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A Publication of the Immortalist Society

LONG LIFE

Longevity Through Technology

Volume 48 - Number 03

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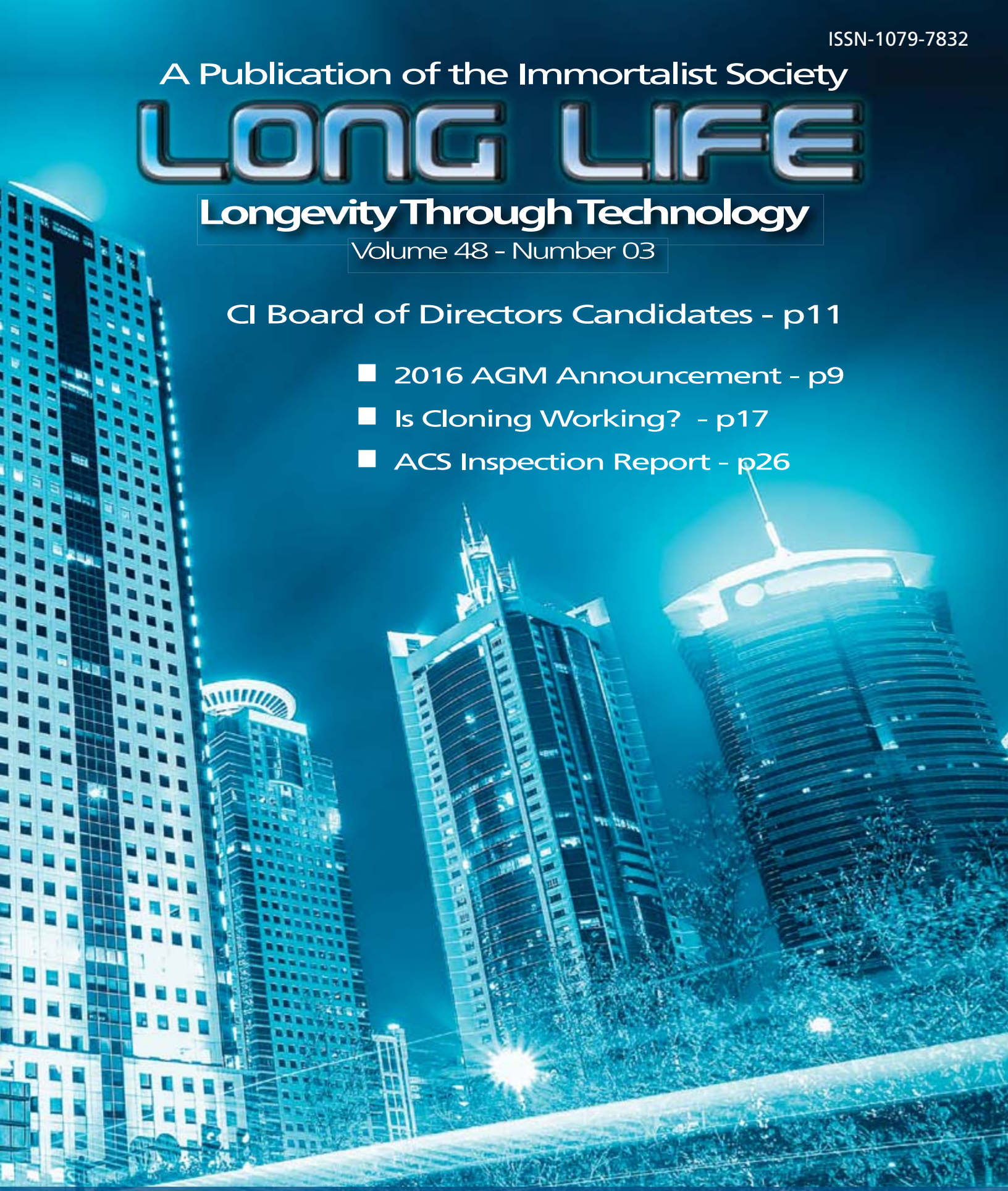

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www.americancryonics.org

Who will be there for YOU?

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Suspended Animation fields teams of specially trained cardio-thoracic surgeons, cardiac perfusionists and other medical professionals with state-of-the-art equipment to provide stabilization care for Cryonics Institute members in the continental U.S.

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CRYONICS INSTITUTE
Technology for Life

Why should You join the Cryonics Institute?

The Cryonics Institute is the world's leading non-profit cryonics organization bringing state of the art cryonic suspensions to the public at the most affordable price. CI was founded by the "father of cryonics," Robert C.W. Ettinger in 1976 as a means to preserve life at liquid nitrogen temperatures. It is hoped that as the future unveils newer and more sophisticated medical nanotechnology, people preserved by CI may be restored to youth and health.

1) Cryonic Preservation

Membership qualifies you to arrange and fund a vitrification (anti-crystallization) perfusion and cooling upon legal death, followed by long-term storage in liquid nitrogen. Instead of certain death, you and your loved ones could have a chance at rejuvenated, healthy physical revival.

2) Affordable Cryopreservation

The Cryonics Institute (CI) offers full-body cryopreservation for as little as $28,000.

3) Affordable Membership

Become a Lifetime Member for a one-time payment of only $1,250, with no dues to pay. Or join as a Yearly Member with a $75 inititation fee and dues of just $120 per year, payable by check, credit card or PayPal.

4) Lower Prices for Spouses and Children

The cost of a Lifetime Membership for a spouse of a Lifetime Member is half-price and minor children of a Lifetime Member receive membership free of charge until the child turns 18 years of age.

5) Quality of Treatment

CI employed a Ph.D level cryobiologist to develop CI-VM-1, CI's vitrification mixture which can help prevent crystalline formation at cryogenic temperatures.

6) Locally-Trained Funeral Directors

CI's use of Locally-Trained Funeral Directors means that our members can get knowledgeable, licensed care. Or members can arrange for professional cryonics standby and transport by subcontracting with Suspended Animation, Inc.

7) Funding Programs

Cryopreservation with CI can be funded through approved life insurance policies issued in the USA or other countries. Prepayment and other options for funding are also available to CI members.

8) Cutting-Edge Cryonics Information

Members currently receive free access to Long Life Magazine online or an optional paid print subscription, as well as access to our exclusive members-only email discussion forum.

9) Additional Preservation Services

CI offers a sampling kit, shipping and long-term liquid nitrogen storage of tissues and DNA from members, their families or pets for just $98.

10) Support Education and Research

Membership fees help CI, among other things, to fund important cryonics research and public outreach, education and information programs to advance the science of cryonics.

11) Member Ownership and Control

CI Members are the ultimate authority in the organization and own all CI assets. They elect the Board of Directors, from whom are chosen our officers. CI members also can change the Bylaws of the organization (except for corporate purposes).

The choice is clear: Irreversible physical death, dissolution and decay, or the possibility of a vibrant and joyful renewed life. Don't you want that chance for yourself, your spouse, parents and children?

To get started, contact us at:

(586) 791-5961 • email: cihq@aol.com

Visit us online at www.cryonics.org

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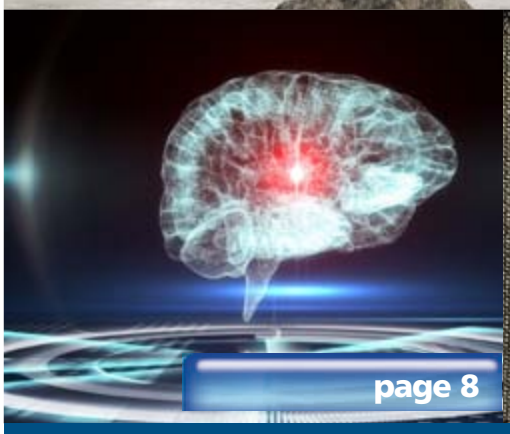

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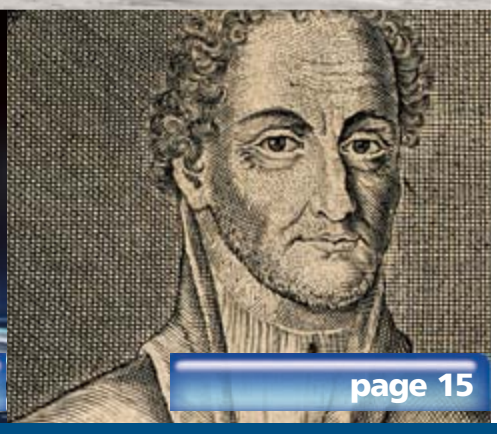

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LONG LIFE MAGAZINE

A publication of the Immortalist Society

ORGANIZATION NEWS

FEATURE STORIES

ONLINE PDF HYPERLINK COMPATIBILTY

Since different browser configurations handle pdf links differently, if you have trouble opening any hyperlink(s) in the magazine, try these steps:

1. "Copy and paste"or manually type the hyperlink or email address into your browser or your email application's address field.
2. Download the pdf file to your desktop. Open downloaded file in Adobe Reader or your preferred PDF viewer.
3. Change PDF viewing settings / extensions on your browser (*advanced users only*)
4. Try a different browser (especially if you're using Internet Explorer.) We recommend Google Chrome.

You've signed up for Cryonics Now what should you do?

Welcome Aboard! You have taken the first critical step in preparing for the future and possibly ensuring your own survival. Now what should you do? People often ask "What can I do to make sure I have an optimal suspension?" Here's a checklist of important steps to consider.

- ☐ Become a fully funded member through life insurance or easy pre-payments

  Some members use term life and invest or pay off the difference at regular intervals. Some use whole life or just prepay the costs outright. You have to decide what is best for you, but it is best to act sooner rather then later as insurance prices tend to rise as you get older and some people become uninsurable because of unforeseen health issues. You may even consider making CI the owner of your life insurance policy.
- ☐ Keep CI informed on a regular basis about your health status or address changes. Make sure your CI paperwork and funding are always up to date. CI cannot help you if we do not know you need help.
- ☐ Keep your family and friends up to date on your wishes to be cryopreserved. Being reclusive about cryonics can be costly and cause catastrophic results.
- ☐ Keep your doctor, lawyer, and funeral director up to date on your wishes to be cryopreserved. The right approach to the right professionals can be an asset.
- ☐ Prepare and execute a Living Will and Power of Attorney for Health Care that reflects your cryonics-related wishes. Make sure that CI is updated at regular intervals as well.
- ☐ Consider joining or forming a local standby group to support your cryonics wishes. This may be one of the most important decisions you can make after you are fully funded. As they say- "Failing to plan is planning to fail".
- ☐ Always wear your cryonics bracelet or necklace identifying your wishes should you become incapacitated. Keep a wallet card as well. If aren't around people who support your wishes and you can't speak for yourself a medical bracelet can help save you.
- ☐ Get involved! If you can, donate time and money. Cryonics is not a turnkey operation. Pay attention and look for further tips and advice to make both your personal arrangements and cryonics as a whole a success.

CRYONICS INSTITUTE
Technology for Life

LONG LIFE

A quarterly publication of the

Immortalist Society

24355 Sorrentino Ct. Clinton Township MI 48035-3239

President: York W. Porter Vice-President: Debbie Fleming
Secretary: Royse Brown • Treasurer: Rich Medalie

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CI EXECUTIVE REPORT

Dennis Kowalski - President, Cryonics Institute

Hello everyone. I'm pleased to report that CI continues with steady growth and improvements. We are currently finishing up the remodeling of the front offices and patient file room and both will be ready for viewing at our 40th AGM on Sunday, September 11th at 3:00pm EDT – Remember to mark your calendars! This year we will be conducting a Silent Auction hosted by Director Stephan Beauregard, with all proceeds donated to CI. Please note, Stephan is still looking for additional auction items as well as volunteers to help run the auction at the meeting. If you can help, please contact him at stephan@cryonics.org or via our Facebook page. Our featured guest speaker this year is Dr. Robin Hanson, an expert on prediction markets, the social implications of future technologies, nano-technology and how these technologies influence the economy and society.

It's election time again, so please don't forget to vote. More information about the Board of Directors elections and our candidates' bios are included in this issue of the CI Newsletter. We have six candidates running for four very important positions this year. Good luck to all of our candidates and thanks for stepping up!

I am impressed with some of the exciting new developments happening in cryonics. CI Membership continues to grow as well as increased public interest in cryonics. There has also been a lot of positive feedback about the many ways to keep informed, such as our new improved CI members only Yahoo group. Membership has increased on this forum since it began and continues as the content has become more focused and relevant. If you are a CI member and are interested in joining the CI Yahoo group please email CIHQ@aol.com to request an invitation. The CI group is private, so we do need to take this little extra step to add new members.

Interest in cryonics operations locally is catching on and members seem to be becoming more aware of and concerned with standby and what they can actually do right now. There are additional cryonics standby groups and facilities sprouting up within the United States and abroad. My hope is that all cryonicists will improve and help one another. I think the standby message is taking hold. We have sold many basic kits and people are asking good questions about our standby manuals and what to do. We also continue to run our "Standby Workbook" feature in every issue of the CI Newsletter to help members focus on their personal standby preparations with simple task-oriented instructions.There will be more to follow.

We continue to work on training efforts for local standby to help members, family, friends and professionals to help honor our wishes when we cannot speak for ourselves. Remember to check the "Next Steps" checklist on page 5 of this magazine and visit the resources section of CI's website to work on improving your own standby should you ever need it.

Stay healthy and I hope to see you at the next AGM.

Cryonics Institute Membership Statistics:

As of August 2016, the Cryonics Institute has 1,308 members, up 16 from our last report. Of the 1,308 Members, 197 have arrangements for Suspended Animation Standby and Transport.

There are 138 human patients and 125 pet patients in cryopreservation at CI's Michigan facility.

CI continues to be an industry leader in terms of both membership and practical affordability for all.

CI MEMBERSHIP

Increase in Membership since last issue

New Country

Members	1,308	Pets	125
SA	197	DNA/Tissue	236
Patients	138		

TOTAL **1,446**

Worldwide Cryonics Groups

AUSTRALIA: The Cryonics Association of Australasia offers support for Australians, or residents of other nearby countries seeking information about cryonics. caalist@prix.pricom.com.au. Their Public Relations Officer is Philip Rhoades. phil@pricom.com.au GPO Box 3411, Sydney, NSW 2001 Australia. Phone: +6128001 6204 (office) or +61 2 99226979 (home.)

BELGIUM: Cryonics Belgium is an organisation that exists to inform interested parties and, if desired, can assist with handling the paperwork for a cryonic suspension. The website can be found at www.cryonicsbelgium.com. To get in touch, please send an email to info@cryonicsbelgium.com.

BHUTAN: Can help Cryonics Institute Members who need help for the transport & hospital explanation about the cryonics procedure to the Dr and authorities in Thimphou & Paro. Contacts : Jamyang Palden & Tenzin Rabgay / Emails : palde002@umn.edu or jamgarnett@hotmail.co Phones : Jamyang / 975-2-32-66-50 & Tenzin / 975-2-77-21-01-87

CANADA: This is a very active group that participated in Toronto's first cryopreservation. President, Christine Gaspar; Vice President, Gary Tripp. Visit them at: http://www.cryocdn.org/. There is a subgroup called the Toronto Local Group. Meeting dates and other conversations are held via the Yahoo group. This is a closed group. To join write: csc4@cryocdn.org

QUEBEC: Contact: Stephan Beauregard, C.I. Volunteer & Official Administrator of the Cryonics Institute Facebook Page.

For more information about Cryonics in French & English: stephanbeauregard@yahoo.ca

DENMARK: A Danish support group is online. Contact them at: david.stodolsky@socialinformatics.org

FINLAND: The Finnish Cryonics Society, (KRYOFIN) is a new organization that will be working closely with KrioRus. They would like to hear from fellow cryonicists. Contact them at: kryoniikka.fi Their President is Antti Peltonen.

FRANCE:
SOCIETE CRYONICS DE FRANCE is a non profit French organization working closely withEuropean cryonics groups. For more information : J.R. Missonnier: phone: 33 (0) 6 64 90 98 41or e-mail: cryonics news.inpi@yahoo.fr.

Can help Cryonics Institute Members who need help for the transport & hospital explication about the cryonics procedure to the Dr and authority in Toulouse Area. Contact : Gregory Gossellin de Bénicourt / Email : cryonics@benicourt.com Phone : 09.52.05.40.15

GERMANY: There are a number of cryonicists in Germany. Their homepage is: www.biostase.de (English version in preparation.) if there are further questions, contact Prof. Klaus Sames: sames@uke.uni-hamburg.de.

GREECE: Greek Cryonics Support Group. Sotiris Dedeloudis is the Administrator. Find them at: http://www.cryonics.gr/

INDIA: Can help Cryonics Institute Members who need help for the transport & hospital explication about the cryonics procedure to the Dr and authority in Bangalore & Vellore Area. Contacts : Br Sankeerth & Bioster Vignesh / Email : vicky23101994@gmail.com Phones : Bioster / 918148049058 & Br Sankeerth / 917795115939

ITALY: The Italian Cryonics Group (inside the Life Extension Research Group (LIFEXT Research Group)) www.lifext.org and relative forum: forum.lifext.org. The founder is Bruno Lenzi, contact him at brunolenzi88@gmail.com or Giovanni Ranzo at: giovanni1410@gmail.com

JAPAN: Hikaru Midorikawa is President, Japan Cryonics Association. Formed in 1998, our goals are to disseminate cryonics information in Japan, to provide cryonics services in Japan, and, eventually, to allow cryonics to take root in the Japanese society. Contact mid_hikaru@yahoo.co.jp or http://www.cryonics.jp/ index.html

NEPAL: Can help Cryonics Institute Members who need help for the transport & hospital explanation about the cryonics procedure to the Dr and authorities in Kathmandu. Contact : Suresh K. Shrestha / Email : toursuresh@gmail.com Phone : 977-985-1071364 / PO Box 14480 Kathmandu.

NETHERLANDS: The Dutch Cryonics Organization (http:// www.cryonisme.nl) is the local standby group and welcomes new enthusiasts. Contact Secretary Japie Hoekstra at +31(0)653213893 or email: jb@hoekstramedia.nl

* Can help Cryonics Institute Members who need help, funeral home, transport & hospital explication about the cryonics procedure to the Dr and authority at Amsterdam with branches in other cities. Contact : Koos Van Daalen / Phone (24 Hours) +31-20-646-0606 or +31-70-345-4810

NORWAY : Can help Cryonics Institute Members who need help for the transport & hospital explication about the cryonics procedure to the Dr, funeral home and authority at Sandvika. Contacts : Gunnar Hammersmark Sandvika Begegravelsesbyraa / Phones : 011-47-2279-7736

PORTUGAL: Nuno & Diogo Martins with Rui Freitas have formed a group to aid Alcor members in Portugal. Contact: nmartins@nmartins.com or visit www.cryonics.com.pt/

RUSSIA: KrioRus is a Russian cryonics organization operating in Russia, CIS and Eastern Europe that exists to help arrange cryopreservation and longterm suspension locally, or with CI or Alcor. Please contact kriorus@mail.ru or daoila.medvedev@mail.ru for additional information or visit http://www.kriorus,ru. Phone: 79057680457

SPAIN: Giulio Prisco is Secretary of the Spanish Cryonics Society. Website is http://www.crionica.org.sec. He lives in Madrid and he's a life member of CI and is willing to serve as a contact point for Europeans. He can be contacted at: cell phone (34)610 536144 or giulio@gmail.com

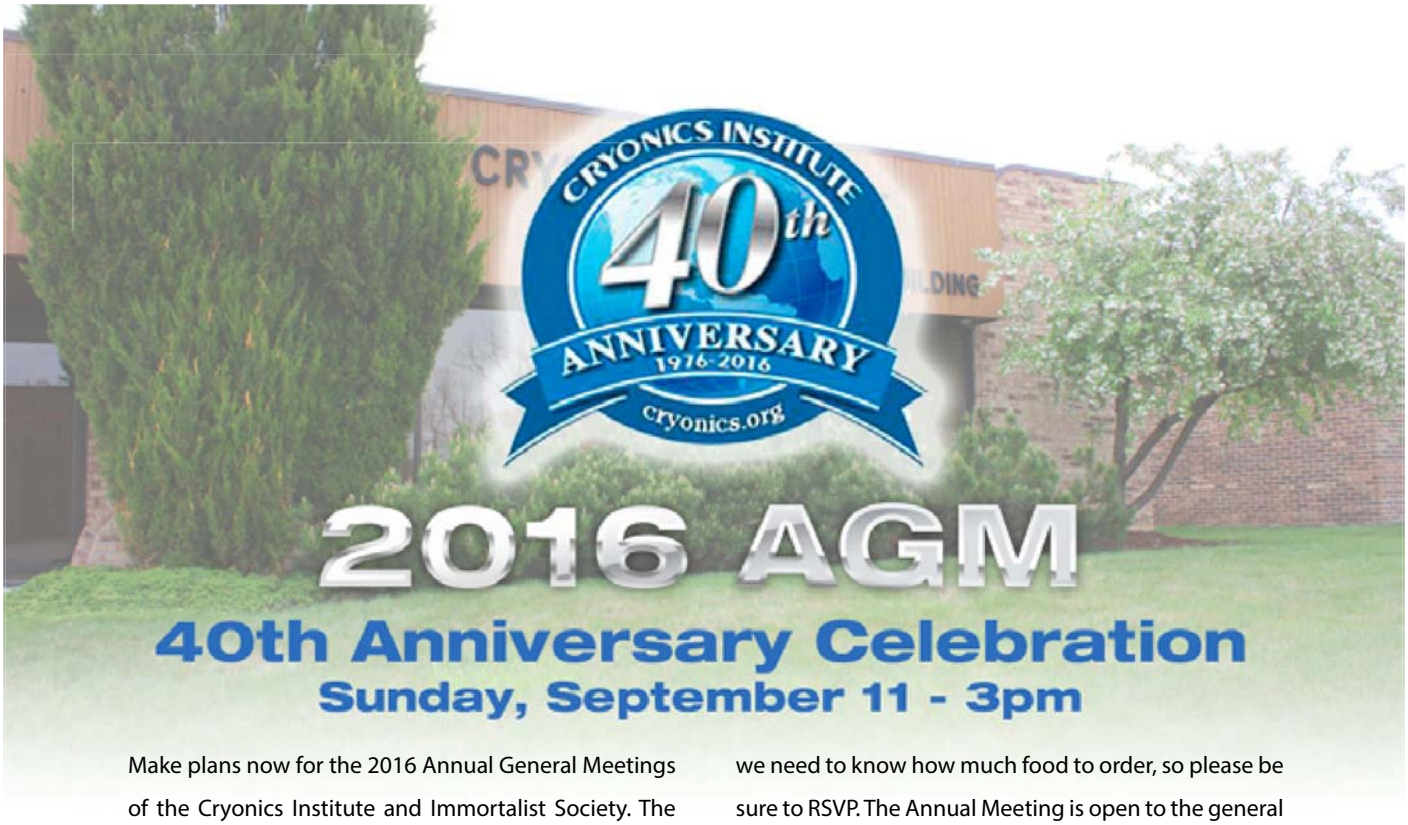
SWITZERLAND
www.CryonicsSwitzerland.com or www.ria.edu/cs

UNITED KINGDOM: Cryonics UK is a nonprofit UK based standby group. http://www.cryonicsuk.org/ Cryonics UK can be contacted via the following people: **Tim Gibson:** phone: 07905 371495, email: tim.gibson@cryonics-uk.org. **Victoria Stevens**: phone: 01287 669201, email: vicstevens@hotmail.co.uk. **Graham Hipkiss**: phone: 0115 8492179 / 07752 251 564, email: ghipkiss@hotmail.com. **Alan Sinclair:** phone: 01273 587 660 / 07719 820715, email: cryoservices@yahoo.co.uk

Can help Cryonics Institute Members who need help, funeral home, transport at London. Contact: F.A. Albin & Sons / Arthur Stanley House Phone: 020-7237-3637

INTERNATIONAL: The Cryonics Society is a global cryonics advocacy organization. Website is www.CryonicsSociety.org. They publish an e-newsletter *FutureNews*. Phone: 1-585-643-1167.

Please note, this list is provided as an information resource only. Inclusion on the list does not constitute an endorsement by Long Life magazine or our affiliated organizations. We urge our readers to use this list as a starting point to research groups that may meet their own individual needs. We further note that readers should always use their own informed judgment and a reasonable amount of caution in dealing with any organization and/or individual listed.



Make plans now for the 2016 Annual General Meetings of the Cryonics Institute and Immortalist Society. The Annual General Meeting (AGM) of the Cryonics Institute will be held at 3PM on Sunday, September 11th, 2016 at the CI facility, 24355 Sorrentino Court, Clinton Township, Michigan 48035 (USA). The Immortalist Society's annual meeting will be held after CI's meeting. The two meetings generally last most of the afternoon.

The CI facility will be open to guests and visitors one hour before the meeting begins. Meetings offer an excellent opportunity to see the facility, meet other members, get a sense of the status of the Cryonics Institute & Immortalist Society and to see Officers, Directors & Staff. For those who come a day early, an informal dinner will be held on Saturday evening at a local restaurant.

Agenda items for the CI AGM will include the President's Report, Treasurer's Report and Investment report as well as business issues that arise. The winners of the 2016 CI Board of Director election will also be announced. Tours of the CI Facility will also be avalable for interested guests. A buffet dinner & social follow both meetings. There is no charge for the buffet dinner, but we need to know how much food to order, so please be sure to RSVP. The Annual Meeting is open to the general public. We request that we be informed if you wish to attend. For driving directions, more meeting information and to confrm attendance, send e-mail to CIHQ@aol.com, phone (586) 791-5961 or visit Wherevent.com (http://www.wherevent.com/detail/Cryonics-Institute-The-Annual-General-Meeting-AGM-2016-of-the-Cryonics-Institute.)

Night-Before Dinner

CI members & the public are welcome to join us the night before the offcial CI AGM at Ike's Restaurant for a casual dinner and drinks (all foods include Vegan options.) We will meet Saturday, September 10, 2016 at 6pm at Ike's Restaurant, 38550 Van Dyke Avenue, Sterling Heights (MI) 48312, near the Cryonics Institute. For a complete menu and directions,please visit Ike's Restaurant. (http://www.ikesrestaurant.com/location.php)

Vote, Vote, Vote!!!

by: York W. Porter, Executive Editor, Long Life Magazine

The CI Voting Forms should have either reached you by now or will shortly. (The Immortalist Society election is held at the meeting itself). A few thoughts on these forms are as follows:

First, keep in mind that rather than the usual "either/or" type of voting that is prevalent in regular type elections such as President of the US, etc., the voting method used by CI is one that is known as "cumulative voting". It is relatively common in corporations and provides the ability for a minority of members to elect a board member regardless of majority opposition.

This capability, while not insuring a minority the ability to "dominate the conversation", "get their way", etc. does allow a significant number of a minority (in CI's case, one vote above twenty percent of the total votes cast), the ability to vote as a bloc and guarantee the success of a single candidate. This, therefore, allows the placement of an individual in a position where they are privy to all business matters of the corporation. This ability to act as a "watchdog" is a very powerful one in any organization, irrespective of the power of the member of the Board of Directors' vote itself.

You don't, of course, have to vote as part of a bloc at all if you don't want to. There are maybe some strategies other than "bloc voting" in cumulative elections but I won't outline them here since, frankly, I'm not aware of what they are. You can check online if you wish to figure it all out. What I have always done is just "vote my conscience". Sometimes I have given all my four votes to one candidate. Other times I have given some of my vote to one candidate and some to others. One time I believe that I gave one vote to each of four candidates. It's really up to each CI voting member to search their own soul and vote how they think is best for CI.

Here are a couple of thoughts in closing. As a past member of the "Teller's Committee" (fancy wording for the folks who do the boring but necessary work of ballot counting), the main thing to keep in mind are these:

First, you have a maximum of four votes. In marking the voting form, I would use either "tally marks" or regular numbering. If you put more than a total of four votes on the form, or if it isn't reasonably possible for the Teller's Committee members (normally three folks do this) to decide among themselves how you wanted your votes cast, the ballot will be considered spoiled and, therefore, not counted. So, be as clear as you can on how you want your votes to register and make sure you don't cast more than five total votes.

Second, in the other most common mistake that is made, if there is a place (which there always has been) to sign the ballot, make sure you do so! If you don't, this will be considered a spoiled ballot as well.

Good luck to all the candidates. I know each of them wants CI to continue to thrive and prosper in the years ahead!!

The twelve Directors of the Cryonics Institute Board are elected from CI's voting membership for three year terms in rotating groups of four every September. The elections are held with the results announced at the Annual General Meeting hosted at the Cryonics Institute facility in Michigan. This year's meeting is scheduled for Sunday, Sept. 11.

All four of the CI Directors whose terms are up (the incumbents) are running for re-election, as well as new candidates Kevin Doyle and Phillipe Vitu. Statements by all candidates appear on the following pages. (Candidate Statements are listed in alphabetical order.) E-mail addresses and, in the case of reading *Long Life* on-line, clickable web links for further candidate information may or may not be provided as well, depending on what information was available at press time.

Long Life Candidate Statements Disclaimer

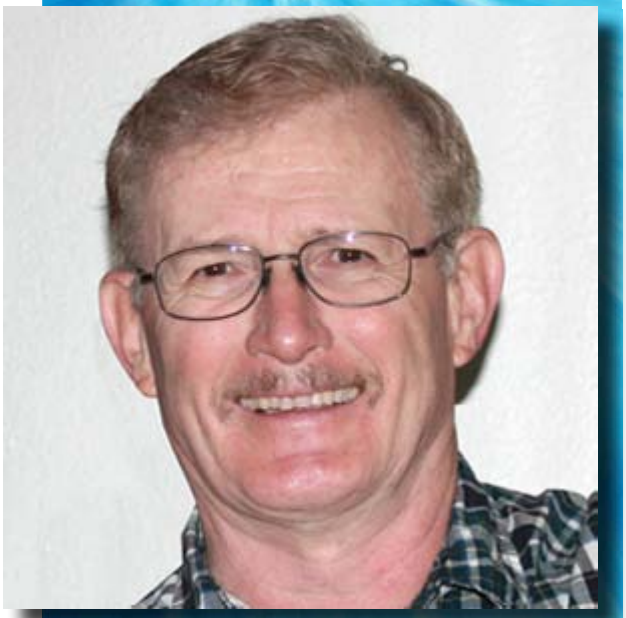
On the following pages, candidates for the Board of Directors' seats of the Cryonics Institute present information. Each of these individuals is a bona fide candidate as best as can be known by the Immortalist Society at the time of the publication deadline of Long Life magazine. *The information presented here, however, represents solely and entirely the view of the candidates themselves. The Immortalist Society cannot guarantee the validity of any individual's candidacy nor the validity of their statements and/or viewpoint as expressed here or elsewhere.* Other candidates than those who submitted information here may decide to run for a seat on the Board of Directors as well.

Further, in no way should the appearance of the information here be considered an endorsement (or repudiation) of the viewpoint of the candidate of the information contained in each statement or as expressed elsewhere.

Voters should, in this election as in any election, read and consider carefully the information contained in these statements and, where applicable, try to verify, to the best of the voter's ability, statements of fact and the validity of candidate's viewpoints. The appearance here or elsewhere does not guarantee the factual or valid nature of statements of the candidates and it is up to each voting member to engage in a reasonable amount of due diligence in evaluating candidate's statements and in voting for candidates in this election.

CRYONICS INSTITUTE
Technology for Life

2016 CANDIDATES



All CI members should have received their 2016 Board of Directors elections ballots in the mail. If you have not received your ballot, please contact CI Headquarters to resolve any issues. This year's candidates for election follow in alphabetical order.

Kevin Doyle

My name is Kevin Doyle and I am running for the position of CI Director. I'm hopeful that I can help with the challenging work CI has ahead regarding growth, stability and changing public perceptions. I'm fully supportive of the current efforts of many groups like the CSC to put local standby teams/procedures in place.

Being from Canada, I could possibly present a bit of an international perspective. I have run a large scale beef farm operation all my life and so have some understanding of ground level work and organization. I am presently assisting the board as an advisor due to an election tie a couple of years ago.

I have a BSc in Mechanical Engineering from Queen's University and a M.E.Sc from the University of Western Ontario and have worked in Nuclear Power Generation for many years. I have a Ph.D. in Operations Research from the University of Toronto and have experience with optimization projects in the health care field, the equipment maintenance field, the area of organizational behavior, and etc. I presently operate my own consulting organization.

My email is kevind@bmts.com. Telephone number is 519-372-6828.

Debbie Fleming

Incumbent: CI Organizational Consultant and Director T2016

My Dad, John Bull, became a patient at the Cryonics Institute in 2014 and was one of the pioneers of the Cryonics movement back in the 1960s, thus Cryonics has always been a household name for me. Involvement in Cryonics and the CI was a passion Dad and I shared. During the past two terms as a Director, I was instrumental in creating CIs Memorial Room where family members can gather to remember their loved ones. It is my greatest desire to see CI continue to thrive and assist in safeguarding its patients.

It has been my privilege to serve two terms as a Director of the Cryonics Institute and it shall remain my pleasure to further serve CIs patients and its members. Please vote to keep me on the Board of Directors so that I may continue to serve you in my dedication to the science of Cryonics and the lifelong passion I shared with my father, John Bull.

Alan Mole

Incumbent: CI Vice President T2016

(Robert) Alan Mole was born in Baltimore in 1943. He earned a BS in Civil Engineering at the University of Denver and an MS (Structural Stress Analysis) at the University of Colorado in 1971. After a career as an aerospace stress analyst, an engineer who determines whether rockets and satellites will break, he is now semi-retired. His background in biology consists of a high school class, plus reading Stryer's Biochemistry and books o n molecular cellular biology to learn of later advances. Currently Vice President of CI, he has written articles for Long Life and also CI Magazine (to be published shortly), and sponsored research.

Marta Sandberg

Incumbent: CI Overseas Director T2016

Hi, I am Marta Sandberg.

My husband is already frozen and cryonics will be my future. You can find out more about me on <http://www.cryonics.org/ci-landing/directors-officers/>

I believe in CI and cryonics and I want to make CI strong through good finances, solid membership, constant communication with our members and working together with all other cryonic organisations. I strongly believe that all cryonicists, no matter what organisation they belong to, are a family and should work together.

To help expand cryonics worldwide I became an independent director of the nascent Australian cryonic facility. I am proud of that achievement and think it will help both CI and cryonics. Other don't agree and say it makes me disloyal to CI. My term is over and you can now decide if you want me to have another term.

If you have any questions, feel free to email me

But please vote – for me or somebody else. We keep CI strong and democratic by caring enough to vote.

My contact details are
Marta Sandberg
PO Box 295
Bridgetown WA 6255
AUSTRALIA
Phone: + 61 (0)8 97 611 422
Email: martasandberg99@hotmail.com
Website: http://www.cryonics.org/ci-landing/directors-officers/

John K. Strickland

Incumbent: CI Risk Management Director T2016

John K. Strickland, Jr. was born in New York City during the Second World War. He lived for 30 years in western New York State where he received a B.A. in Anthropology with a minor in Biology from S.U.N.Y. at Buffalo in 1967. He moved to a spot just outside Austin, Texas in 1976, and earned a second B.A. in Computer Science from St. Edwards University in Austin in 1986. He also earned graduate credits in both Anthropology and Biology. He was a professional programmer/analyst from 1980 to 2009, and was employed by the State of Texas in Austin from 1989 to 2009. He is now an independent writer and analyst in the space and energy fields.

John K. Strickland, Jr

12717 Bullick Hollow Rd.

Austin, TX 78726

512-258-8998 landline (primary)

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My Director's bio page at the National Space Society's site with links to some of my articles.

http://www.nss.org/about/bios/strickland.html

Phillipe Vitu

The revival of the deceased through cryonics would be a momentous achievement in the history of mankind only to be matched by the discovery of agriculture in the Neolithic age or by the invention of the printing press in the fifteenth century.

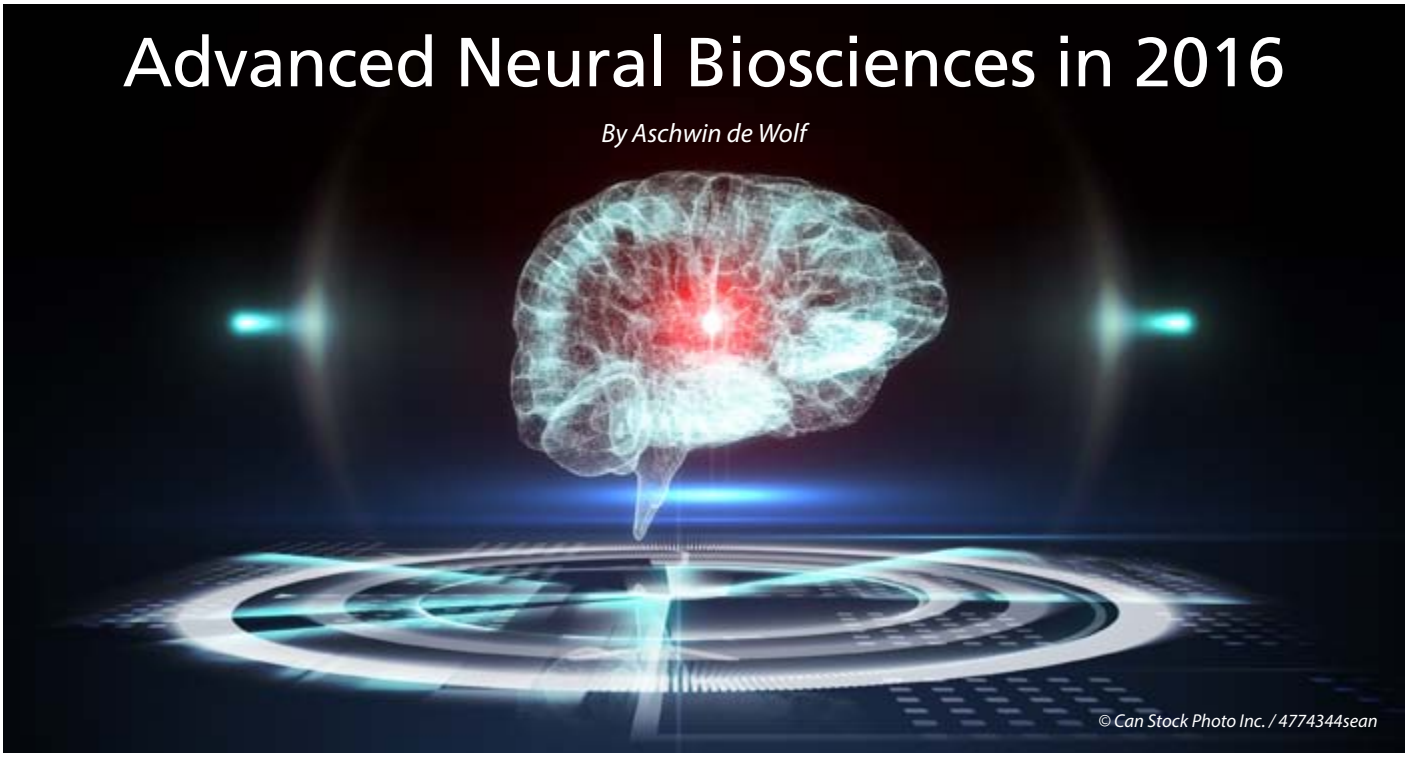
If elected to the Board of CI, I would advocate cost-effective translations of CI material into at least Spanish and French to better bring cryonics to the world. I would give cryonics added exposure with primary health care professionals by helping organize a CI presence at medical conventions in North America.

The cause is worth it.

Proud member of CI since 2012 I grew up in France, Austria, Japan and the US, I am married, currently living in Toronto (Canada) and have two children who are also CI members. I have a Law Degree, an MBA and Masters in Political Science. I am 58 years old.

Advanced Neural Biosciences in 2016

By Aschwin de Wolf



Expansion

2016 is shaping up to be our greatest year to date. For the first time since the creation of our company we are now occupying a stand-alone building in Northeast Portland that is solely dedicated to neural cryobiology and ischemia research. When we started doing research in 2009 it was just the two founders, Chana Phaedra and myself, doing part-time research over the weekend in Salem, OR, on a very limited budget. This year we have two full time staff members and one part-time staff member doing research, and one part-time staff member taking care of all our financial, administrative, and office needs. As a consequence, we have been able to do a lot more research and accelerate our research programs.

Validation of VM-1

The emphasis at Advanced Neural Biosciences (ANB) is to optimize protocols and solutions for cryopreservation of the brain. To cryopreserve the brain without ice formation we use so called vitrification solutions that contain high concentrations of cryoprotectants. While these vitrification solutions are effective in inhibiting ice formation, such high concentrations of cryoprotectants can impair cell viability. Over the last two decades, cryobiology researchers such as Gregory Fahy and Yuri Pichugin have identified vitrification solutions that can inhibit ice formation and have only modest toxicity.

One of these solutions is called VM-1 and was developed by Yuri Pichugin to be used for human cryopreservation at the Cryonics Institute. One of our projects this year is a comprehensive study of VM-1 to independently validate this solution so that we can write a scientific paper meant for publication in a peer reviewed journal. This project will not just reproduce Pichugin's research but will also subject VM-1 to a number of alternative viability tests that look at the ability of brain slices to maintain cellular respiration and cell membrane integrity. We will also investigate whether the combination of ethylene glycol and DMSO (VM-1's two main components) neutralize each other's toxicity (similar to what Greg Fahy and colleagues have discovered about toxicity neutralization between DMSO and formamide), which would be an important finding in cryobiology because it permits the formulation of vitrification solutions with lower toxicity. Last but not least, our viability results will be supplemented with a series of electron micrographs.

One major difference with the Pichugin/Fahy paper that was published in 2006 is that we will not just look at the viability of isolated brain slices, but we will also investigate the effects of "in-situ" cryopreservation of the brain by delivering the vitrification solution through the vessels (perfusion).

Cerebral dehydration

One of the biggest challenges in cryopreservation of the brain is that most of the common cryoprotectants (glycerol, DMSO, ethylene glycol, etc.) have a strong dehydrating effect on the brain because of their poor penetration into the brain. The so called "blood brain barrier" protects the brain from foreign and toxic substances but, un-

fortunately, also excludes good penetration of many cryoprotectants.

In an "ideal" case in which a patient is rapidly cooled after circulatory arrest, perfusing the brain with VM-1 can produce up to about 50% (!) shrinking of the brain. While this shrinking may assist in the inhibition of ice formation (vitrification), it is increasingly being recognized that such a degree of cerebral dehydration is undesirable for brain cryopreservation because it reduces viability of brain cells (as observed by CI researcher Yuri Pichugin) and also produces adverse changes in the brain when the brain is examined at a high magnification under a microscope.

Earlier this year the cryobiology research company 21st Century Medicine won the Brain Preservation Prize after demonstrating near-perfect ultrastructural preservation of the rabbit brain through the use of a method called aldehyde-stabilized-cryopreservation (ASC). Images of the fresh control brains were almost impossible to distinguish from the cryopreserved brains. In short, in this procedure the brain is perfused with a chemical fixative (in this case glutaraldehyde). After brain tissue is stabilized in this matter the brain is then again perfused with a vitrification agent (in this case ethylene glycol) to prevent ice formation when the brain is cooled to cryogenic temperatures.

These results have produced mixed feelings in the cryonics community. On the one hand, it is encouraging to see such high quality preservation of the brain at cryogenic temperatures. On the other hand, it is unfortunate that such results were achieved through the use of toxic fixatives that destroy cell viability. The aim of cryonics research has always been to identity vitrification agents that allow for both good viability and good ultrastructural preservation, not to simply prevent an embalmed brain from freezing.

It is important to note, however, that in the aldehyde-stabilized-cryopreservation experiments an agent was used to open up the blood brain barrier. Interestingly enough, the chemical that was used to open the blood brain barrier (sodium dodecyl sulfate) had been identified as effective for this purpose by Yuri Pichugin for conventional brain vitrification. The most important question right now in neural cryobiology is whether these excellent ultrastructural results obtained with ASC can also be obtained with fixative-free vitrification if such blood brain barrier modifying agents are used.

There are a number of important associated research questions that we are eager to explore. Do these blood brain barrier modifying agents cause damage to the vessels and cell membranes and produce cell and/or tissue swelling (also called edema)? Could a brief period of cerebral ischemia (lack of blood flow to the brain) open the blood brain barrier and produce results that are preferable to the use of fixatives and blood brain barrier modifying agents? Are there cryoprotectants with better blood brain barrier permeability that eliminate the need for opening the blood brain barrier altogether? We hope to know more by the end of 2016.

Nottingham Dollies prove cloned sheep can live long and healthy lives

The University of Nottingham
UNITED KINGDOM • CHINA • MALAYSIA

Reprinted from **University of Nottingham Press Release**

http://www.nottingham.ac.uk/news/pressreleases/2016/july/nottingham-dollies-prove-cloned-sheep-can-live-long-and-healthy-lives.aspx

Editor's Preface by: York W. Porter/Immortalist Society President/Executive Editor Long Life Magazine

Cloning Working Better Than Thought?

For any patient undergoing the procedures associated with cryonics, there are two basic tasks for future science and technology. The first is developing a cure for any diseases that the individual has suffered from, including the ravages of aging, especially as they have affected the brain. The second task is to fix whatever damage the procedures associated with cryonics (freezing damage, ischemia related difficulties pre/post clinical death, etc) may have caused. The most obvious approach would seem and may well be, due to the implementation of sophisticated nanotechnological devices, the repair of the body at the same time the damage to the brain is worked on.

The other approach, however, may be that it turns out to be easier to simply clone any organ needed, (or perhaps an entire body sans brain) other than, of course, the brain itself, instead of doing repair efforts on them. In the case, of the heart, for instance, the basic function is simply to act as a pump to cause blood to flow through the body. That's fundamentally it, the writings of poetry on romance down through the centuries notwithstanding. If the ability to replace the heart with a cloned

and, therefore, a genetically identical organ that will not cause any immunological difficulties, is cheaper, easier, and quicker than engaging in repair of the existing one, that will probably be the path chosen. Again, given what will probably be the enormous potential of nanotechnological devices, this seems extremely unlikely but no one, of course, has a crystal ball to divine the future.

"Dolly" was a sheep that was the first large mammal successfully cloned. At about half of her normal lifespan, however, health problems led to her being euthanised and also led to deep concerns as to whether clones would inherently have health problems which would cause significant problems using them for experimental ourposes. Initially, what seemed to be problems with Dolly's health led to speculation that the field was a "dead end" which would turn out to be of no practical use due to the health problems of the cloned animal. The following report shows that things are working out better than originally thought and shows the continuing progress of the biological sciences in this interesting and useful area of research.

26 Jul 2016

Three weeks after the scientific world marked the 20th anniversary of the birth of Dolly the sheep new research, published by The University of Nottingham, in the academic journal Nature Communications has shown that four clones derived from the same cell line — genomic copies of Dolly — reached their 8th birthdays in good health.

Nottingham's Dollies — Debbie, Denise, Dianna and Daisy — have just celebrated their 9th birthdays and along with nine other clones they are part of a unique flock of cloned sheep under the care of Professor Kevin Sinclair, an expert in developmental biology, in the School of Biosciences.

The research — 'Healthy ageing of cloned sheep' — is the first detailed and comprehensive assessment of age-related non-communicable disease in cloned offspring. Published today, Tuesday 26 July 2016, it shows that at between seven to nine years of age (60 to 70 in human years) these cloned sheep were showing no long-term detrimental health effects.

Dolly made history as the first animal to be cloned from an adult cell using a technique known as somatic-cell nuclear transfer (SCNT). The late, Professor Keith Campbell was instrumental in this pioneering work. In 1999 he joined The University of Nottingham where he continued his research in reproductive biology until his death in 2012. The flock of clones are his legacy to the University.

This latest study was led by Professor Kevin Sinclair, a close colleague of Professor Campbell's.

Professor Sinclair said: "Despite technological advances in recent years' efficiency of SCNT remains low but there are several groups across the world working on this problem at present and there is reason to be optimistic that there will be significant improvements in future. These improvements will stem from a better understanding of the underlying biology related to the earliest stages of mammalian development. In turn this could lead to the realistic prospect of using SCNT to generate stem cells for therapeutic purposes in humans as well as generating transgenic animals that are healthy, fertile and productive. However, if these biotechnologies are going to be used in future we need to continue to test their safety."

Nottingham's cloned offspring

Nottingham's oldest clone was born in July 2006. The four Finn-Dorset clones — 'the Dollies' — were born in July 2007. A female Lleyn clone was born in August 2007 along with a second clone (breed unknown). In June 2008 six more Lleyn ewes were born.

These animals originated from studies undertaken by Professor Campbell between 2005 and 2007 which sought to improve the efficiency of SCNT. The four Finn Dorsets were derived from the mammary gland cell line that led to the birth of Dolly. The other clones came from fetal fibroblasts.

Detailed health assessments — including x-ray and MRI

Longevity and healthy ageing among SCNT clones have long been contentious issues and much was made of Dolly having to undergo treatment for osteoarthritis some time prior to her death in 2003 at six years old.

During 2015 Nottingham's cloned sheep underwent a series of comprehensive assessments for non-communicable diseases including obesity, hypertension and osteoarthritis — three major comorbidities in aged human populations. The examinations included the use of anaesthesia to carry out x-rays and MRI scans.

The research was carried out under the authority of the United Kingdom Animal (Scientific Procedures) Act 1986 with approval from The University of Nottingham Animal Welfare and Ethical Review Board.

The flock was tested for glucose tolerance and insulin sensitivity. They underwent radio-telemetric assessments to check their heart rate and blood pressure. They had a full musculoskeletal examination carried out by Dr Sandra Corr, a veterinary orthopaedic specialist from the University's School of Veterinary Medicine and Science and a co-author of this research.

Radiological examinations of all main joints were followed by MRI scans of their knees, the joint most affected by osteoarthritis in Dolly. Their health was compared with a group of naturally bred six-year-old sheep living under similar conditions at the University.

No major health issues

Professor Sinclair said: "Healthy ageing of SCNT clones has never been properly investigated. There have been no detailed studies of their health. One of the concerns in the early days was that cloned offspring were ageing prematurely and Dolly was diagnosed with osteoarthritis at the age of around five, so clearly this was a relevant area to investigate. Following our detailed assessments of glucose tolerance, insulin sensitivity, blood pressure and musculoskeletal investigations we found that our clones, considering their age, were at the time of our research healthy."

Despite their advanced age the cloned sheep — including the four Dollies — were showing no signs of diabetes, high blood pressure, or clinical degenerative-joint disease. Although some of the animals were showing radiographic evidence of mild, and in Debbie's case, moderate osteoarthritis none of the animals were lame and none required treatment for osteoarthritis.

No detrimental long-term adverse effects of SCNT

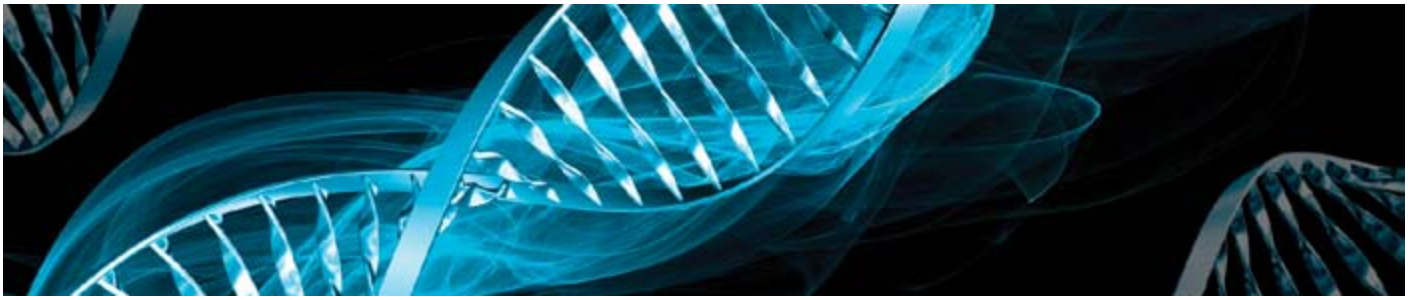
There is still a long way to go before SCNT is perfected. However, this research has shown that cloned animals can live long and healthy lives.

Professor Sinclair said: "It is well established that prior to conception and in the early stages of pregnancy during natural or assisted reproduction subtle chemical changes can affect the human genome leading to development and late-onset chronic diseases. Given that SCNT requires the use of assisted reproductive procedures it is important to establish if similar diseases or disorders exist in apparently healthy aged cloned offspring."

About Nottingham University: The University of Nottingham has 43,000 students and is 'the nearest Britain has to a truly global university, with a "distinct" approach to internationalisation, which rests on those full-scale campuses in China and Malaysia, as well as a large presence in its home city.' (Times Good University Guide 2016). It is also one of the most popular universities in the UK among graduate employers and the winner of 'Outstanding Support for Early Career Researchers' at the Times Higher Education Awards 2015. More than 97% of research at The University of Nottingham is recognised internationally and it is 8th in the UK by research power according to the Research Excellence Framework 2014. It has been voted the world's greenest campus for four years running, according to Greenmetrics Ranking of World Universities.

Story credits

More information is available from Professor Kevin Sinclair in the School of Biosciences at The University of Nottingham on +44 (0)115 951 6053, kevin.sinclair@nottingham.ac.uk



Intervention:
The Second Coming of Robert Ettinger

By Jim Yount, CI member and Governor
American Cryonics Society

The old Cryonics Institute facility had never looked so festive! A team of students from both Wayne State University and Highland Park Community College had worked through the night to garland the cryostats with roses, gardenias and forget-me-nots, then moved on to decorate the meeting room with what looked to be every imaginable living-blooming plant. Even an example of the fabled Century Plant festooned a special enclave just behind the speaker's platform. Could we have expected anything else? Robert Ettinger was coming!

The parade had started over two hours ago at the underground mega-facility in the rejuvenated Highland Park community within Detroit, to be viewed by thousands of local people and tourists alike who had lined Westwood Avenue to see the legendary figure emerge. That the majority of onlookers were not cryonicists had not escaped the attention of members of the new-media; who were quick to point out that the now century-old procedure still had less than 100,000 frozen "patients."

Now Robert, walking ahead of an entourage of Detroit notables all riding Detroit-built motor cars of the mid-20th Century, was on the final leg of his journey.

"He's coming, he's coming, Robert Ettinger is coming" shouted a small boy who ran ahead of the parade with apparent Joy skipping and doing occasional cartwheels through the snow. The human-made snow was the

product of snow machines, borrowed from an Aspen Colorado ski resort. The reliable snow-makers had deposited their product on the last mile of the parade rout during the early morning hours.

The parade had started with Robert himself walking the mile plus route to the newly-constructed Interstate 94 tunnel, there to board a classic motor car for the ride to Clinton Township's Harbor Avenue and then to walk the rest of the way to the old facility. Publicity agents had urged him to drive the route in an old Packard Motor Company hearse.

"Can't you see the symbolism of it?" one of admen had said. "People go to the boneyard in a hearse. Nobody comes back in one; and you will be driving! That is a sign that you control your own destiny." But Robert would have none of it, to the great chagrin of the advertising company the Cryonics Institute had hired to best publicize the event.

An old man with his dog, pre-teen daughter and teen-age son watched the emerging parade on the large view screen at the old facility itself, being some of the hundred and fifty or so CI members who would greet Robert at 24355 Sorrentino Court.

"Why are we stuck inside, Daddy?" complained the daughter. "Parades are ever so much fun; and there is real snow, all along the parade route, and right outside in the parking lot. I would love to play in the snow."

"It is the 115th Annual CI meeting, and we are among the lucky-few who get to be inside, Susie," explained the father. "You can play in the snow a bit after the meeting, before it melts away."

"And we get to meet Robert Ettinger," said 13 year-old Billie. "He is the one who invented cryonics you know!"

"Not really invented, Billy. Cryonics is sort of like fire. It was there to be discovered by anyone. But Robert Ettinger pointed it out to us and explained it in a way we could all understand. And now here he is, coming back to us again after over 75 years in cryostasis."

"But why did some people not want him to come back, father?" quarried Billie with a frown. "We all want to come back from cryostasis, and to live again in vastly improved bodies. You have told us this many times."

"Some people don't want anyone-ever to be frozen, or to come back," replied father. "It surprised me greatly to find that even some in the Cryonic Institute did not want Robert Ettinger to return. They said it was too early, that not enough progress on understanding the identity of self had been made."

"I remember the part where we had this vote, but it wasn't whether Mr. Ettinger should come back or not, it was whether we should ask him if he wanted to return. That part I didn't quite understand."

"You are close to describing what happened, son. We voted to allow a virtual Robert Ettinger to be made. A fictitious construct of Robert's mental processes. Sort of like a self-aware twin who thinks just like the great man. Then we asked the virtual Robert Ettinger if Robert should return."

The large tri-d monitor projection that took up most of one wall in the cryostat room showed that Robert Ettinger himself had rounded onto Sorrentino Court. There he paused to say a few words of thanks and gratitude to the people in their antique automobiles. He promised to see them all later at Ford Field, where he was scheduled to make a major address.

Susie, Billy and father watched on the screen with fascination and a great deal of excitement. As had been agreed, only Robert Ettinger, continued onto Sorrentino Court to the ancient cryonics facility, or former cryonics facility, rather, since the building was now a museum of cryonics history. No actual frozen people or animals had been there for over 50 years.

There was a rush to the door by people anxious to be the first to welcome the father of cryonics into the facility. By previous agreement, no one stepped out of the building to shake RCWE's hand. Two young men had a bit of a scuffle to determine which of them had the honor of holding the door open for the great one's second coming. Ettinger paused at the doorway and with a broad smile, shook his head and the winner of the scuffle reluctantly let go of the door so Professor Ettinger could open it himself.

A hush came over the people in the building; it was as if everyone had grown shy at the same time in the shadow of greatness. Then a young looking, very attractive, woman stepped forward and kissed Ettinger on the cheek and stammered a welcome greeting. She would claim the honor of being the first person to kiss the returning icon, at least the first to kiss him inside the facility. Later the imprint of her lips would grace a much-reproduced porcelain mug, crafted in an old fashioned manor that would bear the insignia: "Welcome Back Bob."

That kiss opened the flood-gate of affection as dozens of people shook the famous author's hands, kissed or hugged him or asked for an autograph. He took the platitudes with good humor, even going as far as to "work the room" to have a few kind words with those few who were shy, or infirm.

When he got to the table where father, Susie, and Billy waited, Susie grabbed his hand and guided it to the ruffled fur of the dog. "This is our cryonics dog Fido, Mr. Ettinger," beamed Susie. "She was frozen and now she is back, just like you."

Ettinger was curious to know if he was now petting one of the enhanced super-dogs that now were beginning to make their way into the dog world, but he felt such a question would be impertinent. Fortunately father, answered the unasked question. "We are one of the 'Adopt a Pet' families of the cryonics community, Mr. Ettinger. Fido could

be reanimated but his owners will likely be in the tank a good time more. We are taking good care of her until her owners can reclaim the friendly doggie."

After the extended meet-and-greet period, it was time to begin the meeting itself. The big screen was split and re-split to show cryonicists who had gathered at various locations around the world. Then the monitor only showed the podium at Ford Field, where a smiling older-looking gentlemen stood before the 60k plus crowd, ceremonial gavel in hand.

"It is with great pleasure that I welcome one and all to the 115th Annual Meeting of the Cryonics Institute," intoned the speaker. Just who was to hold the position as honorary chairman of the historic meeting had been argued over for months. Finally, Jerry O'Neal, mayor of Ann Arbor, was chosen being the highest ranked Michigan politician who was signed-up for cryonics with CI, and who was public about his participation.

O'Neal began to say something else, but was drowned out by the chant 'Ett-in-ger, Ett-in-ger' which went on a good five minutes until O'Neal resorted to the use of the ceremonial gavel to partly silence the huge crowd.

The honorary chairman reluctantly concluded that his intended 20 minute speech was doomed when every time he started to speak the chant begin again. Finally he skipped to the end of his intended dialog and said: "It is my privilege to withdraw as Chairman in favor of the right-honorable Judge Maude Cramer, Chairman Pro-Tem of the Board of Directors of the Cryonics Institute who is at the Cryonics Institute's historic first facility, in Clinton Michigan."

Judge Cramer had been an easier choice. Everyone agreed that such position should go to a female CI member of renown with no blemishes of scandal, which still, in the late 21st Century, often dogged politicians. Judge Cramer had no trouble in bringing order to the meeting. Those members, and onlookers gathered at the stadium would have to quiet down if they were to hear what went on at the historic facility.

"I now announce the counting of ballots. Has our Election Committee tallied all ballots, including absentee ballots?" This was met by an affirmative shake of the head by the Election Committee chairman. Judge Cramer had to remind him that only a verbal reply was acceptable. "Do any now here, or at designated polling places, wish to change their ballots?" The electronic ballot count CI had adapted more than twenty years earlier made quick work of the changed ballot count.

"Just a dang-burned minute, Madam Chairman," interrupted a very old-looking man who was seated in the first row. This was clearly out-of-order, but Judge Cramer simply smiled at the gentleman who had disturbed the proceedings. "Good afternoon, Conrad. Welcome to the meeting. Please tell us your concern."

"I know this meeting is cooked all the way around. I know that we are all here to elect Robert Ettinger to the board, and the board is set to make him Chairman and President, but before you do that I want to know if anyone here can tell me why I should believe it is really Robert Ettinger standing here before us."

Conrad started to go on to state his reasons for doubt. Ms. Cramer was quick to silence the white-haired man, but followed her shushing with a friendly pat on the back.

"Good question, Conrad," said the distinguished Chairman Pro-Tem. "Although this topic has been debated, discussed, and analyzed for several years before this event, I appreciate your giving us the opportunity to address it here. I call upon Dr. Switzer Schmidt, head of our reanimation team, to address this most important concern."

A rather shy looking lady of seemingly middle age, seated in back, took the portable mike being handed to her. The assembly turned heads and chairs to better see her until Chairman Cramer urged the doctor to come up and stand on the podium.

After clearing her throat several times, Dr. Schmidt began her explanation. "You all remember the vote seven years ago when it was decided that we should construct a virtual Robert Ettinger, as complete as the information available to us about Robert would allow. Then we asked that self-aware construct if we should bring back Robert Ettinger. Virtual Robert was quite emphatic that it was consistent with Robert's mind-set that he should return, even at this early age of reanimation technology."

White-haired Conrad, secure in his seat in the front row, waited patiently for Schmidt to continue, but outside amongst the protesters there were many shouts of "Fake Ettinger," and "Don't elect a robot." The protesters were, of course, irrelevant to discussion in the meeting, but Chairman Cramer was keenly aware of the media coverage of the event that would surely focus on the protesters. So, Judge Cramer asked the question herself: "We all know how controversial it has become to rely upon artificial Intelligence, especially on matters of life and death to humans. What reason do we have to trust the Robert Ettinger construct when it told us to allow Robert Ettinger to return?"

"I could answer by saying that the AI we made, and then questioned, is many thousands of times 'smarter' than any human," said the doctor, "but the only answer that satisfies is that someone or something has to decide if it is time for a given frozen person to be given another chance at life. If no one was willing or able to make that choice, then our frozen patients would forever stay frozen. It seemed reasonable

to have an AI, whose mental makeup mimics the patient himself, make the 'come-back now or later' choice on behalf of Robert."

That answer would surely not satisfy the protesters, and Judge Cramer was keenly aware that even many non-protesting CI members harbored doubts, but she was satisfied that prolonging discussion of this point would be counter-productive. "Please continue with your explanation, doctor," she said.

"Most of this is not new. There have been many AI constructs who mimicked humans and sought to remake the unique genius of various individuals. Perhaps most famous is the so-called 'Einstein Computer' (actually a program) and the Thomas Jefferson AI of 2082. We do, of course, use AIs to make AIs, so we have many people and many AIs previous work to aid us.

"Our problem was a bit unique since we had the frozen body, and most importantly the frozen brain, of Professor Ettinger as a data source.

"Over ten years ago we started the program of memory-mapping. We used nanites (themselves made by AIs) capable of functioning at liquid nitrogen temperature, to map out synaptic connections in Robert's brain. However, Robert was old for the time period when he was cryopreserved, so we used his writing and other 'outside sources' to reverse-engineer to what his neural function must have been like when he was a much younger man.

"You tell me how this can be Robert Ettinger standing before us when there is another Robert Ettinger in the tank over in Detroit," said Conrad from the front row, now apparently recovered from his previous torpor.

"You have us there, Conrad," said Chairman Cramer. Your question goes to what Robert Ettinger wrote about in Chapter eight, The Problem of Identity, which is arguably the most famous chapter of his very famous book The Prospect of Immortality."

"Yes, but this damnable thing that calls itself Robert Ettinger, is not even human," argued Conrad.

Now Robert, himself, joined the conversation. "You are quite correct that I am not human, Conrad. At least not all human. In Man into Superman I, or the man named Robert Ettinger if you prefer, wrote of how the human brain could be augmented with artificial brain pathways that might be self-repairing and pretty-much indefinitely maintained so that if there was a death of the original organic brain the other pathways of leaning and reasoning would go on, perhaps noting and perhaps even lamenting the absence of the human brain material.

"But just as a human brain may be subtracted from a biological/mechanical being it can also be added. Perhaps the brain of the Robert Ettinger that is still frozen in the Detroit facility will someday be joined to the being you now see in front of you, or perhaps it, along with the frozen body, will have an independent existence.

"What you see before you, Conrad, is a biological/mechanical being with many times the thinking power of the original Robert Ettinger. My creators/reanimaters endowed me with artificial intelligence as well as regrowth of a very human brain. I am what the Robert Ettinger, writing in 1971, envisioned a man could become. I am an immortal superman.

"Now your job. and that of the other CI members is not to unravel the Gordian Knot of what attributes make me the same or different than the Robert Ettinger who deanimated in 2011. Your job is to decide, by voting, whether or not you wish this being you see in front of you who calls himself Robert Ettinger, to serve as a Director of CI."

Judge Cramer, along with everyone else in the room, was a bit stunned by what Robert had just said, even though she knew and understood what he meant. She had intended to go into the legalities of electing an immortal superman, whose death certificate said July 23, 2011, to the board. It had, after all, taken a good deal of legal work to clear the way. Instead she said: "Has the election committee now concluded the vote count, including those who have just recently cast a replacement ballot? Getting an affirmation, she had the Committee Chairman read the vote tallies. As expected, candidate Robert Ettinger won election by a huge margin. After all, upon learning who was on the ballot, all other candidates had withdrawn. That left the new chairman to appoint one additional Director since the by-laws called for two Directors to be chosen at this election. Not a problem. There would be plenty of qualified candidates that the new Chairman would have to choose from.

The members of CI elect the board of directors and the members of the board then choose their own officers. After the preliminaries of certifying Robert as the newest CI director, Robert spoke up. "All-right, thank you ladies and gentlemen. Now who will nominate me as the President of CI and Chairman of the Board?"A chorus of voices rang out: "I will!"

"Good," said Robert, "Let's get on with the election of Officers, and then let's get down to work!"

* * * * * * * *

The purpose of the above engagement of fantasy was not to show how Robert Ettinger might return, though it was fun doing so, for the author at least. Rather it was to show how an intervention into CI governance, and that of other cryonics organizations, might come about.

intervene: to become involved intentionally in a difficult situation in order to change or improve it or prevent it, or prevent it from getting worse.

(In Cambridge Dictionary, retrieved from the "American English" subcategory: http://dictionary.cambridge.org/us/dictionary/english/intervene)

I dare say most of us are familiar with the occasions when families, ours or one we know, may call for an intervention into the behavior of an errant member, perhaps one who is seemingly hopelessly addicted to drugs or alcohol. For Americans, perhaps the best known such intervention was that of former US President Gerald Ford's wife Betty. As a result of family members' resolve to help her, she learned to control her alcoholism and become a champion for helping people in like situations by founding the famous Betty Ford Center.

Many science fiction fans have read the popular Galactic Milieu Series by Julian May that starts off with the book Intervention in which thousands of interstellar space ships suddenly appear above the skies of major cities of Earth. The adults are here, and just in time! We humans have so messed up our world and are so near self-destruction that the other intelligent races of the galaxy intervene to save us from ourselves.

While intervention by superior beings from outer space, or the angels for that matter, seems iffy, intervention may come from a source a lot closer to home: our own computers.

Many people, and perhaps even most scientists, believe that computer "robotic" thinking will soon outstrip humans. A leading advocate of our making productive use of artificial intelligent is the oft-quoted futurist Ray Kurzweil. Writing in his book *The Singularity Is Near*, Kurzweil states:

"It is hard to think of any problem that a superintelligence could not either solve or at least help us solve. Disease, poverty, environmental destruction, unnecessary suffering of all kinds: these are things that a superintelligence equipped with advanced nanotechnology would be capable of eliminating."

Even if machines could think only at the human level, Kurzweil believes they would outperform humans because of several unique properties of AI intelligence:

- Machines can pool resources in ways that humans cannot.
- Machines have exacting memories.
- Machines can consistently perform at peak levels and can combine peak skills.

I would add a fourth unique property of machines: they are non-emotional.

As cryonicists we are most interested in the "when" of the AI revolution. Let us consider this modest Kurzweil prediction: "By the 2040s, non-biological intelligence will be a billion times more capable than biological intelligence."

There are several things about that quote which stand-out: (1) the 2040s are very near; and (2) a billion is a really big number. Even if Kurzweil misses by being 20 or 40 years too optimistic on how soon, and he is off by a factor of a million on the difference in capability between the two types of intelligence, the point is clear: human intelligence will soon be passed by AI as if it were standing still.

That brings us to the question of governance. Will we be smart enough to recognize that non-human intelligence is much more capable of making correct decisions than are we humans? More specifically, are we willing to turn over our decision making on cryonics questions to machines? If we are willing to turn to machines for problem solving in cryonics, do the structures of our own organizations, our cryonics "governments," even allow this shift in managements?

Our friends at Alcor do not have voting members who elect directors. The Alcor board is self-perpetuating with the board itself choosing new directors or removing those directors that the majority of other directors find impossible to work with. So if the management of Alcor were convinced that the pet Alcor AI could run the organization better, there would be no objection in following that course. The board would only stick around to rubberstamp the decisions of the friendly neighborhood Alcor AI.

Cryonics organization where members elect Directors or Governors, such as CI and ACS, would not have the luxury of employing an AI as a manager so easily. Such organizations would likely need a board that was convinced of the wisdom of this course, which must then seek to persuade the members.

Okay. So it might be we could pass on management to an AI, and certainly could have one as a consultant. But would the cryonics organizations/companies ever freely give up their governance to another entity - no matter how obvious it was that the new kid on the block was ever so much smarter, quicker, and more just than the mere mortals running the cryonics organization?

In the mid-20th century James Burnham, wrote extensively on the organization and form of government. One of his essays entitled The Miracle of Government was published in 1957 and came to my attention through being reprinted in an anthology edited by Jerry Pournelle titled Imperial Stars, Volume One, the Stars at War.

Burnham asks the question: why would people agree to relinquish their freedom of choice and of action to other men? In other words, why would we agree to be governed by Kings and Presidents, Judges and legislative bodies, in the first place? He identifies three reasons men did/have so agreed, which he considers as "non rational."

1) Divine command - God chooses Kings and set them over certain other men.

2) The ruler is chosen by the voice of one-half plus one of the adult population (or adult male population, or population of a particular ethnic group).

3) The ruler is the first-born of a certain father.

Burnham advances the argument that reasons 1 and 3 make for a more long-lasting government than government established by reason 2. In other words: democracy is less stable than totalitarian rule. The long rule of Egyptian Pharaohs and the long-line of kings of Europe support that argument.

Strength and justice are the attributes of good government, says Burnham, summarizing arguments by James Madison; and if government is to work then the governed must accept the legitimacy of the governments as derived from Tradition, Custom, or Faith.

Lacking in this essay is the idea that, regardless of the form of government, effective government is better than ineffective. So maintaining a purely democratic government for the sake of democracy, if it results in poor decisions being made, is doomed to failure.

How have the cryonic societies done so far in governance? Not so well. For instance, the Cryonics Society of California and of New York, so dominant in the 1960s and early 1970s, are no longer in existence. The Cryonics Society of California went down in the disastrous events of the Chatsworth Cemetery where patients were not maintained with liquid nitrogen. There have been quite a number of feuds between cryonic organizations as well as between factions within the various cryonics companies.

Alcor has certainly had its share of difficulties that resulted, temporarily, in a schism with many members leaving to start their own organizations. ACS had its problems with Trans Time resulting in the canceling of the ACS-Trans Time contract.

CI has not been immune to such strife, but has not had the level of in-fighting that has plagued other companies. This is largely due to the fact that one man - most respected by members - stood so long at the helm. Even when Ettinger retired as the CI President, he still continued to have considerable influence with CI. The 'rule' of Robert gave CI relative stability during those early years, but now that he is gone it may be that CI will be as subject to internal strife and schisms as have been other cryonics organizations.

Most telling is the scorecard. Since The Prospect of Immortality had its first mass publishing in 1964 there are less than 400 people in liquid nitrogen and during that time there have been several billion people buried or cremated.

In my story of Intervention: The Second Coming of Robert Ettinger, Robert came back to once-again direct the affairs of the Cryonics Institute. In my telling he was accepted in that role because of his other role as the father of cryonics as well as the father of CI and who lead it during its formative years. The fact that he was also an AI seemed natural. After all, did he not tell us many times that he would come back as an immortal superman?

It may be that the rule of an AI would only be accepted by the people of CI if he/it was, in part at least, Robert Ettinger, an almost divine figure to many of us. Once Robert/AI were installed in office however, we might see the long immortal reign of our own Pharaoh.

I would like to end this article on the positive outlook of an incredibly mentally enhanced Robert Ettinger/superhuman leading us into the age of immortality. Unfortunately, I have to return to that pesky word intervention with which this article began.

In his essay on government discussed herein, author James Burnham identified power and justice as the two necessary elements of good government. Justice, for many of us, is the fair treatment of our frozen patients so they have a chance at reanimation. If we can understand that fact, it will surely be eminently obvious to any entity a billion times more intelligent that are we, whether that entity is our own pet AI or not. If we don't provide justice to our patients then I hope you, the readers, share my wish that an AI will intervene and do it for us.

ACS Inspection Report

Preface by York W. Porter, Immortalist Society President/Executive Editor of Long Life Magazine

Due to an oversight on my part, this report was delayed one issue to this quarter. This is entirely my error and my apologies to Dr. Tandy as well as the readers are in order. As one can see, Dr. Tandy made a good deal of effort in preparation of his report. In my view, efforts such as this one by the American Cryonics Society are an important component of helping to maintain good quality of operations of any cryonics organization. Just like in the field of hospital work that I am engaged in, there is no question that all workers laboring in the field of cryonics are dedicated and quite intelligent folks who are working hard to try to do the most high quality job they can. Also though, just like in hospital work, a "second opinion" never hurts and it is always an advantage to add to the number of dedicated folks that are interested in good and efficient operations in this critically important area of human endeavor.

(Publication Release Date: March 14, 2016)

Inspection Of The Cryonics Institute On January 25, 2016

By Charles Tandy, Ph.D.

<AmericanCryonics.org>

Note On Terminology Used Herein

ACS means American Cryonics Society, Inc.

CI means Cryonics Institute.

Hibernation means cryonic hibernation (also known as cryonic suspension).

Patient means cryonics patient (also known as cryonaut).

LTC care means long term cryonics care (also known as long term cryostorage).

Animal means non-human animal.

Prefatory Remarks

The (non-profit) American Cryonics Society, Inc. has the contractual right to inspect the facilities of the (non-profit) Cryonics Institute to determine if patients coming in under ACS (ACS patients) are being properly cared for by CI. ACS and CI are independent of each other in governance and finances. Typically, an annual ACS inspection of CI takes place in September, but in this case January 2016 (instead of September 2015) proved more feasible for ACS. Since the present ACS document is in the public domain, not all of CI's safety-security precautions will be mentioned (or, if mentioned, thoroughly detailed) in the present document.

The Inspection Begins

As I approached the CI facility on the morning of January 25, 2016, I noticed workers standing on the roof of the building. Upon meeting CI's Chief Operations Officer ("Andy"), he apologized for the noise produced from the activities of the roofing company employees. As it turned out, the occasional noise hindered neither the inspection process nor our conversational interaction. Andy showed me around and answered my questions.

CI's Personnel

CI's longtime Chief Operations Officer is Andrew F. Zawacki ("Andy"). (Andy also serves on CI's 12-member Board of Directors.) Andy told me that CI has two full time employees, himself and Hillary McCauley (a licensed funeral director since April 28, 2015: Michigan Mortuary Science License Number 4501007964), who I also met -- and one part time employee, David Fulcher (Andy's brother-in-law), who I did not meet.

Also CI has various contractual relationships. In addition, CI has had a non-contractual working relationship with a nearby funeral home in Fraser, Michigan (owned by Jim Walsh and his daughter, Sara) for over twenty years.

Legal And Financial

According to Andy, "CI is not involved in any lawsuits and there are no governmental investigations or actions taking place." (There was a time now past when the state of Michigan considered whether to categorize CI as a cemetery; fortunately, they eventually realized the inappropriateness of such a designation.) CI's financial statements are available on the CI website <cryonics.org> at <cryonics.org/resources/ci-annual-financial-reports> ("CI Annual Financial Reports"); a copy of CI's latest financial statement (as of January 25, 2016) is attached as APPENDIX I. *Editor's Note: Appendix I refers to the financial statements previous published in Long Life. They are also included in the copy of the report that is utilized by ACS for its Board and interested members).*

The scope of the present inspection does not include financial or legal inquiry. The present inspection primarily concerns physical in-

spection of the premises and record keeping of patients and cryostat maintenance.

Sections (Areas) Within The Building

The interior of the (7,000 square feet) single-story CI-owned building (in Clinton Township, Michigan) contains the following areas/sections:

- Small front entrance area with closet for coats.
- Main office area with computers.
- Separate office area with conference-size table.
- Small break-room with bed and smoke-alarm in case one of the employees needs to rest.
- Two unisex (i.e., one-person) restrooms, including one that is disability accessible.
- Patient (cryostat) area.
- Perfusion room: Andy stated that the CI perfusion room meets all Michigan state standards required if it were an embalming room instead of a CI perfusion room. This room is used for the perfusion of patients.
- Conference room: Contains a large and attractive conference table plus closets.
- Workshop (fabrication) area.
- Storage area, plus an attic above for additional storage.

Number Of Patients

CI reports, as of the inspection date (January 25, 2016):

- CI has 136 human patients in LTC care.
- CI has 118 animal/pet patients in LTC care.
- CI has 225 sets of tissue/DNA samples in cryopreservation.

Number Of Cryostats

At CI, there are currently four (4) kinds of cryostats in use for long term care of patients and samples:

M = "MVE" (Minnesota Valley Engineering: hard vacuum, steel) Dewar/Cryostat

K = "K-Series" (K Series Cryogenic Systems: hard vacuum, steel) Dewar/Cryostat

R = Rectangular (custom-made HSSV [Hard Shell, Soft Vacuum]) Cryovessel/Cryostat

C = Cylindrical (custom-made HSSV [Hard Shell, Soft Vacuum] 6-patient) Cryocapsule/Cryostat

With respect to patients and samples currently in long term care:

- There is 1 M cryostat in use.
- There is 1 K cryostat in use.
- There are 3 R cryostats (various sizes) in use.
- There are 17 C cryostats (all the same size) in use, one of which has room for two more patients.

In addition, there is one empty C cryostat (that can hold six patients) in the patient (cryostat) area.

Also, according to Andy, there are two C cryostats in the workshop area not yet altogether ready to be placed in the cryostat (patient) area.

Additional various cryostats are also available for short-term emergency use if necessary.

The C cryostats are the most current ones. The present cost of a C cryostat (that can hold six patients) is roughly $30,000. Since the C cryostat is a kind of HSSV (Hard Shell, Soft Vacuum) cryostat, it has to be periodically pumped to keep its vacuum (per HSSV's original intention). Due to out-gassing, a newer C cryostat requires more frequent pumping than a seasoned one (again, per HSSV's original intention).

Additional information about CI's cryostats is available on the CI website at "Cryostats for Cryogenic Storage" <cryonics.org/resources/ci-cryostats>.

Andy indicated that within a few years CI may need more room for more cryostats and that one possibility would be to buy a second facility nearby (for a total of two CI facilities).

Liquid Nitrogen

More than a decade ago, a bulk liquid nitrogen tank (3,000 gallon capacity) was installed immediately behind the back wall of the building. It is enclosed by two chain link fences secured with locks. The liquid nitrogen is transported to CI in large (insulated) tanker trucks. Feed lines extending from the bulk tank through the back wall into the workshop area and then to the patient (cryostat) area are opened when filling of cryostats is needed. Delivery of liquid nitrogen to the (CI owned) bulk tank is ordered well in advance of need so that there is no danger of running out.

Inspection of the interior of a patient's cryostat filled with liquid nitrogen does NOT reveal vigorous boiling; rather, the liquid nitrogen is placid -- it slowly vaporizes. According to the CI website at "Cryostats for Cryogenic Storage" <cryonics.org/resources/ci-cryostats>, the cost to CI for buying and delivery of liquid nitrogen in bulk means that the cost of liquid nitrogen for a (seasoned) C cryostat (containing six patients) amounts to about $100 per patient per YEAR. Apparently this webpage info is based on 2008 data. Some more recent data is available by the CI website link <dropbox.com/sh/88b0gt2udabqgg9/AABxA4eGTBZltITV6odJ5Mxpa?dl=0> ("CI Internal Inspection & Audit Data"). Based on these recent liquid nitrogen receipts, I gather that CI pays a little under 60 cents per 100 cubic feet of gas. Converting 60 cents per 100 cubic feet of gas to liquid, the cost for a cubic foot of liquid nitrogen would be $4.32. This would amount to roughly $120 per patient per YEAR. (On the other hand, one may choose to look at this issue from a broader perspective: Beyond the calculations based on "boil-off" per cryostat (per above), there are additional "boil-off" losses from the bulk storage tank and the feed lines.)

ACS Aluminum Pods

Typically CI puts the patient (in a sleeping bag) on a stretcher for placement within the cryostat. On the other hand, typically the ACS patient (in a sleeping bag) is put within an ACS aluminum pod (instead of on a stretcher) for placement within the cryostat. See APPENDIX II for dimensional specifications of the ACS aluminum cocoon (pod).

CI currently has on hand two extra ACS pods (located in the attic storage area); tags on the pods identify them as ACS property. But what if ACS should need more than these two pods? According to Andy, "The last time I had Beck Industries make pods it took a few weeks."

Keeping The Logs

The inspection logs are filled-in on a daily basis: The liquid nitrogen level is recorded for each cryostat. CI's three employees, plus a contract worker, are currently responsible for taking turns each day. If needed, liquid nitrogen is added and the new level also recorded. Pumping to improve a cryostat's vacuum, if needed, is also recorded. (Andy explained that there "are no log records for the R-4 Cryostat because it is not being used.")

Safety And Security

The CI facility is located on a dead-end no-sidewalk street of buildings suited for the area zoned light industrial. The CI campus includes a small off-street parking lot that adjoins the small off-street parking lot for a neighboring building. I gather that Andy is on good terms with his neighbors in the industrial park. I walked up and down the street and sensed no danger that I might be mugged or robbed.

Each cryostat is fireproof. As indicated above, a daily log is maintained on each cryostat. By writing into the log sheet the liquid nitrogen level in each cryostat on a daily basis (and maintaining an ample liquid level), there is no immediate danger even if the vacuum of the cryostat were to fail and/or the building's electrical system were to go out. However, if a patient is still undergoing the initial stages of cryonic hibernation and not yet ready for LTC care in liquid nitrogen, electricity is important; for this reason, CI does indeed have a backup generator for such an electrical emergency. CI's automated patient cool-down box is located near the R cryostats in the patient (cryostat) area. (For more information about "Computer Controlled Cooling Boxes" see <cryonics.org/resources/computer-controlled-cooling-boxes>.)

Andy pointed out that initial (i.e., pre long term care) cryonic hibernation procedures necessarily vary depending on the condition of the patient's body. According to CI, whole body vitrification is the way to go in some cases, but when a choice should be made, obviously the condition of the brain is given priority.

Files of patients, and files of signed-up cryonicists, are secured in fireproof locked file cabinets. Copies of these documents are also kept in the custody of attorney David Ettinger. Too, each patient, within the cryostat, is tagged for identification. (I did not inquire about CI's computer/digital/electronic files or about the extent and frequency of their website updating.)

There are a number of posted signs within and without the building to warn trespassers of video cameras and intruder alarms. Andy pointed out the huge advantage of prevention.

There is a fire suppressant sprinkler system installed throughout the building. ACS and the Stanley Keoskie trust (administered by ACS) paid half the cost to have that system installed some years ago. A local fire station is nearby (at 21250 Fifteen Mile Road).

CI contracts with a major security company to monitor (24/7) the video cameras and intruder alarms. Functional fire extinguishers and outside lighting are also in place. The CI facility's KNOX-BOX® Rapid Entry System provides non-destructive emergency access to approved first responders. In addition, CI's Knox-Box is configured to alert their security system of a Knox-Box intruder.

In the patient (cryostat) area, CI employees work with liquid nitrogen. The venting of nitrogen vapor can sometimes result in low oxygen. Accordingly, a loud alarm is automatically triggered by a (wall-at-

tached) detector in the event of low oxygen in the patient (cryostat) area. A ventilating fan is in place and can be activated when desired.

CI has telephone access to BOTH land and cell lines. As another safety precaution, CI uses TWO liquid nitrogen suppliers.

CI's New Self-Inspection Report

In February 2016, CI publicly issued on its website its first periodic self-inspection report. Such transparency-accountability is to be commended. Each periodic internal (CI inspection of CI) report may improve the quality of each subsequent periodic external (ACS inspection of CI) report; and, each periodic external (ACS inspection of CI) report may improve the quality of each subsequent periodic internal (CI inspection of CI) report. CI's self-inspection report observes: "A fresh set of eyes can sometimes pick out things that are overlooked by others that are familiar with the operations." Audits and inspections can be annoying, stressful, and/or time-consuming, but they are of unusual importance for organizations that deal directly with "life or death" issues.

The CI self-inspection report is available (February 2016) via a link on page 12 ("CI Introduces New Inspection and Audit Procedures") of the Cryonics Institute Newsletter (Issue 1 of Year 2016) <cryonics.org/images/uploads/magazines/CI_News01-2016.pdf>. The link is to <dropbox.com/sh/88b0gt2udabqgg9/AABxA4eGTBZltITV6odJ5Mxpa?dl=0> ("CI Internal Inspection & Audit Data"). (Seven sets of documents are listed there.) With respect to the self-inspection report, let me here offer two comments:

> (1.) The report contained no byline; I think the author's name probably should be added. (I gather, however, that the report was authored by CI's new trainee.)
>
> (2.) (A.) Sections of the report read as follows: "On the door leading to the storage area, there was a large sign posted about the use of video surveillance so it was made clear that there were cameras inside of the building, as well." "I was impressed with the storage area and how the cryostats were lined in rows and all labeled with the Cryonics Institute's logo and ID numbers. The storage area was very clean and well maintained." "There are multiple lines that are run from the bulk tank into the storage area." "This procedure is done every other month and is documented in the storage unit log book." (B.) The term "storage area" should be "patient (cryostat) area" and the term "storage unit" should be "cryostat." The CI facility's storage area is located behind the wall of the patient (cryostat) area. (CI "stores" files; CI "cares for" patients.)

One more comment, personal in nature, if I may: For some decades it has been remarked that research scientists and committed cryonicists need improvement in their bedside manner or empathy communication skills. Accordingly: As a veteran cryonicist, perhaps there are some things a rookie might best not learn from me. As a veteran cryonicist, perhaps there are some things a rookie might teach me. For example, licensed funeral directors (old and new) may have both "medical" skills and "people" skills useful to the advancement of cryonics.

Closing Remarks

The CI website (including their self-inspection report) proved useful in preparing the present document. I would like to thank Jim Yount, York Porter, Andy Zawacki, Dennis Kowalski, and Pat Heller for their helpful comments.

Since the present ACS document is in the public domain, not all of CI's safety-security precautions are mentioned (or, if mentioned, thoroughly detailed) in the present document. Ideas and comments with an eye toward further improvement are contained in a separate report not for general consumption and not in the public domain.

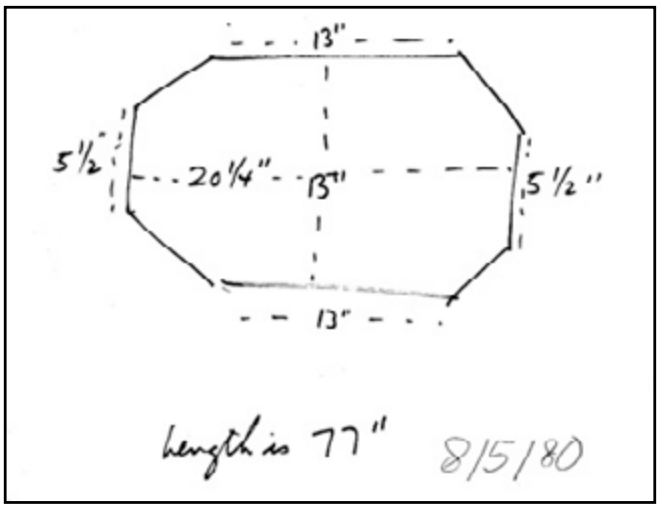
In summary, my broad conclusion is that the Cryonics Institute provides quality patient care at an affordable price.

APPENDIX I (DATA OF FIVE PAGES FROM CI)

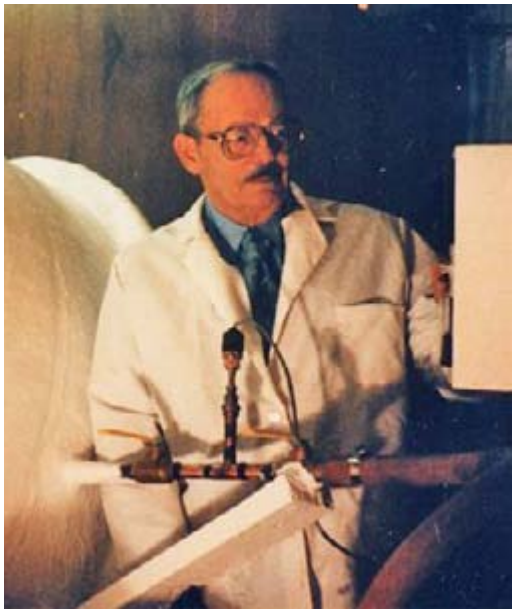
CI's financial statements are available on the CI website <www.cryonics.org> at <www.cryonics.org/resources/ci-annual-financial-reports>.

APPENDIX II (DATA OF ONE PAGE FROM ACS)

Here is a schematic of the ACS cocoons (aluminum pods):



The length of the ACS aluminum cocoon (pod) is subsequently modified depending upon the patient's height.



Robert Ettinger: *The Legacy Continues*

Split Brains, Consciousness, and Identity

Introduction by York W. Porter, President of the Immortalist Society and Executive Editor of Long Life Magazine

One of the concepts that has plagued philosophers (and cryonicists) for quite some time has been the question of "identity". "Who Am I?" questions have filled volumes and volumes of philosophical texts. In cryonics, of course, the problem assumes a more practical aspect in terms of what structures in the brain contain the "self". If one loses a few neurons or if new ones replace those neurons or if those neurons or others are supplemented or replaced by a computer chip, is that the "same" person? At what point can one say that the efforts are futile in that it simply isn't possible to restore the individual person in the sense that they are "really" there?

In the case of this last question, the most obvious situation where cryonics is of no benefit would be someone who is at the center of a thermonuclear explosion. There simply isn't, practically speaking, any biological matter to store since it has been literally vaporized by the high temperatures at the center of a nuclear explosion. Maybe a clone could be developed from DNA that might be available elsewhere but this will only be a copy of the original individual.

In this article, from November of 1985, Robert Ettinger attempts to deal with this problem, at least to some degree. The "Mr. Singley" he refers to here is one Steve Singley, who was a regular contributor at that time to the magazine. Singley had written a letter in which he talked about a surgery called hemispherectomy and the possibility of storing the brain in two different ways, where "Perhaps one half the brain could be frozen and half freeze dried".

Just below Mr. Singley's letter is a brief article entitled "Child With Half A Brain". This was based on an article from an issue of The Globe that is categorized as a "gossip-and-sensation periodical". The Globe article talked about a four year old who was having up to 120 epileptic seizures every day. In a ten-hour surgery, one hemisphere of her brain was removed. The Globe report says that at some point after the surgery, the young child said the heart touching words, "I love you, Mommy and Daddy!" Ettinger's reply to Singley and discussion of the gist of the article begins as follows:

Mr. Singley's letter above, and the hemispherectomy news above, tie in nicely with recent publication of a collection of review articles: *The Dual Brain: Hemispheric Specialization in Humans,* ed. D. Frank Benson and Eran Zaidel, Guilford Press, Neew York, 1985 (UCLA Forum in the Medical Sciences).

The many topics covered include commissurotomies and other types of surgical disconnection in cats, monkeys, and humans. Although it has been known for over a century that the hemispheres of the cortex are typically asymmetrical in development and function, and that in right-handed people the left side of the brain plays the major role in speech and many analytical activities, there are countless exceptions, qualifications, complexities, and uncertainties. One of the major unsolved questions concerns the relationship between identity and consciousness, and the question of whether two or more selves may inhabit a single brain.

These matters are not "merely" philosophical, but potentially have great practical importance, especially to cryonics.

For latecomers, we should review (very briefly) the nature of the surgery and evidence of duality.

Commissurotomies and Sequelae:

The brain is surgically divided by midline section of the cerebral commissures. (As indicated, this is occasionally done in humans as a last-resort measure in certain types of epilepsy.) Both hemispheres, and the mind as a whole, continue to function at a high level (af-

ter recovery from surgery); but while the separation does not go all the way down to the brain stem, most conscious experience of each hemisphere becomes inaccessible to the other. Nearly all direct connections mediating cross talk between the right and left hemispheres have been severed, including the fiber systems that normally interconnect left and right halves of the cortical field for vision. Also severed are interconnections between cerebral representations for the right and left arms and legs, including sensory projections and motor controls.

This means that the left cerebral hemisphere can now see only those things that are in the right half of the visual field, while the right hemisphere sees the left visual field. Likewise (for most people) each hemisphere has tactual perception and motor coordination only for the opposite arm and leg.

Very striking results are reported with split-brain patients in an experimental set-up where different stimuli are provided in the left and right visual fields, and to the left and right hands (with the hands shielded from view).

If the patient is shown a pear in the left visual field (accessible only to the right half of the brain), he reports seeing nothing. Yet after this stimulus, if a picture of a pear is presented (along with others) in the left visual field, he can identify it by pointing--with his left hand! He can also find the object by feel, among a collection of objects out of sight on a tray, if he uses the left hand, but not if he uses the right!

In general, things seen in one visual field cannot be recognized if then presented in the other field; likewise with odors (separate nostrils) and tactile sensations (left and right hands). Verbal reports can be obtained only about things presented to the left side of the brain (right visual field, right hand, or left nostril--the nostril correlates with the same side hemisphere). Yet perceptions which are disclaimed verbally can be demonstrated manually by retrieval or pointing, as noted above!

Interpretation of Experiments:

Some scientists reject the apparent duality of self of the commissurotomy patients. They think identity must remain unified within the left (language) hemisphere, or perhaps centered in the intact brain stem, or somehow distributed over the whole brain, despite the evident disjunctures.

However, Roger W. Sperry (California Institute of Technology), one of the senior and principal investigators in this field, sees no real justification for denying consciousness to the disconnected mute hemisphere. He notes that the (typical) right hemisphere may be superior in novel tasks involving logical reasoning, and that it may generate typical facial expressions of satisfaction at tasks well done or of annoyance at its own errors or those of the other hemisphere. He concludes that:

> "...the mute hemisphere has an inner experience of much the same order as that of the speaking hemisphere, though differing in quality and cognitive faculties...Clearly the right hemisphere perceives, thinks, learns, and remembers, all at a very human level. It also reasons nonverbally, makes studied cognitive decisions, and carries out novel volitional actions. Further, it can be shown to generate typical human emotional responses when confronted with affect-laden stimuli and situations...
>
> "All results to date support the conclusion that the right hemisphere, despite its language deficits, harbors a well-developed, seemingly normal conscious self with a basic personality and social self-awareness that is in close accord with the presurgical character of the patient and also with that of the speaking hemisphere of the same subject."

Such considerations impel some observers to say that even the normal, undivided brain is bicameral, that there are two persons in each of us, a fact that ordinarily isn't noticed. But Sperry points out that, even in commissurotomy patients, everyday behavior seems ordinary and unified, and that the brain is "wired" bilaterally with respect to parts of the anatomy, such as sensations in the face (through the trigeminal nerves, representing both sides of the face to both hemispheres), and other systems including extensive bilateral motor controls.

Sperry concludes finally that the consciousness mind is normally single and unified, and suggests that identity is a holistic property of the integrated brain, or its manifestation as mind. (He also makes some remarks on the "mind-brain paradigm" that seem dubious to me, with confusion on "reductionist" vs. "emergent" theories. But he firmly rejects philosophical dualism, the old materialist-spiritualist division.)

Later Thoughts

When I discussed the problem of the person in 1962, I focused mainly on personality and memory, the logical and psychological effects of changes and discontinuities. Now I think I should have paid more attention to awareness, which is much more mysterious and probably more important.

After all, a very young child is nearly blank as to personality and memory, yet it surely has some degree of awareness. (I also think that awareness necessarily involves self-awareness, even though it may not be of the naming or overtly introspective variety). We also usu-

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ally do not regard amnesia or personality change (such as from trauma) to be a death sentence, even though it would be very alarming.

Further, it is not at all clear that awareness is essential for intelligence, let alone for lower life functions, it is entirely conceivable that a computer (or a computer program!) might be equal or superior to the human mind in almost every objective measure of capability, yet lack awareness. Nor is it clear whether many lower life forms have merely a lower degree of awareness, or none at all. Consciousness may reside in a special circuit or system of the brain (of course with feed-in and feed-back connections to other parts; and of course this system could be distributed rather than localized).

It seems possible that the essential self may lie in the awareness system, and this has extremely significant implications.

First, it suggests that awareness is the ground of being, with the content of consciousness only secondary.

As a very crude analogy, consciousness is the carrier wave, and memories and impulses are the modulations. (Or course memories are stored, and can originate, outside of consciousness.) We exist prior to specific thoughts or memories or personality traits.

As usual, we can construct thought experiments involving strange situations. Following Sperry and others, we might conclude that consciousness is flexible, divisible, and integrable. One physical system (brain) may be host to one or more individual consciousnesses, depending on conditions, physiology and anatomy. And if that is so, perhaps one day (through wireless communications), several brains might be integrated into a single person, as science fiction writers have often speculated. Such convictions, or even suspicions, could lead to serious problems of motivation and behavior--just as, today, some people are deflected from realistic strategies by the mere possibility, without evidence, that they may survive through "reincarnation".

The general thrust and conclusions in the 1962 discussion remain intact, but there is a potentially important shift in emphasis. Memory and personality are not understood, but are probably stored as specific bits of information, perhaps well distributed in the brain and relatively easy to reconstruct (although some studies suggest that specific areas of the brain, notably the hippocampus, may be especially important for some types of memory). Awareness, on the other hand, may be more subtle and/or may reside in a more localized part of the brain, or perhaps have essential elements in several specific parts of the brain.

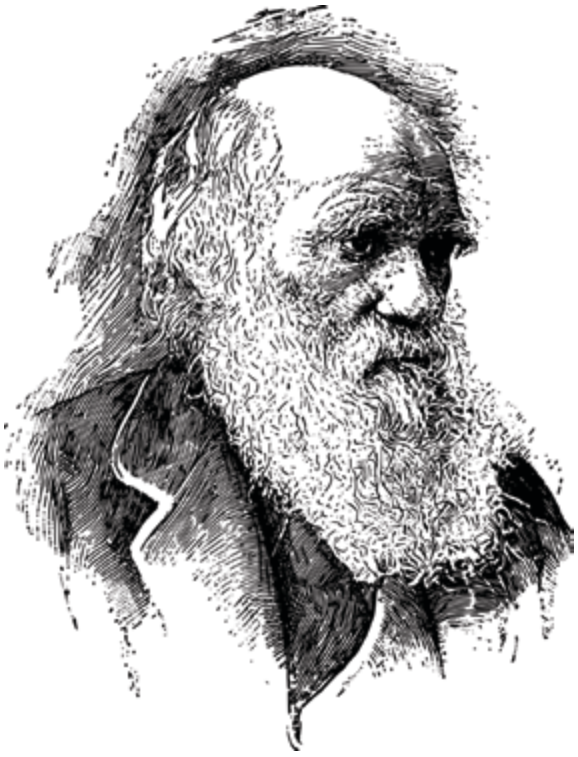
The bottom line once more reinforces the dictates of common sense. We know the brain can sometimes survive massive trauma; we know that freezing inflicts relatively minor damage, even under unfavorable circumstances; we are confident the molecular engineering of the future (Drexler machines)--if civilization endures--will be able to restore any prior configuration if the information has not been lost, i.e., if direct or indirect traces remain. All this tells us plainly it is foolish ever to lose hope. But we do not know which features of the brain, or which traces, may prove essential, so to maximize our chances we must try to save everything, in as nearly life-like a condition as possible.

Final Thoughts

York W. Porter - Executive Editor

Evolution

When I was growing up in a conservative rural community in the Appalachian mountain section of Virginia, I was informed by a dear and close friend that a local man was taking a public stand, based on his religious beliefs, against the scientific doctrine of evolution. This person owned a local fruit and vegetable stand, whose business location I was well familiar with and which I passed by at that time virtually every day. Being a scientifically oriented young fellow and full of the certainties of the young, I decided to "straighten this fellow out" of what I thought of as his antediluvian views. Having some spare time one day, I managed, with a library copy of a book on evolution in my hand, to knock on the man's door late one afternoon. I was already quite determined to show him as to the intellectual error of his ways. In what I initially figured would be an easily one-sided discussion, I found out "in a New York minute" that my new friend knew a heck of a lot more about evolution than I did!



Charles Darwin - Engraving from "The Origin of Species"
Credit: Wikimedia Commons

Though we never came to an agreement down through discussions that followed over the subsequent months as to the validity/lack thereof of the position my new friend held, I gained a new respect for the fact that I was, my previous belief to the contrary, very poorly prepared in my scientific knowledge base. I also gained a new respect for folks that, for whatever reason, disagreed with me. My intellectual opponent became, over time, a newfound friend and we spent many hours sitting on his front porch discussing the pros and cons of religion, evolutionary thinking, politics, and general thoughts about the world in general. As in many discussions, neither of us made much headway, if any, in winning the other over to an entirely new point of view. I always, however, left his home with "food for thought" as to weaknesses in my own developing world-view. In the "sureness and certainty" of my earlier years, it was a beginning towards a hopefully much more mature viewpoint. Now I realize that no matter how much I think I know about any topic, I really don't know much of anything at all about much of anything at all. This realization includes things in which I think I know a great deal, as in my vocation. In those days of discussions with my "anti-evolution" friend, that viewpoint would have been very unsettling to me. Nowadays, I just accept it as one of the signs of maturity in my approach towards the realities of a world that is more complex than I will ever be able to fully comprehend, at least in the limited time that my present physical lifetime

will probably bring.

In spite of my lengthy discussions with my friend/opponent, the one great thing about the whole situation was that wonderful development at this point in humankind's history, of the concept of freedom of speech. No matter which viewpoint I had held, or what viewpoint my friend had, we were free to debate back and forth to our heart's content. My friend printed, at his own cost, columns in the local weely newspaper in which he advanced what he viewed to be errors in evolutionary thinking. However wrong or right each of us thought the words of the other to be, neither of us had to worry about the "thought police" showing up at the door to imprison us or perhaps even worse. It seems incredible to realize that, even in these so called "modern times", not everyone has that ability throughout the world today without fear of real and substantial retribution. (And there are, equally as sad in a certain sense, folks in our own society that seem to think that the answer to speech you don't like is "less speech" by the so-called "offenders" rather than more speech by the folks that disagree with them!).

Lucilio Vanini Credit: Wikimedia Commons

And things were even worse, of course, in previous years of human history, in terms of retribution. In my younger days, I thought in my youthful naiveté that all modern evolutionary thought somehow began with Charles Darwin. Of course, as is written in *Ecclesiastes* "...there is nothing new under the sun". This became evident to me as I began to read more about historical antecedents to Darwin's concept. In particular, there is the tale of Lucilio Vanini.

Vanini was born in 1585 and died in 1619. A very brief life, indeed, with him being only 33 to 34 years old at the time of his death. He packed more, however, into his time than I have managed to in my sixty-four. Starting as the son of a local Italian businessman and with his mother being the daughter of a man who held an influential Custom's position, Vanini initially trained and studied in the fields of philosophy and theology. The wonderful influence of the Renaissance, though, also came into play as he went on from there to study in the areas of astronomy and medicine as well. (It's all I can do just to keep up with the basic fundamentals in the field of the technical aspects of medical radiography in which I make my living!) Vanini had, among his other educational experiences, a doctorate in canon and civil law.

Vanini, though born and studying in his youth in Italy, lived in various places, including France, Italy, Switzerland, and the so-called "Low Countries" (many of these latter are areas which are bounded by the North Sea). His moving so much may have been motivated by both his need to support himself through teaching and by reactions to his self motivated spreading of what were thought of in those days as radical ideas. (One of them, which seems pretty tame today, is that the universe is governed entirely by natural laws). At one point he even fled to England around the year 1612, but he eventually returned to Italy after he had stayed in England for a couple of years. During this time in England he had renounced his Catholic faith and converted to Anglicanism. About a year before his leaving England, however, he had a change of heart and contacted the Vatican and, with the permission of the Pope himself, was readmitted to the Catholic faith as a priest. Things didn't go exactly as he planned after his return to "the continent", however, and he fled to France after things heated up with the arrest of Bonaventure Ginocchi, whom he was visiting in Genoa. Ginocchi was a Vanini friend and companion who had fled with Vanini to England. Ginocchi had even converted to the Anglican faith with Vanini while they both lived together in England.

In an apparent attempt to reassure the authorities that he was an "OK" guy, while in France in 1615, Vanini published

a book with the formidable title of *Amphitheatrum Aeternae Providentiae Divino-Magicum.* This volume was intended as a Vanini treatise against atheism. It apparently served its purpose of placating the authorities, at least for a while, and Vanini was left alone and he even moved from Lyon, where he had fled, to Paris with its more cosmopolitan atmosphere and its location, even then, as somewhat of an international crossroads. While there, he even asked one of the Catholic Church authorities to intervene on his behalf with the folks in Rome. Still wary, in spite of agreement to do so, Vanini decided that his best course of action would be to nevertheless stay in France where he worked on developing contacts with the French nobility. Apparently back then, as is frequently the case nowadays, "who you know" becomes as important, if not more so, than "what you know", especially given Vanini's already impressive educational background.

In 1616, Vanini published a second book, De Admirandis, which he cleared through two theologians who worked at the Sorbonne before publication. In this work, in addition to numerous other subjects, he seems to express the view that lower life arose spontaneously from the elements of the Earth and that, even more controversially, life forms can be converted one to another and that humans arose from "animals related to man, such as the Barbary apes, the monkeys and apes in general". On top of this, it is my understanding that he favored the heliocentric view of the universe, the view that Jesus, Mohammed, and Moses were all imposters, and several other ideas that, while one may or may not agree with, would nevertheless be perfectly allowable for a free human being to believe today.

Not so, however, back then. The "authorities" had finally reached their breaking point. The two theologians who had looked at Vanini's second work and approved of its publication were called on the carpet by the powers that be in the Faculty of Theology at the Sorbonne and, under the great principle of politics voiced by the late Senator Everett Dirksen of Illinois ("When I feel the heat, I see the light!"), they reversed themselves and, through some more machinations, Vanini's work was basically considered banned for publication. (Sort of reminds me of the joke about totalitarianism in Robert Ettinger's seminal book *The Prospect of Immortality.* "Comes the revolution, you'll be eating strawberries and cream!" "But Mr. Chairman, I don't like strawberries and cream!" "Comes the revolution, you'll like strawberries and cream!") Vanini, quite wise to the ways of the world by this point, then fled to Brittany, where he had a protector.

Some time later, sadly, the authorities managed to catch up to him. I have read two accounts of his death. In one, he had his tongue cut out, was strangled, and then his remains were burned to ashes. In the other account, he was burned alive at the stake. (I'll take a traditional death by guillotine any day, thank you just the same!). Although I have never read his works themselves, they seem like a very interesting thing to go through, keeping in mind the state of scientific knowledge at the time he wrote them. As in my youthful and even present ignorance of the history of the concept of evolution, my ignorance of the tapestry of history is even greater. One of my little fantasies, if cryonics is successful, is to go to the Library of Congress and start on "Shelf One, Volume One" and work my way through to the end (which, of course, will never come because while I'm reading and studying away, new volumes will be coming through the door every day! Ah, paradise realized at last!). I'll definitely make sure I pay attention when I come on Vanini's name as I go through things. His thinking, however dated by the knowledge of his time, is nevertheless quite intriguing just the same. Sadly, he paid the ultimate price for his complex and interesting convictions.

In the case of the overwhelming majority of those reading this, however, that isn't necessary when it comes to cryonics. Robert Ettinger has paved the way and the result has been, paraphrasing his words, "with nary an execution to show for it. It almost makes one ashamed to be a revolutionary!" You just need the courage of your convictions to the point of acting on them. Join a cryonics organization. You can start for next to no cost, by joining the Immortalist Society! It's a great way to "get your toes wet" in a concept that is ultimately destined to change the way humans live. (Plus, you get a genuine print version of the magazine plus, if you want, an e-mail notice of when the on-line copy is available!) Later (or sooner), you can "move on up" and join a suspension organization itself or, you can do both at the same time! Whatever you do, just make sure you do something. The folks in all cryonics organizations are more than glad to have you and more than glad to help you to implement Robert Ettinger's outstanding concept in your life so you can make the maximum effort to avoid what turned out to be Vanini's ultimate and sad fate of total personal oblivion. Join us today! You'll be glad you did!

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