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, Rowell Building, 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)
Moderators:
Robert Freishtat, MD, MPH ~ George Washington University School of Medicine and Health Sciences, Washington, DC
Deniz Bölükbaş, PhD Candidate ~ Comprehensive Pneumology Center, Munich

6:00-6:10 PM Opening Remarks
E. Thomas Sullivan, JD, President, University of Vermont, Burlington, Vermont
Darcy Wagner, PhD, Conference Chair ~ Comprehensive Pneumology Center, Munich, Germany

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

~ 1 ~
TUESDAY, JULY 25 ~ Dame Julia Polak Memorial Bioengineering Session
(Location: Grand Maple Ballroom, Davis Center, UVM Campus)

7:30-8:15 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 Lung and Airway Tissue
Moderators:
Sarah 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, England

10:30-10:50  Travel Award Recipient: Pulmonary Vascular Engineering Using Induced Endothelial Progenitor-like Cells
Takaya Suzuki, MD, PhD ~ University of Toronto, Ontario, Canada

10:50-11:10  Travel Award Recipient: Creating Tissue-specific Materials to Guide Cell Behaviour in Airways
Nazia Mehrban, PhD ~ University College 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, Hanover, 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

~ 2 ~
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, Pennsylvania

1:00-2:30  MENTORING LUNCH

Session IV:  **Endogenous Progenitor Cells**
Moderator:
Christina 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, 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, UK

4:05-4:25  COFFEE and NETWORKING BREAK

4:25-4:50  Travel Award Recipient: (John W. Walsh Memorial Travel Scholarship Awardee)
Introduction and Presentation by the Alpha-1 Foundation
Identification of Distinct Resident Mesenchymal Cell Populations in Adult Lungs
Russell Braeuer, PhD ~ University of 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, 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 Kocheekkaran 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, Colorado
Angela Panoskaltsis-Mortari, PhD ~ University of Minnesota, Minneapolis, MN

6:00-8:00  WOMEN AND DIVERSITY RECEPTION
Jennifer Collins, PhD ~ Erasmus MC, Rotterdam, Netherlands

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 and Downtown Burlington.
Free night in Burlington, Dinner on your own
WEDNESDAY, JULY 26

8:30-9:00 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, Hanover, Germany

10:10-10:30  Junior Investigator Presentation: CRISPR-modified iPS 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
Miriel 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-Heiningier, 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, Endogenous Progenitor Cells, and ESC/iPS
Poster Discussion Facilitators:
Collin Stabler, PhD ~ University of Pennsylvania, Philadelphia, Pennsylvania
Michael Pflaum, PhD ~ Hannover Medical School, Hanover, 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 Therapies
Moderators:
Laertis Ikonomou, PhD ~ Boston University, Boston, Massachusetts
Kathleen Atkins, MD student ~ University of 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, England
Marilyn Glassberg, MD ~ University of Miami School of Medicine, Florida
Michael Matthay, MD ~ University of California San Francisco, California
ISCT Members

4:30-5:30  
*Thematic Poster Session #2 – 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, Brazil

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 / UVM lodging
THURSDAY, July 27

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 Medical Center, 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 ASC) in Lung Disease
Moderators:
Marilyn Glassberg, MD ~ University of Miami Miller School of Medicine, Florida
Fernanda Cruz, MD, PhD ~ Federal University of 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, 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, Ontario, 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, 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
Luisa H. A. Silva ~ Federal University of 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, 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