# Pulmonary Center Newsletter:

**September—November 2021**

## Table of Contents:

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Faces</td>
<td>3</td>
</tr>
<tr>
<td>Fall Events</td>
<td>5</td>
</tr>
<tr>
<td>BU Press Releases</td>
<td>8</td>
</tr>
<tr>
<td>Awards and Accomplishments</td>
<td>16</td>
</tr>
<tr>
<td>Upcoming Events</td>
<td>18</td>
</tr>
<tr>
<td>Publications</td>
<td>20</td>
</tr>
<tr>
<td>Alumni News</td>
<td>27</td>
</tr>
</tbody>
</table>
Welcome to the Newsletter!

We made it through another masked Fall!!! And this Fall I think we have been thankful for everything we’ve accomplished, and we have accomplished so much! As always, our remarkable Trainees continue to astonish us with their dedication, receiving awards, publishing papers, and receiving exciting grants! Our faculty continue with research, training, and produce an astounding number of publications. Lab and Administrative staff effectively communicate and support projects and keep the Center up and running. With the Holiday season just around the corner, please remember to take a well-deserved rest and travel safely! Only together were we able to accomplish all these wonderful successes, so thank you for helping to keep the BU Pulmonary Center such a Triumph!

I hope you Enjoy!

Lindsey Stein
Administrative Assistant
Pulmonary Center
New Faces

James Concepcion
Research Assistant
George’s/Carolina’s team

Janae Petipas
Research Assistant
George’s/Carolina’s team

Cedric Stpaul
Research Program Assistant
George’s/Carolina’s team

Kevyn Martins
Research Technician
Katrina’s team

Ian Kinstlinger, PhD
Post-Doctoral Fellow
Kotton Lab

Hirofumi Kiyokawa, MD, PhD
Post-Doctoral Associate
Kotton Lab

Mckenna Montminy
Laboratory Technician
Kotton Lab

P.J. Schnorr, MD
Post-Doctoral Fellow
Kotton Lab

Welcome!
Welcome the Newest Member of the Pulmonary Center!

Miina Hannele Rinne

Born the week of 11/22/2021
We are very proud of all members of the Pulmonary Center who participated in this year’s Evans Day and would like to congratulate these trainees who won awards!

**Basic Oral Presentation Winners:**

1st Place: Anukul Shenoy, Ph.D.
Postdoctoral Fellow
Mentor: Mizgerd

3rd Place: Rhiannon Werder, Ph.D.
Postdoctoral Fellow
Mentor: Wilson

**Clinical Oral Presentation Winner:**

1st Place: Eduardo Nunez, M.D.
Pulmonary Fellow
Mentor: Wiener

**Basic Poster Winner:**

1st Place: Neelou Etesami, M.D.
Ph.D. Student
Mentor: Mizgerd

(Scan Here for the full list of Evans Day Winners)
Jerome S. Brody, MD, Lectureship
November 3, 2021 – 3:30-5:30pm

Wellington Cardoso, M.D., PhD
Columbia University School of Medicine
Professor of Medicine and of Genetics and Development;
Director of the Columbia Center for Human Development

“Origin and fate of airway progenitors in development and diseases.”

This lectureship honors Dr. Brody and his vision of multidisciplinary biological research advancing pulmonary medicine. Dr. Jerry Brody is Professor Emeritus in the Pulmonary Center. He was the longest serving Director of the Pulmonary Center, overseeing its growth and accomplishments for over 30 years.
The Pulmonary Racial Equity Committee was formed in the spring of 2021 to improve diversity, equity, and inclusion across the Pulmonary Center. We have launched an educational curriculum this fall as part of the CCR conference.

After reading this article, I felt

Sessions involving readings, lectures, and discussion occur monthly and focus initially on improving one’s individual knowledge of the subject while later sessions will take on a collective approach to enacting change.
Idiopathic pulmonary fibrosis (IPF) is the most common and severe form of lung disease characterized by relentless scarring leading to death within an average of four years from the time of diagnosis. The poorly understood pathogenesis of IPF, in part due to the lack of human disease models, has been a major hurdle in developing effective therapies.

Now, a team of regenerative medicine researchers at Boston University and the University of Pennsylvania have created a model (using pluripotent stem cells) to show how dysfunction of a highly specialized cell of the air sacs, the type 2 pneumocyte, initiates the fibrotic cascade that characterizes a number of adult and pediatric lung diseases, including IPF and childhood interstitial lung disease (chILD).

“Understanding how dysfunction of the highly specialized cells of the air sacs initiates the fibrotic cascade can result in development of novel targeted therapies for this devastating disease. Furthermore, this model has the potential to serve as a platform for testing new therapeutics,” explains first author, Kontantinos Alysandratos, MD, PhD, assistant professor of medicine.

The researchers used two groups of patient-specific cells. The first group had an altered gene that made them dysfunctional. The second group consisted of normal cells which were engineered by gene editing to correct the altered gene. When both sets of cells were examined using a number of different methods, the cells with the altered gene displayed abnormal proliferation, aberrant recycling of unnecessary cellular components, altered metabolic profiles, and inflammatory activation. When both sets of cells were exposed to hydroxychloroquine, a medication commonly used in pediatric patients carrying this altered gene, aggravation of the
observed disturbances occurred in the cells with the altered gene, while no changes were seen in the normal cells.

According to the researchers, studying lung diseases in children, particularly those diseases that affect the air sac cells that reside deep in the lung, is very difficult since it is hard to access those cells for biological studies. “Generating stem cell-based in vitro models of lung disease, using easily accessible blood or skin cells from these children that are then reprogrammed into induced pluripotent stem cells, remains a very attractive approach for studying pediatric lung disease because it avoids risky biopsies of the deep lung, yet provides a simulation in the laboratory dish of the same processes that we think are occurring in the in vivo lung tissue itself,” says corresponding author Darrell Kotton, MD, the David C. Seldin Professor of Medicine at BUSM and Director of the BU/Boston Medical Center’s Center for Regenerative Medicine (CReM).

The researchers believe it should now be possible to take similar approaches to study many other types of interstitial lung diseases that arise from dysfunction in the air sacs and affect both children and adults. “In this way, these in vitro models should really expand drug development efforts to treat these diseases that until now have suffered from a lack of access to living cells from patients,” Alysandratos says. The work was led by co-senior authors, Kotton and Michael F. Beers, MD, the Robert L. Mayock and David A. Cooper Professor in Pulmonary Medicine at the University of Pennsylvania Perelman School of Medicine.

Scan code for link to BU Press Release

These findings appear online in the journal Cell Reports:
Joseph Mizgerd Named Jerome S. Brody Professor of Pulmonary Medicine

Friday, September 17th, 2021

Joseph P. Mizgerd, ScD, was named the inaugural Jerome S. Brody, MD, Professor of Pulmonary Medicine in a ceremony held both in-person and over Zoom. On Sept. 14, colleagues, friends and family gathered to witness the installation and celebrate his contributions to the pulmonary field.

Mizgerd is Director of the Boston University Pulmonary Center and professor of medicine, microbiology, and biochemistry. His work focuses on immunology in the lung and its influence on acute lower respiratory tract infections.

This professorship honors Jerome Brody, professor emeritus of pulmonary, allergy, sleep & critical care medicine. He was the longest serving director of the Pulmonary Center, overseeing its growth and accomplishments for more than 20 years. He has made many seminal
contributions relating to cigarette smoking-induced lung disease, including lung cancer and COPD.

BUMC Provost and BUSM Dean Karen Antman, MD, kicked off the event. She noted that professorship installations offer some of the most joy-filled moments in academic medicine. Then she opened the floor to David Coleman, MD, FACP, Wade Professor and Chair of Medicine.

“Professorships are a very important part of the way that we acknowledge people in our environment who have been really meaningful, important elements of the character of our department and our institution,” he said.

He added, “Dr. Brody has made indelible contributions to the many people that he inspired and the individuals that he mentored.”

Avrum Spira, MD, MSc, professor of medicine, pathology and bioinformatics and the Alexander Graham Bell Professor in Health Care Entrepreneurship, then spoke about Brody’s legacy in pulmonary medicine and their relationship as collaborators.

“You always were there to help me take the leap, take the risk, to believe in myself,” Spira said to Brody. “From the bottom of my heart, thank you, not just on my behalf, but from the ocean of people who you’ve influenced in such a profound way. You’re a unique, visionary leader.”

Jerome Brody (left) with his wife Anne (center) and brother Alan (right)

Karen Brody, on behalf of herself and her sisters, thanked the Pulmonary Center and BUSM for honoring their father’s legacy.

“It makes us so proud that our father’s lifetime of research and teaching are being recognized through this professorship,” she said.

Brody’s brother, stepdaughter and stepson also shared sentiments of admiration and pride before Brody stepped up to the podium to thank the speakers for their kind words.
Matthew Jones, PhD, associate professor of Pulmonary, Allergy, Sleep & Critical Care Medicine and a faculty member in the Pulmonary Center, joined via Zoom to introduce Mizgerd to the group. Jones had been one of Mizgerd’s trainees as a postdoctoral fellow in 2003, when Mizgerd was an assistant professor at Harvard School of Public Health.

“He fosters a culture of curiosity, scientific rigor, insightfulness and hard work, and it’s balanced with reflection, life accommodation and fun,” Jones said.

Mizgerd then took to the podium to thank Brody, colleagues, mentors, friends, family and his many other supporters.

“This professorship is the most important, most meaningful and most personally significant honor I’ve ever received,” he said.

Congratulations!
George Murphy, PhD, associate professor of medicine, and co-director of the Boston Medical Center/BU Center for Regenerative Medicine (CReM) is a recipient of a 2021 Healthy Longevity Catalyst Award for his project “Deciphering Mechanisms of Disease Resistance and Longevity in Centenarians.”

The National Academy of Medicine (NAM) founded the competition and coordinates among a network of global collaborators, each administering a competition in their respective country or region. In parallel, the NAM administers a U.S.-based Catalyst Award competition, for which approximately 500 innovators submitted applications in 2021. Murphy is one of 25 awardees and will receive $50,000 as seed funding to help advance his project.
New Study Reveals Lung Cell Roles in Pulmonary Immunity

Wednesday, October 6th, 2021

Lung immunity is essential to combat all pulmonary diseases, including COVID-19, pneumonia, lung cancer, asthma and COPD. Lung immunity differs from the systemic immunity which is the normal focus of biomedical investigations and interventions, but factors influencing the establishment and regulation of lung immunity are mostly still unknown. Now a new study reveals lung cell roles in guiding the immune system.

BUSM researchers have found that control of immunity in the lungs is accomplished by cells that line the air spaces, epithelial cells, using a specialized immune-facing molecule, MHC-II. This epithelial MHC-II is essential for localizing and scripting highly specialized immune cells called resident memory T (TRM) lymphocytes inside the lungs.

“Epithelial cells in the lung are typically envisioned as supporting respiratory functions, while MHC-II is understood to connect immune cells to immune cells, so the finding that MHC-II on lung epithelial cells tells TRM cells where to go and what to do in the lung is novel and unanticipated,” explained corresponding author Joseph Mizgerd, ScD, professor of medicine, microbiology and biochemistry.

By analyzing the lung epithelial cells from human and experimental models, the researchers learned that all the different types of epithelial cells examined express MHC-II and increase its expression during infections. The only known function of MHC-II is to educate immune cells called CD4+ T cells. In cell cultures, lung epithelial cells could use this molecule to tell T cells what to do, so that they would be able to respond appropriately to microbes that might cause an infection. Interrupting only MHC-II only on lung epithelial cells led to aberrant numbers and types and places of CD4+ T cells in the lungs, but not the blood, revealing these specific lung cells were responsible for directing pulmonary immunity.
“Our study suggests that lung epithelial cells are akin to gatekeepers that are tasked with appropriately instructing locations of CD4 TRM cell outposts and their ability to fight future infections. Given that TRM cells, beyond their protective roles in pneumonia, play key roles in fighting cancers and provoking asthma, our findings have larger implications in understanding, preventing and treating multiple lung diseases,” said first author Anukul Shenoy, PhD, postdoctoral scientist in BUSM’s Pulmonary Center.

In addition to showing that lung epithelial cells use MHC-II to organize the immune system in the lung, the study also reveals two unexpected findings that grew out of the main discovery. First, that other immune-facing molecules depend on MHC-II for getting to the cell surface where they can interact with other cells to do their immune instruction. Second, that the lack of MHC-II on lung epithelial cells causes changes to the local lung immune system that mirror a rare but serious outcome of immune-targeting cancer therapies (“checkpoint inhibitor therapies”). “This led to the discovery that a molecular target of these cancer treatments is one of the molecules that depends on MHC-II for getting to the cell surface, and the suggestion that deleterious side effects from checkpoint inhibitor therapies may result from inhibition of immune cell guidance by lung epithelial cells,” said Mizgerd.

The researchers envision that interventions (both preventative and remedial) can be designed to harness the ability of lung epithelial cells in modulating the pulmonary immunity. “That way we would be able to use the patients’ own lung epithelial cells to turn on protective roles of TRM cells during pneumonia and/or cancers, while being able to shut off their pathological roles during asthma, as deemed necessary,” said Shenoy.

These findings appear online in the journal Nature Communications

Scan code for link to BU Press Release
Awards and Accomplishments

Alan Fine, MD
Professor of Medicine
- Subaward - from MGH/NIH NHLBI R01 - Age-related mechanisms of T helper memory in the early lung.

Michael Garcia, M.D.
Fourth Year Pulmonary Fellow
Mentor: Walkey
- NIH NHLBI F32 - Characterizing contemporary practices in the approach to elevated troponin I levels during sepsis.

Davidson H. Hamer, M.D.
Professor of Global Health
- Serving as the DSMB Chair for the “Zinc for prevention of pneumonia in the elderly in long-term care facilities pilot study” (PI Meydani at Tufts University)
- Selected to serve as the Scientific Program Chair for the 18th Conference of the International Society of Travel Medicine, which will be held in Basel, Switzerland in May 2023.

Justin Lui MD
Assistant Professor of Medicine
- Awarded the Resident/Fellow Leadership Award by the Massachusetts Chapter of the American College of Physicians.
- One of 30 invited speakers at the 17th Annual Respiratory Disease Young Investigators' Forum held on October 14 - 17, and presented research entitled, "A Random Forest Decision Tool to Risk Stratify Patients for Right Heart Catheterization for Diagnosing Pulmonary Hypertension in Systemic Sclerosis."

Paul J. Maglione MD, PhD
Assistant Professor of Medicine
- Awarded Evans Junior Faculty Research Merit Award at the 2021 Department of Medicine Evans Day.
Eduardo Nunez, M.D.
Fourth Year Pulmonary Fellow
Mentor: Wiener
- NIH NCI F32 - Determining organizational structures and processes that improve lung cancer screening adherence among underserved populations.
- LUNGevity Foundation Health Equity and Inclusiveness Research Fellow Award - Improving lung cancer screening adherence among underserved populations.

Katrina E. Traber MD, PhD
Assistant Professor of Medicine
- Awarded Evans Junior Faculty Research Merit Award at the 2021 Department of Medicine Evans Day.

Allan J. Walkey MD, MSc
Professor of Medicine
Associate Professor of Health Law, Policy & Management
- Subaward - Sunnybrook Research Institute/DOD - The Relationship Between Type of Opioid Used During Critical Illness and Transition to Chronic Pain.

Renda Wiener, M.D.
Professor of Medicine of Medicine
- New Merit/IIR grant from VA HSR&D, "Impact of COVID-19 on implementation and outcomes of VA’s Life-Sustaining Treatment Decisions Initiative."

Jin Yuan, M.D., Ph.D.
Fourth Year Pulmonary Fellow
Mentor: Fine/Jones
- New F32 award from NHLBI, “The Role of Lung Multiciliated Cell MIWI2 in Influenza Pathogenesis.”
In August 2020, the BUSM Pulmonary Center community experience the shocking and sudden loss of Kayla Bell, a research technician in the Maglione laboratory of the Pulmonary Center. Not only was Kayla a highly talented scientist and aspiring immunologist, she was a consummate team player always looking for ways to help out in the Pulmonary Center.

**Kayla Bell Lecture**

**March 16th**

In the spirit of Kayla’s thoughtful and eager generosity, we would like to launch the first annual Kayla Bell Pulmonary Center Lecture. This Lecture will be an occasion to celebrate and commemorate the time that Kayla shared with us.

**Carrie L Lucas, PhD**

Assistant Professor of Immunobiology

Yale School of Medicine
Gordon Snyder Symposium
April 13th

Symposium to Commemorate Gordon Snider’s 100th Birthday.

Please reserve the afternoon of April 13, 2022 for the annual Gordon Snider Lectureship. This year we will commemorate what would have been his 100th Birthday with a Symposium on the Future of COPD. Participants with be BU Alumni Bart Celli, Jerry Criner, Barry Make and Fernando J. Martinez and current BU faculty George O’Connor and Avi Spira. Andrew Wilson will deliver the Annual Gordon Snider Lecture. Look for emails and our next Newsletter for more details on the Program.
Publications

Congratulations to the Pulmonary Center members for the following publications this quarter:


Ko D, Dai Q, Flynn DB, Bosch NA, Helm RH, Monahan KM, Andersson C, Anderson CD, Walkey AJ. Meta-Analysis of Randomized Clinical Trials Comparing the Impact of Implantable Loop Recorder Versus Usual Care After Ischemic Stroke for Detection of Atrial Fibrillation and


Notable news from Pulmonary Center alumni…

Aileen Mickey, MD  
*Former Pulmonary Fellow, Class of 98’*  
Recently accepted a position as President of MainHealth Medical Group in Portland, ME

Congratulations to Aileen for this exciting News!!