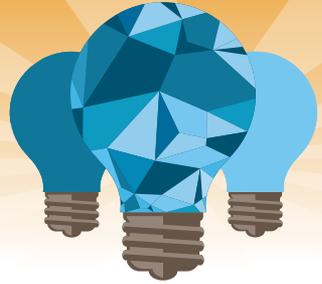


**EMERGING
INNOVATORS IN
COLLABORATIVE
RESEARCH**



Celebrate Colleagues, Build Community!

2021 – 2022 Program Booklet

**October 5, November 3, 2021 and January 11,
February 10, and April 18, 2022**

Seminar Description

The Emerging Innovators in Collaborative Research program, organized by the Office of Academic Training and Outreach Programs (ATOP), recognizes exceptional non-faculty researchers-in-training and research staff who have contributed significantly to a collaborative project, producing high impact research at Children's Hospital. All speakers for the series have been nominated by their Department Chair, Division Chief or Faculty Mentor, and represent a variety of scientific disciplines and research areas.

Program Goals

- Provide a forum for outstanding non-faculty researchers to present and discuss their science
- Celebrate the successes of future leaders in pediatric research
- Build community and collaboration among colleagues and the broader CHOP community

For more information about the program contact Olivia Chesniak, PhD, Academic Programs Officer at chesniako@chop.edu.

PROGRAM SCHEDULE

TUESDAY, OCTOBER 5, 2021

<https://bluejeans.com/344375945/7558>

11:00 a.m. to 11:30 a.m. **Developing multi-species OPA1 disease models in order to exploit mitophagy modulation for therapy development**

Suraiya Haroon, PhD | Research Associate
Pediatrics – Human Genetics

11:30 a.m. to 12:00 p.m. **Reproducible breath metabolite changes in children with SARS-CoV-2 infection**

Amalia Berna, PhD | Research Scientist
Pediatrics – Infectious Diseases

WEDNESDAY, NOVEMBER 3, 2021

<https://bluejeans.com/646328737/7399>

11:00 a.m. to 11:30 a.m. **Role of dietary fiber in the recovery of the human gut microbiome and its metabolome**

Ceylan Tanes, PhD | Research Scientist
Pediatrics – Gastroenterology, Hepatology, & Nutrition

11:30 a.m. to 12:00 p.m. **Novel targets for rational combination therapy in Philadelphia chromosome-like ALL**

Yang Ding, MD | Instructor
Pediatrics – Oncology

TUESDAY, JANUARY 11, 2022

<https://bluejeans.com/117340671/9296>

11:00 a.m. to 11:30 a.m. **Impact of interspecies interactions during gastrointestinal infection with *Clostridioides difficile***

Arwa Abbas, PhD | Postdoctoral Fellow
Pathology & Laboratory Medicine – Laboratory Medicine

11:30 a.m. to 12:00 p.m. **Biomolecular condensates coordinate assembly of infectious viral progeny**

Matthew Charman, PhD | Postdoctoral Fellow
Pathology & Laboratory Medicine – Cancer Pathobiology

PROGRAM SCHEDULE

THURSDAY, FEBRUARY 10, 2022

<https://bluejeans.com/942054520/1837>

11:00 a.m. to 11:30 a.m. **Using the *Drosophila* model to investigate neurodevelopmental disorders**

Qin Wang, PhD | Postdoctoral Fellow
Pathology & Laboratory Medicine – Cell Pathology

11:30 a.m. to 12:00 p.m. **Key roles for SOXC transcription factors in skeletogenesis**

Marco Angelozzi, PhD | Postdoctoral Fellow
Surgery – Orthopedics

MONDAY, APRIL 18, 2022

<https://bluejeans.com/149683478/7244>

11:00 a.m. to 11:30 a.m. **Biopsy-derived 3D organoids for investigation of gastrointestinal pathology, development, and therapy**

Tatiana Karakasheva, PhD | Research Associate
Pediatrics – Gastroenterology, Hepatology, & Nutrition

11:30 a.m. to 12:00 p.m. **Monoferric forms of transferrin serve as distinct signaling molecules in the modulation of erythropoietin sensitivity and ineffective erythropoiesis**

Amaliris Guerra, PhD | Postdoctoral Fellow
Pediatrics – Hematology

12:00 p.m. to 12:30 p.m. **Association of Electronic Benefits Transfer with increased WIC participation**

Aditi Vasan, MD | Instructor
Pediatrics – General Pediatrics

October 5th Presenters



Suraiya Haroon, PhD

Research Associate

Pediatrics – Human Genetics

NOMINATED BY: Marni Falk, MD

COLLABORATORS: Sherine Chan, PhD, Medical University of South Carolina; Doug Wallace, PhD, Children’s Hospital of Philadelphia; Xilma Ortiz, MD, Children’s Hospital of Philadelphia; Chris Fang-Yen, PhD, University of Pennsylvania

PROJECT: *Developing multi-species OPA1 disease models in order to exploit mitophagy modulation for therapy development*

DESCRIPTION: Pathogenic mutations in OPA1 primarily results in vision loss but can also cause a range of neuromuscular defects. Unfortunately, there are no FDA-approved cures or treatments for OPA1 diseases. To bridge this medical deficit, we are developing worm, zebrafish and patient fibroblast models of OPA1 disease to identify novel therapies. We know that OPA1 dysfunction leads to increased mitochondrial stress and mitophagy. We postulate that modulating mitophagy may rescue some OPA1 disease symptoms. Therefore, we are screening with mitophagy modulators in worms to identify potential therapies, which will be validated in zebrafish and in patient cell lines.



Amalia Berna, PhD

Research Scientist

Pediatrics – Infectious Diseases

NOMINATED BY: Audrey R. Odom John, MD, PhD

COLLABORATOR: Elikplim H. Akaho, MD, Children’s Hospital of Philadelphia

PROJECT: *Reproducible breath metabolite changes in children with SARS-CoV-2 infection*

DESCRIPTION: During the COVID-19 pandemic, it has been an ongoing challenge to provide sufficient testing for infection. Most coronavirus testing methods involve uncomfortable nasal swabs. Our goal is to deliver a “COVID-19 breathalyzer” for children that would be rapid, and easy to administer. In the John lab, we have done preliminary “breathprinting” studies on children at CHOP with and without coronavirus infection. Using state-of-the-art technology called mass-spectrometry, we have identified odor molecules that are found at high levels in the breath of children with COVID-19 infection compared to uninfected children. Using these molecules, we can diagnose infection with high accuracy.

November 3rd Presenters

Ceylan Tanes, PhD

Research Scientist

Pediatrics – Gastroenterology, Hepatology, & Nutrition

NOMINATED BY: Kyle Bittinger, PhD

COLLABORATORS: Gary Wu, MD, University of Pennsylvania;
Robert Baldassano, MD, Children's Hospital of Philadelphia;
Douglas Wallace, PhD, Children's Hospital of Philadelphia

PROJECT: *Role of dietary fiber in the recovery of the human gut microbiome and its metabolome*

DESCRIPTION: The human gut harbors a vast reservoir of bacteria and other microbes, which themselves carry a wide array of metabolically active genes that dwarf the human genome. In this study, we characterized the effect of omnivore, vegan, and enteral nutrition diets on the human gut microbiome and its associated metabolome. We found that diet, specifically dietary fiber, played a key role in gut microbiome reconstitution following antibiotic use. In turn, we determined the consequences for microbial metabolite production in the gut, such as bile acid modification and utilization of amino acids.



Yang Ding, MD

Instructor

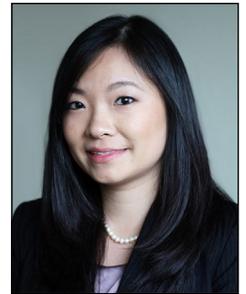
Pediatrics – Oncology

NOMINATED BY: Kai Tan, PhD

COLLABORATOR: Sarah Tasian, MD, Children's Hospital of Philadelphia

PROJECT: *Novel targets for rational combination therapy in Philadelphia chromosome-like ALL*

DESCRIPTION: My research aims to identify new therapy targets in Philadelphia chromosome-like B-acute lymphoblastic (a common high-risk leukemia subtype defined by a kinase-activated gene expression pattern and chemoresistance with very poor clinical outcomes). Towards this goal, I have established a collaborative mentorship team with complementary expertise consisting of Dr. Kai Tan, a leader in systems biology, and Dr. Sarah Tasian, an expert in kinase-signaling. I used an unbiased network biology-based approach to analyze large-scale primary patient genomic and transcriptomic datasets and identified previously unrecognized synergies in Ph-like ALL that can inform rational combination therapy approaches and potentially overcome targeted therapy resistance.



January 11th Presenters



Arwa Abbas, PhD

Postdoctoral Fellow

Pathology and Laboratory Medicine – Laboratory Medicine

NOMINATED BY: Joseph Zackular, PhD

COLLABORATORS: Frederic Bushman, PhD, University of Pennsylvania; Maire Conrad, MD, MS, Children's Hospital of Philadelphia; Mark Goulian, PhD, University of Pennsylvania; Maribeth Nicholson, MD, MPH, Vanderbilt University Medical Center

PROJECT: *Impact of interspecies interactions during gastrointestinal infection with Clostridioides difficile*

DESCRIPTION: Infection with the pathogenic bacterium *Clostridioides difficile* is the leading cause of hospital-acquired infections and a major public health threat for both children and adults. Infection occurs in a dynamic polymicrobial environment in the gastrointestinal tract and presents as a spectrum of disease ranging from asymptomatic colonization to severe GI complications and death. While some microbiota are known to restrict *C. difficile* colonization, we don't fully understand how microbial cooperation influences disease outcomes. The goal of my research is to determine how a family of commensal and opportunistic pathogenic bacteria, the Enterobacteriaceae, adapt to and impact the outcome of *C. difficile* infection.



Matthew Charman, PhD

Postdoctoral Fellow

Pathology and Laboratory Medicine – Cancer Pathobiology

NOMINATED BY: Matthew Weitzman, PhD

COLLABORATORS: Daniel Blumenthal, PhD, Charisma Therapeutics; Elene Tsopurashvili, Princeton University

PROJECT: *Biomolecular condensates coordinate assembly of infectious viral progeny*

DESCRIPTION: To sustain infection and ultimately infect new hosts, viruses hijack host cells for their progeny production. During infection with the nuclear-replicating DNA virus human adenovirus, viral genomes must be packaged within a proteinaceous capsid shell to yield infectious progeny virions. However, it is unknown how capsid assembly and genome packaging are coordinated within the crowded nuclear environment. We show that the 52K protein of human adenovirus forms liquid-liquid condensates. These condensates recruit virion proteins and viral genomes, and are essential for genome packaging. Disrupting condensates abolishes infectious progeny production, suggesting that this process may be targeted as an antiviral strategy

February 10th Presenters

Qin Wang, PhD

Postdoctoral Fellow

Pathology and Laboratory Medicine – Cell Pathology

NOMINATED BY: Yuanquan Song, PhD

COLLABORATOR: Dong Li, PhD, Children's Hospital of Philadelphia

PROJECT: *Using the Drosophila model to investigate neurodevelopmental disorders*

DESCRIPTION: Many neurodevelopmental disorders have been linked to pathogenic variants. I utilize the *Drosophila* model to analyze the impact of patient variants on protein structure and function, thus assess their neuropathological roles and looking for potential therapeutic targets. We have already found that the gene *SMARCA5/Iswi* is important for fly development and its loss-of-function results in a spectrum of neurodevelopmental abnormalities, which mirror the key morphological and behavior phenotypes present in affected individuals who carry *de novo* SMARCA5 mutations. We also identified a gene *U2AF2/u2af50*, whose variants are associated with developmental delay and seizure in both human and fly.



Marco Angelozzi, PhD

Postdoctoral Fellow

Surgery – Orthopedics

NOMINATED BY: Veronique Lefebvre, PhD

COLLABORATORS: Anirudha Karvande, PhD, Children's Hospital of Philadelphia; Rebecca Ahrens-Nicklas, MD, PhD, Children's Hospital of Philadelphia; Claudio Graziano, MD, Policlinico S. Orsola-Malpighi, Bologna, Italy; Renata Pellegrino PhD, MS, Children's Hospital of Philadelphia

PROJECT: *Key roles for SOXC transcription factors in skeletogenesis*

DESCRIPTION: SOXC genes are transcription factors involved in several biological process. Their expression is essential in the formation of many organs, and variants affecting these genes have been associated with human developmental diseases characterized by intellectual disability and dysmorphic features. My research project focuses on dissecting the roles of the SOXC genes in skeletal development and maintenance. The analysis of human variants identified in patients and the study of knockout mouse models are used to identify SOXC-dependent cellular and molecular mechanisms that could help to better understand SOXC- and bone-related diseases and develop novel therapeutic approaches.



April 18th Presenters



Tatiana Karakasheva, PhD

Research Associate

Pediatrics – Gastroenterology, Hepatology, & Nutrition

NOMINATED BY: Kathryn Hamilton, PhD

COLLABORATORS: Judith R. Kelsen, MD, and the CHOP Very Early Onset IBD Program; Melanie Ruffner, MD, PhD, Children's Hospital of Philadelphia; Dan Dongeun Huh, PhD, University of Pennsylvania; Suzanne MacFarland, MD, Children's Hospital of Philadelphia

PROJECT: *Biopsy-derived 3D organoids for investigation of gastrointestinal pathology, development, and therapy*

DESCRIPTION: We have a pipeline for efficient generation of 3D organoids (e.g. mini-organs) from a single endoscopic biopsy. These organoids have been used to (1) demonstrate defects in epithelial lining of patients with monogenic VEO-IBD; (2) provide material for single-cell RNA sequencing of epithelium from eosinophilic esophagitis patients, enabling deeper understanding of epithelial barrier defects in this immune system-driven disease; (3) grow vascularized mini-intestines in an engineered scaffold that can be perfused with immune cells for a more wholistic organ modeling; (4) grow polyps from patients with pediatric polyposis syndrome to investigate carcinogenic transformation. Our newest and exciting project involves developing gene therapy approaches to monogenic VEO-IBD.



Amaliris Guerra, PhD

Postdoctoral Fellow

Pediatrics – Hematology

NOMINATED BY: Stefano Rivella, PhD

COLLABORATORS: Robert Fleming, MD, Saint Louis University School of Medicine; Nermi Parrow, PhD, Saint Louis University School of Medicine; Yelena Ginzburg, MD, Icahn School of Medicine at Mount Sinai

PROJECT: *Monoferrous forms of transferrin serve as distinct signaling molecules in the modulation of erythropoietin sensitivity and ineffective erythropoiesis*

DESCRIPTION: We are interested in understanding the role of transferrin (TF) in erythropoiesis and the regulation of iron metabolism beyond its iron delivery capacity. We have generated mice carrying mutations in TF that blocked binding of iron on the N-terminal (TF^{monoN}) or C-terminal (TF^{monoC}) lobes and crossed them to a mouse model of β -thalassemia (BT) (*Hbb*^{th3/+}). Our preliminary data shows amelioration of anemia in *Hbb*^{th3/+}TF^{monoN} but not in *Hbb*^{th3/+}TF^{monoC} and provides evidence that mono TF serves a regulatory function. We are now elucidating the mechanisms for the observed differences and are exploring the translational potential of monoN TF in BT.

April 18th Presenters

Aditi Vasan, MD

Instructor

Pediatrics – General Pediatrics

NOMINATED BY: Chen C. Kenyon, MD, MSHP

COLLABORATORS: Atheendar S. Venkataramani, MD, PhD, University of Pennsylvania; Alexander G. Fiks, MD, MSCE, Children's Hospital of Philadelphia; Chris Feudtner, MD, PhD, MPH, University of Pennsylvania

PROJECT: *Association of Electronic Benefits Transfer with increased WIC Participation*



DESCRIPTION: The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is an important source of nutritional support for women and children living in poverty, but only 50% of eligible women and children currently receive WIC. In 2010, Congress mandated that states transition WIC benefits from paper vouchers to electronic benefits transfer (EBT) cards, which are more convenient, less stigmatizing, and may improve WIC participation. We found that in states that implemented WIC EBT, participation increased by 7.78% 3 years after implementation. These findings suggest that EBT could increase WIC participation, with beneficial downstream effects on maternal and child health.

About the Office of Academic Training and Outreach Programs (ATOP)

ATOP provides institutional oversight in three key strategic areas: Academic Training, Outreach Programs, and Specialty Programs and Diversity.

The Academic Training team provides professional and career development programming for all non-faculty **researchers-in-training** at Children's Hospital, including:

- Postdoctoral Fellows
- Physician Fellows
- Training Grant Fellows
- CHOP-Based Graduate Students
- Research Staff

Visit the [ATOP website](#) to learn more about the CHOP trainee community and to find up-to-date program information, policy- and administration-related materials and resources.

For more information about ATOP, contact David Taylor, PhD, Associate Director at taylor@chop.edu.