" uses—correcting what clearly are deficiencies relative to a pre-established norm. The government, argues Fukuyama, can and should enforce the ban on further intervention. Ray Kurzweil, disagreeing, takes the libertarian view that the individual should be permitted to decide what self-modifications he or she wishes to undergo, within large limits. These wishes would then be carried out assuming the technology and knowhow are available. In *Are We Spiritual Machines?* Kurzweil offers that desirable and attainable modifications will not stop with biotechnology but will extend fairly soon to person-machine interfaces of different sorts and possibly, eventually, to replacement of most or all of the human organism, including the brain, with superior artificial components.

Stock, in *Redesigning Humans,* is doubtful of Kurzweil's optimistic projections of near-term, nonbiological modifications, but is also sure that bans on biotech's development and uses will be unenforceable, something which in turn is refreshingly viewed in a positive light. "To forgo the powerful technologies that genomics and molecular biology are bringing would be as out of character for humanity as it would be to use them without concern for the dangers they pose." Stock is well aware of the possible dangers but sees the free market itself as a powerful regulatory and protective force. Problems may sometimes develop, but what is profitable should, in general, correlate with what is good for us and result in our betterment. Stock is also even-handed in surveying the spectrum of opinion, offsetting the reactionary, anti-cloning contingent with explicit mention of transhumanists and extropians, who are, of course, fervent advocates of life-extension technologies and their use. As with Kurzweil and somewhat contrary to Fukuyama, there is the implicit assumption that people have the competence and thus the right to make up their own minds as to the use of a technology that could affect the quality or length of their lives.

This libertarian principle is extended to an area where it is more controversial, in which characteristics of the unborn are chosen by the parents-to-be. Such choices are already being made routinely, through a process known as preimplantation genetic diagnosis (PGD), which involves testing embryos at an early stage of development and discarding those that fail to measure up. In this way traits such as gender and the absence of certain disorders such as hemophilia and Tay-Sachs disease can be preselected. First applied in 1989, the procedure is still too expensive and limited in scope to have seen much use, but that can be expected to change. Should people have the right to select the characteristics of their offspring, given that the latter cannot give informed consent? Stock does not attempt a definitive answer to this hard question, but expresses confidence in a policy that allows for individual discretion and choice.

Meanwhile, the possibilities are growing in this field as in many others. Germinal choice technology, or GCT, is the author's term for the whole range of feasible genetic interventions, "extending all the way from rudimentary embryo diagnostics to germline enhancement." GCT in more advanced forms is experimentally applied to animals today, as one example yielding a "knockout" strain of mouse in which a certain gene is deactivated. The modification occurs in the germ cells of the mouse and thus is passed to offspring. In the same way other genetic changes could be introduced and would be inherited; the same could be applied to humans. "Pure and simple, we are poised to make conscious, highly specific choices about the genetic constitutions of our children and to inject our preferences into the

next generation using methods far beyond those previously available." Possible choices might include, for example, genetic predispositions toward good feeling and optimism and away from debilitating depression. This may be well and good, but the author offers words of caution. "None of us wishes to see our children suffer, but if we could protect them from all the dangers and pains of life, we might ultimately diminish them by leaving them untested and shallow."

The cautionary approach is even more essential, as the author notes, when we move from what can be considered therapeutic intervention—helping to forestall depression, for instance—into the more controversial area of enhancements. Clearly we must be very careful, but, unlike Fukuyama, Stock does not call for an outright, government-enforced ban on every "enhancement." What do we consider the scope and boundary of the term anyway? Is alleviating an aging-related debility therapy or enhancement? What about choosing to make a child more intelligent than average, but still within the human range? Are even outright enhancements always or most of the time wrong? In any case, Stock insists, people will get what they want, or try, whether it is banned or not—attempting to enforce a prohibition of life- or health-extending treatments will not work. We will have to trust their (our) judgment, and he is at least cautiously optimistic that the right choices will be made, both for themselves (ourselves) and the unborn.

As immortalists, we should of course find this reassuring. Yes, we certainly seek what can only be considered enhancements, not simply "therapy." We would not, for instance, want disability or death forced on us at any age, whatever mortality tables may tell us is "normal" for humans. Reasonable standards for permissible choices must go beyond a foolish, fearful appeal to uphold whatever is "human" if that is degrading and lethal, as normal aging inevitably becomes. Happily, we are finding some significant agreement with our own position, despite the prevalence of "conservatives" who would forever keep us at levels set by our evolution.

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Reading a book you're sure will interest other Alcor members?

Would you like to write a review for *Cryonics* but aren't sure if the book has already been reviewed in a previous issue?

Contact Lisa Lock, Editor, to discuss the possibilities:

llock@winterthur.org

(continued from page 32)

Dora Kent and its aftermath had created bad feelings with local officials, and there were earthquakes and other problems. With the move to Arizona in 1994, all this was left behind, and the new location proved more favorable. The technical people who left Alcor did good work in their new settings and, in due course and with various changes both in and outside the organization, mostly rejoined it, while continuing their promising research. Alcor now works closely with some of these researchers, who are hoping to perfect reversible suspended animation. The organization is larger and stronger than ever, and does more and better suspensions, with solid indications of better things to come.

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TechNews

by Gina Miller with R. Michael Perry, Ph.D.

Image Stored in a Single Molecule. An image composed of more than 1,000 bits of information can be stored in the atoms of a single molecule, U.S. researchers have shown. Bing Fung and colleagues at the University of Oklahoma found that the 19 hydrogen atoms in a lone liquid crystal molecule can store at least 1,024 bits of information. The data are stored in the complex interaction of the protons' magnetic moments. Fung hopes the technique, dubbed "molecular photography," could one day be used to pack massive amounts of digital information into a tiny space but admits that the process is currently experimental. "It's a very, very first step towards using nuclear spins for molecular information processing," he told *New Scientist. (New Scientist* 12/2/02) http://www.newscientist.com/news/news.jsp?id=ns99993129 [NGN 12/5/02]

Nano May Unlock Secrets of Aging. A new form of nanotechnology developed at Stanford may lead to a better understanding of the life and death of human cells. Writing in the November 18 *Proceedings of the National Academy of Sciences* (PNAS), Stanford researchers describe how newly created circles of synthetic DNA—called "nanocircles"—could help researchers learn more about the aging process in cells. *(San Jose Business Journal* 11/29/02) http://sanjose.bizjournals.com/sanjose/stories/2002/11/25/daily58.html [NGN 12/5/02]

Expanding Moore's Law. Nanotechnology will catapult the semiconductor industry into a new phase of relatively steady, sustained growth that will replace its historical boom-and-bust cycles, said microprocessor veteran Nick Tredennick. The occasion was his keynote address at the November 19 Embedded Systems Conference in Boston. Just as the increased circuit complexity posited by Moore's Law enabled the PC and its derivatives, nanotechnologies will enable ever more diverse embedded applications that will outnumber those spawned by the PC, Tredennick said. (11/21/02) http://www.eet.com/semi/news/OEG20021120S0024 [NGN 12/5/02]

Power Supply for Artificial Cell. A team of chemists have found a new way to power artificial cells or liposomes. Using a shuttle molecule, calcium ions are transported across the membrane barrier to the interior of the cell. The process is powered and controlled by light, using an artificial reaction center molecule adapted from photosynthesis. (EurekAlert 11/27/02) http://www.eurekalert.org/pub_releases/2002-11/asu-acg112502.php [NGN 12/5/02]

New Nano Signal Capacity. As conventional transistors shrink in size, they lose their ability to amplify signals and thus their very status as transistors. Now researchers have taken advantage of a proposed quantum effect to construct a Y-shaped, nano electronic circuit that boosts signals spontaneously. The unique device, described in the November 25 print issue of *PRL,* is one of just a few known designs that might lead to circuits of atomic proportions. *(Physical Review Focus*, print issue 11/25/02) http://focus.aps.org/story/v10/st23 [NGN 12/5/02]

Removing Biocontaminants. The potential value of Gradipore's (ASX Code: GDP) breakthrough separations platform, Gradiflow, has been extended with the granting of a new U.S. patent. The patent covers Gradiflow's unique ability to remove biological contaminants such as viruses and bacteria. Unlike other large-scale purification technologies, Gradiflow can purify proteins and remove viral and bacterial pathogens simultaneously. This offers pharmaceutical manufacturers the opportunity to reap the economic benefits of faster, higher yielding manufacturing processes, reduced processing costs, and improved product safety and quality. (StockHouse USA 12/4/02) http://www.stockhouse.com/news/news.asp?tick=GDP&newsid=1427148 [NGN 12/5/02]

Look, Ma, No Stains. New techno-clothes let a man be a mess without looking like one. Will shoppers buy slob chic? The idea of pants as a bib is one whose time has come. Levi's Dockers brand has unveiled its Go Khaki with Stain Defender line. Treated with DuPont Teflon, these trousers allow the wearer to spill any "oil or water-based liquid" (e.g., beer, salad dressing) and have it bead up and roll off. Earlier this year, Lee introduced its Performance Khaki, which uses Nano-Care, microscopic whiskers that repel spills. (Time.com from the 12/9/02 issue of *TIME* magazine) http://www.time.com/time/magazine/article/0,9171,1101021209-395345,00.html [NGN 12/5/02]

Step Toward General-Purpose Assembler? A University at Buffalo engineer has developed a novel method for assembling nanoparticles into three-dimensional structures that one day may be used to produce new nanoscale tools and machines. The work could be an important step in fulfilling the immense potential of nanotechnology because it gives scientists and engineers improved control and flexibility in the creation of materials for the manufacture of many nanoscale devices, according to Paschalis Alexandridis, associate professor of chemical engineering in UB's School of Engineering and Applied Sciences. (ScienceDaily 12//4/02) http://www.sciencedaily.com/releases/2002/12/021204081355.htm [NGN 12/5/02]

How Much Nano-Danger? The nanotechnology debate is un-

der way. Michael Crichton's alarmist novel, *Prey*, with menacing swarms of molecule-sized robots, hit bookstores last week, with a Hollywood spectacular soon to follow. Nongovernmental groups, scientists, and industry are lining up for a major public-relations battle over the good and evils of nanotechnology. One side says nanotech will fill the world with self-replicating microscopic "nanobots"—1,000 times smaller than the diameter of a human hair—that will wipe out humanity. The other calls nano a silver bullet that promises a cure for cancer, an end to crop shortages, and the solution to cleaning up pollution. *(The Beacon Journal* 12/9/02) http://www.ohio.com/mld/beaconjournal/news/editorial/4699072.htm [NGN 12/18/02]

Nanoscience for Defense. The Center for Nanoscience Innovation for Defense (CNID) has been created to facilitate the rapid transition of research innovation in the nanosciences into applications for the defense sector. U.S. government allocations of $13.5 million are being shared equally by three University of California institutions: Santa Barbara, Los Angeles, and Riverside. A second increment is anticipated that will ultimately bring total funding to more than $20 million over three years. (EurekAlert 12/10/02) http://www.eurekalert.org/pub_releases/2002-12/uocs-ncf121002.php [NGN 12/18/02]

Biology Aiding Nanotech. The latest avenue in nanotechnology involves harnessing biological structures and processes, scientists said at a conference December 11. The National Science Foundation sponsored the event at its headquarters to highlight ongoing nanotech research the agency is funding. The work occurs at the nanometer scale—a nanometer is to an inch what an inch is to 400 miles. One project, run by the University of Texas at Austin, looks to improve on natural nanoscale processes such as those that build seashells out of calcium carbonate, said Angela Belcher, a professor of chemistry and biochemistry at the university. (UPI 12/11/02) http://www.upi.com/view.cfm?StoryID=20021211-043234-2067r Also view the report on the National Science Foundation sponsored conference "Education key part of nano research". (UPI 12/12/02) http://www.upi.com/view.cfm?StoryID=20021212-042358-9709r [NGN 12/18/02]

N.Y. Credited with Top Nano Breakthroughs. The December issue of a journal on nanotechnology co-published by Forbes credits researchers in New York State with three of the top five breakthroughs in nanotechnology in 2002, according to Gov. George Pataki's office. The journal, the *Forbes/Wolfe Nanotech Report,* surveyed more than 30 researchers and industry experts to compile the list. *(The Business Review* 12/23/02) http://www.bizjournals.com/albany/stories/2002/12/09/daily63.html [NGN 12/18/02]

The Nanodrive Project. Inventing a nanotechnology device for mass production and consumer use is trickier than it sounds. Many engineers have had the thrill of designing a novel product that then enters mass production and pops up all over the world. We hope—in fact, we would lay better than 50/50 odds on it—that within three years we will experience the rarer pleasure of having launched an entirely new class of machine. *(Scientific American* January 2003 issue) http://www.sciam.com/article.cfm?chanID=sa006&articleID=000CCFEC-C4F4-1DF7-9733809EC588EEDF [NGN 12/18/02]

Flash Nanowire Structure. A novel nanoelectronic structure has startled researchers at AMD with a sudden show of promise for future flash memory devices. The structure, called a polysilicon nanowire, was under investigation as a possible method for fabricating flash cells in processes below 65 nm. But it caught the attention of researchers by demonstrating an entirely unanticipated, and quite possible quantum electronic, behavior. AMD believes it can probably scale the existing stacked-gate flash cell to the 65 nm process node, according to vice president of technology Craig Sander. But the company is searching for novel structures that can be fabricated below that level. (EETimes 12/12/02) http://www.eet.com/semi/news/OEG20021211S0001 [NGN 12/18/02]

Taming the Machine. Too many technologies waste our time rather than improve it. But next year will see technology get closer to serving humanity—by anticipating what we need. Nanotechnology, the science of the super-small, is also expected to help streamline production, improving the economics of everything from refining petrochemicals to manufacturing sources of alternative energy, says Tim Harper, founder of Madrid-based CMP Cientifica. And nanotechnology is fighting bioterrorism. Dendrimers—tree-shaped synthetic molecules—have the ability to capture smaller molecules in their cavities, making them perfect to deal with biological and chemical contaminants. The U.S. Army hopes to use them to clean up after bioterror attacks. James Baker, head of the University of Michigan School of Medicine's Center for Biologic Nanotechnology, wants to use dendrimers to do everything from zap cancer cells to protect astronauts from radiation. *(TIME* Europe Magazine 12/16/02 paper issue-Forecast 2003) http://www.time.com/time/europe/forecast2003/html/tech.html [NGN 12/18/02]

MEMS for Masses. Indian Institute of Science (IISc) is all set to establish the country's first mini-fab—a full fledged fabrication facility—dedicated to micro electromechanical systems (MEMS) and nanotechnology products. The mini-fab will be located at the IISc campus in Bangalore. The project will be divided into eight phases ranging across MEMS silicon fabrication to nano-fabrication. The different phases will become operational as and when funds are committed. (Financial Express 12/13/02) http://www.financialexpress.com/fe_full_story.php?content_id=23709 [NGN 12/18/02; MP]

Dialogue between Ray Kurzweil and Eric Drexler. What would it take to achieve successful cryonics reanimation of a fully functioning human brain, with memories intact? A conver-

sation at the recent Alcor Conference on Extreme Life Extension between Ray Kurzweil and Eric Drexler sparked an e-mail discussion of this question. They agreed that despite the challenges, the brain's functions and memories can be represented surprisingly compactly, suggesting that successful reanimation of the brain may be achievable. (Kurzweilai.net 12/3/02) http://www.kurzweilai.net/meme/frame.html?main=/articles/art0533.html [NGN 12/18/02]

Nontoxic Disinfectants. Consider what you could do with something that disinfects as thoroughly as chlorine bleach but is not poisonous. Factories that process cold food such as lunch meat could constantly clean equipment without risking the safety or taste of the finished product. Apple cider could stay fresh and cold from the press to your refrigerator, since the mill would no longer have to boil the juice to eliminate the chance of botulism. That's the promise of a range of disinfecting creams, tonics, and sprays being developed by NanoBio Corp. in Ann Arbor, Michigan. (Smalltimes 12/13/02) http://www.smalltimes.com/document_display.cfm?document_id=5187 [NGN 12/18/02]

Artificial Nanopore Spots DNA Molecules. Scientists at Princeton University, US, have produced an artificial nanopore by micromoulding poly(dimethylsiloxane)—(PDMS)—elastomer. The on-chip electronic sensor was able to detect single DNA molecules. "With our fabrication and measurement techniques—micromoulding and four-point measurement of the electrical current—we have shown our ability to easily and reproducibly create artificial pores that can sense single molecules of lambda DNA," said Princeton researcher Lydia Sohn. (nanotechweb.org 12/11/02) http://www.nanotechweb.org/articles/news/1/12/6/1 [NGN 12/18/02]

EUV Laser. Combining concepts from electromagnetic radiation research and fiber optics, researchers have created an extreme-ultraviolet, laser-like beam capable of producing tightly focused light in a region of the electromagnetic spectrum not previously accessible to scientists. Between 10 and 100 times shorter than visible light waves, the extreme-ultraviolet (EUV) wavelengths will allow researchers to "see" tiny features and carve miniature patterns, with applications in such fields as microscopy, lithography, and nanotechnology. (ScienceDaily 1/1/03) http://www.sciencedaily.com/releases/2003/01/030101222126.htm [NGN 1/8/03]

Self-Repair. Researchers in industry and academia are tinkering with self-repairing systems, molecular circuits, and more. The customarily languid pace at which scientific research blossoms into practical applications appeared to speed up last year with a number of discoveries being rushed toward commercialization. Autonomic computing, in which systems can configure and repair themselves, took a big leap forward when Pennsylvania State University researchers said they had developed software that can repair—on the fly—an attacked database while allowing it to continue processing transactions. (ZDnet 12/30/02) http://c.moreover.com/click/here.pl?j55922320&w=501400 Or: http://www.zdnet.com.au/newstech/enterprise/story/0,2000025001,20270873,00.htm [NGN 1/8/03]

Chemical Attraction Solves Geometric Puzzles. Circuit builders could capitalize on self-assembling floating patterns. Chop up a square into four pieces, and reassemble them into a triangle. This kind of geometric dissection puzzle delighted ancient Chinese scholars. Chemists have now created self-solving dissections. Their trick could help in building easy-to-modify circuits. George Whitesides of Harvard University in Cambridge, Massachusetts, and colleagues design the edges of floating polygonal shapes so that they stick together in a particular arrangement. (Nature Science update 12/23/02) http://www.nature.com/nsu/021223/021223-2.html [NGN 1/8/03]

Nanoimprint Lithography. A potentially low-cost form of lithography affectionately known as "squish and flash" by its backers is coming to market. Three vendors have announced or released tools for the technique, properly known as nanoimprint lithography. And the concept has garnered enough interest among research entities in the United States, Europe, and Japan to have warranted its own conference this month. Imprint lithography uses polymers that harden into patterns when exposed to ultraviolet light through a 1:1 proximity mask. The patterns on the template are written with an electron-beam system at the same line width as the pattern on the wafer, rather than at the 4x reduction possible with conventional optical lithography. Molecular Imprints, Inc. (MII), next month will ship a development tool, the Imprio 100, with a $2 million price tag, said CEO Norm Schumaker. Nanonex Corp. (Princeton, N.J.) is shipping nanoimprint lithography tools that range in price from $300,000 to $700,000. (EE Times 12/20/02) http://www.eet.com/at/news/OEG20021220S0022 [NGN 1/8/03]

AI to Create Original Music. Just as IBM's Deep Blue showed the world a computer can play chess as well as a human master, Eduardo Reck Miranda, a researcher for the Sony Computer Science Laboratories, Inc., aims to demonstrate a computer program able to compose original music. So far, neural networks have succeeded in imitating distinct musical styles, but truly original compositions have remained elusive. Miranda is tackling that problem with an orchestra of virtual musicians—called agents—that interact to compose original music. (EETimes 12/30/02) http://www.eet.com/at/news/OEG20021230S0015 [NGN 1/8/03]

Nanotuner. Tuning of carbon nanotube resonance frequencies can be achieved by varying a static voltage applied between the nanotubes and a counter electrode. This was demonstrated for several nanotubes (NT) grown on a nickel support tip. The natural resonant NT frequencies are those where the NT oscillates with a large amplitude, a motion that can be monitored directly by watching the pattern of electrons spraying out the end of the

tubes (like water spraying out of a wiggling garden hose). (Physics News Update 12/23/02) http://www.aip.org/enews/physnews/2002/split/618-1.html [NGN 1/8/03]

Taiwan Industrial Park Initiatives. Taiwan's National Science Council outlined new developments and major policy programs the island will implement to maintain its high-tech edge over competitors at its year-end press conference yesterday. In particular, a major direction would be attracting investments and fresh talent for Taiwan's three major science-based industrial parks, with the focus on "IC production in the north, nanotechnology in the central region, and the optoelectronics industry in the south," according to NSC Chairman Wei Che-ho. (eTaiwanNews 1/3/03) http://www.etaiwannews.com/Taiwan/2003/01/03/1041555655.htm [NGN 1/8/03]

Nano Attracting Mainstream Venture Capital. Once dismissed as just so much science fiction and Silicon Valley hokum, nanotechnology now represents no less than the next industrial revolution. "If you're looking for analogies to put the impact of nanotech into context, I'd say the invention of the internal combustion engine is a good one," says Tim Harper, a physicist formerly with the European Space Agency who now runs an early stage nanotech fund and nanotech conference group in Madrid. Talk like that would be purely hyperbolic if not for the fact that many of the world's most prominent scientists see this tiny art as the next big thing. (Red Herring 12/18/02) http://www.redherring.com/insider/2001/1218/341.html [NGN 1/8/03]

Smart Materials Commercialize. Advanced materials are moving out of the lab and into the commercial world. Once regarded as laboratory curiosities, smart materials are beginning to make their mark on some high-profile commercial applications. This class of materials encompasses a broad range of ceramics, metal alloys, gels, and polymers. What sets them apart is their ability to adapt when they're exposed to external stimuli, such as temperature, magnetism, or electricity. Piezoelectric crystals and magneto-rheological fluids have been around for years. Now, newer exotic alloys and polymers with intriguing properties are joining them. Some of the more recent arrivals in the lab, such as carbon nanotubes, are still the subject of basic research. Yet others have made the transition into commercial applications. (Memmagazine Dec., 02) http://www.memagazine.org/contents/current/features/hotstuff/hotstuff.html [NGN 1/8/03]

Nano-IT AFM. Pacific Nanotechnology, Inc. (PNI), the global leader in high-performance, easy-to-use, and affordable atomic force microscopes (AFMs), today announced the new Nano-IT AFM for inspection and metrology of nanodevice wafers and storage media disks. It has applications in R&D, process development, failure analysis, and quality assurance for MEMS and semiconductor devices, data storage media, magnetic read/write heads, and photonic devices. The Nano-I AFM can routinely visualize and quantitatively measure surface structures having nanometer-sized dimension. Priced at $100K, the Nano-I AFM sets a new standard for affordability, yet it also offers high-performance and ease-of-use. (Hoovers Online 1/7/02) http://hoovnews.hoovers.com/fp.asp?layout=displaynews&doc_id=NR200301071680.2_87aa000b7312a70e [NGN 1/8/03]

Kurzweil Favors Therapeutic Cloning. Cloning is an extremely important technology, according to noted inventor and futurist Ray Kurzweil—not for reproducing humans but for life extension. Possible desired uses include therapeutic cloning of one's own organs, creating new tissues to replace defective tissues or organs, or replacing one's organs and tissues with their "young" telomere-extended replacements without surgery. Cloning even offers a possible solution for world hunger—creating meat without animals. (Kurzweilai.net January 03) http://www.kurzweilai.net/meme/frame.html?main=/articles/art0535.html [NGN 1/8/03]

Nanomechanical Device Warns of Heart Attacks. A team of scientists from the University of Basel and IBM Zurich Research Laboratory, Switzerland, has developed a cantilever-based device that can detect two cardiac biomarker proteins in the bloodstream. The proteins can act as an early warning system for heart attacks. (nanotechweb.org 1/7/03) http://www.nanotechweb.org/articles/news/2/1/1/1 [NGN 1/8/03]

Robots in Combat. In future wars, robots may drop from the sky by the hundreds from unmanned aircraft, swarming like giant insects over battlefields in coordinated, terrifying assaults. But that is a decades-away scenario. For now, military planners and robot designers are simply trying to improve devices by incorporating lessons from Afghanistan, where robots saw their first significant military action. The newest 'bots being developed by such companies as iRobot range farther from their "masters" than did their forebears in Afghanistan. They can navigate terrain and obstacles more deftly, lay down a cover of smoke, test for chemical weapons and extend a "neck" that can peer around corners. The machines are also learning how to right themselves if they flip over as well as how to follow their tracks back home if they lose contact with their base. (NWAnews.com [AP] 1/13/03) http://www.nwanews.com/adg/story_business.php?storyid=18527 [MP].

Bat Enzyme Holds Promise in Strokes. An enzyme that lets vampire bats freely slurp blood from their prey may help stroke victims survive, Australian researchers say. The treatment may be safer than the present approved treatment. (New Zealand News 01/13/03) http://www.nzherald.co.nz/storydisplay.cfm?storyID=3050991&thesection=news&thesubsection=world [MP].

Nanotech Oversight Bill Reintroduced. Legislation establishing a government advisory board to oversee a U.S. nanotechnology initiative was reintroduced this week in the House of Representatives. The bill, sponsored by Rep. Mike Honda, D-Calif., calls for industry and university experts to serve on an

advisory panel that would advise the Bush administration and Congress on research investments and goals for the U.S. National Nanotechnology Initiative. Similar legislation was introduced in October by Honda, a member of the House Science Committee. The bill calls for the formation of an advisory panel that would develop short-, medium- and long-range objectives for nanotechnology development over the next decade and beyond. (EE Times 1/10/03) http://www.eet.com/at/news/OEG20030110S0047 [NGN 1/19/03]

Nutraceuticals and Nanosensors. Researchers at the University of Massachusetts Amherst have developed a series of novel techniques in nanotechnology that hold promise for applications ranging from highly targeted pharmaceutical therapies, to development of nutrition-enhanced foods known as "nutraceuticals," to nanoscopic sensors that might one day advance medical imaging and diagnostics. The research, published in the January 10 issue of *Science*, was funded by the U.S. Department of Energy and the National Science Foundation. (EurekAlert 1/9/03) http://www.eurekalert.org/pub_releases/2003-01/uoma-utd010703.php [NGN 1/19/03]

Bone Cement and Bone Substitution. Competitive Technologies, Inc. (Amex: CTT), announced today that it has signed an exclusive agreement with the University of South Carolina Research Foundation (USCRF) to license and commercialize a new nanotechnology invention of injectible calcium phosphate-based biomaterial for use in skeletal repair. The technology is from the research of Dr. Brian Genge, a research professor in the Department of Chemistry and Biochemistry at the University of South Carolina. (StockHouse USA 1/17/03) http://www.stockhouse.com/news/news.asp?tick=CTT&newsid=1473523 [NGN 1/19/03]

Nanoshells Offer Sensor for Single Molecules. Rice University researchers have come up with a way of tailoring the local electromagnetic field around metal nanoshells. The scientists claim this could enable chemical screening for single molecules using the surface-enhanced Raman scattering (SERS) effect. "This is the first time that anyone has designed and engineered a nanosensor specifically for obtaining chemical information," said Naomi Halas of Rice University. (nanotechweb.org 1/14/03) http://nanotechweb.org/articles/news/2/1/6/1 [NGN 1/19/03]

Lasers Slim Enough for Chips. Optical fibers a thousand times narrower than human hair are producing laser light. The devices could be incorporated into silicon microchips to help make information technology faster and more compact. Built by Charles Lieber and coworkers at Harvard University in Cambridge, Massachusetts, the lasers are single wires of the semiconductor cadmium sulphide. Called nanowires, they measure just a hundred millionths of a millimeter across. (Nature Science Update 1/16/03) http://www.nature.com/nsu/030113/030113-5.html [NGN 1/19/03]

Ceramic Fracture Protection via Nanotubes. Ceramics are famous for being hard, but easy to break. Now, researchers have demonstrated that adding carbon nanotubes to a ceramic material can nearly triple its resistance to fracturing. Since carbon nanotubes were discovered a decade ago, ceramics researchers have tried to exploit the tiny tubes' extraordinary strength and flexibility to make much more fracture-resistant materials. Such durable materials could eventually replace conventional ceramics or even metals in countless products, says Joshua D. Kuntz of the University of California, Davis. (Small Times 1/13/03) http://www.smalltimes.com/document_display.cfm?document_id=5308 [NGN 1/19/03]

Researchers Create Novel Life Form. Researchers said Monday they have manipulated an organism successfully to make it produce an unnatural amino acid in addition to its natural counterparts. "It's a bona fide unnatural organism now," said lead researcher Ryan Mehl, previously at Scripps Research Institute where the study was conducted and currently an assistant professor of chemistry at Franklin and Marshall College in Lancaster, Pa. Manufacturing this unnatural bacterium could lead to the manipulation of others to manufacture antibiotics, enzymes, or other compounds for human use, Mehl said. By adding a novel amino acid, another protein building block, the bacterium could produce proteins not found in nature and with unknown potential, he said. (United Press International 1/13/03) http://www.upi.com/view.cfm?StoryID=20030113-061458-1878r [NGN 1/19/03]

Watchdogs Say Stop Some Nanotech. An advocacy group that helped quash efforts to introduce genetically modified products in Europe, Africa, and elsewhere intensified the spotlight on nanotechnology Wednesday with a report recommending a halt to some nanotech activities. Nanotechnology officials and observers said the report raises important questions, but is flawed and its recommendations are misguided. ETC Group (Small Times 1/31/03) http://www.smalltimes.com/document_display.cfm?document_id=5417 [NGN 2/1/03]

Bucky Diamonds in the Rough. Nanometer-size diamonds could have a buckyball-like shape, prompting researchers to coin a new term: "bucky diamonds." Both diamonds and the soccer ball-shaped cage molecules called buckyballs are made of pure carbon, and according to the January 24 print issue of *PRL*, nanoscale diamonds could surround themselves with buckyball shells. But several experts in the field are not convinced by the data. If the work is confirmed, this new family of carbon clusters may provide new insights for the development of optoelectronics—futuristic devices that process both light and electrical signals. (Physical Review Focus 1/30/03) http://focus.aps.org/story/v11/st4 [NGN 2/1/03]

Nano Discussion Group. The nascent field of nanotechnology, which at this point is really only nanoscience, has only recently

gained legitimacy. All signs indicate, however, that it is poised for robust growth during the coming decade. One of the problems with this subject, however, is that there is little agreement on what constitutes "nanotechnology." Some (including Intel) refer to nanotechnology as any technology that utilizes components smaller than 100 nanometers. Others have more radical visions of nanotechnology. These proponents foresee molecular assemblers building computers that are millions of times faster than current computers. User discussion: what jobs are there, Crichton's book *Prey*, and education. (Geek.com 1/28/03) http://www.geek.com/news/geeknews/2003Jan/bch20030128018378.htm [NGN 2/1/03]

Ultra-High-Density Data Storage. A simpler and more reliable manufacturing method has allowed two materials researchers to produce nanoscale magnetic sensors that could increase the storage capacity of hard disk drives by a factor of a thousand. Building on results reported last summer, the new sensors are up to 100 times more sensitive than any current alternative technology. Susan Hua and Harsh Deep Chopra, both professors at the State University of New York at Buffalo, report in the February issue of *Physical Review B* on their latest experiments with nanoscale sensors that produce, at room temperature, unusually large electrical resistance changes in the presence of small magnetic fields. (NSF 1/30/03) http://www.nsf.gov/od/lpa/news/03/pr0316.htm [NGN 2/1/03]

Supercomputer to Help Decipher Nanophenomena. Rice University today announced a research agreement with IBM that will provide nanotechnology researchers at Rice's Center for Biological and Environmental Nanotechnology (CBEN) with a supercomputer powerful enough to decipher the quantum phenomena of carbon nanotubes and other nanomaterials. CBEN researchers plan to use the supercomputer to find new ways to use nanomaterials to treat and diagnose disease and to clean pollutants from the environment. (Rice University 1/29/03) http://www.rice.edu/projects/reno/Newsrel/2003/20030129_cbenibm.shtml [NGN 2/1/03]

Constructive Disruptive Technologies. Two potentially disruptive technologies watched closely by integrators today are open-source software and nanotechnology. Each holds the promise of radically changing the landscape of information technology. The concept of open-source software, for example, challenges many notions about how software should be created and sold. Linux, developed under the open-source license, is already provoking turmoil in the market for operating systems. "If you are an entrenched proprietary software vendor, this paradigm shift can be alarming," said John Weathersby, chairman of the Oxford, Miss.-based Open Source Software Institute. However, integrators and vendors that exploit the growing open-software movement in government can crack new markets, especially in the Department of Defense, where numerous offices are using open-source solutions as low-cost alternatives to commercial software. The same holds true for nanotechnology. Although still a few years out, nanotechnology can greatly expand the role of integrators as small, cheap computational devices are placed in everything from shoes to unmanned aerial vehicles. (Washington Technology 1/27/03) http://www.washingtontechnology.com/news/17_20/cover-stories/19859-1.html [NGN 2/1/03]

World Nanotechnology Summit 2003. Emerging Technologies Limited is proud to announce that it will hold the first World Nanotechnology Summit (WNS2003) in New York on April 7 to 10, 2003...bringing together leading executives, investors and advisors from around the world to discuss the next 3 to 5 years of opportunity. It is a major opportunity to hear about the latest developments worldwide and to make important new contacts. http://www.nanotechsummit.com/ [NGN 2/1/03]

Fighting Hazards from a Computer. If we are attacked with nerve gas or anthrax, we'll need to know what's coming our way as quickly as possible. Nanotechnologists are working on new sensors that are both small and sensitive enough to work anywhere that we are threatened with biological or chemical weapons. At Purdue University, chemist Jillian Buriak has come up with a detection lab on a chip. She uses extremely tiny pieces of gold that can connect from a computer to natural sensors found in living cells to pick up traces of biochemical agents. This article includes a video. (ScienCentral 1/29/03) http://www.sciencentral.com/news/articles/view.php3?language=english&type=article&article_id=218391873 [NGN 2/1/03]

Braille-Like System Shrinks Storage. A team of European scientists is experimenting with a molecular-scale storage device that can be read like Braille and could lead to systems that hold nearly 100 gigabits of data per square inch. The researchers from the chemistry departments at the University of Edinburgh in Scotland and the University of Bologna in Italy said they have discovered a class of materials that, when gently nudged, form bumps in a predictable pattern that could be used to encode data. (MSNBC 1/23/03) http://www.msnbc.com/news/863373.asp [NGN 2/1/03]

Nanoscale View of Single Molecules. A group of researchers at Cornell University have perforated the top layer of a chip with two million "holes" that serve as nanoscale waveguides for a 488-nanometer laser, allowing them to film individual molecules during chemical reactions. Professor Watt Webb's group put 40-nanometer holes in the aluminum top layer of a 25 millimeter square chip. "Conventional wisdom would tell you that this is not a single- or multimode waveguide, since its size is ten times smaller than the light going through it. Rather, we call it a zero-mode waveguide," said postdoctoral fellow Michael Levene. (EETimes 1/31/03) http://www.eetimes.com/at/news/OEG20030131S0022 [NGN 2/1/03]

Nano Could Save the Ozone Layer. Whilst experimenting with

nanospheres and perfluorodecalin, a liquid used in the production of synthetic blood, researchers at Germany's University of Ulm have stumbled across a phenomenon that could ultimately help remove ozone-harming chemicals from the atmosphere. The perfluorodecalin, against all expectations, was taken up by a water-based suspension of 60 nm diameter polystyrene particles. (nanotechweb 1/30/03) http://nanotechweb.org/articles/news/2/1/16/1 [NGN 2/16/03]

Zyvex Head Predicts Antiaging Nano. Stick around 20 years and you could live to see medical nanotechnology battle aging, says the head of a company that's making it happen. "I think nanomedicine has such promise for humanity that I have taken a small portion of my net worth and hired Rob to write a book and to give us some ideas about what might be possible," Texan millionaire Jim Von Her said in Wellington, New Zealand, while attending a nanotechnology conference. "We can't build any of the devices he has designed yet because we don't have atomic precision. But in 20 years we are going to be able to make little devices to go in your body and actually fight diseases and cure some of the aging problems in cells. The "Rob" Von Ehr refers to is Robert A. Freitas Jr., who is writing the books on nanomedicine, called, appropriately, *Nanomedicine*. He has currently produced two volumes. (Betterhumans 2/14/03) http://www.betterhumans.com/News/news.aspx?articleID=2003-02-14-2 [NGN 2/16/03]

"Sticky" DNA Promises IT Breakthrough. Imagine information stored on something only one hundredth the size of the next generation computer chip—and made from nature's own storage molecule, DNA. A team led by Richard Kiehl, a professor of electrical engineering at the University of Minnesota, has used the selective "stickiness" of DNA to construct a scaffolding for closely spaced nanoparticles that could exchange information on a scale of only 10 angstroms (an angstrom is one 10-billionth of a meter). The technique allows the assembly of components on a much smaller scale and with much greater precision than is possible with current manufacturing methods, Kiehl said. The work is published in a recent issue of the *Journal of Nanoparticle Research*. (EurekAlert 2/6/03) http://www.eurekalert.org/pub_releases/2003-02/uom-dc020603.php [NGN 2/16/03]

Race to Build First Robot Insect. By 2004 the world's densest computer—400 of them could fit on the surface of a grain of salt—could be powering the first walking silicon chip, with legs that move like a Mexican wave. If that works, the next step could be a robot insect the size of a housefly. Nanotechnology has become big business, with more than 450 firms, 270 university departments and $4bn (2.48bn) worth of investment in the US, Europe, and Japan. (Guardian Unlimited 2/15/03) http://www.guardian.co.uk/uk_news/story/0,3604,895903,00.html [NGN 2/16/03]

Thousand CDs in a Wristwatch. Miniaturization is the buzzword today. Nanotechnology is not simply miniaturization. It is much more in frontier science, with its scope and application limitless and mind-boggling. "1000 compact discs in a wrist watch," that is how Prof. CNR Rao, a noted scientist, terms it. India is one of the few leading countries of the world where work on nanotechnology is progressing at a faster pace in a number of premier scientific institutions. The Minister for Science and Technology, Dr. Murli Manohar Joshi, a physicist by his own right, sums up, "Nanotechnology could one day unravel the mystery of interconnectivity of the whole universe." (indiaexpress.com 2/15/03) http://www.indiaexpress.com/news/technology/20030215-0.html [NGN 2/16/03]

Strong Optical Tweezers. Focused light beams called optical tweezers excel at trapping and moving micron-sized objects, but nanometer-scale particles generally slip through their grasp. Now researchers calculate that a laser tuned to resonate with the internal energy levels of semiconductor nanoparticles could strengthen its grip up to 100,000 times. A previous study had suggested a similar but much less drastic enhancement. The paper, appearing in the February 7 print issue of *PRL*, points the way toward size- and shape-selective sorting of building blocks for efficient nano-patterned materials. *(Physical Review Focus* 2/11/03) http://focus.aps.org/story/v11/st6 [NGN 2/16/03]

Center for Responsible Nanotechnology. Patchwork regulation of nanotech could be a grave danger, warns CRN. The Center for Responsible Nanotechnology (CRN) is deeply concerned about the potential for abuse of nanotechnology and also about the serious hazards of unwise regulation. CRN's statement comes in response to a report by the University of Toronto Joint Centre for Bioethics, warning that a backlash against nanotechnology development is gathering momentum and needs to be addressed. (nanotech-now 2/15/03) http://nanotech-now.com/CRN-release-02152003.htm [NGN 2/16/03]

Editor's note:
NGN: Nanogirl News, by Gina Miller.
MP: items selected and lightly edited by Mike Perry.

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http://www.transvision.org/tv/2003usa/

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Schedule

Thursday, June 26, 2003—Intensive Seminar on Transhumanism

Friday, June 27, 2003
8 pm Debate: "Should Humans Accept or Reject the Genetic Path to the Post-Human?"
Accept: Greg Stock, Ph.D. UCLA, author of *Redesigning Humans*
Reject: George Annas, J.D., Director of Health Law, Boston University

Saturday, June 28, 2003
9 am: Opening Keynote, "Why Not Re-Invent Humans? Is This The Best We Can Do?" by Greg Pence, Ph.D., author of *Who's Afraid of Human Cloning?*

9 am–5 pm: Dozens of Panels, Papers, Performances, & Videos
See some of the speakers at: http://www.transhumanism.org/tv/2003usa/speakers.htm

7 pm: First Annual JBS Haldane Award Banquet

Sunday, June 29, 2003
9 am–1 pm: Dozens of Panels, Papers, Performances & Videos

12:30 pm: Closing Keynote, "Who's Afraid of PostHumanity?: The Politics and Ethics of Genetically Engineering People," by Ron Bailey, Science Writer, *Reason Magazine*

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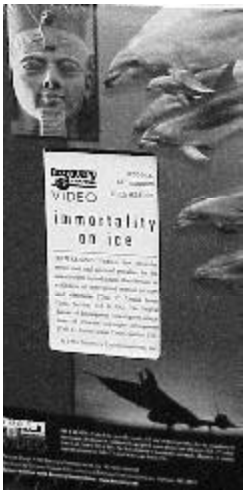


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