ORGAN BANKING SUMMIT 2015

THE DEVELOPMENT OF LONG-TERM BANKING OF ORGANS AND OTHER COMPLEX TISSUES

TO CATALYZE A VITAL NEW INDUSTRY THAT PERFECTS THE ORGAN PRESERVATION PROCESS, SAVING AND ENRICHING MILLIONS OF LIVES

PRESERVATION OF ORGANS WOULD ENABLE

- Better matches
- Less immunosuppression
- Lower costs
- More organs
- Less disease transmission
- More lives saved
- Fertility protection
THE NEED IS ENORMOUS AND WHILE, BANKING IS AUDACIOUS, IT’S POSSIBLE TO CRACK BY COMING TOGETHER

Locations:

Scientific Young Investigator Hackathon at NASA Research Park / SU Labs

Lawrence Berkeley National Laboratory Site Visit

Large opening day at the brand new Bio X Campus at the heart of the Medical and Engineering Schools at Stanford

Pre-, Core- and Post-Events at the Sheraton Palo Alto

Participants:

Invited and Recommended Young Investigators

Speakers and Participants at the Multi Day Organ Banking Summit

Scientists and Interested Parties (VC, Biotech, etc) + Stanford Med School, Biosciences and Engineering Faculty/Students

Speakers and Participants at the Multi Day Organ Banking Summit
**SPEAKERS INCLUDE WORLD LEADING SCIENTISTS FROM:**

HARVARD/MBG/MIT, STANFORD, BERKELEY, UOFM, CARNEGIE MELLON, 21ST CENTURY MEDICINE, T3 - TISSUE TESTING TECHNOLOGIES

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**Organ Banking Summit Host Professor**

**UTKAN DEMIRCI, DIRECTOR OF BIO-ACOUSTIC MEMS IN MEDICINE LABS AT STANFORD UNIVERSITY**

Creator of innovative high-throughput nanoliter cell manipulation technologies for cryopreservation

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**MEHMET TONER, PROFESSOR AT HARVARD/MBG AND MIT**

Co-founder of the Center for Engineering in Medicine and co-Author of 2014 rat liver preservation breakthroughs published in Nature Medicine

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**GREGORY FAHY, CHIEF SCIENCE OFFICER AT 21ST CENTURY MEDICINE**

Lead scientist behind the first successful transplant of a cryopreserved and vitrified mammalian organ (rabbit kidney)

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**JANET ELLIOTT, CANADA RESEARCH CHAIR IN THERMODYNAMICS AND PROFESSOR AT UNIVERSITY OF ALBERTA**

Inventor of engineering modeling derived protocols to vitrify human tissues; World expert on thermodynamics in cryobiology

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**MICHAEL TAYLOR, ADJUNCT PROFESSOR AT CARNEGIE MELLON AND VP FOR R&D, T3 - TISSUE TESTING TECHNOLOGIES**

World leader in vitreous cryopreservation approaches of tissue systems

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**BORIS RUBINSKY, PROFESSOR AT UNIVERSITY OF CALIFORNIA, BERKELEY**

Discoverer of fish antifreeze proteins for cryopreservation solutions and innovative isochoric cryopreservation approach

---

**JOHN BISCHOF, DIRECTOR OF BIOHEAT AND MASS TRANSFER LAB AT THE UNIVERSITY OF MINNESOTA**

Inventor of award-winning rewarming approach based on radio frequency heating of nanoparticles in cryoprotectant solutions
YOED RABIN, DIRECTOR OF THE BIOTHERMAL TECHNOLOGY LABORATORY AND PROFESSOR AT CARNEGIE MELLON UNIVERSITY
World leader on thermo-mechanical stress and structural damage in cryopreservation; inventor of the cryomacroscope; developer of ultra-miniature, wireless, implantable “cryo sensors”

BARRY FULLER, LEAD GLOBAL PROFESSOR AT THE UNESCO CHAIR IN CRYOBIOLOGY AND PROFESSOR AT UCL MEDICAL SCHOOL / ROYAL FREE HOSPITAL
Pioneer of bio artificial liver and preservation of the largest volume metric organoid bulk - 2 liters of liver spheroids

ALBERT PETRENKO, HEAD OF THE BIOCHEMISTRY DEPARTMENT AND PROFESSOR AT THE INSTITUTE FOR PROBLEMS OF CRYOBIOLOGY AND CRYOMEDICINE NAS OF UKRAINE (IPC&C) AND KHARKOV UNIVERSITY
Creator of methods for the preservation of stem cells and bioartificial tissues
GLORIA ELLIOTT, DIRECTOR OF THE BIOSTABILITY LAB AND PROFESSOR AT UNIVERSITY OF NORTH CAROLINA – CHARLOTTE
Creator of next generation preservation agents for the stabilization of biologics and leader in applying molecular understanding to improve cryo processes

ROBERT N. BEN, CANADA RESEARCH CHAIR IN MEDICINAL CHEMISTRY AND PROFESSOR OF ORGANIC AND BIOORGANIC CHEMISTRY AT THE UNIVERSITY OF OTTAWA
Creator of novel small molecule ice recrystallization inhibitors as cryoprotectants for the long-term storage of biological samples and tissues

JOHN G. BAUST, UNESCO PROFESSOR, CHIEF SCIENTIFIC ADVISER AT CPSI BIOTECH, DIRECTOR OF THE INSTITUTE OF BIOMEDICAL TECHNOLOGY AT THE STATE UNIVERSITY OF NEW YORK, BINGHAMTON
Expert in the responses to low temperature exposure elicited by mammalian cells, tissues and organs with focus on cryopreservation, cancer biology and tissue engineering

JASON ACKER, PRESIDENT-ELECT OF THE SOCIETY FOR CRYOBIOLOGY AND PROFESSOR AT THE UNIVERSITY OF ALBERTA
Creator of new methods for the long-term storage of a number of cell types and tissues

ADAM HIGGINS, DIRECTOR OF THE BIOTRANSPORT AND BIOMEDICAL PROCESS ENGINEERING LAB AND PROFESSOR AT OREGON STATE UNIVERSITY
Expert in mathematical modeling and optimization of cryopreservation procedures and high flow rate microfluidics for chemical processing

JAMES BENSON, BIOMATHEMATICIAN PREDOMINANTLY FOCUSING ON CRYOBIOLOGY AND ASSISTANT PROFESSOR AT NORTHERN ILLINOIS UNIVERSITY
Expert biomathematician predominantly focusing on heat and mass transfer and cryoprotectant toxicity problems and optimization in cryobiology

DAYONG GAO, DIRECTOR OF THE CENTER FOR CRYO-BIOMEDICAL ENGINEERING AND ARTIFICIAL ORGANS AND PROFESSOR AT THE UNIVERSITY OF WASHINGTON
World expert and inventor of novel technology and instruments for cryopreservation and biobanking
ROBERT SHMOOKLER-REIS, PROFESSOR OF GERIATRIC MEDICINE, MOLECULAR BIOLOGY AND PHARMACOLOGY AT THE UNIVERSITY OF ARKANSAS
Expert in biochemical defense pathways in animals and discoverer of genes regulating longevity in the nematode

GANG ZHAO, DIRECTOR OF THE LABORATORY FOR CRYO-BIOMEDICAL ENGINEERING AND PROFESSOR AT UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA
Expert in modeling of heat and mass transfer in cryopreservation and inventor of a novel microfluidics-based microperfusion microscope for investigation of cell osmotic responses

THOMAS E. JOHNSON, PROFESSOR OF INTEGRATIVE PHYSIOLOGY AT COLORADO BOULDER AND FELLOW OF BIOFRONTIERS PROGRAM
Led the discovery of age-1, the first gene shown to extend longevity of a metazoan. Developing drugs for better organ cryopreservation

BRIAN WOWK, CRYOBIOLIGIST AND SENIOR PHYSICIST AT 21ST CENTURY MEDICINE
Discoverer and developer of synthetic ice-blockers; Leader in the solid organ cryopreservation field

JOHN MORRIS, FOUNDER AND CEO OF ASYMPTOTE
Leading specialist in cryopreservation, with focus on liquid nitrogen-free and clean-room compatible storage of live biological samples

JOÃO PEDRO DE MAGALHÃES, DIRECTOR OF THE INSTITUTE OF INTEGRATIVE BIOLOGY AND PROFESSOR AT THE UNIVERSITY OF LIVERPOOL
Currently using functional genomics to understand genomics of extreme species like the naked mole rat and the bowhead whale; Currently using function genomic to understand cryoprotectant toxicity

ROBERT SHMOOKLER-REIS, PROFESSOR OF GERIATRIC MEDICINE, MOLECULAR BIOLOGY AND PHARMACOLOGY AT THE UNIVERSITY OF ARKANSAS
Expert in biochemical defense pathways in animals and discoverer of genes regulating longevity in the nematode

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Led the discovery of age-1, the first gene shown to extend longevity of a metazoan. Developing drugs for better organ cryopreservation

RAMON RISCO, PROFESSOR OF ENGINEERING AT THE UNIVERSITY OF SEVILLE, CEO OF SAEPRESERVATION AND SENIOR PHYSICIST AT NATIONAL ACCELERATOR CENTRE (SPAIN)
Inventor of a technology based in sulphur detection by computer tomography for avoiding fractures, controlling ice and monitoring cryoprotectant concentration in organ cryopreservation
ALESSANDRO TOCCHIO, CO-FOUNDER OF THE ORGAN PRESERVATION ALLIANCE
Awarded entrepreneur in the biomedical field. Postdoctoral Scholar at Stanford School of Medicine. Inventor or a novel microfabrication technology and innovative biomaterial for regenerative medicine applications.

LT. COL. LUIS M. ALVAREZ, DIRECTOR OF THE DOD’S THREE NEW ORGAN AND TISSUE BANKING GRANT PROGRAMS
Former co-founding Deputy Director of the DoD’s Tissue Injury and Regenerative Medicine Program and Deputy Director of AFIRM. Currently the Director of the Center for Molecular Science and Academy Professor at the United States Military Academy

... AND MANY OTHER LEADING SPEAKERS FROM CRYOBIOLGY AND RELATED SCIENTIFIC FIELDS AS WELL AS FROM BIOTECH, VC, GOVERNMENT, STAKEHOLDER ORGANIZATIONS AND TRANSPLANT, TRAUMA AND REGENERATIVE MEDICINE, INCLUDING:

ROBBIE BARBERO, ASSISTANT DIRECTOR FOR BIOLOGICAL INNOVATION, WHITE HOUSE OFFICE OF SCIENCE AND TECHNOLOGY POLICY (OSTP)
Thought leader for federal science research policy, with a focus on life sciences and grand challenge areas

LT. COL. LUIS M. ALVAREZ, DIRECTOR OF THE DOD’S THREE NEW ORGAN AND TISSUE BANKING GRANT PROGRAMS
Former co-founding Deputy Director of the DoD’s Tissue Injury and Regenerative Medicine Program and Deputy Director of AFIRM. Currently the Director of the Center for Molecular Science and Academy Professor at the United States Military Academy

SEBASTIAN GIWA, CO-FOUNDER AND CEO OF THE ORGAN PRESERVATION ALLIANCE AND FOUNDER OF SYLVATICA BIO INC.
Served as President of the National Youth Council of Sweden and directly lobbied the Prime-Minister, EU Commissioners and the UN Secretary General, was a Baker Scholar at Harvard Business School and co-founded the Organ Preservation Alliance and Sylvatica to transform transplantation

ALESSANDRO TOCCHIO, CO-FOUNDER OF THE ORGAN PRESERVATION ALLIANCE
Awarded entrepreneur in the biomedical field. Postdoctoral Scholar at Stanford School of Medicine. Inventor or a novel microfabrication technology and innovative biomaterial for regenerative medicine applications.
**ROBERT STRONG, WORLD-CLASS FACILITATOR AND AWARD WINNING COMEDY MAGICIAN**

Voted best magician, best comedian and best performer at numerous occasions, performed for two Presidents of the United States and awarded two Civilian Medallions of Distinction from the US Army

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**ABBAS ARDEHALI, CHIEF OF CARDIAC SURGERY AT UCLA SCHOOL OF MEDICINE, DIRECTOR OF THE HEART AND HEART-LUNG TRANSPLANT PROGRAM AND PROFESSOR OF CARDIOThoracic SURGERY**

World-leading heart transplant surgeon and developer of state-of-the-art perfusion, revival and repair processes to make more hearts available

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**CHARITY TILLEMANN-DICK, INTERNATIONALLY ACCLAIMED SOPRANO, BEST SELLING BILLBOARD CLASSICAL RECORDING ARTIST AND TWO TIME DOUBLE LUNG TRANSPLANT RECIPIENT**

World Class Opera Soprano and Top-Rated TED Speaker

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**GABOR FORGACS, SCIENTIFIC FOUNDER OF ORGANOVO**

Authority in bio-mechanics, tissue engineering and pioneer in 3D bio-printing

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**RONALD ZUCKERMANN, SENIOR SCIENTIST AND DIRECTOR OF THE BIOLOGICAL NANOSTRUCTURES FACILITY AT THE LAWRENCE BERKELEY NATIONAL LABORATORY**

Pioneer in adapting the fundamental principles of protein folding to man-made polymers, to create novel nanoarchitectures capable of specific molecular functions

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**JOHN SCANDLING, PROFESSOR OF MEDICINE, MEDICAL DIRECTOR OF ADULT KIDNEY AND PANCREAS TRANSPLANTATION, STANFORD UNIVERSITY**

World-leading expert on bolstering immunotolerance by conditioning organ recipients with total lymphoid irradiation and antithymocyte. Pioneered techniques that preserve persistent graft function without maintenance drugs.

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**XIAOXI WEI, FOUNDER AND CEO OF X-THERMA INC. (USER AFFILIATE TO LAWRENCE BERKELEY NATIONAL LABORATORY)**

Supramolecular chemist focused on developing novel highly effective, non-toxic cryoprotectants via Biomimetic Nanoscience

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**ABDUL RAZAQUE, PROFESSIONAL MAGICIAN AND TELEPATHIC PERFORMER**

Telepathic mind reader with a career spanning 25 years

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### PRE-SUMMIT EVENTS (WEDNESDAY)

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Details</th>
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<tbody>
<tr>
<td>8:30am - late</td>
<td>Scientific Young Investigator Hackathon at NASA Research Park</td>
<td>Selected Young Investigators + Hackathon Faculty + Others Interested Are Welcome and Encouraged to Stop By</td>
</tr>
<tr>
<td>2:00pm - 6:00pm</td>
<td>Lawrence Berkeley National Laboratory Site Visit (with focus on Biological Nanostructures Facility, The Molecular Foundry)</td>
<td>Dr. Ronald Zuckermann - Sr. Scientist &amp; Facility Director, Biological Nanostructures Facility, The Molecular Foundry</td>
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<tr>
<td>All day</td>
<td>Facilitated and Informal Breakfast Meetings and Networking (some media, VC and other external guests are invited)</td>
<td>Informally + by OPA inspired ahead of time</td>
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<tr>
<td>6:00 - late</td>
<td>Informal Networking at the Sheraton and Informal Dinner in Palo Alto (recommended restaurants and times will be sent out)</td>
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### PRE-SUMMIT EVENTS (THURSDAY)

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:00 - 9:30</td>
<td>Facilitated and Informal Breakfast Meetings and Networking (some media, VC and other external guests are invited)</td>
<td>Informally + by OPA inspired ahead of time</td>
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<tr>
<td>9:30 - 10:30</td>
<td>Either Continued Facilitated and Informal Breakfast Meetings and Networking - OR - Mentoring Young Investigator Hackathon Teams</td>
<td>Informally + by OPA inspired ahead of time / Hackathon Faculty Assigned</td>
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10:30 - 10:45 Welcome and Kick-Off
Robin Farmanfarmaian, Summit Executive Director; Valentina Morigi; Dr. Alessandro Tocchio, Co-Founder and Dr. Sebastian Giwa, Co-Founder and CEO

10:45 - 11:10 While millions and millions of lives have been saved, organ transplantation still faces massive problems after 50 years; Organ Preservation is a Big Part of the Solution
Dr. Abbas Ardehali, UCLA School of Medicine, Chief Cardiac Surgery, Director Heart and Heart-Lung Transplant Program, Professor Cardiothoracic Surgery

11:10 - 12:30 Moderated Round-Table Discussions about the Transformational Potential for Organ Banking - Lunch will be Served
Dr. Sebastian Giwa and Robert Strong, World-Class facilitator and Award Winning Comedy Magician

12:35 Sharp Bus Leaves for Stanford Bio-X

Broader Audience Joins us for the Stanford Biomedical Engineering Society Hosted Events

1:05 - 1:10 Welcome to Stanford Bio-X and the Grand Challenges in Organ Banking Day
Shivani Baisiwala and Kay Hung, Co-Presidents of Stanford Biomedical Engineering Society and Dr. Utkan Demirci, Host Professor, Leading Cryobiologist and Director of Stanford’s Bio-Acoustic MEMS in Medicine Labs

1:15 - 1:45 From Lung Transplant To Lincoln Center: Impossible Possibilities
Charity Tillemann-Dick, Internationally acclaimed soprano, best selling Billboard classical recording artist and two time double lung transplant recipient
MAIN CONFERENCE: DAY 1 / THURSDAY (STANFORD BIO-X)

The Need and Value

1:50 - 2:10
Let’s Revolutionize Transplantation Medicine through Organ Banking: Why, What and How
Dr. Sebastian Giwa, President and CEO of the Organ Preservation Alliance

2:15 - 3:15
Talks and Panel on Grand Challenges, Breakthrough Technologies and the Future of Transplantation
Chair: Robin Farmanfarmaian, Summit Executive Director

Challenge of Organ Shortage is Enormous, but we’re Heading Towards a Future Where we Have Time and Ability to Improve and Augment Organs before More and Better Transplants
Dr. Abbas Ardehali, UCLA School of Medicine, Chief Cardiac Surgery, Director Heart and Heart-Lung Transplant Program, Professor Cardiothoracic Surgery

White House Office of Science and Technology Policy: Revolutionary Science and Technology is Needed and Possible
Dr. Robbie Barbero, Assistant Director for Biological Innovation, White House Office of Science and Technology Policy (OSTP)

The Promises of Tissue Engineering for Organ Building and Banking
Dr. Gabor Forgacs, Scientific Founder of Organovo, Authority in bio-mechanics, tissue engineering and pioneer in 3D bio-printing

Tolerance Induction - The Holy Grail of Transplantation, and How Organ Banking Could Increase its Power
Dr. John Scandling, Medical Director of Kidney and Pancreas Transplantation and Professor of Medicine, Stanford University
**MAIN CONFERENCE: DAY 1 / THURSDAY (STANFORD BIO-X)**

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<tr>
<td>2:15 -</td>
<td>A Vision of a Future Where Organ Banking Revolutionizes Transplant, Trauma and Regenerative Medicine</td>
<td>Lt Col. Luis Alvarez, PhD, Director of the DoD’s three new organ and tissue banking grant programs, former co-founding Deputy Director of the DoD’s Tissue Injury and Regenerative Medicine Program that also oversees the AFIRM. Currently the Director of the Center for Molecular Science and Academy Professor at the United States Military Academy</td>
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<tr>
<td>3:15</td>
<td>Networking Coffee Break and Poster Exhibition</td>
<td>All Panelists</td>
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<tr>
<td>3:45</td>
<td>Networking</td>
<td>All Panelists</td>
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**Networking**

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**Audacious Project, But the Problems are Solvable (Part 1)**

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<tr>
<td>3:45</td>
<td>Magic and Comedy</td>
<td>Robert Strong, World-Class facilitator and Award Winning Comedy Magician</td>
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<tr>
<td>3:50</td>
<td>A Powerful Solution, Market For the Birth of a New Industry</td>
<td>Dr. Sebastian Giwa, President and CEO and Alessandro Tocchio Co-Founder of the Organ Preservation Alliance</td>
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<td>3:55</td>
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<tr>
<td>4:00 -</td>
<td>Keynote 1: Lessons in Organ Preservation from NATURE</td>
<td>Dr Kenneth Storey, Canada Research Chair in Molecular Physiology</td>
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<td>4:20</td>
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<td>4:25 -</td>
<td>Plenary Cryo Talk 1: Cryobiology: Past, Present and Future</td>
<td>Dr Erik Woods, President of the International Society for Cryobiology, Senior Vice President and Lead Scientist, Cook Regentec</td>
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<td>4:40</td>
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<tr>
<td>4:45 -</td>
<td>Plenary Cryo Talk 2: The Grand Challenge of Organ Banking and the Current State of the Art</td>
<td>Dr Greg Fahy, Chief Science Officer at 21st Century Medicine</td>
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<td>5:05</td>
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MAIN CONFERENCE: DAY 1 / THURSDAY (STANFORD BIO-X)

Networking

5:05 - 5:30
Networking Coffee Break and Poster Exhibition

Audacious Project, But the Problems are Solvable (Part 2)

5:35 - 5:40
Magic and Comedy
Robert Strong, World-Class facilitator and Award Winning Comedy Magician

5:45 - 6:35
Powerful Approaches in Organ Banking
Chair: Dr. Utkan Demirci, Host Professor, Leading Cryobiologist and Director of Stanford’s Bio-Acoustic MEMS in Medicine Labs

- Microfluidics and high-throughput screening of cryoprotectants
  Dr. Utkan Demirci, Host Professor, Leading Cryobiologist and Director of Stanford’s Bio-Acoustic MEMS in Medicine Labs

- Nanowarming: A new concept in tissue and organ preservation
  Dr. John Bischof - Director of Bioheat and Mass Transfer Lab at the University of Minnesota

- Isochoric Pressure Based Cryopreservation and Natural Anti-Freeze Proteins
  Dr. Boris Rubinsky, Professor at UC Berkeley, Discoverer of fish antifreeze proteins for cryopreservation solutions and innovative isochoric cryopreservation approach

- Cryobiological Thermodynamics: How Math Can Save Lives
  Dr. Janet Elliott, Canada Research Chair in Thermodynamics and Professor at University of Alberta

- Modern Cryobiology – What Can Organic Synthesis Bring to the Table?
  Dr. Robert Ben, Canada Research Chair in Medicinal Chemistry, Professor Bioorganic Chemistry at the University of Ottawa

6:40 - 7:00
Keynote 2: The Extinction of Extinction for Generations to Come: Cryobanking of Species in the South Lunar Pole
Dr. Mehmet Toner, Professor at Harvard, Mass Gen Hospital and Co-founder of the Center for Engineering in Medicine
### MAIN CONFERENCE: DAY 1 / THURSDAY (STANFORD BIO-X)

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<tr>
<td>7:05 - 7:10</td>
<td>Closing Reflections</td>
<td>Dr. Alessandro Tocchio, Co-Founder of the Organ Preservation Alliance</td>
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<tr>
<td>7:15 - 7:20</td>
<td>Thanks and Closing</td>
<td>Shivani Baisiwala and Kay Hung, Co-Presidents of Stanford Biomedical Engineering Society</td>
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<td>7:25 - 7:40</td>
<td>Magic and Comedy</td>
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<tr>
<td>7:45 - 8:05</td>
<td>Networking Break</td>
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### Evening Program for Speakers and Participants at the Multi Day Organ Banking Summit

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>8:10</td>
<td>Bus back to Palo Alto for Speakers and Participants in the Multi Day Conference</td>
</tr>
<tr>
<td>8:30 - 10:00</td>
<td>Dinner</td>
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<tr>
<td>Late to Later</td>
<td>Informal Wine, Beer and Cocktails, Networking on Your Own at the Sheraton</td>
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</tbody>
</table>
**MAIN CONFERENCE: DAY 2 / FRIDAY (SHERATON)**

**Session**

8:30 - 10:45  **Remaining Obstacles That Need to Be Overcome**  
Charis: Dr. Jason Acker - President-Elect Society, Cryobiology and Professor at the University of Alberta and Dr. Sebastian Giwa - CEO, Organ Preservation Alliance

- Control ice formation  
  Dr. Ido Braslavsky - Director of the Food-Biophysics and Cryobiology Laboratory and Professor at The Hebrew University of Jerusalem

- Control cryoprotectant toxicity and chilling injury  
  Dr. Greg Fahy - Chief Science Officer at 21st Century Medicine

- Reducing thermo-mechanical stress and preserving structural integrity  
  Dr. Yoed Rabin – Director of the Biothermal Technology Laboratory and Professor at Carnegie Mellon University

- Avoid ischemic injury  
  Dr. Mike Taylor - Adjunct Professor at Carnegie Mellon and VP for R&D, T3 - Tissue Testing Technologies

- Augment revival and repair  
  Dr. Erik Woods, President of the International Society for Cryobiology and CEO of Cook General BioTechnology and Genesis Bank

- Comments on Integrated Challenge and How Sub-Problems Can Be Traded-off Against Each Other  
  Dr. Jason Acker - President-Elect of the Society for Cryobiology and Professor at the University of Alberta

**Panel Discussion and Participant Discussion**

**Networking**

10:45 - 11:15  **Networking Coffee Break**
### Session

**11:15 - 12:00**

**Controlling Ice Formation**

Chairs: Dr. Kelvin Brockbank - President and Chief Science Officer of T3 - Tissue Testing Technologies. Dr. Ido Braslavsky - Director of the Food-Biophysics and Cryobiology Laboratory and Professor at The Hebrew University of Jerusalem

- Avoiding the Problems of Ice on Tissues via Vitrification
  
  Dr. Mike Taylor - Adjunct Professor at Carnegie Mellon and VP for R&D, T3 - Tissue Testing Technologies

- Ice Propagation
  
  Dr. Jason Acker - President-Elect of the Society for Cryobiology and Professor at the University of Alberta

- Diffusion limited ice crystallization: The importance of non-equilibrium events during freezing + A comment on liquidus tracking
  
  Dr. John Morris - Founder and CEO of Asymptote

- Different Classes and Types of Ice Active Compounds
  
  Dr. Robert Ben - Canada Research Chair in Medicinal Chemistry, Professor Organic and Bioorganic Chemistry at the University of Ottawa

- Freezing under pressure
  
  Nickolas Greer - Chief Science Officer, Risssali - Technology and Devices for Freezing and Thawing Under Pressure

- The Power of Isochoric (Constant Volume) Preservation Part 2
  
  Dr. Boris Rubinsky, Professor at UC Berkeley, Discoverer of fish antifreeze proteins for cryopreservation solutions and innovative isochoric cryopreservation approach

### Networking

**12:10 - 1:15**

Lunch

### Session

**1:15 - 2:15**

**Controlling Ice Formation (continued)**

Chairs: Dr. Kelvin Brockbank - President and Chief Science Officer of T3 - Tissue Testing Technologies. Dr. Ido Braslavsky - Director of the Food-Biophysics and Cryobiology Laboratory and Professor at The Hebrew University of Jerusalem
# MAIN CONFERENCE: DAY 2 / FRIDAY (SHERATON)

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<tr>
<td>2:15 - 2:45</td>
<td>Networking Coffee Break</td>
<td>Dr. Janet Elliott - Canada Research Chair in Thermodynamics and Professor at University of Alberta</td>
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<tr>
<td>2:45 - 4:45</td>
<td>Limiting Cryoprotectant Toxicity and Chilling Injury</td>
<td>Chair: Dr. Greg Fahy - Chief Science Officer at 21st Century Medicine</td>
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<td>Deeper Dive on the Use of a Microfluidics Approach to High-throughput Screening of New Cryoprotectants</td>
<td>Dr. Utkan Demirci - Director of Bio-Acoustic MEMS in Medicine Labs at Stanford University</td>
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<td>Designing Next Generation Protectants</td>
<td>Dr. Gloria Elliott - Director of the Biostability Lab and Professor at University of North Carolina – Charlotte</td>
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<td>An Engineering Perspective on Toxicity</td>
<td>Dr. Brian Wowk - Cryobiologist and Senior Physicist at 21st Century Medicine</td>
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<tr>
<td></td>
<td>Designing Innovative Procedures for Avoiding Cryoprotectant Toxicity in Whole Organs</td>
<td>Dr. Adam Higgins - Director of the Bio-transport and Biomedical Process Engineering Lab and Professor at Oregon State University</td>
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</table>

## Panel Discussion and Participant Discussion

**Networking**

- **2:15 - 2:45** Networking Coffee Break
- **2:45 - 4:45** Limiting Cryoprotectant Toxicity and Chilling Injury

**Thermodynamics in Cryopreservation: Understanding Ice Formation**

Dr. Janet Elliott - Canada Research Chair in Thermodynamics and Professor at University of Alberta

**Antifreeze Proteins and Visualizing Ice Observations** (video of ice inhibitors in action)

Dr. Ido Braslavsky - Director of the Food-Biophysics and Cryobiology Laboratory and Professor at The Hebrew University of Jerusalem

**Roles of Ice-Active Agents in Organ Cryopreservation**

Dr. Brian Wowk - Cryobiologist and Senior Physicist at 21st Century Medicine

**Comments by Discussant**

Dr. Kelvin Brockbank - President and Chief Science Officer of T3 - Tissue Testing Technologies

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**Panel Discussion and Participant Discussion**
MAIN CONFERENCE: DAY 2 / FRIDAY (SHERATON)

2:45 - 4:45
Membrane models of chilling and cold shock  
Dr. John Morris - Founder and CEO of Asymptote

Protecting Cells and Proteins in Multiple Organ Systems  
Dr. Kenneth Storey - Canada Research Chair in Molecular Physiology and Professor in Biochemistry at Carleton University

Cryoprotectant toxicity: biochemical mechanisms and functional genomics  
Dr. Joao Pedro Magalhaes - Leader of the Integrative Genomics of Aging Group at the Institute of Integrative Biology, University of Liverpool, UK

Eliminating Toxicity during Long-Term Cryogenic Storage of Human Organs  
Dr. Tom Johnson - Professor at the Institute for Behavioral Genetics, University of Colorado; Professor of Integrative Physiology and Fellow of Biofrontiers Program

Comments by Discussant  
Dr. Greg Fahy - Chief Science Officer at 21st Century Medicine

Panel Discussion and Participant Discussion

Networking
4:45 - 5:15 Break

Session
5:15 - 7:00
Thermo-Mechanical Stress and Structural Integrity in Cryopreservation  
Chair: Dr. Yoed Rabin – Director of the Biothermal Technology Laboratory and Professor at Carnegie Mellon University

Mechanical Behavior of Cryopreserved Materials  
Dr. Yoed Rabin – Director of the Biothermal Technology Laboratory and Professor at Carnegie Mellon University

Computer Tomography for avoiding fractures, controlling ice and monitoring cryoprotectant in organ cryopreservation  
Dr. Ramon Risco - Professor of Engineering, University of Seville, CEO of SafePreservation, Senior Physicist at National Accelerator Centre (Spain)

Protocols that Avoid Fracturing in Whole Organs and Solutions  
Dr. Brian Wowk - Cryobiologist and Senior Physicist at 21st Century Medicine
<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>5:15 - 7:00</td>
<td>Neutron Scattering – A Technique to Interrogate Molecular Changes Coming out of the Vitreous State&lt;br&gt;Challenges in Thermo-Mechanical Stress Modeling&lt;br&gt;Cell-based Modeling of Mechanical and Chemical Stress in Tissues During Cryoprotocols&lt;br&gt;Comments by Discussant&lt;br&gt;<strong>Panel Discussion and Discussion with Rest of Participants</strong>&lt;br&gt; Networking&lt;br&gt; 7:00 - 7:15</td>
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Main Conference: Day 3 / Saturday (Sheraton)

Session
8:45 - 9:30
Optimal Rewarming Modalities
Chair: Dr John Bischof - Director of Bioheat and Mass Transfer Lab at the University of Minnesota
Electromagnetic Warming: Basics and Strategies
Dr. Dayong Gao - Director of the Center for Cryo-Biomedical Engineering and Artificial Organs and Professor at the University of Washington
Considerations for Electromagnetic Warming of Vitrified Biomaterials
Dr. Brian Wowk - Cryobiologist and Senior Physicist at 21st Century Medicine
Radiofrequency heating of magnetic nanoparticle solutions
Dr John Bischof - Director of Bioheat and Mass Transfer Lab at the University of Minnesota

Panel Discussion and Discussion with Rest of Participants

Hackathon Finals
9:30 - 10:00
Finalist Hackathon Presentations
Two Finalist Teams Present

Networking
10:00 - 10:30
Break

Session
10:30 - 12:30
Enhance Cellular and Tissue Repair and Avoid I/R Injury
Chair: Dr. Erik Woods, President of the International Society for Cryobiology, Senior Vice President and Lead Scientist, Cook Regentec
Biochemical Defense Pathways in Animals
Dr. Robert Shmookler-Reis - Professor of geriatric medicine, molecular biology, and pharmacology at the University of Arkansas
Self-Resuscitation of Frozen Animals - how can things start functioning again and repair
Dr. Kenneth Storey - Canada Research Chair in Molecular Physiology and Professor in Biochemistry at Carleton University
### MAIN CONFERENCE: DAY 3 / SATURDAY (SHERATON)

<table>
<thead>
<tr>
<th>Time</th>
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<td>10:30 - 12:30</td>
<td>How to Block Injury after it Has Occurred: Example of Blocking Apoptosis</td>
<td>Dr. John Baust, Sr - UNESCO Professor, Chief Scientific Adviser at CPSI Biotech, Director of the Institute of Biomedical Technology at the State University of New York, Binghamton</td>
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<td>Cytoprotection Strategies - I/R Injury and Opportunities for Organ Repair</td>
<td>Dr. Barry Fuller - Lead Global Professor at the UNESCO Chair in Cryobiology and Professor at UCL Medical School / Royal Free Hospital</td>
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<td>Effect of natural cocktail of trophic factors on ischemic injury of isolated rat liver under hypothermic storage and reperfusion</td>
<td>Dr. Alexander Petrenko - Head of the Biochemistry Department and Professor at the Institute for Problems of Cryobiology and Cryomedicine ff Ukraine (IPC&amp;C) and Kharkov University</td>
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<td>Ex vivo Lung Perfusion. Initial Steps Toward Organ Repair</td>
<td>Dr. Pablo Sanchez, Lead Scientist for XVI-VO Perfusion, Inc and Assistant Professor of Surgery, University of Maryland</td>
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<td>Persufflation in organ preservation and conditioning prior to cryopreservation and during rewarming</td>
<td>Dr. Klearchos Papas, Scientific Director of the Institute of Cellular Transplantation and Professor of Surgery, University of Arizona</td>
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<td>Pre-conditioning, Epigenetics and Other Strategies</td>
<td>Dr. Erik Woods, President of the International Society for Cryobiology, Senior Vice President and Lead Scientist, Cook Regentec</td>
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MAIN CONFERENCE: DAY 3 / SATURDAY (SHERATON)

Networking

12:30 - 1:30

Roundtable and Lunch

Other Areas of Science That we Should Bring in to Help Crack Organ Banking? Top 5 per Table and then Collect/Discuss

Tools we’d Like to See Applied? Top 5 per Table and then Collect/Discuss

Other Key Ideas on How to Overcome the Remaining Challenges

1:45 - 2:00

Awards, Closing Words and Final Thoughts

Award for the Winning Hackathon Team - Sponsored By New Organ

Dr. Alessandro Tocchio, Co-Founder and Boris Schmalz, Jedd Lewis of the Organ Preservation Alliance

Short Synthesis of Some of the Super Exciting Things we Covered in this first Summit

Dr. Sebastian Giwa - CEO and President of the Organ Preservation Alliance

Post-Summit Events (Saturday/Sunday)

Sat Afternoon

Informal Networking at the Sheraton, Informal Dinner in Palo Alto or San Francisco

Sunday

Potential Wine Tour to Napa or Other Area for Those Interested. Please let Valentina know if you are interested in joining - please contact: valentina@organpreservationalliance.
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The Organizing Team

Sebastian Giwa
Alessandro Tocchio
Valentina Morigi
Robin Farmanfarmaian
Jesse Horwitz
Boris Schmalz
Zak Allal
Martin Kawalski
Aduke Thelwell
Jedd Lewis
Eli Mohamad
Kevin Caldwell
Owen Britton Jennings
Shahan Lilja
Andrew Bishara

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