

ALCOR LIFE EXTENSION FOUNDATION

# CRYONICS

2<sup>ND</sup> QUARTER 2009 · VOLUME 30:2



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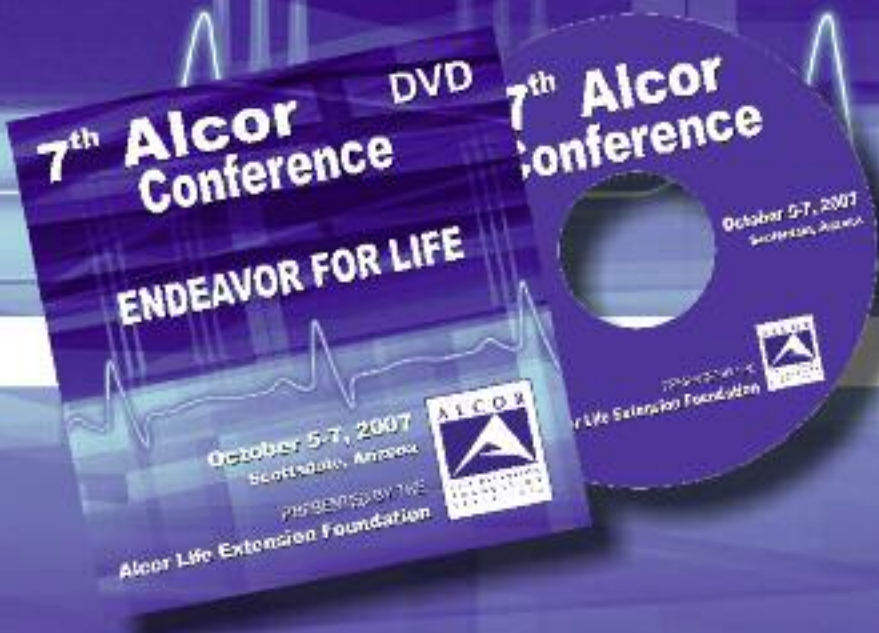
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# CRYONICS

2<sup>ND</sup> QUARTER 2009 · VOLUME 30:2

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ALCO  
REPO  
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What are the differences between a local and a remote case and how does it affect case preparation and logistics? New developments in the area of readiness and deployment to eliminate the “surprise factor” in cryonics are reviewed with an eye towards the future.

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Readiness is perhaps the least recognized and the most underappreciated aspect of cryonics operations. Being able to respond to a cryonics patient in a timely and thorough manner does not just involve assuring that all the physical and personnel components of running a cryonics case are in place, it also requires great attention to detail and the ability to strike the right balance between premature deployment and making quick decisions when a patient goes down. In this issue I discuss the advantages of local case work and the advances that have been made this year in the area of readiness.

One of the biggest challenges of a growing cryonics organization is to keep track of the location and health status of all of its members. Although we have implemented aggressive measures to reduce the surprise factor in case work, we cannot emphasize enough the importance of keeping Alcor up to date about one's current whereabouts and health status. This is particularly important for older members in poor health and those who are scheduled for invasive surgical procedures.

The case report featured in this issue of *Cryonics* is a fitting illustration of the challenges that are discussed in the readiness article. In terms of complexity and the potential for significant ischemic injury, this case is positioned half-way between the international straight freeze case featured in the previous issue of the magazine and the clear advantages of a local Arizona case. The case report features a list of problems encountered during a recent Colorado case and a quick glance at those is sufficient to conclude that they mostly reflect the additional logistical challenges that come with a remote case in an area with few local cryonicists.

As a general rule, members should expect the best care (no, or shorter, ischemic delays) when de-animation takes place close to the facility. Not all members prefer to move to Arizona, of course. This issue features a list of Alcor's membership by state that gives a good idea of areas with potential for organized cryonics activity. As we write this, there are new hotbeds of cryonics activity in Oregon and areas such as Florida and the Northeast are being revitalized. Do not hesitate to contact members in your own state to form your own group. As always, a list of currently active cryonics meetings can be found in the magazine.

As former Alcor president Steve Bridge writes, it is hard to write a good cryonics novel. The writer needs to avoid the boredom of simplistic agitprop on the one hand and the temptation to use the cryonics theme as a vehicle for post-resuscitation doom and gloom on the other. The cryonics theme in 'the unincorporated man' (the lack of capital letters is intentional) represents more than a passing interest of the authors because both of them have publicly confirmed having made cryonics arrangements with the Cryonics Institute. It seems that extensive exposure to the idea of cryonics often leads to a more favorable attitude, but how can we benefit from this phenomenon when most reporting of cryonics is either brief or sensational in nature? Readers with innovative ideas are encouraged to share their thoughts with us.

# ADVANCES IN READINESS



By Aschwin de Wolf

## Local and remote cases

The objective of standby and stabilization in cryonics is to limit injury to the brain after pronouncement of legal death. Unfortunately, many cryonics patients have not been stabilized promptly after pronouncement of legal death because the cryonics organization was not proactively tracking the health condition of its members, was not made aware of the pending death of a member, or the case was one of rapid decline or sudden death. In other cases, the cryonics organization was aware of the critical condition of the patient but was faced with the challenge of providing services in a geographical area where few other cryonics advocates live. This creates a non-trivial challenge because *premature deployment* of a standby team can expose the cryonics organization to a prolonged standby in which resources are “wasted” but *delayed deployment* can arrive too late for the patient to receive meaningful stabilization procedures. Even in cases where a cryonics standby team is able to intervene promptly after cardiac arrest, the distance between the location of stabilization procedures and the cryonics facility conspire with the legal and logistical challenges of transporting a patient across state lines to produce harmful periods of cold ischemia.

To picture the challenges of out-of-state cryonics, imagine the fate of a critically ill person in a state with limited medical emergency services, who, after a 911 call, needs to be flown thousands of miles across state lines to a medical facility without the possibility of treatment during transport. It stands to reason that even the best executed remote case cannot completely eliminate the harmful effects associated with long transport times

such as loss of viability, poorer brain perfusion, and increased edema during cryoprotective perfusion. Looking at today’s cryonics technologies, the *cold* ischemic time that permits transport of a patient without loss of neurological viability of the brain by contemporary criteria is estimated to be around 5 hours. This makes good cryonics basically a *local* phenomenon. Another distinct advantage of local casework is that it enables the use of a dedicated transport vehicle and the use of equipment that is too expensive or not practical to deploy in other areas in the United States.

Some members who have recognized the challenges of remote standby and stabilization have decided to relocate to the state, or even the city, of their cryonics organization. As a general rule, these decisions are made when the member in question has retired or recognizes a high probability that the cryonics organization’s services may be needed in the near future. As a consequence, the Phoenix/Scottsdale area has a larger proportion of (retired) people with cryonics arrangements than could be expected based on cryonics demographics alone. Alcor encourages its (elder) members to relocate to be closer to the cryonics facility. There has even been some discussion whether Alcor should offer incentives or discounts for people who reside in the Phoenix/Scottsdale area.

Most people, however, do not prefer to relocate to the area of their cryonics organization without an urgent need to do so. For these people it would be helpful to know which areas in the United States have a high density of cryonics members. The table to the right was created in March 2009 and ranks all the US states with Alcor members.

## Alcor Members By State

California	254
Arizona	77
Florida	66
Texas	54
New York	31
Washington	25
Massachusetts	21
Nevada	21
Illinois	19
Georgia	18
Oregon	18
New Jersey	17
Pennsylvania	17
Minnesota	15
North Carolina	14
Virginia	12
Colorado	11
Maryland	10
New Mexico	10
Indiana	8
Iowa	7
Tennessee	6
Louisiana	5
Ohio	5
Utah	5
Vermont	5
Missouri	4
South Carolina	4
Alabama	3
Arkansas	3
Connecticut	3
DC	3
Idaho	3
Michigan	3
Wisconsin	3
Alaska	2
Delaware	2
Hawaii	2
Kansas	2
New Hampshire	2
Oklahoma	2
Maine	1
Mississippi	1
North Dakota	1

## Readiness

Cryonics training and reference manuals have traditionally assumed that all necessary equipment for standby, stabilization, and transport will be immediately available when team members need it. Manuals have concentrated only on procedures, omitting any description of prior preparation that enables the procedures to be performed.

The task of maintaining readiness is mundane and pedestrian but cannot be overlooked or trivialized. An organization that provides standby response will likely have at least one person on staff who is primarily tasked with ordering, assembling, inventorying, and packing the dozens of pieces of equipment and hundreds of components, tools, and supplies that are involved. This person must enjoy *scrupulous attention to detail*. These qualities will minimize the chance that a standby team member will open a transport container and find that something was omitted by accident—or was borrowed by a person who forgot to put it back.

Maintaining readiness acquires greater complexity because Alcor pre-deploys multiple standby kits across the continental United States. These kits must be refreshed when medications or supplies pass their expiry dates and restocked when old equipment is to be replaced with newer or better alternatives. If the new equipment is much larger or heavier, it may require larger transport containers or even the division of the contents of one container among two new ones. Under these circumstances, remotely placed kits are returned to Alcor for upgrades.

The first step Alcor took when redesigning its standby/stabilization/transport kit was to enlist the help of consultants to review and discuss Alcor's field team inventory with the Research & Development Committee. Many people were involved in this process, including those with extensive practical field experience, a strong technical background, and intimate familiarity with the current inventory. Significant upgrades were discussed extensively and implemented after feedback had been received. Alcor's transport coordinator, Aaron Drake, subsequently began upgrading and replacing field team equipment in the regional groups where he conducted training in the second quarter, including California and Nevada.

When any revision or upgrade is made, Alcor will propagate it among all extant

standby kits, to honor this fundamental guideline:

*Generally all kits will be duplicates of each other, so that personnel who have been trained to use one set of equipment will find the same set no matter where a case happens to occur.*

## Mini-Kits

A more recent development is to assemble kits that include only the most basic and cost-effective supplies to stabilize a patient. The typical contents of such kits include:

- Drugs to prevent and reverse blood clotting
- Supplies to set up an IV
- A body bag for patient transport and cooling
- Hospital instructions

These kits are not considered a substitute for a comprehensive standby kit. They are intended as a stopgap measure for caregivers of members who are in a critical condition but do not meet the criteria for a full deployment. The use of such mini-kits allows for basic stabilization procedures when a patient deteriorates faster than expected or if Alcor were to find itself confronted with multiple standbys at the same time. Mini-kits may also be sent to areas that do not satisfy the criteria for having a comprehensive set of standby kits but enough infrastructure to do basic standby and stabilization.

## Deployment Committee

The decision of when and how to deploy can be a source of uncertainty and discussion. Alcor has remedied this situation by forming a deployment committee which includes persons with different kinds of backgrounds and knowledge to ensure that all relevant information is being taken into account.

Alcor's deployment committee consists of the following people:

- The *executive director* (Jennifer Chapman) of the cryonics organization, to ensure that the strategic goals, legal considerations, financial issues, and other priorities of the organization are given due consideration.

- The *chief medical advisor* (Steven B. Harris, MD) who has extensive experience in assessing critical patients and its consequences in terms of protocols and equipment.
- The *transport coordinator* (Aaron Drake) to ensure that decisions are made with accurate factual knowledge about the availability and skills of team members and equipment needs.

Ideally, the deployment committee will meet to decide (either unanimously or by majority vote if acceptable) when and how to deploy. The committee not only specifies the guidelines for normal decision making but also specifies guidelines for circumstances in which not all members can participate in decision making or in cases of extreme emergency when decisions need to be made without delay in the field.

Clearly, a deployment committee cannot anticipate or cover all aspects of a deployment, but it should be expected that when such a committee has been active for a considerable period of time general lessons have been learned which will enable the committee to operate in a more rule-bound fashion without making up decisions on the fly. In 2009, Alcor Life Extension Foundation formed a deployment committee consisting of the Executive Director, the Chief Medical Advisor, and the Transport Coordinator.

## Predicting future cases

Ideally, all cryonics cases would involve the timely deployment of a standby team so that there is little delay between pronouncement of legal death and start of stabilization procedures.

An important tool Alcor uses to reduce the "surprise factor" in case work is a systematic analysis of the membership database. Members are grouped by region so that physical capabilities can track membership density. This data can also be used to predict the growth of case work when certain assumptions are made about membership growth. For example, in 2006 Dr. Michael Perry did an analysis of Alcor's database to predict future caseload and the probability of having simultaneous cases. This kind of analysis is also important for making strategic decisions about the organization, hiring, and the allocation of space within the building.

Another tool that has recently been employed to reduce the surprise factor of case work is the use of actuarial tables to estimate regional caseload. Although some simplifying assumptions are made (such as assuming no difference between the general population and cryonics members) the information obtained can be used to allocate standby equipment in areas with the highest likelihood of multiple cases. Below is an analysis that was done in March 2009 by Mike Perry and the author using an actuarial table from the US government Social Security administration (2004). For example, the expected number of cases within a year for CA is 2.4 (all results are rounded to tenths). Such an analysis is necessary, but not sufficient, and will be supplemented by periodic checking of older members and the health status of patients with serious complications.

NV	0.2	0.2	0.4
NY	0.1	0.2	0.3
OH	0.0	0.0	0.0
OK	0.0	0.0	0.0
OR	0.0	0.1	0.1
PA	0.0	0.1	0.1
SC	0.0	0.1	0.1
TN	0.0	0.0	0.0
TX	0.1	0.2	0.3
UT	0.0	0.1	0.1
VA	0.0	0.0	0.0
VT	0.0	0.0	0.0
WA	0.0	0.2	0.2
WI	0.0	0.0	0.0

### Readiness in the 21st Century

The recognition and development of the practical challenges discussed here have produced a strong commitment to get serious about readiness at Alcor. One of the most tangible results during the year of 2009 has been the creation of a designated “readiness room” where information pertaining to potential and existing cases is being organized and displayed to enable informed and effective decision making. The organization now regularly calls its membership base to inquire about their overall health and encourages members who have scheduled medical procedures to initiate contact, in advance. Alcor provides the member with a standardized form for sharing medical information and contacts specific to their upcoming procedure and takes a very active role in monitoring a member's progress throughout the procedure and subsequent recovery. Alcor may speak to medical providers to inquire about the severity of a procedure, to assess the need to provide standby services, and to follow-up after a procedure to determine when the member is on the road to recovery.

When the organization is notified of a pending case the medical information about the member in question is closely scrutinized by persons with experience in medicine and patient assessment. Then the patient is assigned a degree of risk corresponding to the facts known at the time. In some cases Alcor simply decides to maintain a higher state of alertness whereas in other cases the organization will decide to deploy one or more team members to the scene. Alcor is confident that because all relevant information is maintained in a single location and the physical aspects of readiness (including inventory) are taken care of, fewer cases will come as a complete surprise to the organization.

Looking forward, these initial steps towards improving and streamlining readiness and service delivery are just the start. More benefits should be expected when a greater integration of Alcor's administrative aspects and the readiness aspects of the organization is achieved. At this point, information pertaining to readiness needs to be *actively* generated from Alcor's databases. In the future this step will be eliminated and readiness variables will be a part of database design and maintenance. Another major step Alcor would like to take is to offer members the ability to change their personal information (including health information) online on a secure section of the Alcor website.

When it comes to patient care, there is no substitute for location. Recognition of this fact forces any serious cryonics organization to contemplate the feasibility of remote vitrification. As we understand it now, there is no serious *technical* obstacle preventing remote cryoprotective perfusion and shipment at sub-zero temperatures to the cryonics facility, but the logistical challenges would require substantial investments, not just in terms of money, but in qualified people to operate the equipment as well. As ever, the prospects of seeing such technologies materialize depend on the resourcefulness and generosity of our members. ■

*Parts of this article have been adapted from Alcor's new procedures manual, a work in progress being coauthored by Aschwin de Wolf and Charles Platt. This manual will integrate and document all current and historically relevant knowledge relating to human cryopreservation procedures.*

### Estimated Annual Alcor Cases by State

State	Females	Males	Total
AK	0.0	0.0	0.0
AL	0.0	0.0	0.0
AR	0.0	0.0	0.0
AZ	0.1	0.8	1.0
CA	0.4	2.1	2.4
CO	0.0	0.1	0.2
CT	0.0	0.0	0.0
DC	0.0	0.0	0.0
DE	0.0	0.0	0.0
FL	0.2	0.4	0.6
GA	0.0	0.1	0.1
HI	0.0	0.0	0.0
IA	0.0	0.1	0.1
ID	0.0	0.0	0.0
IL	0.0	0.1	0.1
IN	0.0	0.1	0.1
KS	0.0	0.0	0.0
LA	0.0	0.0	0.1
MA	0.0	0.2	0.2
MD	0.0	0.0	0.0
ME	0.0	0.0	0.0
MI	0.0	0.0	0.0
MN	0.0	0.1	0.1
MO	0.0	0.0	0.0
MS	0.0	0.0	0.0
NC	0.0	0.1	0.1
ND	0.0	0.0	0.0
NH	0.0	0.0	0.0
NJ	0.0	0.2	0.2
NM	0.0	0.1	0.1

# ALCOR CASE REPORT FOR PATIENT A2061

By Aaron Drake, NREMT-P, CCT, Alcor Transport Coordinator

Member A2061, age 86, born on April 6, 1923, a retired computer programming school owner from Colorado Springs, CO, was legally pronounced on June 7, 2009, of cerebral anoxia and Parkinson's disease.

A2061 started his paperwork for cryopreservation on January 11, 2003 and was officially approved on January 28, 2004. He elected for a neuro-cryopreservation and was funded through a life insurance policy through North American LIC.

*Note: All times are Arizona time, unless otherwise indicated.*

## Notification of Alcor

TeleMed received a call at 09:26 AM on June 7, 2009 and dispatched a text message to the Alcor notification list at 09:30 AM Arizona time. The information read: "45)9:26 AM STAT (719-488-XXXX) thomas barton RE Pt A2061 RE:HUMAN STATUS: DECEASED [ID#:82061][REASON::pt is passing.

## History

In the fall of 2006, A2061 became a patient of Select Long Term Care Hospital of Colorado Springs, CO. An agreement among Select, Alcor and A2061 was executed to comply with the wishes of our member. This consisted of pre-deploying a mini-medication kit with instructions for administration in the event of A2061's clinical death. The kit consisted of five medications: propofol; streptokinase; heparin; epinephrine; and gentamicin. In 2008, care was transferred to Life Care Solutions for 24/7 home health care and the medication kit was also sent to A2061's per-

sonal residence. On July 8 of 2008, Regina Pancake sent an updated kit that contained non-expired medications along with administration instructions to Becky Birch, the coordinator of the program. In May 2009, Aaron Drake had spoken with Becky regarding their willingness and comfort level in administering the medications in the event of an emergency. This conversation was initiated during Aaron's routine calls to members considered to be at an elevated level of risk.

## Pre-Deployment

On the morning of Sunday, June 7, 2009, Thomas Barton, CNA for Life Care Solutions was at A2061's home in Colorado Springs, CO, providing routine home health assistance. A2061 was awake and at the breakfast table having toast and something to drink, however he had consumed very little that morning. Thomas also noticed that he had difficulty holding his head up. There had been a perceptible decline in A2061's activity level over the previous two weeks and he had become especially lethargic since the previous

## Background

### Family:

Sons: Peter, Matthew and Andrew.

### Alcor Personnel:

Jennifer Chapman, Executive Director  
Aaron Drake, Transport Coordinator  
Hugh Hixon, Research Fellow  
Todd Huffman, Contractor  
Nancy McEachern, Contract Surgeon  
Regina Pancake, Readiness Coordinator

### Known medical history:

Parkinson's disease, Thrombocytosis, Melanoma, Chronic Kidney Disease, Functional Decline.

In the care of Life Care Solutions of Colorado Springs providing 24/7 home health care.

### Circumstances of legal death:

Clinical death occurred at A2061's private residence. Witnesses included Thomas Barton of Life Care Solutions, his sons Peter and Matthew, and employees of Black Forest Fire and Rescue.

Thursday, June 4. When Thomas noticed that he was beginning to have some difficulty breathing, possibly due to his body's position, he moved A2061 from the chair to the floor and laid him supine. He then called Alcor's emergency 800 number to give a "head's up." He phoned his office who subsequently called the son, Peter to notify him of his father's condition. Thomas claimed that A2061 was still breathing; however, he eventually became unresponsive and Thomas was unable to detect a pulse; so he called 911. When para-



medics from Black Forest Fire and Rescue arrived, A2061 exhibited a couple of agonal respirations before he went into full arrest. The paramedics began to work the code.

During this time, TeleMed sent out a text to the Alcor notification list at 9:30 AM. Jennifer Chapman (at home) called Hugh Hixon (at Alcor) to review A2061's file and determine his Alcor status. TeleMed contacted Jennifer to confirm receipt of the text. Both Jennifer and Aaron (who was out on a bicycle ride at the time) repeatedly called the number listed on the text and it was initially busy. Jennifer directed Hugh to prepare Alcor's operating room and contact Nancy McEachern to determine her availability for surgery, as Jose Kanschepolsky was out of town. Regina was in the hospital with a personal medical issue and was unavailable for deployment. Aaron arrived home in 10 minutes and began to pack and prepare in case he was sent.

At 9:46 AM, the deployment committee of Jennifer, Aaron and Dr. Steve Harris conferred over the phone and decided that they did not have enough information at this time to make a deployment determination. Another text and call from TeleMed indicated that Thomas Barton called again, saying that he was on the phone with 911 when we were trying to reach him.

Aaron tried the number again and this time talked to Thomas to better understand the situation and probable outcome. Thomas confirmed that the patient was still alive when the ambulance arrived. The paramedics were working the code, however they were not making any progress as the patient was in Pulseless V-Tach and was not responding to treatment protocols. They were considering discontinuing supportive measures as they believed their efforts to be futile. The paramedics asked if the family preferred to discontinue supportive measures at home and leave the patient for the coroner to declare or to transport the patient to the hospital and let the Emergency Physician, Dr. Hooker, declare the patient. After consulting with Steve Harris, Aaron told Thomas that Alcor would prefer leaving the patient at home with the idea that pronouncement would be quicker. The theory behind this was that a coroner would respond quickly to the home because the sheriff or paramedics that remained with the patient, to maintain the chain of custody, would need to return to service, where at a hospital, there might not

be any sense of urgency to respond. In addition, the home health provider and family were willing to initiate medication administration and cooling procedures immediately following pronouncement. Aaron was able to speak to the son, Peter, about the situation. Although it was emotionally difficult for Peter to talk, he said he was aware of his father's intent to be cryopreserved and he confirmed that he wanted to help honor those wishes.

Jennifer was advised of the situation and directed Aaron to begin looking for the next available flight. Hugh began to promote a scenario where no deployment would be made and that the mortuary would just send out the patient directly to Alcor. His justification was that it might take too long before we could get to Colorado Springs and gain access to the patient. This option was considered as well but the fact that this was occurring over the weekend made it more attractive to have someone there on the ground.

When Aaron checked the flight status online, he found there were only four seats available on a direct flight to Colorado Springs with US Airways; however he did not book them prior to leaving home as he did not have confirmation that the final decision was to deploy. At 10:45 AM, Aaron departed for the airport just in case. While en-route to the airport, Jennifer confirmed with Aaron that the decision was for him to go and that he should go ahead and book the next available flight. Aaron requested that Hugh bring the Medication Kit and meet him at the airport in an attempt to make the next flight.

Upon arrival at the airport, Aaron checked with the ticket counter and all seats on the original flight were now sold out. The next flight to Denver was two and half hours later. As this was the next best option, Aaron booked the flight and planned to rent a car to drive from Denver to Colorado Springs. Hugh arrived with the medication kit at 11:35 AM and Aaron checked the kit through as baggage.

It was considered whether to contract with Suspended Animation, particularly to perform a field washout. An Alcor technical advisor was consulted. Based on the fact that cardiac arrest had already occurred, and that transporting a washout team from Florida to Colorado would add hours more of ischemic time, Alcor was advised to just ship the patient from Colorado to Arizona as soon as possible.

Jennifer spoke to Peter and Steve Harris. The coroner had been contacted and

someone from the Sheriff's office was there. He confirmed that the IV had been left in his arm and that they had the mini-med kit. Steve was asked by Jennifer to handle instructions for the family to draw up the meds and Peter was advised to get ice, if possible.

At 11:40 AM, Steve walked one son (who had had some experience with syringes in doing farm work) through IV admin of 1) all heparin, 2) 1 dose streptokinase (mixed and given through the filter), and 3) epinephrine, which Steve asked to be given only in a 5 mL dose. This was followed with 10 cc of saline to flush all meds into the line (an arm line, apparently). The clamp valve to the bag was turned off the whole time. Due to circumstances, Steve had them omit the gentamicin and propofol. They also had another dose of streptokinase which Steve had them hold in reserve. This process took about 15 minutes.

After the meds were in, Steve had them start chest compressions, 30 – 60 a minute, for 10 minutes. They were comfortable doing this and understood the reason for it. Steve listened on the phone as they started the compressions and seemed satisfied they were going well. They had sent another son to get ice and would pack the head after finishing compressions.

Jennifer called Steve Rude. He advised that Colorado is a sign-and-file state. When the funeral director arrives, he will get necessary vitals so everything can be expedited. He instructed National Shipping that we wanted the patient sent cold. They briefly discussed the logistics of shipping and the need for a direct flight. The family also expressed concern about having a memorial service and that the patient's wish was for the remainder of his body to be cremated. Steve Rude said he would call and talk to the family regarding this.

Springs Funeral Home arrived at the home at 12:30 PM (1:30 MDT). They loaded and transported the patient, packed in ice, to the mortuary where the gurney was placed into a 34 degree F. walk-in cooler at 1:00 PM (2:00 MDT). The ice was removed from around the patient to allow for the cold air flow.

Hugh and Jennifer discussed the possible candidates for the surgical team and made calls to determine availability.

## Deployment

At 2:55 PM, US Airways flight #490 departed from Phoenix for Denver and arrived at 5:42 PM. After collecting the medications kit from the baggage terminal, Aaron

rented a car and began the two-hour drive to Colorado Springs. Along the way he spoke with Jennifer and Hugh to confirm the plans for the evening and tomorrow. He also called and spoke briefly with the son, Peter, to alert him of his arrival. Peter kept the phone call brief as family had just arrived and he needed to tend to them. They agreed to speak early in the morning to obtain the remaining vital statistics needed for the death certificate.

Aaron arrived at the Springs Funeral Home at 8 PM (9 PM - MDT). He met with Paul Wood, the funeral director who had spoken with Steve Rude earlier in the day. They spoke about cryonics for around 15 minutes and covered what processes he would need to perform at his facility. Paul was very willing to help and said he would be available no matter what time of day or night it was. They viewed the patient in the cooler. No ice was currently around the patient but cold air was blowing across the surface. Paul said they had removed the ice upon arrival as they thought the cold moving air would cool the body temperature quicker than if the ice bags were blocking air movement. The patient felt very cold to the touch and was sufficiently stiff. The right arm was bent and cocked in a 90 degree position. The IV tubing was visible; however, further examination revealed that it was not intact in the patient's arm as originally thought. Even at 10+ hours after clinical death coupled with the cold storage, the blood still flowed profusely from the patient's IV wound when the arm was straightened, due to the administration of our medications. 4x4 gauze pads and Coban wrap had to be used to stop the bleeding.

The mortuary's storage cooler was only tall enough to accommodate rolling cots with bodies on top and was not feasible for someone to stand inside. Aaron decided to build a makeshift ice bath out of an inverted air shipper box. This way, ice could be placed around the patient to maintain the cold temperature and the patient could then be moved to another room where medications could be administered. The patient was returned to the cooler while Aaron began the process of drawing up the medications. At Aaron's direction, Paul left to purchase 20 bags of ice and 2.5 gallon zipper style plastic bags.

It took around 45 minutes to draw up the medications. Steve Harris had advised to give all of the meds that had not been administered by the family, with the exception of the

propofol. Alcor keeps the components of its med kits in three different locations based upon the different levels of temperatures needed for storage. Because of this, it is possible for someone not to obtain all the meds needed, especially if administration is done in a hurry. While drawing up the medications, it was determined that the Mannitol, which is stored separately, was not in the kit.

The temporary ice bath was constructed on top of a cot and held together with duct tape. The patient was moved into the box and then surrounded with bagged ice, which had been placed into zip lock bags. This entire unit was then moved into another room for Aaron to work.

After donning the necessary Personal Protective Equipment, Aaron established a peripheral IV in the vein of the antecubital fossa of the left arm on the first attempt. Due to the position and height of the box surrounding the patient, the IV had to be started left-handed. An 18 gauge over-the-needle catheter with a saline lock was used and secured with Tegaderm. Blood return was observed and flushed with saline. No redness, swelling or signs of infiltration were noted and patency was determined to be intact. Coban wrap was applied to further secure the IV site. The medications were systematically administered in the proper order per protocol. There was difficulty in introducing the nasal gastric tube supplied due to its thickness. However, it was eventually placed. After delivering around 60 cc's of the Maalox, blood started to return up the tube which had to be clamped using hemostats. Aaron called Hugh to inquire about the unexpected events and Hugh said that due to the elapsed time from clinical death, the buffering agent was not needed and that he could discontinue that medication. The tube was extubated and a pool of blood was noted in the oral pharynx. There were no thermocouples in the Med Kit to develop a temperature profile in the field.

All medications were flushed with saline and chest compressions were applied to promote circulation throughout the patient. After completion of this procedure the patient was returned to the cooler. Aaron cleaned up and spoke to Paul about the plans for the following morning. Paul was planning on contacting the physician of the health care service to determine the cause of death, get the coroner's signature (office open at 9:00

AM MDT), and finally to obtain a health department permit. The contingency plan was to be granted a deferred death certificate. This is a Colorado option that allows for transport but is incomplete for some reason. In this case, it may take too much time to determine the cause of death as no one may be available to make an immediate determination. The mortuary felt very comfortable that they could obtain this if needed. Paul also provided Aaron with a list of questions for Peter so they could complete the death certificate paperwork.

Aaron had just checked into a motel at around 12:30 AM (MDT) when Jennifer called to review the actions of the evening and to determine a possible timeline of events for the next day. To promote expediency, it was decided to only allow for a short window of time to obtain a "cause of death" from a physician before attempting to obtain the deferred death certificate.

At 6:00 AM the next morning, Jennifer called Aaron to discuss the logistics of preparing the shipping container and keeping the patient cold. A Ziegler case had to be obtained from Denver and the mortuary had someone assigned to starting on that early in the morning.

Aaron called Peter to collect the remaining vital statistics of his father and explained the plan to ship the patient to Alcor, in Scottsdale, later that same day. Aaron provided this information to the mortuary when he arrived. By 9:30 AM it was decided to obtain a deferred death certificate from the donor. National Shipping was coordinating the flight arrangements and was experiencing difficulty in finding an airline that would accommodate a "wet-ice" shipment.

Eventually, United Airlines was selected and a 4:00 PM flight was booked. There was a push for an earlier flight but it just was not feasible. The mortuary needed to get a Ziegler case from Denver, construct the shipper, load the patient, load the Ziegler, transport back to Denver (up to 2 hours) and deliver to United Cargo two plus hours prior to departure. It appeared that a 4:00 PM flight would be the earliest that could be achieved. If we pushed a lot harder we could maybe gain an hour but we could also get pushback which might greatly delay the process. Aaron booked a seat on the flight that the patient was scheduled to take.

Aaron directed the mortuary to send someone out to purchase wooden 2x4s and insulation to complete construction of the ice shipper. Aaron supervised the construction of the shipper to ensure that it met our guidelines to provide the best possibility to maintain cold temperatures during travel. During this process, the mortuary received notification that the Health department had issued the permit and all the paperwork was prepared. The Ziegler case had arrived and the patient was placed and packaged with ice on all sides. The case was then secured into the air tray, labeled, and the paperwork was secured in a document holder on the outside of the shipper. By 12:00 PM they were putting the finishing touches on the box and getting it loaded into their hearse. They departed at 12:15 PM for the Denver airport.

Aaron obtained copies of all of the paperwork, everything that the mortuary had as well as what was being shipped with the container. He said his goodbyes and gave thanks for their assistance. They commented that they felt they would have been the only funeral home in the city that could have pulled this project off as quickly as they had accomplished it. Most local mortuaries would not have even have accepted a cryonics case and it could possibly have taken days to complete if we had used someone else. They thought the selection process that we used to find them, National Shipping through Steve Rude, was very good.

Aaron traveled to Denver and called Paul to confirm that the shipment had arrived at the Cargo desk as planned. Paul said that he had received confirmation from the airline that the shipment had arrived prior to the two hour deadline required. United flight #523 departed at 4:03 PM MDT and arrived at 4:54 PM Arizona time.

Upon arrival in Phoenix, Aaron traveled directly to Alcor to prepare for surgery as Rude Family Mortuary was on site to receive the shipment. Steve Rude called at 5:54 PM to say that the patient was not on the scheduled flight as expected. He had no idea why and found it unacceptable. The patient was at the airport on time and the air bill said "express." Regardless of the circumstances, the patient was now on United flight #329 and was scheduled to arrive at 7:28 PM Arizona time. They were to unload immediately as soon as the plane touched down. His representative was at the airport and they planned on filing a grievance and/or claim.

## Surgery

Back at Alcor, the surgical team had been assembled and was awaiting the arrival of the patient. On hand were Nancy McEachern, D.V.M., as Surgeon, Hugh Hixon as Perfusionist, Todd Huffman and Bruce Cohen as general help, and Aaron Drake representing patient transportation.

The Rude mortuary hearse arrived at Alcor with the patient at 8:40 PM and the shipping container was transferred into the surgery bay. There was some condensation noted on the exterior of the Ziegler case after removing it from the shipping container. Examination showed that the patient was packed very well with ice and was still completely covered. The patient was removed from the container and placed onto the surgical table and repacked with bags of ice.

By 8:48 PM, Todd began to prep the head and initiated shaving. He noted that a small nick to the scalp produced substantial blood flow. He also noted some blood in the oropharynx. Aaron confirmed that he had noticed this after inserting the nasal gastric tube in Colorado Springs, and he relayed his experience, as described previously in this report. At 8:59 PM the patient was repositioned so that the head was closer to the edge of the surgical table.

Dr. McEachern sterilized the freshly shaved head with isopropyl alcohol and made two incisions in the scalp to prepare for the burrholes. She commented that the patient was bleeding out of the incision and that apparently the anti-coagulants did a very good job at keeping clots from forming. After the second incision was made, retractors were used to open an area for the craniotome perforator. Todd held the head while Bruce started making the first burrhole. Todd took over the craniotome when Bruce had difficulty in advancing the perforator all the way. Todd finished the first burrhole then completed the second. Hugh and Dr. McEachern cleaned up both holes with a Sperling Kerrison rongeur. It was noted that it was difficult to see the membrane due to a substantial amount of blood which raised the possibility that the patient had an aneurysm, which may have contributed to his clinical death.

Hugh stated that the crackphone was not currently functioning so we would be placing a thermocouple only. Dr. McEachern placed the right thermocouple and secured it with

bone wax, however it was later removed for observation purposes. The patient was repositioned so that Dr. McEachern could access the patient's neck, utilizing ice bags to prop the shoulders and head. She felt she was still too low for optimal access so a step stool was brought in to increase her height and angle. She also requested repositioning of the surgical lights and to lower the ambient temperature of the surgical bay. At 9:30 PM, she made the first incision into the left side of the neck and worked towards identifying the left carotid artery. At 9:41 PM it was identified and clamped off. The patient was then repositioned to expose the right side of the neck and an incision was made to search for the right carotid artery. After 15 minutes, the artery was identified and clamped at 10:05 PM. Over the next six minutes the process of cutting the skin and tissue around the neck was completed. Todd then used an osteotome to separate the cranium from the trunk. At 10:15 PM, cephalic isolation was complete.

Todd moved the head to the neuro isolation enclosure and it was fastened into place. Hugh inserted the right cannula into the right carotid artery and Nancy tied the cannula in place. Todd, who was at the perfusion unit, noted that the pressure reading was 154 mm Hg, however, the reservoir was running low. Adjustments were made in the speed to 70 (550 mL/min) and pressure to 60 and the reservoir began to refill. The left cannula was inserted and secured. Perfusate was observed to flow from both vertebral arteries, indicating a functional Circle of Willis, so the vertebral arteries were clamped off. A nasopharyngeal thermocouple and jugular thermocouple were placed to monitor temperature. The LabView system was started and Hugh noted that they were getting really good flow. At 10:56 PM, Hugh switched over to a closed circuit; the top of the cephalon enclosure was placed; and the cryoprotective ramp was started.

Over the next five hours, the cryoprotectant concentration in the head was increased and monitored by manual refractometry. At 3:54 AM, effluent from both jugulars had been above the desired terminal concentration for ½ hour; and cryoprotection was ended. At 4:15 AM the patient was transferred to initial cooldown to -110°C.

## Conclusions and Findings

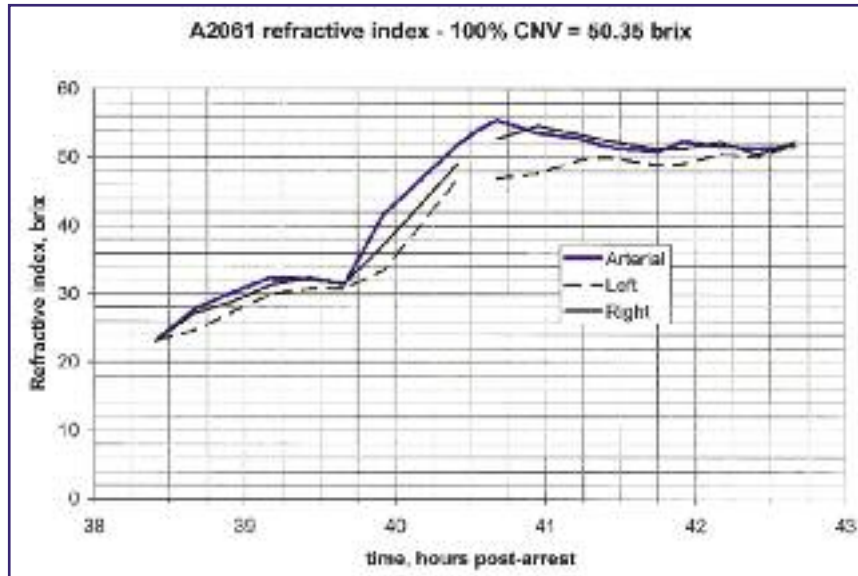
### Present:

Aaron Drake, Hugh Hixon, Regina Pancake, Jennifer Chapman, Aschwin de Wolf.

### Telepresent:

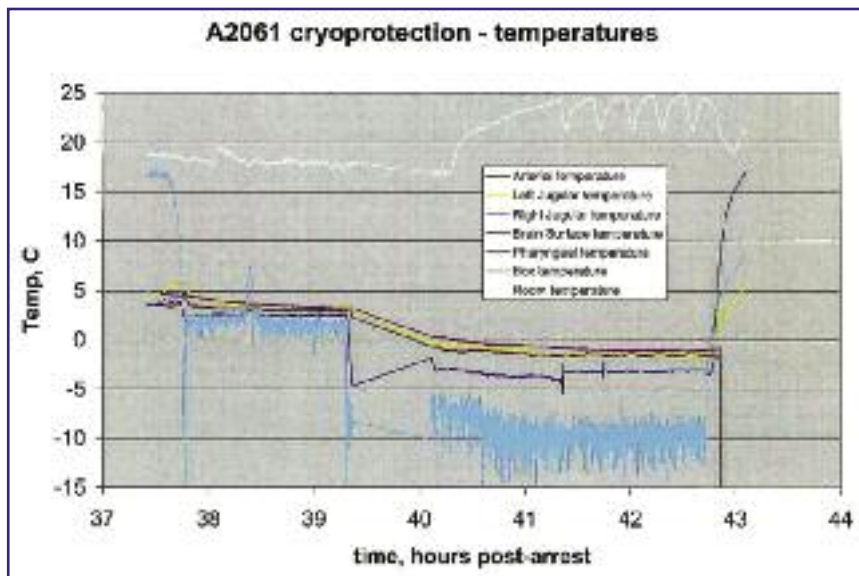
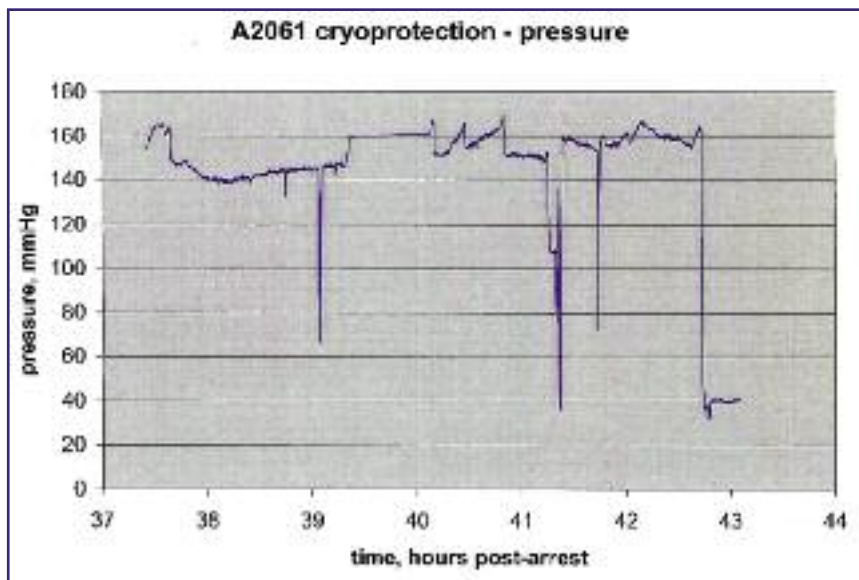
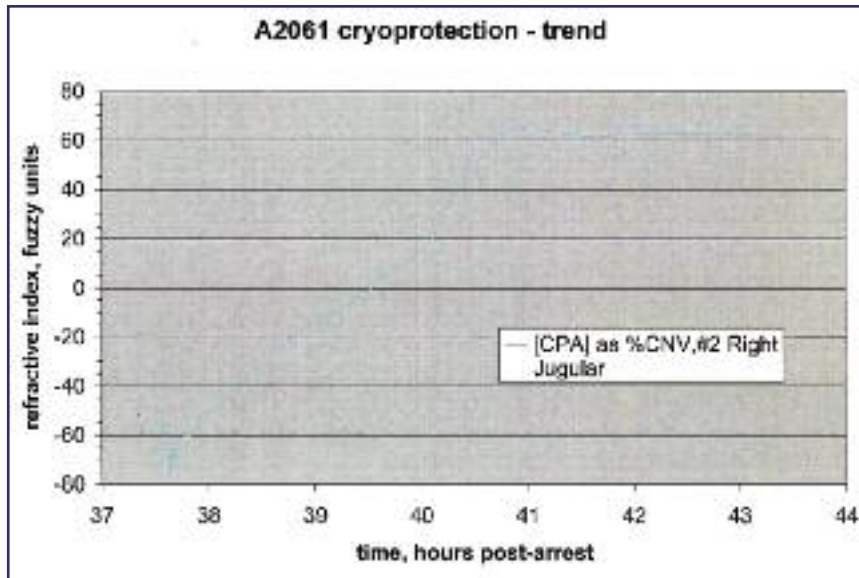
Brian Harris, Todd Huffman

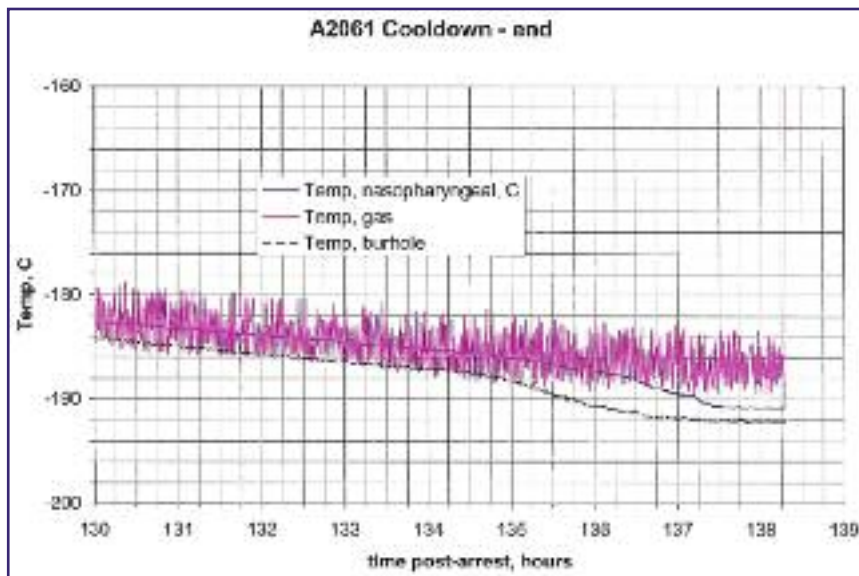
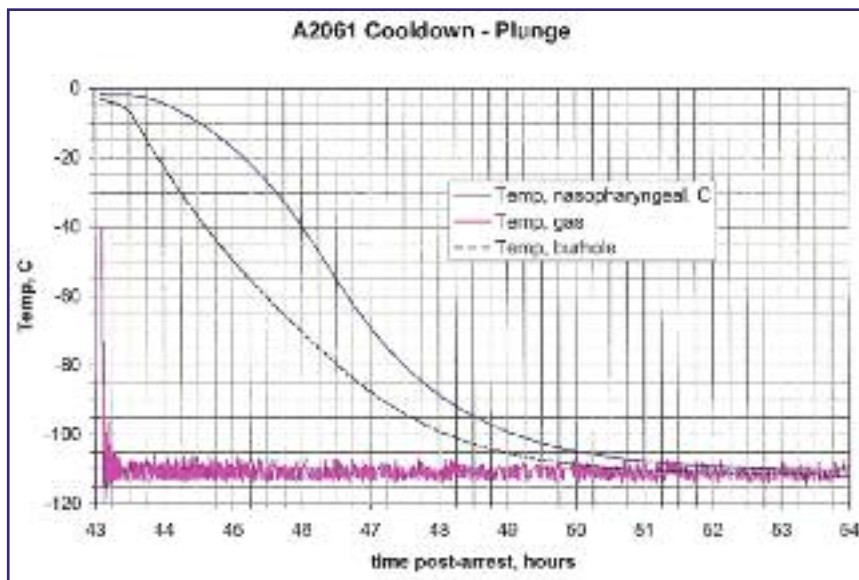
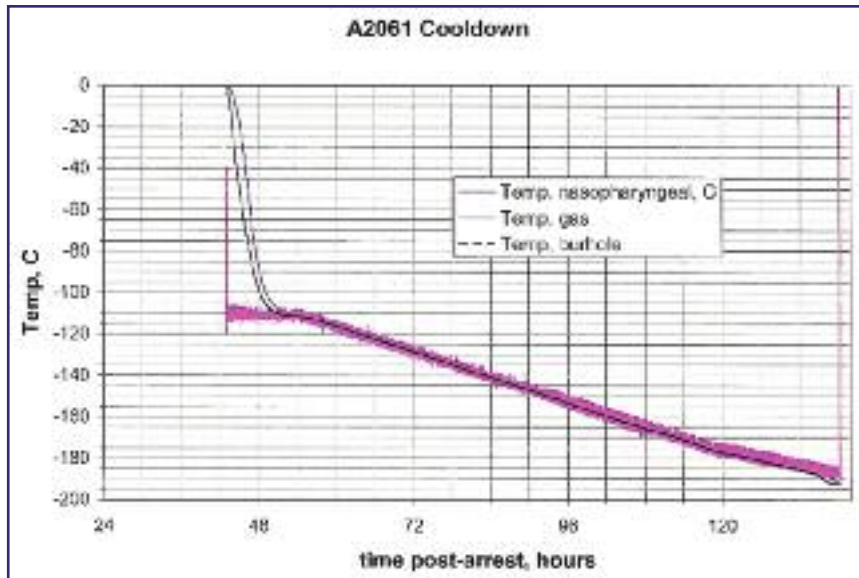
- **Communication:** Communication among team members was challenging at the onset of the case as multiple calls were being placed simultaneously. There was an idea put forth of using a conference call system to facilitate; possibly using Yammer or Alcor's conference call device in the conference room.
- **Booking airline:** Aaron did not know that he had the authority to book a flight in anticipation of deployment without obtaining prior permission. It is better to book and secure a seat than run the risk of missing the next available flight. Jennifer has since told Aaron that he has the latitude to make a best judgment call.
- **Handoff of the Meds Kit:** Excellent team work in getting the meds kit to the airport for Aaron to take on the flight, however the Mannitol medication, which was stored separately, was not included when the meds were gathered.
- **Pre-deployment of Meds Kit:** The effectiveness of this action was evident by the thinness of the blood after 10 hours and 36 hours after clinical death. The home health care agency expressed their appreciation in having Regina send them a current med kit to have in place for the patient.
- **Med Kit as airline carry on item:** It would be beneficial to have a "script" issued by Steve Harris to allow us to take the meds kit on board rather than sending it as checked luggage. TSA has issues with sending this much liquid medication on board without a label or script associated. This could save as much as an hour if you do not have to wait for baggage.
- **Additional supplies in Med Kit:** There needs to be IV supplies such as catheters, tubing, saline bags, saline lock with 3 way stopcock, syringe flushes etc. Some of these items are contained in the support kit but it did not come with the meds kit. Aaron was only able to start an IV because he brought a personal supplies kit from home.
- **Research new TSA shipping regulations:** Starting July 1, 2009, the TSA is establishing new requirements for shipping of human remains. We need to identify a method to quickly locate a funeral home that is a certified shipper.
- **Article in funeral home industry magazine:** To gain visibility in the funeral home industry, we should try to write an article about cryonics in an industry publication. Our expectations are not that every funeral home director will read it but that we will gain credibility by being able to refer to it.
- **Need staff training on Alcor's member database:** Jennifer commented that few staff members have the knowledge of how to get into the membership database to identify if someone is a member or not. We could also consider using a licensed Google document database so we can access the information remotely.
- **When to perform a remote washout:** Jennifer would like to have a document that identifies what criteria to use when determining when to perform/not perform a washout in the field.
- **Remote temperature profile:** It is very important to have the data from a DualLogR of the temperature readings of the patient while on scene and during transportation. This should be included in the expanded Med Kit container.
- **Difficulty in introducing the NG tube:** This tube was homemade by Hugh and should really be used as an OG tube due to its size and thickness. The size was chosen because of the viscosity of the Maalox.
- **Use of Personal Protective Equipment during moving of the patient:** We did not really wear the appropriate PPE in the OR while moving the patient. We stayed fairly clean but this will probably not be the case as a matter of course. Typical OR protocols call for dual layer of protection from patient and provider when moving or handling.
- **Need to identify additional surgical personnel:** We now have fewer people around Phoenix that have practical surgical experience that we can call on to participate on a case. We need to identify and/or cross train more people.
- **Use of a surgical knife over a scalpel when performing neuro separation:** The scalpel blade came off during the procedure and left a very jagged appearance. A specific knife would eliminate both of these issues.
- **We need to investigate the cause of the shipping delay:** In order to prevent this from happening again we need to identify the cause. We do not have the authority to obtain this information from the airlines. We will need to go through Steve Rude and National Shipping.
- **For later analysis, we need a list of time checkpoints to include, but not limited to:** Call received; confirmation; launch determination; departure; on-scene arrival; begin meds administration; complete meds administration; complete legal paperwork; complete shipper; depart for airport; departure time; arrival at PHX; arrival at Alcor; time to first cut; time to begin perfusion; time to end perfusion; time to cool down start; time to end cool down; time to transfer, etc. ■



## Refractive Index Data

	Arterial	Left	Right
1145	23.2	23.2	23.2
1200	27.8	24.6	27.2
1215	30.2	27.3	28.8
1230	32.4	29.9	31.3
1246	32.2	30.8	32.4
100	31.5	30.8	31.6
115	41.5	33.4	37
145	51.8	46.6	49
154	54.2		
201	55.4	46.9	52.7
217	53.6	47.6	54.6
233	52.8		53.4
245	51.5	50	52.4
305	50.8	48.8	51.2
315	52.3	49	51.2
330	51.6	50.4	52.2
345	51.3	50	50.4
400	51.6	51.8	52.2





# the unincorporated man

Authors: Dani Kollin and Eytan Kollin [Tor Books, 2009]

## BOOK REVIEW BY STEVE BRIDGE

*One of the hardest books to write must be the “cryonics novel.”*

There are not many really good cryonics novels, perhaps not any that would be considered among the all-time great futuristic books. If you write a novel *about* cryonics, your choices are limited. You are pretty much stuck with variations on 1. Guy gets frozen. 2. Guy gets revived. The future is different. 3. Guy gets attacked and doesn't know why. 4. Guy figures out future and gets the girl. Probably the best of these is still *Age of the Pussyfoot* by Frederik Pohl, written way back in 1969. (Robert Heinlein's popular *The Door Into Summer* (1956) is really more a time travel book than a cryonics book.)

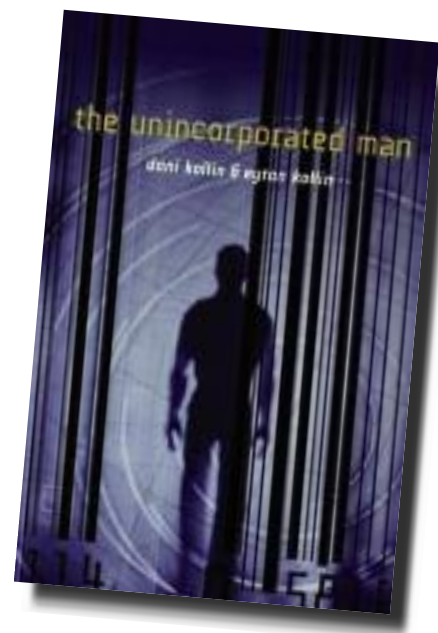
Then there is a variation where most of the problems are in the “before getting suspended” part of the story. The writer can concentrate on today's world and today's human motivations, and write a mystery or suspense drama. Successful variations on this include *The First Immortal* by James Halperin (1998) and *Chiller* by Sterling Blake (pseudonym of Gregory Benford) (1993).

There are also many novels which merely use cryonics as a tool to save the hero or get the hero to the future, where the real themes of the book can be played out. My favorite “save the hero” story is the Hugo Award-winning *Mirror Dance* by Lois McMaster Bujold. My favorite “get the hero to the future” tale is now ... *the unincorporated man* (the lack of capital letters is intentional on the part of the authors) by brothers Dani and Eytan Kollin. The brothers are public cryonicists (Cryonics Institute) but have not written a “cryonics novel.” There is no explanation of cryonics technology or justification for its use, beyond its being an accepted life-saving technology in the future. Instead, this is a political novel, obviously inspired by Robert Heinlein and Ayn Rand, among others.

Justin Cord is a wealthy, inventive, terminally-ill genius (very Heinlein) from today who doesn't trust the current cryonics companies. He arranges to have himself placed in suspension in a self-sustaining storage unit and buried in a cave under a mountain. Stretching plausibility, he is discovered about 300 years in the future by a mine explorer and revived. And boy, is the world different.

The Kollins have developed an extremely well thought-out future, based on an idea by economist Milton Friedman from his 1962 book, *Capitalism and Freedom*. This quote from Friedman leads off the book, “The counterpart for education (financing) would be to ‘buy’ a share in an individual's earning prospects; to advance him the funds needed to finance his training on condition that he agree to pay the lender a specified part of his future earnings. There seems no legal obstacle to private contracts of this kind, even though they are economically equivalent to the purchase of a share in an individual's earning capacity and thus to partial slavery.”

In this future, the world economy and society in general had long before experienced a complete meltdown. Large corporations took over most of the functions of government, and Western civilization, at least, worked by each individual being a public corporation. At birth, each person is assigned a number of shares of stock in him or herself. The government owns some, and the parents own some; but some a person can sell to pay for his education, training, or capital to start a business. The better one's future earnings prospects are, the more expensive the stock. If the person does well in life, he might even be able to buy back many of his shares. This system is stable and understandable. Yes, there are still less successful people and some



who feel trapped by the system; but the world as a whole is calm and the economy generally works well.

Justin Cord is the only survivor from the 21st Century. The cryonics companies were destroyed in the collapse of society, with a loss of all patients, although a reformed version of suspended animation is commonplace in this future. (For the sake of the fiction, I forgive the brothers for killing us all off. It's not much worse than Gregory Benford did in *Chiller*, where a serial killer murders the dynamic young CEO of a cryonics organization – published a couple of months after I became the dynamic young CEO of Alcor. “Chiller,” indeed.)

Cord was not born into the personal corporation system, so no one quite knows how to handle him. Most people assume that his earnings potential is huge, as the only living representative of the 21st Century Dark Ages. Everyone wants a corporate piece of him. But Cord is a libertarian and refuses to become incorporated, believing that he would be ceding control of his life to others. Forced to justify his position in court, Cord speaks out to the world and advocates rebellion against the system. (Justin Cord = John Galt?)



The Kollins' future is worked out in great detail, with many levels, unlike the lazy one-dimensional futures that populate many SF novels. They are a bit hazy on what happened to the Third World countries; but no one can get everything into one novel. The characterization is better than in most Heinlein novels. For example the ostensible villain of the piece has several layers and surprises to him, and is so well-done that there are times that the reader wonders if he will turn out to be one of the good guys instead. The female psychiatrist who takes on Cord's case is well portrayed as a believable individual. This ability to create characters bodes well for future novels by these writers. On the other hand, the romance that pushes part of the plot forward is awkward and the one sex scene is clumsy. (Will somebody please find these guys some girlfriends?)

Just as cryonics novels can be boring and one dimensional, novels about grand political and social ideas like freedom, responsibility, libertarianism, communism, etc. can turn into a series of self-satisfied and self-approved lectures, with the author's particular point of view being promoted as the truth as obvious as the "revealed truth" of some religions. Thankfully, the Kollins have given us a story about *humans* dealing with the consequences of these ideas, with doubt, confusion, and tension between various ideas. Messier than a polemic but a hundred times more interesting.

Actually, BOTH versions of the future (the incorporated mainstream and the libertarian rebellion proposed by Justin Cord) are so convincingly argued by the various characters that this reader bounced back and forth trying to decide which was better. Easy solutions are boring. It made me wonder if each brother chose a side in the writing of the book in order to argue them so thoroughly. That would be an interesting way to co-write a book and provide tension.

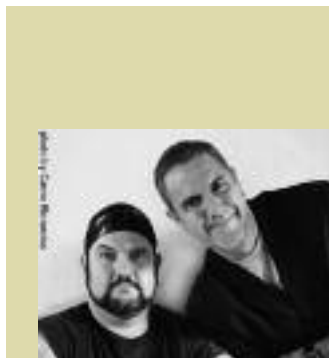
I have some other quibbles. The ending of the book seems kind of messy and indistinct – hmm, like a lot of Heinlein books. Also, and perhaps this is inevitable in an SF novel, the authors seem so convinced that their knowledge and philosophy of today is obviously correct that their main character (or maybe they themselves?) could go 300 years in the future and straighten everyone out, as if no one had learned anything new in 3 cen-

turies. The arrogance is the same as exhibited by writers who send their characters BACK in time hundreds of years to teach everyone what right manners, morals, and politics are.

And I regret that the writers did not better pursue a very important moral issue about Justin Cord's libertarian approach. As I understand the libertarian ideal, the individual should be able to control his own life and make whatever choices he wants, as long as those choices do not take away anyone else's personal control and choices. Of course, quite a few of our desired choices could harm others or take their own freedom. That fuzzy line could be the subject of a whole series of novels, like Isaac Asimov explored the consequences of the Three Laws of Robotics and how they were often in conflict.

Justin Cord's rebellion harms the personal fortunes and the very lives of billions of people, and even as he begins to understand this, he pursues his direction without much regret or moral reflection. I think there was an even bigger and better book here if that moral struggle could have been brought out.

Still, Dani and Eytan Kollin have succeeded admirably at writing a book of ideas which also completely holds our attention as a novel. This should be entertaining and thought-provoking for anyone who sees this review. I borrowed this book from the public library (I'm a librarian, after all); but I think I'll have to buy a copy for my personal library. You should, too. ■



## About the Authors

**Dani Kollin**, co-author of "*the unincorporated man*," is an advertising copywriter currently living in Los Angeles, California. Dani has also worked as a creative director and copywriter in the print, broadcast and new media fields. In addition to being happily married and the proud father of three children Dani is also an avid endurance cyclist and surfer.

**Eytan Kollin** is a teacher of history, government and economics currently living in Pasadena, California. His hobbies include historical reenactments, chess, and battle recreation with historical melee weapons. "*the unincorporated man*" is his first published work.

# MEMBER PROFILE:

## TIM SHAVERS

By Chana de Wolf

*This is the second of two profiles introducing new Alcor Board Directors to the membership.*

Tim Shavers is a man of thoughtful consideration. It is precisely that trait, in combination with a propensity for action, which brought him full-swing into the cryonics movement within months of first learning about it. Having stumbled across cryonics online in 2007, Tim began researching the subject extensively. Coincidentally, his wife reconnected with her cousin after many years, whose husband turned out to be Alcor Board member Ravin Jain. "Meeting Ravin was great," says Tim. "Right away I was 'plugged in' and could get involved."

Since he works as a private investor, Tim initially got involved by acting as an Advisor and member of the Finance Committee. Meanwhile, he began the process of signing up as an Alcor member. "My research convinced me that there's a meaningful chance that cryonics will work, and that Alcor is the leading cryonics organization," he states. "This motivated me to join Alcor and to get actively involved in trying to strengthen Alcor and the cryonics movement to help increase the odds that cryonics works for me, my family and friends, and for all cryonicists."

Tim completed his membership arrangements in early 2009 and was elected to the Board of Directors on April 25, 2009. Tim brings a background in law and business con-

sulting to the Directors table, complementing the other Board members' knowledge and skills. He attended Harvard College (AB 1989) and Yale Law School (JD 1993) and began his career practicing corporate and real estate transactional law in New York City. In 1995 Tim joined McKinsey & Company and spent nine years as a management consultant in McKinsey's New York and Hong Kong offices, primarily working with the board and top management of several well-known companies on issues of global strategy and growth. While there, he led business strategy and restructuring projects in the US, Canada, Japan, Korea, Hong Kong, Singapore and Indonesia, and traveled to more than 40 countries. Tim has also been involved in several investment partnerships in the US and overseas.

To prepare himself for his role as an Alcor Director, Tim has eagerly begun reading cryonics history and science, as well as some of the more nuanced debates within the movement, such as whether to opt for whole body or neuro preservation. All of this information fits into a much larger framework for Tim, who says he has always had an interest in 'big picture' issues. At McKinsey Global Institute, Tim helped lead McKinsey's efforts to forecast global trends over the next 10-20 years. Tim's research on accelerating techno-



*Tim Shavers is Alcor's newest addition to the Board of Directors.*

logical progress helped convince him that cryonics can work, and that he should do what he can to make it work for himself and others.

"When you realize that cryonics could work...you start to care about humanity's long-term future in a way you didn't before. The existential risks to humanity – epidemics, asteroids, and other strokes of cosmically bad luck – become personally felt risks. And the possibilities for humanity's future – using technology to enhance our minds and bodies, exploring space and colonizing new worlds, perhaps finding other life forms – these possibilities become truly exciting when you realize you may be there to help make them happen."

But Tim is realistic about the current state of cryonics in the grand scheme of things. "The cryonics movement is subscale – small and underfunded – and we're trying to do groundbreaking and difficult work in a society that's mostly indifferent or hostile." In order to make progress toward greater societal acceptance leading to growth in membership and increased financial resources, Tim believes that Alcor needs to develop several aspects of its program over the next 5-10 years. In particular, he wants Alcor to focus on research geared toward making advances in resuscitation from cryopreservation,

improved readiness capability and education of Alcor members, stronger finances, and greater involvement of Alcor members.

As might be expected, Tim has specific recommendations for improving Alcor's financial stability. Most importantly, he suggests "the establishment of an endowment fund where principal would not be invaded and an appropriate portion of income/capital gains would be paid out to support operations and research." This is the same model which is used successfully by universities (and the Catholic church) and which would allow Alcor to operate in perpetuity – an obvious advantage for an organization that may need to do just that.



*Tim enjoys eating healthy and grilling vegetables with his family.*

Of course, the only way to keep Alcor going for however long may be necessary – whether that be 20 years or 200 – is for members to follow Tim's example and get involved. He points out that Alcor is still much too small to act like a pure service organization, and that its continued ability to function depends on member participation.

One may wonder how Tim finds the time to be so involved, himself. The answer is provided once again by his proactive attitude. After years of working high-stress jobs in New York City, Tim and his wife were ready to start a family. They decided to quit their



*The Shavers recently welcomed their first son, and Alcor welcomed its youngest member shortly thereafter.*

jobs and move to Peoria, AZ, where they are now "living a much more relaxed lifestyle," and welcomed their son on February 6, 2009. "My wife joined Alcor with me, to my everlasting joy," he gushes, "and together we signed up our newborn son."

Tim recognizes that his decision to leave the world of business behind in order to become a private investor has allowed him the freedom to explore his interests in more depth and the time to invest in those movements that mean most to him, like cryonics and transhumanism. This makes him wonder how many people feel compromised in their ability to be more active members because they are busy trying to get ahead or make ends meet.

But there are plenty of things that every member can do to advance the cryonics cause. Tim advises members to "join the monthly Board calls to hear what's going on and to ask questions and comment on things you care about. Join your local first-response group and get training. Tell your family and friends why you're an Alcor member, and encourage them to learn more. Make a contribution to Alcor or to another organization that is advancing cryonics or related sciences. Or donate your time and talent to Alcor, to help strengthen the organization and increase our chances of success."

Having already met dozens of other Alcor members at Board meetings, the monthly Phoenix Cryonics Meetup, and the asset preservation working group, Tim reports that we are "a wonderfully talented and fascinating group of freethinkers and visionaries." He stresses once again that

"we're a small community, but there is tremendous talent, wealth, connections and determination within our small group, and we can make a difference – if we all pull together. No one else is going to do it for us. We have to save our own lives, and the lives of those we love. We can do it, if we all get involved."

In a direct address to the Alcor membership, Tim says "if you have suggestions or concerns or questions about anything at Alcor, or if you just want to say hello, please email me anytime at [timshavers@gmail.com](mailto:timshavers@gmail.com). Alcor belongs to its members; every member is important, and the board and staff want to know what's on your mind." ■



*Father and son spend some quality time together.*

# SCHRÖDINGER'S RABBITS: THE MANY WORLDS OF QUANTUM

Author: Colin Bruce [Washington, DC: Joseph Henry Press, 2004]

BOOK REVIEW BY R. MICHAEL PERRY, PH.D.

As Immortalists we are interested in extending our lives beyond the biological limits using scientific methods. We thus have a special interest in reality as revealed by science, and particularly the strange world of the quantum, which underlies reality as we know it. This in turn presents puzzles that have exercised many bright minds for decades now, with one particular point of view, called the “many-worlds” interpretation, being a special focus of interest and controversy. Under many-worlds, reality, including ourselves and our immediate surroundings, is constantly splitting or fragmenting into nearly independent parts so that different versions of history play themselves out in ever-growing profusion. Thus, for example, there are actual versions of history, existing side-by-side with ours, in which Napoleon won the battle of Waterloo or the dinosaurs developed into intelligent creatures and humans as we know them never existed. On the face of it, given we never see but one version of events unfolding, this seems bizarre to the point of fantasy. But other attempts to explain reality at a deep level, when examined closely, are even weirder and more implausible-looking, so that many-worlds, under suitable refinements, seems to offer the best all-around explanation of what is going on. That, at any rate, is the conclusion reached in *Schrödinger's Rabbits*, which covers nearly a half-century of developments of the basic theoretical position that was first argued in 1957 by Hugh Everett III.

Everett's formulation left important things unspecified, such as whether the splitting of worlds happens instantaneously and totally, an issue which has been largely cleared up through the theory of decoherence. (The splitting does not happen instantly, nor is it ever total in a mathematical sense, though very nearly so in important cases.) In this way (and others) many-worlds copes well with the problem of “non-locality”—effects that seem to propagate at faster than light speed, in violation of special relativity, the most basic and strongly-entrenched portion of Einstein's famous theory. Many-worlds also provides that events are fully deterministic; apparent randomness is a virtual effect of the

multiplicity of histories that come into being, each with its own observers for whom events seem to occur in a particular way “by chance” though overall all effects are predictable. Histories in turn tend to be “coherent” with events accompanied by other events that support a reasonable narrative rather than contradictory occurrences.

The coherence property is brought out in the famous Schrödinger-cat thought experiment in which a cat is either euthanized or spared with equal probability. Many-worlds dictates that immediately following this event we must confront a “superposition of states” in which both alive and dead cats are present, yet we never actually observe such contradictory features. And this is precisely because of the enforcement of coherent histories. So, for example, while it is commonplace that there will be happy cat-lovers seeing live cats, and sad ones seeing dead cats, a happy cat-lover seeing a dead cat, or anyone seeing features suggesting a cat both dead and alive, is unlikely. Again, one sort of observed event will be accompanied, with high probability, by other, corresponding observed events so as to form a coherent history rather than events being randomly jumbled.

One practical benefit of many-worlds is that it provides a natural theoretical framework for quantum computing, which really does behave as if many histories—computational processes in this case—were happening in parallel. Clever design can ensure that, if as much as one of these parallel processes produces a sought-for result, the result will propagate and be accessible to all or nearly all the worlds. Quantum computing appears to hold great promise, though to date only very limited quantum computers have been implemented and the scale-up problems seem challenging.

Despite successes in both theory and some applications, many-worlds remains controversial and some of its important problems are still unsolved. Nevertheless, its support among physicists is substantial. An informal poll of 90 physicists conducted by the author reported 50 as “uncommitted” while among those willing to endorse one quantum interpretation or another,



fully 30 or 75 percent gave the nod to some version of many-worlds. In any case, the reader in search of thought-provoking observations and speculations will not be disappointed. Immortalists might well ponder whether many-worlds in some sense guarantees that we must be immortal, since our continuers—later versions of ourselves who remember their past—arguably must survive indefinitely in some of the parallel histories, no matter what happens. Such matters are also discussed at length (though not really adequately, in my view), and readers are invited to form their own opinions. ■

## About the Author

### Colin Bruce

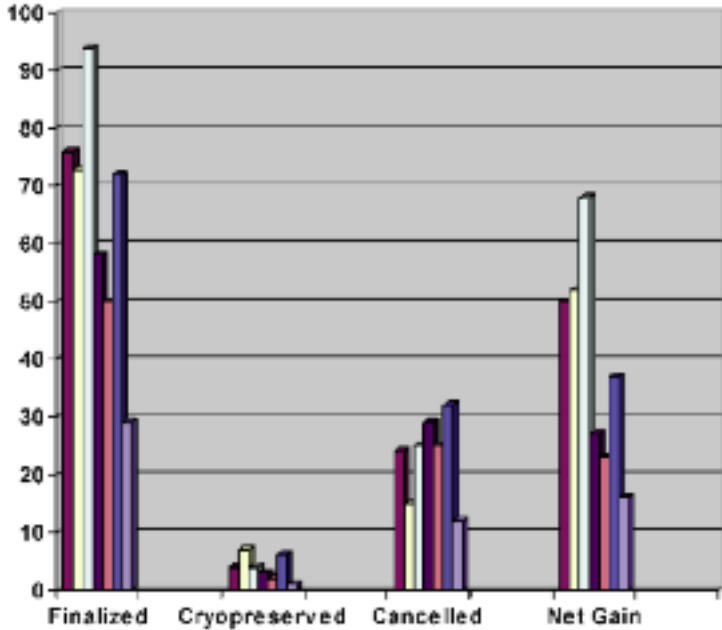
An independent physicist living in Oxford [UK],

Colin Bruce trained as a mathematical physicist and returned to the subject after detours in the defense and computing industries. He currently [2004] performs research for the European Space Agency and frequently writes about quantum physics and other science topics. He has been privileged to participate in the seminars at which the modern version of the Many Worlds Interpretation of quantum mechanics has been debated and refined by its leading proponents. [Source: *Schrödinger's Rabbits* dust jacket.]



# Membership Statistics

2009	01	02	03	04	05	06	07	08	09	10	11	12	
TOTAL	876	883	888	886	891								891
FINALIZED	3	11	8	0	4								26
REINSTATED	1	0	0	0	2								3
CANCELLED	3	3	3	2	1								12
CRYO-PRESERVED	0	1	0	0	0								1
NET GAIN	+1	+7	+5	-2	+5								+16



On May 31, 2009, Alcor had 891 members on its Emergency Responsibility List. During the first five months of 2009 26 memberships were approved, 3 memberships were reinstated, 12 memberships were cancelled and 1 member was cryopreserved. Overall, there was a net gain of 16 members for the year of 2009 to date.

## Take a look at the **ALCOR BLOG** [www.alcornews.org/weblog](http://www.alcornews.org/weblog)

Your source for news about:

**Cryonics technology**

**Cryopreservation cases**

**Television programs about cryonics**

**Speaking events and meetings**

**Employment opportunities**



## Forget Dentures: Why not Grow New Teeth?

Ever wonder why sharks get several rows of teeth and people only get one? Some geneticists did, and their discovery could spur work to help adults one day grow new teeth when their own wear out. A single gene appears to be in charge, preventing additional tooth formation in species destined for a limited set. When the scientists bred mice that lacked that gene, the rodents developed extra teeth next to their first molars—backups like sharks and other non-mammals grow, University of Rochester scientists reported Feb. 26. "It's exciting. We've got a clue what to do," said Dr. Songtao Shi of the University of Southern California School of Dentistry, who said the Rochester discovery will help his own research into how to grow a new tooth from scratch. Also intriguing: All the mice born without this gene, called *Osr2*, had cleft palates severe enough to kill. So better understanding of this gene might play a role in efforts to prevent that birth defect, the Rochester team reported in the journal *Science*.

MSNBC

2/26/09

<http://www.msnbc.msn.com/id/29411799/>

## Going Gray? Scientists Uncover Root Cause

Attention parents: It's not your kids that are making you go gray. Your hair is simply building up too much hydrogen peroxide. Bottle-blondes may be a fad, but hydrogen peroxide, which is produced naturally in the human body, interferes with melanin, the pigment that colors our hair and skin. The body also produces the enzyme catalase, which breaks down hydrogen peroxide into water and oxygen. Or at least it does for a while. As we age, catalase production tails off, leaving nothing to transform the hydrogen peroxide into chemicals the body can release. So, as hydrogen peroxide builds up, we go gray, concluded researchers at the University of

Bradford in the United Kingdom, who last week published the results of a study in the Federation of American Societies for Experimental Biology's online journal. "This new insight could open new strategies for intervention and reversal of the hair graying process," wrote the study's lead author John Wood, who died last month.

MSNBC

3/2/09

<http://www.msnbc.msn.com/id/29468796/>

## Enzyme Behind Cancer Spread Found

Scientists say they have identified an enzyme that helps cancer spread around the body. Cancer metastasis, where the cancer spreads from its original location, is known to be responsible for 90% of cancer-related deaths. Institute of Cancer Research scientists have found that an enzyme called LOX is crucial in promoting metastasis, *Cancer Cell* journal reports. Drugs to block this enzyme's action could keep cancer at bay, they hope. The researchers studied breast cancer in mice, but are confident that their findings will apply to humans with other cancer types too. LOX (lysyl oxidase) works by sending out signals to prepare a new area of the body for the cancer to set up a camp. Without this preparation process the new environment would be too hostile for the cancer to grow. Lead researcher Dr Janine Erler described the discovery as "the crucial missing piece in the jigsaw that scientists have been searching for." She said it was the first time one key enzyme has been identified as responsible for effectively allowing the cancer to spread. "If we can interrupt the body's ability to prepare new locations for the cancer to spread to, we can effectively prevent cancer metastasis."

BBC News

3/8/09

<http://news.bbc.co.uk/2/hi/health/7813072.stm>

## Bionic Eye Gives Blind Man Sight

A man who lost his sight 30 years ago says he can now see flashes of light after being fitted with a bionic eye. Ron, 73, had the experimental surgery seven months ago at London's Moorfield's eye hospital. He says he can now follow white lines on the road, and even sort socks, using the bionic eye, known as Argus II. It uses a camera and video processor mounted on sunglasses to send captured images wirelessly to a tiny receiver on the outside of the eye. In turn, the receiver passes on the data via a tiny cable to an array of electrodes which sit on the retina—the layer of specialized cells that normally respond to light found at the back of the eye. When these electrodes are stimulated they send messages along the optic nerve to the brain, which is able to perceive patterns of light and dark spots corresponding to which electrodes have been stimulated. The hope is that patients will learn to interpret the visual patterns produced into meaningful images. The bionic eye has been developed by US company Second Sight. So far 18 patients across the world, including three at Moorfields, have been fitted with the device.



BBC News

3/4/09

<http://news.bbc.co.uk/2/hi/health/7919645.stm>

## Virus “Triggers Child Diabetes”

A common virus may be the trigger for the development of many cases of diabetes, particularly in children, UK researchers have reported. Signs of enteroviruses were found in pancreatic tissue from 60% of children with type 1 diabetes, but in hardly any children without the disease. They also found that 40% of adults with type 2 diabetes had signs of the infection in insulin-producing cells. The study published in *Diabetologia* raises the possibility of a vaccine. Although genetics is known to play a fairly substantial role in a person's risk of developing diabetes, environmental factors must also be involved and the idea of a viral cause of diabetes has been considered for decades. The latest study was made possible by a pathologist in Glasgow who for 25 years collected tissue samples from children across the UK who had died less than 12 months after being diagnosed with type 1 diabetes. Dr Alan Foulis believed that enteroviruses—a common family of viruses which cause symptoms such as vomiting and diarrhea—would be present but until recently the technology was not sensitive enough to detect them.

BBC News  
3/5/09

<http://news.bbc.co.uk/2/hi/health/7926026.stm>

## Graphene: Key to Superfast Chips

Massachusetts Institute of Technology (MIT) researchers, led by Tomás Palacios and Jing Kong, have developed a new material that could lead to microchips that operate at much higher speeds than is possible with today's standard silicon chips, leading to cell phones and other communications systems that can transmit data much faster. The key to the superfast chips is the use of a material called graphene, a form of pure carbon that was first identified in 2004. The MIT researchers built an experimental graphene chip known as a frequency multiplier, meaning it is capable of taking an incoming electrical signal of a certain frequency—for example, the clock speed that determines how fast a computer chip can carry out its computations—and producing an output signal that is a multiple of that frequency. In this case, the MIT graphene chip can double the frequency of an electromagnetic signal. Frequency multipliers

are widely used in radio communications and other applications. But existing systems require multiple components, and produce “noisy” signals that require filtering and consume large power. The new graphene system has just a single transistor and produces, in a highly efficient manner, a clean output that needs no filtering.

I-Micronews

3/23/09

<http://www.i-micronews.fr/news/Graphene-Key-superfast-chips-developed-MIT,2879.html>

## Researchers Regenerate Axons Necessary for Voluntary Movement

For the first time, researchers have clearly shown regeneration of a critical type of nerve fiber that travels between the brain and the spinal cord and which is required for voluntary movement. The regeneration was accomplished in a brain injury site in rats by scientists at the University of California, San Diego School of Medicine and is described in a study to be published in the April 6th early on-line edition of the *Proceedings of the National Academy of Sciences (PNAS)*. “This finding establishes a method for regenerating a system of nerve fibers called corticospinal motor axons. Restoring these axons is an essential step in one day enabling patients to regain voluntary movement after spinal cord injury,” said Mark Tuszynski, MD, PhD, professor of neurosciences, director of the Center for Neural Repair at UC San Diego and neurologist at the Veterans Affairs San Diego Health System. The UC San Diego team achieved corticospinal regeneration by genetically engineering the injured neurons to over-express receptors for a type of nervous system growth factor called brain-derived neurotrophic factor (BDNF).



PhysOrg.com

4/6/09

<http://www.PhysOrg.com/news158258501.html>

## Extending the Life of Quantum Bits

Quantum computing holds great promise as a way to factor huge numbers, potentially breaking ultra-secure cryptographic codes unbreakable by traditional computers. However, this promise has historically been tempered by practical concerns: quantum computers rely on particles and molecules that are extremely sensitive to the environment; therefore, any such system only works for milliseconds, and the more particles and ions are added to a system, the quicker its ability fades. Now that perspective is changing. Researchers Michael Biercuk, John Bollinger and Herman Uys at the National Institute of Standards and Technology (NIST) have demonstrated, for the first time, that the lifetime of quantum-computing bits, known as qubits, can be extended using simple operations. In their experiment, they showed that by applying specially timed magnetic pulses to qubits, made of beryllium ions, they could prolong the life of the quantum bits from about one millisecond to hundreds of milliseconds. The work is described in this week's *Nature*. This means that the researchers have bought some time to do more complex experiments, such as modeling quantum states of large molecules, says Biercuk. It also means that they could add more qubits to the system.

Technology Review  
4/23/09

<http://www.technologyreview.com/computing/22532/>

## Obama Vows Investment in Science

In a speech April 27 to the US National Academy of Sciences in Washington DC President Barak Obama said it was time for the US to take a lead on innovation. He set the goal of devoting “more than 3%” of the gross domestic product (GDP) to US science research, adding that it was time for America to lead again in the area of research and development (R&D). US R&D spending is cur-

rently of the order of 2.6%, according to the most recent recorded figures. He said his administration would double the budgets of key agencies, including the National Science Foundation and the National Institute of Standards and Technology. It would also pursue the goal of a cut in carbon pollution of more than 80% by 2050. He also announced a new commitment to mathematics and science education.

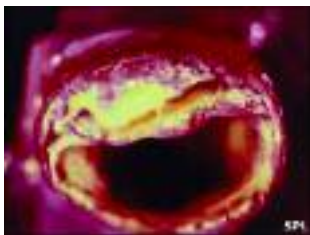
BBC News

4/27/09

<http://news.bbc.co.uk/2/hi/science/nature/8020930.stm>

## Scientists Pinpoint Fats Danger

Scientists have identified a genetic mechanism which appears to determine which fatty deposits in the arteries have the potential to kill us. Most of these plaques pose no risk to health, but a minority burst, forming blood clots, which can cause heart attacks or strokes. A Columbia University team headed by Dr Ira Tabas pinpointed a gene which seems to make plaques more vulnerable to rupture. The study using mice appears in the journal *Cell Metabolism*. Fatty deposits begin to form in the arteries of most people in their teens, but the vast majority is harmless. However, it is thought that around 2% of plaques have the potential to burst. This can lead to the development of a clot, which can restrict blood supply to the heart or brain, with potentially grave consequences. Scientists believe one of the key factors determining whether a plaque will burst is the makeup of its inner core. The inner core of plaques vulnerable to rupture often contains a lot of dead cells. These cells release substances that can weaken the surface cap of the plaque, making rupture more likely. The Columbia team identified a gene thought to play a key role in the buildup of these dead cells. Dr Tabas said the finding raised hopes of new drugs to cut the risk of dangerous plaques.



Ruptured plaques can be deadly.

BBC News

5/5/09

<http://news.bbc.co.uk/go/em/-/1/hi/health/8033205.stm>

## First Image of Memories Being Made

The ability to learn and to establish new memories is essential to our daily existence and identity; enabling us to navigate through the world. A new study by researchers at the Montreal Neurological Institute and Hospital (The Neuro), McGill University, and University of California, Los Angeles has captured an image for the first time of a mechanism, specifically protein translation, which underlies long-term memory formation. The finding provides the first visual evidence that when a new memory is formed new proteins are made locally at the synapse—the connection between nerve cells—increasing the strength of the synaptic connection and reinforcing the memory. The study, published in *Science*, is important for understanding how memory traces are created and the ability to monitor it in real time will allow a detailed understanding of how memories are formed. Dr. Wayne Sossin, neuroscientist at The Neuro was a co-investigator in the study, which was funded by the National Institutes of Health, the WM Keck Foundation and the Canadian Institutes of Health Research.

ScienceDaily

6/19/09

<http://www.sciencedaily.com/releases/2009/06/090618151331.htm>

## 2,000-Fold Improvement in DVD Storage Capacity Seen

Futuristic discs with a storage capacity 2,000 times that of current DVDs could be just around the corner, thanks to new research from Swinburne University of Technology in Australia. For the first time researchers from the university's Centre for Micro-Photonics have demonstrated how nanotechnology can enable the creation of "five dimensional" discs with huge storage capacities. The research, carried out by Mr Peter Zijlstra, Dr James Chon and Professor Min Gu was published today in the scientific journal *Nature*.

The *Nature* article describes how the researchers were able to use nanoscopic particles to exponentially increase the amount of information contained on a single disc. "We were able to show how nanostructured material can be incorporated onto a disc in order to increase data capacity, without increasing the physical size of the disc," Gu said. Discs currently have three spatial dimensions, but using nanoparticles the Swinburne researchers were able to introduce a spectral—or color—dimension as well as a polarization dimension. "These extra dimensions are the key to creating ultra-high capacity discs," Gu said. To create the "color dimension" the researchers inserted gold nanorods onto a disc's surface.



Researchers in Australia have demonstrated how nanostructured material can be incorporated onto a disc in order to increase data capacity, without increasing the physical size of the disc. (Credit: Peter Zijlstra/James Chon)

ScienceDaily

5/21/09

<http://www.sciencedaily.com/releases/2009/05/090520192137.htm>



# MEETINGS

## About the Alcor Foundation

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

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

## ARIZONA

### Scottsdale:

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

### At Alcor:

Alcor Board of Directors Meetings and Facility Tours – Alcor business meetings are generally held on the first Saturday of every month starting at 11:00 AM MST. Guests are welcome. Facility tours are held every Tuesday and Friday at 2:00 PM. For more information or to schedule a tour, call D'Bora Tarrant at (877) 462-5267 x 101 or email [dbora@alcor.org](mailto:dbora@alcor.org).

## NEVADA

### Las Vegas:

There are many Alcor members in the Las Vegas area. If you wish to meet and socialize, contact Katie Kars at (702) 251-1975. This group wants to get to know you!

## Host a Meeting in your area.

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

## CALIFORNIA

### Los Angeles:

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

### San Francisco Bay:

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

## OREGON

### Portland:

Cryonics Oregon holds regular meetings every 2-3 months for members of cryonics organizations living in Portland and the surrounding areas. For information, please contact Chana de Wolf at [chana.de.wolf@gmail.com](mailto:chana.de.wolf@gmail.com) or 503.756.0864.

A Yahoo group is also maintained for cryonics activities in the Pacific Northwest at <http://tech.groups.yahoo.com/group/CryonicsNW/>.

## DISTRICT OF COLUMBIA

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

## TEXAS

### Dallas:

North Texas Cryonauts, please sign up for our announcements list for meetings (<http://groups.yahoo.com/group/cryonauts-announce>) or contact David Wallace Croft at (214) 636-3790 for details of upcoming meetings.

## NEW ENGLAND

### Cambridge:

The New England regional group strives to meet monthly in Cambridge, MA – for information or to be added to the AlcorNE mailing list, please contact Bret Kulakovich at 617-824-8982, [alcor@bonfireproductions.com](mailto:alcor@bonfireproductions.com), or on FACEBOOK via the Cryonics Special Interest Group.

## UNITED KINGDOM

There is an Alcor chapter in England. Its members are working diligently to build solid emergency response, transport, and cryopreservation capability. For information about meetings, contact Alan Sinclair at [cryoservices@yahoo.co.uk](mailto:cryoservices@yahoo.co.uk). See the web site at [www.alcor-uk.org](http://www.alcor-uk.org).

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# WHAT IS CRYONICS?

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

# HOW DO I FIND OUT MORE?

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

- A 30-minute DVD documentary "The Limitless Future"
- A fully illustrated color brochure
- A sample of our magazine
- An application for membership and brochure explaining how to join
- And more!

**Your free package should arrive in 1-2 weeks.**

(The complete package will be sent free in the U.S., Canada, and the United Kingdom.)

# HOW DO I ENROLL?

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Signing up for a cryopreservation is easy!

**Step 1:** Fill out an application and submit it with your \$150 application fee.

**Step 2:** You will then be sent a set of contracts to review and sign.

**Step 3:** Fund your cryopreservation. While most people use life insurance to fund their cryopreservation, other forms of prepayment are also accepted. Alcor's Membership Coordinator can provide you with a list of insurance agents familiar with satisfying Alcor's current funding requirements.

**Finally:** After enrolling, you will wear emergency alert tags or carry a special card in your wallet. This is your confirmation that Alcor will respond immediately to an emergency call on your behalf.

**Call toll-free today to start your application:**

**877-462-5267 ext. 132**

**[info@alcor.org](mailto:info@alcor.org)**

**[www.alcor.org](http://www.alcor.org)**



**The Limitless Future**  
Get your FREE copy of Alcor's  
30-minute DVD documentary by visiting the  
"Free Information" section of our website





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Your best chance at achieving future immortality is to protect your precious health now so you can benefit from future medical breakthroughs. Staying informed about the latest health discoveries can mean the difference between life and premature death.

And the **Life Extension Foundation** can be your passport to the future. As the largest anti-aging organization in the world, we are dedicated to finding scientific ways to prevent disease, slow aging, and eventually stop death.

For more than two decades, Life Extension has been at the forefront of the movement to support revolutionary anti-aging research that is taking us closer to our goal of extending the healthy human life span indefinitely. We inform our members about path-breaking therapies to help keep them healthy and alive.

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- Access to a toll-free phone line to speak with **knowledgeable health advisors**, including naturopathic doctors, nutritionists, and a cancer expert, about your individual health concerns. You can also receive help in developing your own personal life extension program.
- **Discounts on prescription drugs, blood tests, and pharmaceutical quality supplements** that will greatly exceed

your membership dues. You'll receive a directory listing the latest vitamins and supplements, backed by scientific research and available through a unique buyers club.

#### **FREE BONUS!**

- **Disease Prevention and Treatment book** (\$49.95 cover price) ...this hardbound fourth edition provides novel information on complementary therapies for 133 diseases and illnesses—from Alzheimer's disease to cancer, from arthritis to heart disease—that is based on thousands of scientific studies.

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