

# **Stem Cells, Cell Therapies, and Bioengineering in Lung Biology and Diseases July 24-27, 2017**

Hosted by: University of Vermont, Burlington, Vermont

## **AGENDA**

### **MONDAY, JULY 24**

9:00-4:00 PM Practical/Theoretical Course: Coordinated by Weiss Laboratory at UVM  
Hands-on workshop, Stafford Hall, UVM Campus

- General lung harvest and processing
- Decellularization and recellularization
- Flexivent / Lung mechanics
- Industry-sponsored technologies (TBD)

5:00-6:00 Welcoming Reception and Registration, Sheraton Hotel

### **Session I: Extracellular Vesicles in Lung Regenerative Medicine**

(Location: Sheraton Hotel)

Moderators:

**Robert Freishtat, MD, MPH ~ George Washington University School of  
Medicine and Health Sciences, Washington, DC**

**Deniz Bölükbaş, PhD Candidate ~ Comprehensive Pneumology Center, Munich,  
Germany**

6:00-6:10 PM Opening Remarks  
**E. Thomas Sullivan, JD, President, University of Vermont, Burlington, Vermont**  
**Darcy Wagner, PhD, Conference Chair ~ Lund University, Lund, Sweden**

6:10-6:40 *Featured Presentation: Mesenchymal Stem Cell-derived Extracellular Vesicles: A Potential New  
Tool In Regenerative Medicine*  
**Bernd Giebel, PhD ~ University Hospital Essen, Essen, Germany**

6:40-7:10 *Featured Presentation: MSC Therapy: Transiting from Cell to Exosome*  
**Sai Kiang Lim, PhD ~ A\*STAR Institute of Medical Biology, Singapore**

7:10-7:40 *Featured Presentation: A Clinical Indications Prediction (CLIP) Scale for Human MSCs*  
**Donald Phinney, PhD ~ The Scripps Research Institute, Jupiter, Florida**

7:40-8:00 Discussion

Free night in Burlington, Dinner on Your Own

## **TUESDAY, JULY 25 ~ Dame Julia Polak Memorial Bioengineering Session**

(Location: Grand Maple Ballroom, Davis Center, UVM Campus)

7:45-8:30 AM Shuttle bus looping between Sheraton Hotel and UVM Campus

8:00-8:45 Continental Breakfast and Continued Registration

8:45-9:00 Welcome and Introduction

**David V. Rosowsky, PhD, PE, FASCE, FSEI, Provost, University of Vermont**  
**Frederick C. Morin III, MD, Dean, Robert Larner, M.D. College of Medicine**

### **Session II: Ex Vivo Bioengineering of Lung and Airway Tissue**

Moderators:

**Sarah E. Gilpin, PhD ~ Massachusetts General Hospital, Boston, Massachusetts**  
**Juan José Uriarte, PhD ~ University of Vermont, Burlington, Vermont**

9:00-9:40 *Featured Presentation: Molecular and Cellular Composition of Murine and Human Lungs in Health and Disease*

**Herbert Schiller, PhD ~ Comprehensive Pneumology Center, Munich, Germany**

9:40-10:10 *Featured Presentation: Recent Advances in Lung Bioengineering Using Acellular Scaffolds*  
**Harald Ott, MD ~ Massachusetts General Hospital, Boston, Massachusetts**

10:10-10:30 *Junior Investigator Presentation: Platforms and Technologies for Hollow Organ Tissue Engineering*

**Claire Crowley, PhD ~ University College London, London, United Kingdom**

10:30-10:50 *Travel Award Recipient: Pulmonary Vascular Engineering Using Induced Endothelial Progenitor-like Cells*

**Takaya Suzuki, MD, PhD ~ University of Toronto, Toronto, Canada**

10:50-11:10 *Travel Award Recipient: Creating Tissue-Specific Materials to Guide Cell Behaviour in Airways*  
**Nazia Mehrban, PhD ~ University College London, London, United Kingdom**

11:10-11:40 COFFEE and NETWORKING BREAK

### **Session III: Bioengineering Next Generation Devices for Lung Diseases**

Moderator:

**Jason Bates, PhD ~ University of Vermont, Burlington, Vermont**

11:40-12:00 *Featured Presentation: Lung-on-a-Chip*

**Ramon Farré, PhD ~ University of Barcelona, Barcelona, Spain**

12:00-12:20 PM *Junior Investigator Presentation: Towards the Development of a Bioartificial Lung*  
**Michael Pflaum, PhD ~ Hannover Medical School, Hannover, Germany**

12:20-12:40 *Featured Presentation: On Growth and Form of the Distal Air Exchange Surfaces within the Lung*  
**David Warburton, MD ~ Children's Hospital Los Angeles, California**

12:40-1:00 Travel Award Recipient: *Mesenchymal Stem Cells Drive Cell Repopulation in an In Vivo Model of Lung Regeneration*  
**John Sembrat, MS ~ University of Pittsburgh, Pittsburgh, Pennsylvania**

1:00-2:30 MENTORING LUNCH

**Session IV: Endogenous Progenitor Cells**

Moderator: **Christina E. Barkauskas, MD ~ Duke University, Durham, North Carolina**

2:30-3:15 *Featured Presentation: Towards Somatic Epithelial Stem Cell Therapy for Cystic Fibrosis*  
**Scott Randell, PhD ~ University of North Carolina Chapel Hill, North Carolina**

3:15-3:45 *Featured Presentation: Tissue Tension, RANKL, Mammary Stem Cells and Breast Cancer Risk*  
**Jason Northey, PhD ~ University of California San Francisco, San Francisco, California**

3:45-4:05 *Junior Investigator Presentation: Lung Stem Cell Niches in Health and Disease*  
**Joo Hyeon-Lee, PhD ~ Cambridge Stem Cell Institute, Cambridge, United Kingdom**

4:05-4:25 COFFEE and NETWORKING BREAK

4:25-4:30 *Introduction and Presentation by the Alpha-1 Foundation*

4:30-4:50 *John W. Walsh Memorial Travel Scholarship Awardee*  
Travel Award Recipient: *Identification of Distinct Resident Mesenchymal Cell Populations in Adult Lungs*  
**Russell Braeuer, PhD ~ University of Michigan, Ann Arbor, Michigan**

4:50-5:10 Travel Award Recipient: *Towards Human Lung Regeneration in End-stage Respiratory Failure: Genetically-modifiable 3D Organoid Culture of Human Embryonic Lung Stem Cells Enables for the First Time the Study of Human Lung Development In Vitro*  
**Marko Nikolić, MB BChir ~ University of Cambridge, Cambridge, United Kingdom**

5:10-5:30 Travel Award Recipient: *In Vitro Biological Characteristics of Extremely Preterm versus Term Umbilical Cord-Derived Mesenchymal Stem Cells for Neonatal Lung Injury*  
**Merline Kocheekaran V. Benny, MD ~ Women & Infants Hospital, Warwick, Rhode Island**

5:30-6:00 Panel Discussion and Wrap Up  
**Melanie Königshoff, MD, PhD ~ University of Colorado Denver, Aurora, Colorado**  
**Angela Panoskaltzis-Mortari, PhD ~ University of Minnesota, Minneapolis, Minnesota**

6:00-8:00 WOMEN AND DIVERSITY RECEPTION  
**Jennifer Collins, PhD ~ Erasmus MC, Rotterdam, Netherlands**  
**Katherine McCauley, PhD ~ Boston University, Boston, Massachusetts**

6:00-10:00 Hop on the free Trolley Tours bus for a trip downtown. Bus will make continuous loops from the Davis Center, the Sheraton Hotel and Downtown Burlington.

Free night in Burlington, Dinner on your own

## **WEDNESDAY, JULY 26**

8:15-9:00 AM Shuttle bus looping between Sheraton Hotel and UVM Campus

8:30-9:00 Continental Breakfast

### **Session V: iPSC and ESC Biology and Application in Lung Regenerative Medicine**

Moderators:

**Amy Firth, PhD ~ University of Southern California, Los Angeles, California**

**Finn Hawkins, MBBCh ~ Boston University, Boston, Massachusetts**

9:00-9:40 *Featured Presentation: Generation of Human Pluripotent Stem Cell-derived Airway Organoids to Model Cystic Fibrosis In Vitro*

**Katherine McCauley, PhD ~ Boston University, Boston, Massachusetts**

9:40-10:10 *Featured Presentation: Cystic Fibrosis Disease Specific iPSC Reporter Lines for Disease Modelling, HT Screening and Cellular Therapies*

**Ruth Olmer, PhD ~ Hannover Medical School, Hannover, Germany**

10:10-10:30 *Junior Investigator Presentation: CRISPR-modified iPSC Cells to Validate New Targets for Cystic Fibrosis*

**Hongmei Lisa Li, PhD ~ Boston Children's Hospital, Boston, Massachusetts**

10:30-10:50 COFFEE and NETWORKING BREAK

10:50-11:10 *Travel Award Recipient: The Instructive Role of Endothelial Cells in Shaping Lung Progenitor Cell Fate*

**Miriell Ho, DPhil ~ Ottawa Hospital Research Institute, Ottawa, Canada**

### **Session VI: New Conference Feature: Elevator Pitch Competition – Commercialize Your Research for Industry Sponsorship or SBIR/STTR Collaboration**

Panel:

**Yvonne Janssen-Heininger, PhD, University of Vermont, Burlington, Vermont**

**Kerry Swift, MS, Office of Technology Commercialization, University of Vermont**

**Erik Monsen, PhD, University of Vermont and selected members from small business**

11:10-11:50 *One Minute Elevator Pitch Competition for Junior Trainees. 1 slide allowed; 1 minute buzzer. Panel of Senior Investigators and VT Tech Commercialization Group to judge. Prize award: Registration Fee refunded (two awards)*

11:50-12:00 GROUP PHOTO AND BREAK

12:00-12:40 PM LUNCH

12:40-1:40 *Thematic Poster Session #1 – Bioengineering and ESCs/iPSCs*

Poster Discussion Facilitators:

**Deniz Bölükbaş, PhD Candidate ~ Comprehensive Pneumology Center, Munich, Germany**

**Michael Pflaum, PhD ~ Hannover Medical School, Hannover, Germany**

**Franziska Uhl, PhD ~ University of Vermont, Burlington, Vermont**

## **Session VII: Regulation of Stem Cell and Regenerative Medicine Treatments**

Co-sponsored by the International Society for Cellular Therapy

Moderators:

**Laertis Ikonomou, PhD ~ Boston University, Boston, Massachusetts**

**Kathleen Atkins, MD student ~ University of Toronto, Toronto, Canada**

- 1:40-2:15      *Featured Presentation: U.S. Clinics Marketing Unproven "Stem Cell" Interventions: Ethical, Scientific, and Regulatory Concerns*  
**Leigh Turner, PhD ~ University of Minnesota, Minneapolis, Minnesota**
- 2:15-2:45      *Featured Presentation: Unproven Cellular Therapies: State of the Art and Perspectives*  
**Massimo Dominici, MD ~ International Society for Cellular Therapy, Modena, Italy**
- 2:45-3:10      *Featured Presentation: Complications after Intravitreal "Stem Cell" Injection at a "Stem Cell" Clinic*  
**Ajay Kuriyan, MD, MS ~ University of Rochester Medical Center, Rochester, New York**
- 3:10-3:40      *Asian Presentation: Regulatory Developments and Trends in Cell Based Medicine*  
**Doug Sipp, BA ~ RIKEN Center for Developmental Biology, Tokyo, Japan**
- 3:40-4:00      COFFEE and NETWORKING BREAK
- 4:00-4:30      *Panel Discussion*  
**Martin Birchall, MD ~ University College London, London, United Kingdom**  
**Marilyn Glassberg, MD ~ University of Miami School of Medicine, Miami, Florida**  
**Michael Matthay, MD ~ University of California San Francisco, San Francisco, California**  
**ISCT Members**
- 4:30-5:30      *Thematic Poster Session #2 – Endogenous Progenitor Cells, Cell Therapies, Clinical Trials, Commercialization and Regulation*  
Poster Discussion Facilitators:  
**Jennifer Collins, PhD ~ Erasmus MC, Rotterdam, Netherlands**  
**Fernanda Cruz, MD, PhD ~ Federal University of Rio de Janeiro, Rio de Janeiro, Brazil**
- 5:15              Shuttle Bus from Sheraton to Davis Center, for family members / guests at the hotel to join with participants who will be attending the cruise. (*Only one pickup from Sheraton.*)
- 5:30-6:00      Shuttle Bus from Davis Center to Cruise.
- 6:00-9:00      Dinner Cruise on Lake Champlain  
Award Ceremony  
(*Cruise boards from 6:00-6:30 and departs promptly at 6:30pm*)
- 9:00              Shuttle bus returning from Cruise to the Sheraton Hotel / Best Western / UVM lodging

## **THURSDAY, July 27**

8:15-9:00 Shuttle bus looping between Sheraton Hotel and UVM Campus

8:30-9:00 Continental Breakfast

### **Session VIII: Careers in Stem Cells, Cell Therapies, and Lung Bioengineering**

Moderators:

**Jennifer Collins, PhD ~ Erasmus MC, Rotterdam, Netherlands**

**Sadaf Atarod, PhD ~ Boston University, Boston, Massachusetts**

9:00-9:25 *An Overview of Peer Review Process at NIH Center for Scientific Review*

**Ghenima Dirami, PhD ~ National Institutes of Health, Bethesda, Maryland**

9:25-9:50 *NHLBI Funding Mechanisms at All Career Stages*

**Neil Aggarwal, MD ~ Lung Biology and Disease Branch Chief; Division of Lung Diseases, National Heart, Lung, and Blood Institute, Bethesda, Maryland**

9:50-10:15 *Transitioning from Discovery to Product Development – NHLBI Innovator Support*

**Matthew McMahon, PhD ~ Office of Translational Alliances and Coordination (OTAC) Director; National Heart, Lung, and Blood Institute, Bethesda, Maryland**

10:15-10:45 *Featured Presentation: SBIR/STTR Case Example*

**Yvonne Janssen-Heininger, PhD ~ University of Vermont, Burlington, Vermont**

10:45-11:10 COFFEE and NETWORKING BREAK

### **Session IX: Cell Therapies (MSCs, EPCs, and ASCs) in Lung Disease**

Moderators:

**Marilyn Glassberg, MD ~ University of Miami School of Medicine, Miami, Florida**

**Fernanda Cruz, MD, PhD ~ Federal University of Rio de Janeiro, Rio de Janeiro, Brazil**

11:10-11:40 *Featured Presentation: Mesenchymal Stromal Cells: Biology and Potential Therapeutic Value for ARDS*

**Michael Matthay, MD ~ University of California San Francisco, San Francisco, California**

11:40-12:10 PM *Featured Presentation: Cell Based Gene Therapies for Pulmonary Disorders: Manufacturing Perspectives for Canadian Clinical Trials*

**Dave Courtman, PhD ~ Ottawa Hospital Research Institute, Ottawa, Canada**

12:10-12:30 *Travel Award Recipient: Mesenchymal Stromal Cells Modulate Human Macrophages in the Acute Respiratory Distress Syndrome by Enhancing Macrophage Oxidative Phosphorylation via Extracellular Vesicle-Mediated Mitochondrial Transfer*

**Thomas J. Morrison, PhD ~ Queen's University Belfast, Belfast, United Kingdom**

- 12:30-1:20 LUNCH
- 1:20-1:40 Travel Award Recipient: *Magnetic Targeting Increases Lung Retention of Mesenchymal Stromal Cells in a Murine Model of Silicosis*  
**Luísa H. A. Silva, MSc ~ Federal University of Rio de Janeiro, Rio de Janeiro, Brazil**
- 1:40-2:00 Travel Award Recipient: *Soft Matrix Facilitates Programming of Mesenchymal Stem Cells into Anti-Fibrotic Phenotypes*  
**Jae-Won Shin, PhD ~ University of Illinois at Chicago College of Medicine, Chicago, Illinois**
- 2:00-3:00 *Open Discussion - Setting Priorities and Recommendations to the NIH and Other Organizations Regarding Future Research Opportunities*  
**Daniel Weiss, MD, PhD ~ University of Vermont, Burlington, Vermont**
- 2:00-3:30 Continuous Shuttle from Davis to Airport and/or hotel\*.

*\* Please note: Sheraton / Best Western will also provide free shuttle service from the hotel to the airport; inquire at the front desk.*