The **Center for Engineering in Medicine** is headquartered at Massachusetts General Hospital and affiliated with Harvard and MIT.

Learn more at massgeneral.org/CEM

The **American Society of Mechanical Engineers** represents an engineering community of more than 140,000 members worldwide.

Learn more at asme.org

**Charlotte Banks** is a research initiative at the University of North Carolina Charlotte that aims to cryopreserve whole organs and large tissues.

Learn more at charlottebanks.org

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**Partners**

- The **American Society of Mechanical Engineers** represents an engineering community of more than 140,000 members worldwide.
- **Charlotte Banks** is a research initiative at the University of North Carolina Charlotte that aims to cryopreserve whole organs and large tissues.
- **Commission for Engineering in Medicine (CEM)** is headquartered at Massachusetts General Hospital and affiliated with Harvard and MIT.
- **American Society of Mechanical Engineers (ASME)** represents an engineering community of more than 140,000 members worldwide.
- **Charlotte Banks** is a research initiative at the University of North Carolina Charlotte that aims to cryopreserve whole organs and large tissues.
- **Society for Cryobiology** is a professional organization for researchers in the field of cryobiology.
- **Ossium Health** is a company that develops and commercializes innovative technologies for tissue and organ preservation.
- **Association of Organ Procurement Organizations (AOPA)** is a membership organization that represents organ procurement organizations across the United States.
- **International Institute for the Advancement of Medicine (IIAM)** is an organization dedicated to advancing medical technology and education.
- **X-therma, Inc.** is a company that develops and supplies innovative technologies for tissue and organ preservation.
- **LifeNet Health** is a non-profit organization that facilitates the distribution of donated organs and tissues.
- **Binghamton University** is a public research university located in Binghamton, New York.

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**Supporters**

- **LifeGift** is a non-profit organization that coordinates the donation of organs and tissues.
- **Terumo BCT** is a company that develops and supplies medical devices and systems for the storage and transport of organs.
- **Terumo BCT** is a company that develops and supplies medical devices and systems for the storage and transport of organs.
- **Binghamton University** is a public research university located in Binghamton, New York.
Human Ingenuity + Human Tissue = Successful Research

IIAM provides non-transplantable, normal and diseased human organs and tissues authorized for purposes of medical research, education, and development. Human tissues in research enable the faster development of more efficacious drugs with improved safety profiles and enhanced understanding of basic disease processes that directly affect humans.

Talk to us about your research needs by contacting Dolores Baldasare at dolores_baldasare@iiam.org or 845-694-8440

800-486-IIAM (4426)
www.iiam.org

IIAM is a Non-Profit Organization
Background on the Summit: Meeting a Grand Challenge

The Summit on Organ Banking through Converging Technologies brings together scientists, engineers, key stakeholders from government and industry, and leaders from non-profits focused on human health, with the aim of addressing the challenge of banking organs and large tissue systems for transplantation, research, regenerative medicine, and other applications.

Together we will outline new and emerging research strategies that can overcome the remaining scientific sub-challenges in organ banking, with the hope of benefiting millions of patients each year worldwide.

"Millions of people each year worldwide could benefit from organ replacement. The public health implications of these technologies are nothing short of staggering."

- Dr. George Church
Professor of Genetics, Harvard Medical School

See organpreservationalliance.org/media for more background information, e.g. in:

- SCIENTIFIC AMERICAN™
  U.S. Funds Efforts to Freeze Human Organs for Long-Term Storage

- BBC
  Science Translational Medicine
  Wait not in vain
  After decades of piecemeal progress, the science of cryogenically storing human organs is warming up
  Feb 6th 2016 | From the print edition

- Wired
  Organ preservation
  "Organs being kept alive could be the most important breakthrough in transplantation in the last 50 years."

- Dr. David Nelson
  Chief of Heart Transplantation, Baptist Integris Medical Center
  Former board member, United Network of Organ Sharing, American Society of Transplantation
**AUGUST 3**
Hyatt Regency Boston, 3rd floor
Martha’s Vineyard

**AUGUST 4**
Joseph B. Martin Conference Center, main auditorium
Shuttles available: Hyatt front lobby, starting at 8:00 a.m.

**AUGUST 5**
Hyatt Regency Boston, 4th floor ballroom terrace

**AUGUST 6**
Hyatt Regency Boston, 4th floor ballroom terrace
Program Agenda
and Description
The grand challenge of organ banking
Outlining unmet needs and setting goals for organ banking research

Organ and tissue preservation presents a cross-cutting unmet need in biology and medicine. Diverse areas of public health would be transformed by advances in this field, spanning transplantation, tissue engineering and regenerative medicine, trauma care and emergency preparedness, cancer care, drug discovery, and basic biomedical research.

While the benefits of preservation advances vary across these areas, their needs can be met by a common set of technologies and research challenges. Just as agriculture, fertility, molecular biology, and other areas were revolutionized by the ability to cryopreserve and bank cells, much of biomedicine could be revolutionized by the ability to scale cryobanking to larger tissue systems and whole organs.

As one example, over 80% of the U.S. National Institutes of Health budget goes to institutes and centers whose missions are directly impacted by the “organ banking” research effort. This effort aims to make fundamental advances to extend preservation times across a variety of organ and tissue systems, combining advances in cryopreservation, hypometabolism, ex vivo perfusion, and related areas.

During the Aug. 4 sessions, speakers from many of fields of biomedicine affected will discuss ways that this research effort can advance their respective areas. Special focus will be given to organ transplantation, which has already saved hundreds of thousands of patients through the heroic efforts of organ procurement organizations, the United Network of Organ Sharing, transplant centers, and others – even while facing severe logistical constraints imposed by organ preservation times that are measured in hours. Leaders across many aspects organ transplantation will discuss what organ banking could mean for the ability of this field to reach its lifesaving potential.

These speakers will be joined by experts in cryopreservation, ex vivo perfusion and other fields. Together they will outline needs and goals for organ banking research, setting the stage for a cohesive organ banking “Apollo Program” distributed across research labs and clinics worldwide.
## Session 1: The grand challenge of organ banking

### SESSION CHAIR AND MODERATOR:
Dr. Andrew Marshall  
Chief Editor, *Nature Biotechnology*

### LOCATION:
Joseph B. Martin Conference Center  
Ampitheater

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speaker(s)</th>
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</table>
| 9:00  | Introduction: the promise of organ and tissue preservation to transform medicine | Jedediah Lewis  
President and Chief Executive Officer,  
*Organ Preservation Alliance* |
| 9:15  | Organ banking 101  
*Crash course talk*                  | Dr. Erik Woods  
Past President,  
*Society for Cryobiology*  
Chief Science Officer and Co-founder,  
*Ossium Health* |
| 9:35  | Is organ banking within reach?     | Dr. Sebastian Giwa  
Chairman and Co-founder,  
*Organ Preservation Alliance,  
Sylvatica Biotech,  
Ossium Health* |
| 9:55  | Achieving organ banking: proofs of principle and paths forward  
*Lightning talks and panel discussion* | Dr. Korkut Uygun  
Assistant Professor,  
*Harvard Medical School*  
Deputy Director of Research,  
*Shriners Hospitals for Children*  
Dr. Greg Fahy  
Chief Science Officer,  
*21st Century Medicine* |
|       |                                   | Dr. Nir Shani  
Director,  
*Microsurgery and Plastic Surgery Lab,  
Tel Aviv Sourasky Medical Center* |
|       |                                   | Dr. Shaf Keshavjee  
Professor,  
*University of Toronto*  
Chief Medical Officer,  
*Perfusix* |
|       |                                   | Dr. Kenneth Storey  
Professor,  
*Carleton University*  
Canada Research Chair in Molecular Physiology |
|       |                                   | Dr. John Bischof  
Professor,  
*University of Minnesota* |
# Session 2: Steps toward realizing organ transplantation’s full potential

**SESSION CHAIR AND MODERATOR:**
Dr. Joren Madsen  
Director, Transplant Center, Massachusetts General Hospital  
Past President, American Society of Transplantation  
Associate Editor, American Journal of Transplantation

**LOCATION:**  
Joseph B. Martin Conference Center Ampitheater

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Institution/Title</th>
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| 10:40 | Enabling organ banking by combining the best of academia and the best of industry | Dr. Mehmet Toner  
Professor,  
Harvard Medical School |  

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<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Institution/Title</th>
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</table>
| 10:55 | Networking Break  
*Snacks and Beverages* |                                                                      |                                                                                |

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Institution/Title</th>
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</table>
| 11:25 | Fireside chat with Charity Sunshine Tillemann-Dick  
*Charity Sunshine Tillemann-Dick*  
Professional opera singer  
Two-time double lung transplant recipient | Dr. Sebastian Giwa  
Chairman and Co-founder,  
Organ Preservation Alliance,  
Sylvatica Biotech,  
Ossium Health |  

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Institution/Title</th>
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| 11:50 | Transforming transplantation through *ex vivo* preservation and organ banking | Dr. James Markmann  
(recorded remarks)  
Chief, Division of Transplantation,  
Massachusetts General Hospital |  

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Institution/Title</th>
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</table>
| 12:00 | Bringing transplantation to new frontiers  
*Crash course talk* | Dr. Gerald Brandacher  
Scientific Director,  
Johns Hopkins Reconstructive Transplantation Program |  

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Institution/Title</th>
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</table>
| 12:10 | Logistical needs in organ recovery and transplantation  
*Crash course talk* | Elling Eidbo  
Chief Executive Officer,  
Association of Organ Procurement Organizations |  

12:25
Taking advantage of increased organ preservation time: OPTN/UNOS perspectives
Dr. David Klassen
Chief Medical Officer, United Network of Organ Sharing

12:40
Envisioning a new logistical framework for organ recovery and transplantation
Dr. Shaf Keshavjee
Professor, University of Toronto
Chief Medical Officer, Perfusix

12:55
The impact of organ banking on transplantation
Panel discussion
MODERATOR:
Dr. Joren Madsen
Director, Transplant Center, Massachusetts General Hospital
Past President, American Society of Transplantation
Associate Editor, American Journal of Transplantation

PANELISTS:
David Hartell
Executive Director, Canadian National Transplant Research Program
Dr. David Klassen
Chief Medical Officer, United Network of Organ Sharing
Dr. Shaf Keshavjee
Professor, University of Toronto
Chief Medical Officer, Perfusix
Elling Eidbo
Chief Executive Officer, Association of Organ Procurement Organizations
Dr. Gerald Brandacher
Associate Professor of Plastic and Reconstructive Surgery, Johns Hopkins School of Medicine
Dr. David Nelson
Chief of Heart Transplantation, Baptist Integris Medical Center

1:25
Lunch
Main Lobby
### Session 3: Enabling diverse new technologies through organ banking

**SESSION CHAIR AND MODERATOR:**
Dr. Orla Smith  
Editor, *Science Translational Medicine*

<table>
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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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</thead>
</table>
| 2:20  | Off-the-shelf xenotransplantation: making “organs on demand” a reality | Dr. George Church  
Professor,  
*Harvard Medical School* |
| 2:40  | Immune tolerance induction through organ banking: moving transplantation from a treatment to a cure | Dr. David Sachs  
(recorded remarks)  
Professor,  
*Columbia University School of Medicine*  
Professor Emeritus,  
*Harvard Medical School* |
| 2:55  | Envisioning new possibilities for regenerative medicine and research  | **PANELISTS:**  
Rony Thomas  
Chief Executive Officer,  
*LifeNet Health*  
Dr. Wendy Dean  
Medical Officer, Tissue Injury and Regenerative Medicine Program,  
*U.S. Department of Defense*  
Gina Dunne Smith  
Executive Director,  
*International Institute for the Advancement of Medicine*  
Dr. Anthony Letai  
Associate Professor,  
*Harvard Medical School*  
Dr. Claudia Zylberberg  
Chief Executive Officer,  
*Carleton University Akron Biotech* |
| 3:20  | Department of Defense interest in tissue preservation and biomanufacturing | Dr. Wendy Dean  
Medical Officer, Tissue Injury and Regenerative Medicine Program,  
*U.S. Department of Defense* |
Session 4: Meeting a grand challenge

SESSON CHAIR AND MODERATOR:
Dr. Robert Kruger
Editor, Cell

LOCATION:
Joseph B. Martin
Conference Center
Ampitheater

4:35
Fireside chat: How to think about large-scale challenges in biomedicine
Dr. Ed Boyden
Assistant Professor,
Massachusetts Institute of Technology
2016 Breakthrough Prize recipient

5:05
Charlotte Banks: first steps toward building a convergence-based research program
Dr. Gloria Elliott
Professor,
University of North Carolina Charlotte
Director,
Charlotte Banks Research Initiative

5:15
Launching an organ banking Apollo Program
Jedediah Lewis
President and Chief Executive Officer,
Organ Preservation Alliance

5:30
Poster session, Networking and cocktails
Main Lobby
New Research Building, Harvard Medical School

3:35
Increasing the quality and shelf-life of pancreatic islets: What we learned from encapsulation studies
Dr. Clark Colton
Professor,
Massachusetts Institute of Technology

3:50
Perspectives on ovarian and testicular tissue cryopreservation
Dr. Helen Picton
Professor,
Leeds University School of Medicine

4:05
Networking Break
Snacks and Beverages
These “deep dive” sessions have two objectives:

1. **To allow those outside the field to become familiar with the remaining scientific and engineering challenges of organ banking.** For instance, new researchers will gain knowledge they need to launch projects in the organ banking space, while potential funders, investors, and other supporters will gain an understanding of the kinds of projects they can help accelerate.

2. **To allow researchers from diverse backgrounds to gain insight into each other’s approaches and identify opportunities for collaboration.** Speakers from within the fields of cryopreservation and organ preservation will give talks along with many researchers completely new to this challenge, integrating knowledge from many domains (engineering, physics, chemistry, cell and molecular biology, computational biology, pathology, etc.).

Talks are intended to be short, jargon-free, and kept at the level of an overview. The aim is to focus on articulating the overall approach, proofs of principle, and reasons for optimism that the approach could yield progress. At the end of every session, an interactive panel Q&A will allow for collaborative brainstorming among session speakers and audience members, with the main goal of (together) answering the question:

“How could these approaches and technologies be leveraged to create organ banking breakthroughs?”
### Session 5: Limiting cryoprotectant and osmotic toxicity

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
<th>Organization/Institution</th>
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</thead>
<tbody>
<tr>
<td>8:00</td>
<td>Welcome, agenda, session format</td>
<td>Jedediah Lewis</td>
<td>President and Chief Executive Officer, Organ Preservation Alliance</td>
</tr>
<tr>
<td>8:10</td>
<td>Ice formation and cryoprotectant toxicity in tissue cryopreservation</td>
<td>Dr. Janet Elliott</td>
<td>Professor, University of Alberta</td>
</tr>
<tr>
<td></td>
<td>Crash course talk</td>
<td></td>
<td>Canada Research Chair in Thermodynamics</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Associate Editor, Cryobiology</td>
</tr>
<tr>
<td>8:30</td>
<td>Cooling injury in rabbit kidneys below -22°C</td>
<td>Dr. Greg Fahy</td>
<td>Chief Science Officer, 21st Century Medicine</td>
</tr>
<tr>
<td>8:40</td>
<td>Mechanisms of intracellular ice formation in tissues</td>
<td>Dr. Jens Karlsson</td>
<td>Professor, University of Villanova</td>
</tr>
<tr>
<td>8:50</td>
<td>Designing the next generation of cryoprotectants to meet the needs for emerging cellular therapies and tissue engineering</td>
<td>Dr. Robert Ben</td>
<td>Professor, University of Ottawa</td>
</tr>
<tr>
<td>9:00</td>
<td>Ice-binding-proteins and their interaction with ice crystals</td>
<td>Dr. Ido Braslavsky</td>
<td>Professor, Hebrew University of Jerusalem</td>
</tr>
<tr>
<td>9:10</td>
<td>Development of organ perfusion strategies to reduce CPA toxicity</td>
<td>Dr. Adam Higgins</td>
<td>Associate Professor, Oregon State University</td>
</tr>
</tbody>
</table>
## Session 6: Strategies for controlling physical effects during organ cryobanking

**SESSION CHAIR:**
Dr. Yoed Rabin  
Professor, Carnegie Mellon University

**LOCATION:**
Hyatt Regency Boston  
4th floor grand ballroom

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter &amp; Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:15</td>
<td>Physical effects in cryopreservation: an engineering approach</td>
<td>Dr. Yoed Rabin, Professor, Carnegie Mellon University</td>
</tr>
</tbody>
</table>
| 10:35  | Nanoparticle heating for improved cell and tissue preservation                 | Dr. John Bischof, Professor and Department Chair, University of Minnesota  
Associate Director, Institute for Engineering in Medicine                            |
| 10:45  | Ice-free vitrification of complex large tissues                               | Dr. Kelvin Brockbank, Chief Executive Officer, Tissue Testing Technologies              |
| 10:55  | Thawing for cryopreserved tissues                                              | Dr. Girish Srinivas, Partner and Director of Technology, TDA Research                   |
| 11:05  | Factors affecting the success of organ cryobanking                            | Dr. Nir Shani, Director, Microsurgery and Plastic Surgery Lab, Tel Aviv Sourasky Medical Center |
### Session 7: Nature-inspired induction of hypometabolism

**Session Chair:**
Dr. Kenneth Storey  
Professor, Carleton University  
*Canada Research Chair in Molecular Physiology*

**Location:**  
Hyatt Regency Boston  
4th floor grand ballroom

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>11:15</td>
<td>Interactive panel discussion and Q&amp;A</td>
<td>Dr. Yoed Rabin, Dr. John Bischof, Dr. Kelvin Brockbank, Dr. Girish Srinivas and Dr. Nir Shani</td>
</tr>
<tr>
<td>11:35</td>
<td>Banquet Lunch</td>
<td></td>
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</tbody>
</table>
| 11:15 | **Turning the switch to OFF:** hypometabolism of organs at any temperature | Dr. Kenneth Storey  
*Professor, Carleton University  
Canada Research Chair in Molecular Physiology* |
| 12:35 | Crash course talk                                                   |                                                                                          |
| 12:55 | **Hacking temperature to extend and enhance preservation**          | Dr. Korkut Uygun  
*Assistant Professor, Harvard Medical School  
Deputy Director of Research, Shriners Hospitals for Children* |
| 1:05  | **Partial freezing: a nature-inspired strategy for organ banking**  | Dr. Shannon Tessier  
*Research fellow, Mehmet Toner Lab, Massachusetts General Hospital* |
| 1:15  | **Identification of non-coding RNAs modulated at low temperatures in animal models of cold adaptation** | Dr. Pier Jr. Morin  
*Associate Professor, Université de Moncton* |
| 1:25  | **Preserving vascular function during organ procurement and storage guided by physiological systems** | Dr. Guillermo García-Cardeña  
*Associate Professor, Harvard Medical School* |
**Session 8: Protecting key biological systems during organ banking**

**SESSION CO-CHAIRS:**
- Dr. Janet Elliott  
  Professor, University of Alberta  
  Canada Research Chair in Thermodynamics  
  Associate Editor, Cryobiology
- Dr. Julie Stacey  
  Editor-in-Chief, EBioMedicine

**LOCATION:**
Hyatt Regency Boston  
4th floor grand ballroom

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 1:35  | Interactive panel discussion and Q&A  
  Dr. Kenneth Storey, Dr. Korkut Uygun, Dr. Shannon Tessier, Dr. Pier Jr. Morin and Dr. Guillermo García-Cardeña |
| 1:55  | Break                                                                                           |

### Cryopreservation of endothelial cells
- Dr. Janet Elliott  
  Professor, University of Alberta  
  Canada Research Chair in Thermodynamics  
  Associate Editor, Cryobiology

### Copolymer surfactant catalyzed membrane sealing linked to reduction in interfacial tension
- Dr. Raphael Lee  
  Professor, University of Chicago

### Cell adhesion and the cytoskeleton
- Dr. David Calderwood  
  Associate Professor, Yale School of Medicine

### Interactive panel discussion and Q&A
- Dr. Janet Elliott, Dr. Raphael Lee and Dr. David Calderwood

**MODERATOR:**
- Dr. Julie Stacey  
  Editor-in-Chief, EBioMedicine

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<tr>
<th>Time</th>
<th>Break</th>
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<tr>
<td>2:20</td>
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<td>2:45</td>
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**Session 9: Enhancing stress tolerance and aiding tissue recovery**

**SESSION CHAIR:**
Dr. John G. Baust  
Professor,  
*Binghamton University, State University of New York*

**LOCATION:**
Hyatt Regency Boston  
4th floor grand ballroom

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker Information</th>
</tr>
</thead>
</table>
| 3:15  | Understanding cryoinjury and cell stress pathways  
*Crash course talk* | Dr. John G. Baust  
Professor,  
*Binghamton University, State University of New York*                              |
| 3:35  | Enhancing stress tolerance and aiding recovery                        | Dr. John M. Baust  
Chief Executive Officer,  
*CPSI Biotech*                                                                        |
| 3:45  | Utilizing the amino acid response to induce organ cytoprotection      | Dr. Malcolm Whitman  
Professor,  
*Harvard Medical School*                                                               |
| 3:55  | Prophylactic treatment of ischaemically stored organs with novel organic carbon monoxide donor molecules | Dr. Ivan Sammut  
Associate Professor,  
*University of Otago*                                                                  |
| 4:05  | Nanomedicine for improving cell and tissue preservation               | Dr. Thomas Webster  
Professor and Department Chair,  
*Northwestern University*                                                               |
| 4:15  | Induction of synthetic lethality in glioblastoma                      | Dr. Markus Siegelin  
Assistant Professor,  
*Columbia University Medical Center*                                                    |
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<tr>
<th>Time</th>
<th>Event</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>4:25</td>
<td>Interactive panel discussion and Q&amp;A</td>
<td>Dr. John G. Baust, Dr. John M. Baust, Dr. Malcolm Whitman, Dr. Ivan Sammut, Dr. Thomas Webster and Dr. Markus Siegelin</td>
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<tr>
<td>4:50</td>
<td>Break</td>
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<tr>
<td>4:55</td>
<td>Breakthrough Ideas in Organ Banking Hackathon: Finalist Presentations</td>
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<tr>
<td>5:40</td>
<td>Break</td>
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<tr>
<td>7:30</td>
<td>Cocktail reception</td>
<td>4th floor foyer</td>
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</tbody>
</table>
# Session 10: Unlocking a new world of transplant capabilities through organ perfusion platforms

**SESSION CHAIR:**
Dr. Barry Fuller  
*President and Chief Executive Officer, Organ Preservation Alliance*

**LOCATION:**  
Hyatt Regency Boston  
4th floor grand ballroom

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
<th>Affiliation</th>
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</thead>
<tbody>
<tr>
<td>8:00</td>
<td>Morning announcements</td>
<td>Jedediah Lewis</td>
<td>President and Chief Executive Officer, Organ Preservation Alliance</td>
</tr>
<tr>
<td>8:05</td>
<td>Organ perfusion technologies</td>
<td>Dr. Barry Fuller</td>
<td>Professor, University College London Medical School</td>
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<td>- improving the physiology of transplant</td>
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<td>preservation and creating opportunities</td>
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<td>for organ cryopreservation?</td>
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<td></td>
<td><em>Crash course talk</em></td>
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<tr>
<td>8:25</td>
<td>How to create and measure normal physiology</td>
<td>Dr. Jayan Nagendran</td>
<td>Assistant Professor and Director of Research, Division of Cardiac Surgery, University of Alberta</td>
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<tr>
<td>8:35</td>
<td>Ovine model of prolonged normothermic ex</td>
<td>Dr. Álvaro Rojas-Peña</td>
<td>Assistant Research Scientist and Extracorporeal Life Support Laboratory Manager, University of Michigan</td>
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<td>situ heart perfusion and support for</td>
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<td>72 hours</td>
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<tr>
<td>8:45</td>
<td>Novel, non-obvious applications of perfusion</td>
<td>Dr. Michael Taylor</td>
<td>Chief Science Officer, Sylvatica Biotech</td>
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<td>technology</td>
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<tr>
<td>8:55</td>
<td>Gaseous oxygen perfusion as an organ</td>
<td>Dr. Klearchos Papas</td>
<td>Professor, University of Arizona College of Medicine</td>
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<td></td>
<td>preservation method</td>
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## Session 11: Assessing preservation needs and outcomes

<table>
<thead>
<tr>
<th>AUGUST 4</th>
<th>AUGUST 5</th>
<th>AUGUST 6</th>
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<tbody>
<tr>
<td>9:05</td>
<td>Interactive panel discussion and Q&amp;A</td>
<td>Dr. Barry Fuller, Dr. Jayan Nagendran, Dr. Álvaro Rojas-Peña, Dr. Michael Taylor and Dr. Klearchos Papas</td>
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<tr>
<td>9:25</td>
<td>Networking Break</td>
<td>Snacks and Beverages</td>
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### Session 11: Assessing preservation needs and outcomes

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<tr>
<th>LOCATION:</th>
<th>Hyatt Regency Boston 4th floor grand ballroom</th>
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| SESSION CHAIR: | Dr. Jason Acker  
President, **Society for Cryobiology**  
Professor, **University of Alberta** |

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<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
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| 9:55   | 3D imaging of whole organs at single-cell resolution                 | Todd Huffman  
Chief Executive Officer, **3Scan** |
| 10:05  | Measuring viability and functional status of tissues for transplantation | Dr. Clark Colton  
Professor, **Massachusetts Institute of Technology** |
| 10:15  | Should consideration be given to the role that donor factors may play in the cryobiological response of cells, tissues and organs? | Dr. Jason Acker  
President, **Society for Cryobiology**  
Professor, **University of Alberta** |
| 10:25  | Molecular mapping of tissue histological features by imaging mass spectrometry as a tool for tissue and organ transplant studies | Dr. Peggi Angel  
Assistant Professor, **Medical University of South Carolina** |
| 10:35  | Interactive panel discussion and Q&A                                | Todd Huffman, Dr. Clark Colton, Dr. Peggi Angel and Dr. Jason Acker |
| 10:55  | Break                                                              |           |
### Session 12: New tools for organ cryopreservation

**SESSION CHAIR:**
Dr. Ramón Risco Delgado  
Professor, *Universidad de Sevilla*  
Research Director and Founder, *Safe Preservation*

**LOCATION:**  
Hyatt Regency Boston  
4th floor grand ballroom

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<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter(s)</th>
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| 11:00 | Pressure-aided preservation: adding thermodynamic degrees of freedom          | Dr. Brad Weegman  
Lab Director, *Sylvatica Biotech*                                              |
| 11:10 | XT-ViVo™-next generation nature-inspired ice prevention for better biobanking  | Dr. Xiaoxi Wei  
Chief Executive Officer, *X-Therma*                                           |
| 11:20 | Avoiding recrystallization in organs by selective targeting of ice through magnetic ice-binding proteins | Dr. Ramón Risco Delgado  
Professor, *Universidad de Sevilla*  
Research Director and Founder, *Safe Preservation* |
| 11:30 | Non-newtonian, shear-thickening behaviour with cryoprotectant solutions        | Dr. Peter Kilbride  
Senior Research Scientist, *Asymptote Ltd.*                                    |
| 11:40 | Interactive panel discussion and Q&A                                            | Dr. Brad Weegman, Dr. Xiaoxi Wei, Dr. Ramón Risco Delgado and Dr. Peter Kilbride |
| 12:00 | Closing, Hackathon winners announced                                           |                                                                              |
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