

# ORGANS ON-DEMAND

## Vision-Setting Workshop on an Organ Banking 'Apollo Program'



... to Revolutionize Trauma, Transplant and Regenerative Medicine

Early Evening Wednesday August 5<sup>th</sup>  
to Thursday August 6<sup>th</sup>, 2015

United States Military Academy,  
West Point, NY

## LEADERS FROM DARPA AND BTO, INCLUDING:



**COL. GEOFFREY LING, M.D., PH.D., FOUNDING DIRECTOR OF DARPA'S BIOLOGICAL TECHNOLOGIES OFFICE (BTO)**

Created and managed a broad and revolutionary research portfolio, spanning neuroscience, infectious disease, pharmacology, and battlefield medicine



**COL. MATTHEW HEPBURN, M.D., PROGRAM MANAGER IN DARPA'S BIOLOGICAL TECHNOLOGIES OFFICE; PREVIOUSLY DIRECTOR OF MEDICAL PREPAREDNESS ON THE WHITE HOUSE NATIONAL SECURITY STAFF**

Former Chief Medical Officer at a Level II medical facility in Iraq and leading expert in global health and infectious diseases with potential impact on national security



**DR. DOUGLAS J. WEBER, PROGRAM MANAGER IN DARPA'S BIOLOGICAL TECHNOLOGIES OFFICE; ASSOCIATE PROFESSOR IN THE DEPARTMENT OF BIOENGINEERING AND THE DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION AT THE UNIVERSITY OF PITTSBURGH**

Leading scientist in functional electrical stimulation, activity-based neuromotor rehabilitation, neural coding, and neural control of prosthetic devices



**DR. PHILLIP ALVELDA, PROGRAM MANAGER IN DARPA'S BIOLOGICAL TECHNOLOGIES OFFICE; CEO AND CHAIRMAN OF TADA, FOUNDING CEO OF MOBIV**

Phillip was selected by Fast Company as the US's 15th most influential high technology entrepreneur, has been granted numerous technology awards, received an Emmy Award from the Academy of Television Arts & Sciences and is a World Economic Forum Technology Pioneer

## WORLD LEADERS FROM MEDICINE, TRANSPLANTATION, SURGERY AND BIOTECH



**DR. DAVID H. SACHS, DIRECTOR OF THE TRANSPLANTATION BIOLOGY RESEARCH CENTER MASS GENERAL HOSPITAL, AND PAUL S. RUSSELL AND WARNER-LAMBERT PROFESSOR OF SURGERY AND IMMUNOLOGY AT HARVARD MEDICAL SCHOOL**

World leader in transplantation medicine, immune tolerance and xenotransplantation. Recipient of the world's highest dedicated award for the most outstanding contributions in the field of transplantation, the Medawar Prize



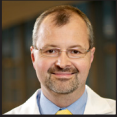
**DR. MARTINE ROTHBLATT, CHAIRMAN AND CEO, UNITED THERAPEUTICS; PRESIDENT AND CEO, LUNG BIOTECHNOLOGY INC AND LEAD INVESTOR IN TRANSMEDICS**

Innovator behind “organ in a box” preservation, humanized pig lungs and 3D printed organs technology. Creator of GeoStar and Sirius Satellite Radio and responsible for launching PanAmSat and WorldSpace



**DR. PETER RHEE, CHIEF, DIVISION OF TRAUMA, CRITICAL CARE, BURN AND EMERGENCY SURGERY, PROFESSOR OF SURGERY AND MARTIN GLUCK ENDOWED CHAIR IN TRAUMA SURGERY AT THE UNIVERSITY OF ARIZONA**

Former US Navy Captain, battlefield casualty physician in Afghanistan and Iraq and Director of the Navy Trauma Training Center, and Pioneer and World Leader in suspended animation for trauma



**DR. BOHDAN POMAHAC, PROFESSOR AT HARVARD MEDICAL SCHOOL AND DIRECTOR, PLASTIC SURGERY TRANSPLANTATION PROGRAM AT BRIGHAM AND WOMEN’S HOSPITAL, BOSTON**

World leader in the field of Vascularized Composite Allograft (VCA) Transplantation and e.g. led the team that performed the first full face transplant in United States



**DR. GERALD BRANDACHER, SCIENTIFIC DIRECTOR OF THE JOHNS HOPKINS RECONSTRUCTIVE TRANSPLANTATION PROGRAM AND VASCULARIZED COMPOSITE ALLOTRANSPLANTATION (VCA) LABORATORY**

Internationally renowned surgeon scientist pioneering immunomodulation and tolerance induction for solid organ and vascularized composite allografts. Part of the team that performed the first bilateral hand transplant and first forearm transplant in the United States



**DR. JOHN BRADFORD, PRESIDENT, SPACEWORKS ENTERPRISES AND NASA NIAC FELLOW**

Industry leader in the application of human stasis for space exploration and designer of the torpor-inducing Mars transfer habitat



**DR. JORDAN SHIN, MEDICAL DIRECTOR AT LUNG AND XENOLUNG CLINICAL DEVELOPMENT AT LUNG BIOTECHNOLOGY INC AND FORMERLY HEAD OF HEART FAILURE AT MASS GENERAL HOSPITAL**

A recovering academic cardiologist from Massachusetts General Hospital and Harvard Medical School now working to address the shortage of transplantable lungs with a variety of technologies that delay the day they are needed and expand their supply

## WORLD LEADING SCIENTISTS



**DR. MEHMET TONER, HELEN ANDRUS BENEDICT PROFESSOR OF SURGERY (BIOMEDICAL ENGINEERING), AND HEALTH SCIENCES AND TECHNOLOGY AT HARVARD, MASS GENERAL HOSPITAL AND MIT**

Co-founder of the Center for Engineering in Medicine and among many things co-author of 2014 rat liver preservation breakthroughs published in Nature Medicine



**DR. GREGORY FAHY, CHIEF SCIENCE OFFICER AT 21<sup>ST</sup> CENTURY MEDICINE**

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



**DR. MICHAEL TAYLOR, CO-FOUNDING CHIEF SCIENCE OFFICER, SYLVATICA BIOTECH, ADJUNCT PROFESSOR AT CARNEGIE MELLON AND VP FOR R&D, T3 - TISSUE TESTING TECHNOLOGIES**

World leader in hypothermic, perfusion based, vitreous and other forms of preservation approaches of organs and tissue systems



**DR. KEVIN E. HEALY, HEAD OF THE BIOENGINEERING DEPARTMENT AND THE JAN FANDRIANTO DISTINGUISHED PROFESSOR IN ENGINEERING AT THE UNIVERSITY OF CALIFORNIA AT BERKELEY**

Thought leader and innovator working at the interface between stem cells and materials science to develop Organ-on-a-chip and other dynamic engineered systems to explore both fundamental biological phenomena and new applications in translational medicine



**DR. KELVIN BROCKBANK, PRESIDENT AND CHIEF SCIENCE OFFICER OF T3 - TISSUE TESTING TECHNOLOGIES**

Inventor of clinical cryopreservation methods currently employed for viable meniscal allografts, allogeneic heart valves, ligaments, and vascular grafts



**DR. 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



**DR. ERIK WOODS, PRESIDENT OF THE INTERNATIONAL SOCIETY FOR CRYBIOLOGY, SENIOR VICE PRESIDENT AND LEAD SCIENTIST, COOK REGENTEC**

Developed enhanced methods for the preservation and banking of umbilical cord blood-derived stem cells



**DR. KENNETH STOREY, CANADA RESEARCH CHAIR IN MOLECULAR PHYSIOLOGY AND PROFESSOR IN BIOCHEMISTRY AT CARLETON UNIVERSITY**

Creator of new approaches of gene activation that allow organisms to endure and flourish under extreme conditions, such as the frozen “frog-sicles”. Advisor to both the European and Japanese Space Agencies (ESA and JAXA) on How to Adapt Hibernation and Similar Mechanisms from Nature to Humans



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

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



**DR. THOMAS PETERSEN, WORLD LEADING TISSUE ENGINEER AND PRINCIPAL SCIENTIST, UNITED THERAPEUTICS**

Developed the first functional bioengineered lung. Lead author on ground-breaking publication in Science describing the first successful animal transplantation of an engineered lung



**DR. 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



**DR. 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 cryomicroscope; developer of ultra-miniature, wireless, implantable “cryo sensors”



**DR. KORKUT UYGUN, ASSISTANT PROFESSOR AT HARVARD MEDICAL SCHOOL; CO FOUNDER, ORGAN SOLUTIONS; DIRECTOR, ORGAN RE-ENGINEERING LAB, MASSACHUSETTS GENERAL HOSPITAL**

World expert in organ preservation via supercooling and subnormothermic perfusion; leading researcher in transplantable engineered livers



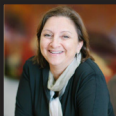
**DR. MARK ROTH, DIRECTOR OF THE ROTH LAB AT THE FRED HUTCHINSON CANCER RESEARCH CENTER AND PROFESSOR AT THE UNIVERSITY OF WASHINGTON, FOUNDER OF IKARIA, INC., MACARTHUR FELLOW OF THE JOHN D. AND CATHERINE T. MACARTHUR FOUNDATION**

World leader in hibernation and suspended animation research. (Photo by Paul C. Miller)



**STEPHEN VAN SICKLE, CHIEF SCIENCE OFFICER OF ARIGOS BIOMEDICAL**

Co-founder of Silicon Valley and Peter Thiel funded Organ Banking Start-up and Co-innovator of a high speed cooling and warming system using hyperbaric pressure combined with persufflation for large vitrifiable organs



**DR. CLAUDIA ZYLBERBERG, FOUNDER, PRESIDENT AND CEO OF AKRON BIOTECH AND MEMBER OF LEADERSHIP TEAM, ALLIANCE FOR REGENERATIVE MEDICINE (ARM)**

Developer of novel products aimed at the isolation of stem cells and cryopreservation



**DR. 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



**DR. MARTHA LUNDBERG, PROGRAM DIRECTOR, ADVANCED TECHNOLOGIES AND SURGERY BRANCH, NATIONAL HEART, LUNG, AND BLOOD INSTITUTE (NHLBI) AND MEMBER OF THE FEDERALWIDE, MULTIAGENCY TISSUE ENGINEERING SCIENCE (MATES) WORKING GROUP**

Developed and advanced targeted NHLBI investment in over a dozen research technology programs and in 2002 assumed responsibility for the Tissue Engineering (TE) portfolio



**DR. 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



**DR. TAMER KHAYAL, CHIEF MEDICAL OFFICER, TRANSMEDICS**

Co-leader of the world's largest randomized trials for organ preservation for transplantation and key developer of the Organ Care System for perfusion based preservation of hearts and lungs



**DR. 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



**DR. EVA LAI, ASSISTANT RESEARCH PROFESSOR, JOHNS HOPKINS UNIVERSITY AND SCIENTIFIC DOMAIN COORDINATOR FOR PROTECTIVE AND RESTORATIVE BIOENGINEERING, US ARMY MEDICAL RESEARCH AND MATERIEL COMMAND**

Eva served as the portfolio lead for the DoD's regenerative medicine portfolio at TATRC (U.S. Army's Telemedicine and Advanced Technology Research Center)

## HOSTING CONVENER



**LT. COL. LUIS M. ALVAREZ PH.D., DIRECTOR OF THE CENTER FOR MOLECULAR SCIENCE, ACADEMY PROFESSOR AT THE U.S. MILITARY ACADEMY AND DARPA SERVICE CHIEF FELLOW**

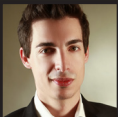
Founding Principal Investigator of the Regenerative Biology Research Group at the National Cancer Institute; Former co-founding Deputy Director of the DoD's Tissue Injury and Regenerative Medicine Program and Deputy Director of AFIRM; and author of the DoD's first-ever Organ and Tissue Banking Grant Solicitations

## CONVENERS



**DR. SEBASTIAN GIWA, CO-FOUNDER AND CEO OF THE ORGAN PRESERVATION ALLIANCE AND FOUNDER OF SYLVATICA BIO INC.**

Served as the youngest ever 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 (top 5%) at Harvard Business School and senior investment associate at world leading hedge fund Bridgewater Associates



**DR. ALESSANDRO TOCCHIO, CO-FOUNDER OF THE ORGAN PRESERVATION ALLIANCE, POSTDOCTORAL RESEARCH SCHOLAR AT STANFORD UNIVERSITY SCHOOL OF MEDICINE AND CO-FOUNDER OF TENSIVE**

Awarded entrepreneur in the biomedical field. Inventor of a novel micro fabrication technology and innovative biomaterial for regenerative medicine applications

# PROGRAM WEDNESDAY AUGUST 5<sup>TH</sup>

## Hotel Thayer (Pershing Room)

**Early afternoon**      **Optional Tour of West Point**  
(email [Valentina@organpreservationalliance.org](mailto:Valentina@organpreservationalliance.org) if interested)

**17:00-18:15**      **Check-in and Registration**

### Drinks and Networking

**17:30**      **Welcome Reception**

### Working Dinner and Key Talks: An Enormous Need and Value (Part 1)

<b>18:15</b>	Welcome	Lt. Col. Luis M. Alvarez, Ph.D., Director of the Center For Molecular Science and Academy Professor at the U.S. Military Academy and DARPA Service Chief Fellow
	Kick-off	Dr. Sebastian Giwa, Co-Founder and President, the Organ Preservation Alliance  Robin Farmanfarmaian, Executive Director, the Organ Preservation Alliance
	Alpha Vision, Workshop Goals and Overview	Lt. Col. Luis M. Alvarez, Ph.D.
<b>19:05</b>	Plenary Talk: Transplantation has Come Long Way	Dr. Jordan Shin, Medical Director at Lung and XenoLung Clinical Development at Lung Biotechnology Inc. and Former Head of Heart Failure at Massachusetts General Hospital
<b>19:25</b>	The Vast Need and Value of Organs on Demand and the Ability to Control Biological Time	Dr. Sebastian Giwa



- 19:40** Keynote: Perspectives on the Future of Transplantation: Conquering Chronic Rejection, Immune Suppression and the Organ Shortage
- Dr. David Sachs, Director of the Transplantation Biology Research Center, Surgical Services at Massachusetts General Hospital; Paul S. Russell and Warner-Lambert Professor of Surgery and Immunology at the Harvard Medical School, and Recipient of the World's Highest Dedicated Award Contribution Field Transplantation, the Medawar Prize

## Break

- 20:30** Plenary Talk: The Recent Revolution in Hand, Limb and other Vascularized Composite Transplantation and its Potential Future
- Dr. Bohdan Pomahac, Professor at Harvard Medical School and Director of the Plastic Surgery Transplantation Program at Brigham and Women's Hospital, Boston. E.g. led the team that performed the first full face transplant in United States
- Dr. Gerald Brandacher, Scientific Director of The Johns Hopkins Reconstructive Transplantation Program and Vascularized Composite Allotransplantation (VCA) Laboratory. Pioneer in Immuno-Modulation Tolerance Induction Vascularized Composite Allografts Team Performed First bilateral Hand Transplant first Forearm Transplant and first forearm transplant in the United States
- 20:55** The Value of Organs and Tissues on Demand for National Defense
- Lt. Col. Luis M. Alvarez, Ph.D.
- 21:05** Keynote 2: Nature Already Has Solutions now Finally Have Tools Understand Those Solutions Begin Applying Them
- Dr. Ken Storey, Canada Research Chair in Molecular Physiology and Professor in Biochemistry at Carleton University, Advisor to Both the European and Japanese Space Agencies (ESA and JAXA) on How to Adapt Hibernation and Similar Mechanisms from Nature to Humans
- 21:30** DARPA and BTO's Vision of the Future
- Dr. Geoffrey Ling, Founding Director of DARPA's Biological Technologies Office (BTO)

## Drinks and Networking

## PROGRAM THURSDAY AUGUST 6<sup>TH</sup>

Jefferson Hall, USMA Library (Haig Room)

### An Enormous Need and Value (Part 2)

<b>8:30</b>	Controlling Biological Time for Organ and Tissue Banking: Synthesis of Ideas and Goals	Lt. Col. Luis M. Alvarez, Ph.D.
<b>8:40</b>	Controlling Biological Time and Organ Banking: Why, What, and How	Dr. Sebastian Giwa
<b>8:55</b>	<b>Organ Banking: Enabler and Accelerator of the Future of Transplantation and of Regenerative Medicine Breakthroughs - <i>Lightning talks</i></b>	Chair: Lt. Col. Luis M. Alvarez, Ph.D.
	The Future and Needs of Tissue Engineering	Dr. Thomas Petersen, World Leading Tissue Engineer, Principal Scientist, United Therapeutics and Developer of the First Functional Bioengineered Lung
	The Future and Needs of Organ-on-a-Chip Technologies	Dr. Kevin Healy, Head of the Bioengineering Department and the Jan Fandrianto Distinguished Professor in Engineering at the University of California at Berkeley; Leader in Organ-on-a-Chip Technology
	Industry Perspective: Vast Economic Value and Market Potential	Dr. Claudia Zylberberg, Founder, President and CEO of Akron Biotech and Member of Leadership Team, Alliance for Regenerative Medicine (ARM)
	NIH and Multi-Agency Tissue Engineering Science (MATES) Interagency Working Group's Perspectives	Dr. Martha Lundberg, Program Director, Advanced Technologies and Surgery Branch, National Heart, Lung, and Blood Institute (NHLBI) and Member of the Federalwide, MultiAgency Tissue Engineering Science (MATES) Working Group

**Panel and then Round table  
Discussion on What Organs on  
Demand Would Mean for the  
Future of Healthcare, the Bio-  
Economy, and National Security**

**Panelists as above as well as:**

Xenotransplantation and Immune  
Tolerance (covered on Day 1)

Vascularized Composite Allotransplan-  
tation/VCA (covered on Day 1)

Military Use-Cases (covered on Day 1)

Overall and Other Cases (covered above)

**Panelists as above as well as:**

Dr. David Sachs

Dr. Gerald Brandacher and  
Dr. Bohdan Pomahac

Lt. Col. Luis M. Alvarez, Ph.D.

Dr. Sebastian Giwa

**Remaining Challenges and Why They Now Are Within Reach**

**10:00** Technological and Other Key Forms  
of Enabling Convergence: Why Organ  
Banking now, for the First Time, is  
Within Reach

Lt. Col. Luis M. Alvarez, Ph.D.

**Break**

**10:30** Cryobiology: Past, Present and Future

Dr. Erik Woods, President of the Society  
for Cryobiology, Senior Vice President  
and Lead Scientist, Cook Regentec

**10:45** A Grand Challenge...

... That Can be Translated into 6  
Sub-Problems that Only Need to Be  
Held Within Acceptable Thresholds

Dr. Greg Fahy, Chief Science Officer at  
21st Century Medicine.

<b>11:00</b>	The Time is Now for Multi-Component, Holistic Organ Banking Approaches	Dr. Korkut Uygun, Assistant Professor in Surgery at Harvard Medical School, Mass General Hospital and the Center for Engineering in Medicine
		Dr. Michael Taylor, Co-Founding Chief Science Officer, Sylvatica Biotech, Adjunct Professor at Carnegie Mellon and VP for R&D, T3 - Tissue Testing Technologies

**Examples of Promising Avenues to Achieve Organs on Demand – *Lightning Talks* (Part 1)**

<b>11:20</b>	Future of Perfusion	Dr. Tamer Khayal, World Leader in Perfusion Based Preservation of Organs and Chief Medical Officer, TransMedics
	Nature Already Has Solutions Part II	Dr. Ken Storey, Canada Research Chair in Molecular Physiology and Professor in Biochemistry at Carleton University, Advisor to both the European and Japanese Space Agencies (ESA and JAXA) on How to Adapt Hibernation and Similar Mechanisms from Nature to Humans
	The Relatively Recent Emergence of Large Volume/Complex Tissue Vitrification	Dr. Kelvin Brockbank, President and Chief Science Officer, T3 - Tissue Testing Technologies
	Applying the “Materials Genome Initiative” to Design Next Generation Protectants	Dr. Gloria Elliott, Director of the Biostability Lab and Professor at University of North Carolina – Charlotte
	Pending: Examples of What Organic Chemistry Can Bring to the Table: Rational Compound Design, High Throughput Screening and Organic Synthesis	Dr. Robert Ben, Canada Research Chair in Medicinal Chemistry and Professor of Organic and Bioorganic Chemistry at the University of Ottawa
	Third Generation Cryo = Molecular Understanding Based Cryo	Dr. 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
	Nano-Warming	Dr. John Bischof, Director of Bioheat and Mass Transfer Lab at the University of Minnesota

## Lunch and Invited Vision Talks:

**12:20** Lunch at West Point Club  
(Hudson Room)

Suspended Animation for Trauma:  
From Science Fiction to Clinical Trials

Dr. Peter Rhee, Chief, Division of Trauma, Critical Care, Burn and Emergency Surgery, Professor of Surgery and Martin Gluck Endowed Chair In Trauma Surgery at the University of Arizona

Human Torpor to Sustain U.S.  
Leadership in Space

Dr. John Bradford, President, Spaceworks Enterprises and NASA Niac Fellow

## Examples of Promising Avenues to Achieve Organs on Demand – *Lightning Talks* (Part 2)

**13:40** Scanning and Micro Sensing for Optimal  
Understanding and Protocols

Dr. Yoed Rabin, Director of the Biothermal Technology Laboratory and Professor at Carnegie Mellon University

Organ-on-a-Chip Technology and  
Micro-Fluidics as Tools to Create Better  
CPAs and Cryo Protocols

Dr. Utkan Demirci, Director of  
Bio-Acoustic MEMS in Medicine  
Labs at Stanford University

Hyperbaric Pressure and Gas Persuf-  
flation To Enable Rapid and Uniform  
Cooling, Vitrification and Warming

Stephen Van Sickle, Chief Science  
Officer, Arigos Biomedical

Computational Tools Enable Cryobiolog-  
ical Understanding and Rapid Proto-  
typing: Historical Successes, Future  
Potential, and a Cutting Edge Cell-based  
Tissue Model

Dr. James Benson, Biomathematician  
Predominantly Focusing on Cryobiology  
and Assistant Professor at Northern  
Illinois University

Convergence and Powerful Acceleration  
in Areas of Science, Domains of Tech-  
nology and Tools Outside of Classical  
Cryobiology

Dr. Alessandro Tocchio, Co-Founder  
of the Organ Preservation Alliance,  
Postdoctoral Research Scholar at  
Stanford University School of Medicine

**14:20** Round Table and Q&A Session:  
Organ Banking Challenges and Solutions

All Speakers Above  
Moderator: Lt. Col. Luis M. Alvarez,  
Ph.D.

## 'DARPA-Hard' Implementations of Organs on Demand

- 14:40**      Concept 1: Vitrification of Humanized Pig Kidneys      Dr. Greg Fahy, Chief Science Officer at 21<sup>st</sup> Century Medicine
- Concept 2: Banking of VCA via Radio Frequency Excited Nanoparticles and Vitrification      Dr. John Bischof, Director of Bioheat and Mass Transfer Lab at the University of Minnesota
- Dr. Kelvin Brockbank, President and Chief Science Officer of T3 - Tissue Testing Technologies

### Break

- 15:40**      Concept 3: Nature Inspired, Suppressed Metabolism and High-Sub-Zero Banking of Livers      Dr. Mehmet Toner, Helen Andrus Benedict Professor of Surgery (Biomedical Engineering) and Health Sciences and Technology at Harvard, Mass General Hospital and MIT (Presenter)
- Dr. Michael Taylor, World Leader in Hypothermic, Perfusion-Based, Vitreous And Other Forms of Preservation Approaches of Organs and Tissue Systems
- Dr. Kenneth Storey, Canada Research Chair in Molecular Physiology and Professor in Biochemistry at Carleton University

## Reflections and Thoughts on Steps Forward

- 15:55** Implications of Organs on Demand for the Future of Healthcare and Other Reflections: *Shared Remarks and Round table Conversation*
- Dr. Peter Rhee, Chief, Division of Trauma, Critical Care, Burn and Emergency Surgery, Professor of Surgery and Martin Gluck Endowed Chair in Trauma Surgery at the University of Arizona
- Dr. Martine Rothblatt, Chairman and CEO, United Therapeutics; President and CEO, Lung Biotechnology
- Round table Conversation*
- 16:20** A Giant Leap Forward: Concrete Steps to Make Organs on Demand a Reality
- Lt. Col. Luis M. Alvarez, Ph.D.
- 16:35** Open Round table Discussion and Reflections
- Everyone
- 16:50** BTO Reflections and Closing Comments
- Dr. Geoffrey Ling, Founding Director of DARPA's Biological Technologies Office (BTO)
- Closing
- Lt. Col. Luis Alvarez, Ph.D.
- Dr. Sebastian Giwa
- 17:00 – 18:00** Reception
- 18:00** Self Organized Networking

## CONTACT

### ABOUT THE WORKSHOP PROGRAM/GOALS

[luis.alvarez@darpa.mil](mailto:luis.alvarez@darpa.mil) or [sebastian.giwa@post.harvard.edu](mailto:sebastian.giwa@post.harvard.edu)

### ABOUT LOGISTICS AND OTHER

[valentina@organpreservationalliance.org](mailto:valentina@organpreservationalliance.org) and [robin@organpreservationalliance.org](mailto:robin@organpreservationalliance.org)

Valentina Morigi  
COO,  
Organ Preservation Alliance

Robin Farmanfarmaian  
Executive Director,  
Organ Preservation Alliance