



Stem Cells, Cell Therapies, and Bioengineering in Lung Biology and Diseases

July 17-20, 2023

Hosted by: The University of Vermont

AGENDA

Note: all times are EDT.

MONDAY, JULY 17

8:30 AM-4:00 PM **Workshop** ~ See Workshop Program

4:30-6:00 PM **Welcome Reception** and Registration Check-In, Hotel Vermont

Transition to: *COURTYARD BURLINGTON HARBOR HOTEL*, HARBOR ROOM

6:00-6:10 PM Opening Remarks
Kate Tracy, PhD, Senior Associate Dean for Research ~ The Larner College of Medicine at the University of Vermont

Session I: Engineering New Models of Lung Disease and Repair

Moderators:

Chelsea Magin, PhD ~ University of Colorado, Denver | Anschutz, Aurora, CO
Rebecca L. Heise, PhD ~ Virginia Commonwealth University, Richmond, VA

6:15-6:40 PM *Featured Presentation: 3D-Printed Lungs to End the Organ Shortage*
Keri Dame, PhD ~ United Therapeutics, Manchester, NH

6:40-7:05 *Featured Presentation: Kaizen for Pre-Clinical Models of Lung Disease – From Static 2D to Dynamic 3D and Beyond*
Jeremy Hirota, PhD ~ McMaster University, Hamilton, ON, Canada

7:05-7:30 *Featured Presentation: Microstructured Hydrogels to Guide Self-Assembly and Function of Lung Alveolospheres*
Claudia Loebel, MD, PhD ~ University of Michigan, Ann Arbor, MI

7:30-7:55 *Featured Presentation: Engineering Motile Apical-Out Airway Organoid to Probe Respiratory Pathophysiology*
Xi (Charlie) Ren, PhD ~ Carnegie Mellon University, Pittsburgh, PA

7:55-8:10 *Outstanding Abstract Achievement Award Presentation: Sorafenib Inhibits Invasion of Multicellular Organoids That Mimic Lymphangiomatosis Nodules*
Sinem Koc-Günel, MD ~ Goethe University Hospital Frankfurt, Germany

8:10-8:30 *Panel Discussion*

TUESDAY, JULY 18

All sessions at the *Dudley H. Davis Center, UVM Campus, Grand Maple Ballroom.*

7:45-8:45 AM Breakfast

8:45-9:00 Welcome Remarks
Amy Ryan, PhD ~ 2023 Conference Chair
Richard L. Page, MD, Dean ~ The Larner College of Medicine at the University of Vermont

Session II: Lung Repair and Regeneration: Integrating Omics with Function

Moderators:

Christopher Waters, PhD ~ University of Kentucky, Lexington, KY
Alexander Misharin, MD, PhD ~ Northwestern University, Evanston, IL

9:00-9:25 AM *Featured Presentation: Spatial Metabolomics and Pulmonary Fibrosis*
Ramon Sun, PhD ~ University of Florida, Gainesville, FL

9:25-9:50 *Featured Presentation: Real-Time Imaging of Alveolar Recovery after Lung Injury: Studies Informed by Omics Data*
Jaime Hook, MD – Icahn School of Medicine at Mount Sinai, New York, NY

9:50-10:15 *Featured Presentation: Pulmonary Macrophages in Lung Injury and Repair*
Alexander Misharin, MD, PhD ~ Northwestern University, Evanston, IL

10:15-10:30 *Outstanding Abstract Achievement Award Presentation: NICHES Analysis of Cell-to-Cell Signaling in Native and Engineered Lung Tissues*
Micha Sam Brickman Raredon, MD, PhD ~ Yale School of Medicine, New Haven, CT

10:30-10:50 *Panel Discussion*

10:50-11:05 Coffee and Networking Break

11:05-12:05 PM “Minute to Win It” Competition

Moderator:

Finn Hawkins PhD, Boston University, Boston, MA

Introductory Remarks:

Panel of Senior Investigator Judges:

Erik Monsen, PhD ~ University of Vermont, Burlington, VT
Susan Reynolds, PhD ~ Nationwide Children’s Hospital, Columbus, OH
John Mahoney, PhD ~ Cystic Fibrosis Foundation, Lexington, MA

*One Minute Elevator Pitch Competition for Junior Trainees.
1 slide allowed: 1-minute buzzer. Two prizes awarded.*

12:05-1:00 PM Lunch

1:00-2:15 PM

Poster Session #1

Poster Discussion Moderators:

Janette Burgess, PhD ~ University Medical Center, Groningen, The Netherlands
Susan Reynolds, PhD ~ Nationwide Children's Hospital, Columbus, OH

Poster Judges:

Lalit K. Gautam, PhD ~ University of Iowa, Iowa City, IA
Robert Hynds, PhD ~ University College London, London, UK
Claudia Loebel, MD, PhD ~ University of Michigan, Ann Arbor, MI
Chelsea Magin, PhD ~ University of Colorado, Denver | Anschutz, Aurora, CO
Amanda Tatler, PhD ~ Biodiversity Institute, Nottingham University, UK
Rachel L. Zemans, MD ~ University of Michigan, Ann Arbor, MI

Session III: Heterogeneity in Lung Immune Cells and Influences on Regeneration

Moderators:

Anna Krasnodembskaya, PhD ~ Queen's University of Belfast, Northern Ireland
Patrick Hume, MD, PhD ~ National Jewish Health, Denver, CO

2:15-2:40 PM

Featured Presentation: Foxp3+ regulatory T cells (Tregs) in Immune Homeostasis and Repair of Damaged Lung Tissue

Jason Mock, MD, PhD ~ University of North Carolina, Chapel Hill, NC

2:40-3:05

Featured Presentation: Immune Cell Signaling and Epithelial Regeneration in COPD

Thomas Conlon, PhD ~ Helmholtz Zentrum Munich, Germany

3:05-3:30

Featured Presentation: Chemokine-Expressing Macrophage Subsets

Claudia Jakubzick, PhD ~ Geisel School of Medicine at Dartmouth, Hanover, NH

3:30-3:45

Outstanding Abstract Achievement Award Presentation: Compartment-Specific Single Cell RNA Sequencing of Human Lung Sub-Compartments Defines Spatial Heterogeneity of Interstitial Macrophages and Other Leukocytes

Patrick Hume, MD, PhD ~ National Jewish Health, Denver, CO

3:45-4:00

Panel Discussion

4:00-4:15

Coffee and Networking Break

Session IV: Careers in Stem Cells, Cell Therapies, and Lung Bioengineering

Moderator:

Susan Reynolds, PhD ~ Nationwide Children's Hospital, Columbus, OH

4:15-5:00 PM

Featured Presentation: Pursuing Translational Biomedical Science in an Academic Lab

Polly Parsons, MD ~ University of Vermont, Burlington, VT

5:00-6:30 **WOMEN AND DIVERSITY PANEL AND NETWORKING**
Panelists
Laurel Kuxhaus, PhD ~ National Science Foundation, Alexandria, VA
Enid Neptune, MD, PhD ~ Johns Hopkins University, Baltimore, MA
Alexandra Noël, PhD, MSc ~ Louisiana State University, Baton Rouge, LA
Karen Ridge, PhD ~ Northwestern University, Chicago, IL
Venkataramana Sidhaye, MD ~ Johns Hopkins University, Baltimore, MA

WEDNESDAY, JULY 19

7:30-8:30 AM **Breakfast and [Breakfast Session 1](#)**

Funding and Financial Management of Your Lab – Panel Discussion

Laurel Kuxhaus, PhD ~ National Science Foundation, Alexandria, VA
Gustavo Matute-Bello, MD ~ NIH, Division of Lung Diseases, NHLBI, Bethesda, MD
John Sheridan, PhD ~ Cystic Fibrosis Foundation, Bethesda, MD

Session V: [Application of Surgical Techniques to Advance Stem Cell Therapeutics](#)

Moderators:

Sriram Vaidyanathan, PhD ~ Nationwide Children's Hospital, Columbus OH
Robert Hynds, PhD ~ University College London, London, UK

8:35-9:00 AM *Featured Presentation: From Bench to Bedside: Translation Using Animal Models of Airway Reconstruction*

Tendy Chiang, MD, FACS ~ Nationwide Children's Hospital, Columbus, OH

9:00-9:25 *Featured Presentation: Stem Cell Transplant to the Sinus Cavity of a Preclinical Rabbit Model*
Do-Yeon Cho, MD ~ University of Alabama, Birmingham, AL

9:25-9:50 *Featured Presentation: Detection and Quantification of Mucociliary Clearance in Patients with Airway Disease*

Ada C. Sher, BS ~ Ohio State University, Columbus, OH

9:50-10:05 *Outstanding Abstract Achievement Award Presentation: Compound Screening in Primary Human Airway Basal Cells Identifies Wnt Pathway Modulators as Potential Pro-regenerative Therapies*

Jessica Orr, PhD ~ University College London, London, UK

10:05-10:25 *Panel Discussion*

10:25-10:45 *Coffee and Networking Break*

Session VI: Compassionate Use of Cell and Gene Therapies

Co-sponsored by the International Society for
Cell & Gene Therapy (ISCT)



Moderator:

Laertis Ikonomou, M.Eng, PhD ~ University at Buffalo, Buffalo, NY;
Chair of the ISCT Committee on the Ethics of Cell and Gene Therapy

- 10:45-11:00 AM *Panel Presentation: ISCT's Expanded Access Working Group*
Patricia Zettler, JD ~ The Ohio State University, Columbus, OH;
Chair of the ISCT Expanded Access Working Group
- 11:00-11:15 *Panel Presentation: What's Different about Compassionate Use for Gene Therapies?*
Alison Bateman-House, PhD ~ NYU Grossman School of Medicine, New York, NY
- 11:15-11:30 *Panel Presentation: Compassionate Use of Cellular Therapies in Pediatric Patients*
Dean A. Lee, MD, PhD ~ Nationwide Children's Hospital, Columbus, OH
- 11:30-12:00 *Panel Discussion*
- 12:00-1:15 PM **MENTORING/MEET THE FACULTY LUNCH**
- 1:15-2:30 PM **Poster Session #2**
Poster Discussion Moderators:
Daniel J. Weiss, MD, PhD ~ University of Vermont, Burlington, VT
Xi (Charlie) Ren, PhD ~ Carnegie Mellon University, Pittsburgh, PA
Poster Judges:
Finn L. Hawkins, MB BCh ~ Boston University, Boston, MA
Robert Hynds, PhD ~ University College London, London, UK
Mehmet Nizamoglu, MS ~ University Medical Center Groningen, Netherlands
Jessica Orr, BSc ~ University College London, UK
- 2:30-2:45 Coffee and Networking Break

Session VII: Epithelial Plasticity: Cells Going Awry in Lung Injury

Moderators:

Michael F. Beers, MD ~ Perelman School of Medicine at the University of Pennsylvania
Yael Aschner, MD ~ University of Colorado Anschutz Medical Campus, Aurora, CO

- 2:45-3:10 PM *Featured Presentation: Ineffectual ATII-to-AT1 Cell Differentiation in Recovery after Lung Injury*
Rachel L. Zemans, MD ~ University of Michigan, Ann Arbor, MI

- 3:10-3:35 *Featured Presentation: If You Were an Epithelial Cell, Which Fibroblast Would You Ask for a Date?*
Anne-Karina Perl, PhD ~ Cincinnati Children's Hospital, Cincinnati, OH
- 3:35-4:00 *Featured Presentation: Plastic or Metaplastic: Regenerative Responses of the Distal Lung Epithelium*
Jaymin J. Kathiriya, PhD ~ Icahn School of Medicine at Mount Sinai, NY
- 4:00-4:15 *Outstanding Abstract Achievement Award Presentation: Contact-compression Induces Pro-Inflammatory and Fibrotic Responses in Bronchial Epithelial Cells*
Akash Gupta, BSc ~ University Medical Center Groningen, The Netherlands
- 4:15-4:35 *Panel Discussion*
- 4:40-5:20 PM *Buses leave at intervals to transport to dinner cruise (and to hotels if not attending the dinner cruise).*
- 6:00 PM **Dinner Cruise on Lake Champlain ~ Award Ceremony**
(Cruise boards from 6:00-6:30 and departs promptly at 6:30pm.)
- 9:00 PM *Cruise disembarks.*
(Please advise UVM in advance if you will need transportation back to the hotel following the cruise. The distance to walk is about two blocks uphill.)

THURSDAY, JULY 20

- 7:30-8:30 AM **Breakfast and Breakfast Session 2**
Finding a Position and Starting Your Own Lab – Panel Discussion
Jaime Hook, MD ~ Icahn School of Medicine at Mount Sinai, NY
Sriram Vaidyanathan, PhD ~ Stanford University, Stanford, CA
Jaymin Kathiriya, PhD ~ Icahn School of Medicine at Mount Sinai, NY
Jeremy Katzen, MD ~ University of Pennsylvania, PA

Session VIII: Dame Julia Polak Memorial Bioengineering Session **Mechanotransduction in Lung Development and Disease**

Moderators:

Jin-Ah Park, PhD ~ Harvard University, TH Chan School of Public Health, Boston, MA
Daniel Tschumperlin, PhD ~ Mayo Clinic, Rochester, MN

- 8:35-9:00 AM *Featured Presentation: Mechanical Forces and Early Lung Development*
Celeste Nelson, PhD ~ Princeton University, Princeton, NJ
- 9:00-9:25 *Featured Presentation: Mechanobiology of Branching Morphogenesis*
Victor D. Varner, PhD ~ The University of Texas at Dallas, Richardson, TX
- 9:25-9:50 *Featured Presentation: Impact of Nuclear Mechanics and Genome-Lamina Interactions on Stem Cell Fate Transitions*
Yekaterina Miroshnikova, PhD ~ NIH: NIDDK, Bethesda, MD

9:50-10:05 *Outstanding Abstract Achievement Award Presentation: Label-Free High-Resolution Photothermal Optical Infrared Spectroscopy For **In Situ** Identification of Biomolecules in Living Precision-Cut Lung Slices*
Nika Gvazava, MD ~ Lund University, Sweden

10:05-10:25 *Panel Discussion*

10:25-10:45 Coffee / Networking Break and **GROUP PHOTO**

Session IX: Challenges and Controversies in Human Mesenchymal Stromal Cell Therapy

Moderators:

Amy Ryan, PhD ~ University of Iowa, IA

Shirley Mei, PhD, MSc ~ Ottawa Hospital Research Institute, Ottawa, CA

10:50-11:05 AM *Panel Presentation: Live and Let Die: Understanding How Mesenchymal Stromal Cell Therapy Works*

Tracy Heng, PhD ~ Monash University, Melbourne, Australia

11:05-11:20 *Panel Presentation: MSCs for the Treatment of Sepsis: The Rationale and Evidence*
Lauralyn McIntyre, MD ~ Ottawa Hospital Research Institute, ON, Canada

11:20-11:35 *Panel Presentation: MSC Challenges and Controversies*
Jacques Galipeau, MD ~ University of Wisconsin in Madison, WI; President, International Society of Cell & Gene Therapy

11:35-12:00 *Panel Discussion*

12:00-1:15 PM Lunch Break

Session X: The Matrix Revealed: Understanding Extracellular Matrix Influence of Repair and Regeneration

Moderators:

Janette Burgess, PhD ~ University Medical Center, Groningen, The Netherlands

Alicia Tanneberger, MS ~ University of Colorado, Denver | Anschutz, Denver, CO

1:15-1:40 PM *Featured Presentation: Force Maintenance in the Smooth Muscle: A Collective Phenomenon Controlled by the Extracellular Matrix*

Harikrishnan Parameswaran, MS, PhD ~ Northeastern University, Boston, MA

1:40-2:05 *Featured Presentation: Matrix Stiffness and Crosslinking as Drivers of Disease*
Amanda Tatler, PhD ~ Biodiversity Institute, Nottingham University, Nottingham, UK

2:05-2:30 *Featured Presentation: Complexities of Responses to ECM Mechanics in Pulmonary Fibrosis and Lung Metastasis*

Núria Gavara, PhD ~ University of Barcelona, Barcelona, Spain

2:30-2:45 *Outstanding Abstract Achievement Award Presentation: Dual-Stiffness dECM Hybridgel for 3D Culture*

Leigh-Ann Antczak, BSc ~ Virginia Commonwealth University, VA

2:45-3:05 *Panel Discussion*

3:05-3:20 Coffee and Networking Break

Session XI: Concluding Discussion

Moderator:

Daniel J. Weiss, MD, PhD ~ University of Vermont, Burlington, VT

3:20-5:00 PM *Open Discussion - Setting Priorities and Recommendations to the NIH and Other Organizations Regarding Future Research Opportunities*

Shuttle bus - continuous looping from Davis Center to Airport and Hotels.