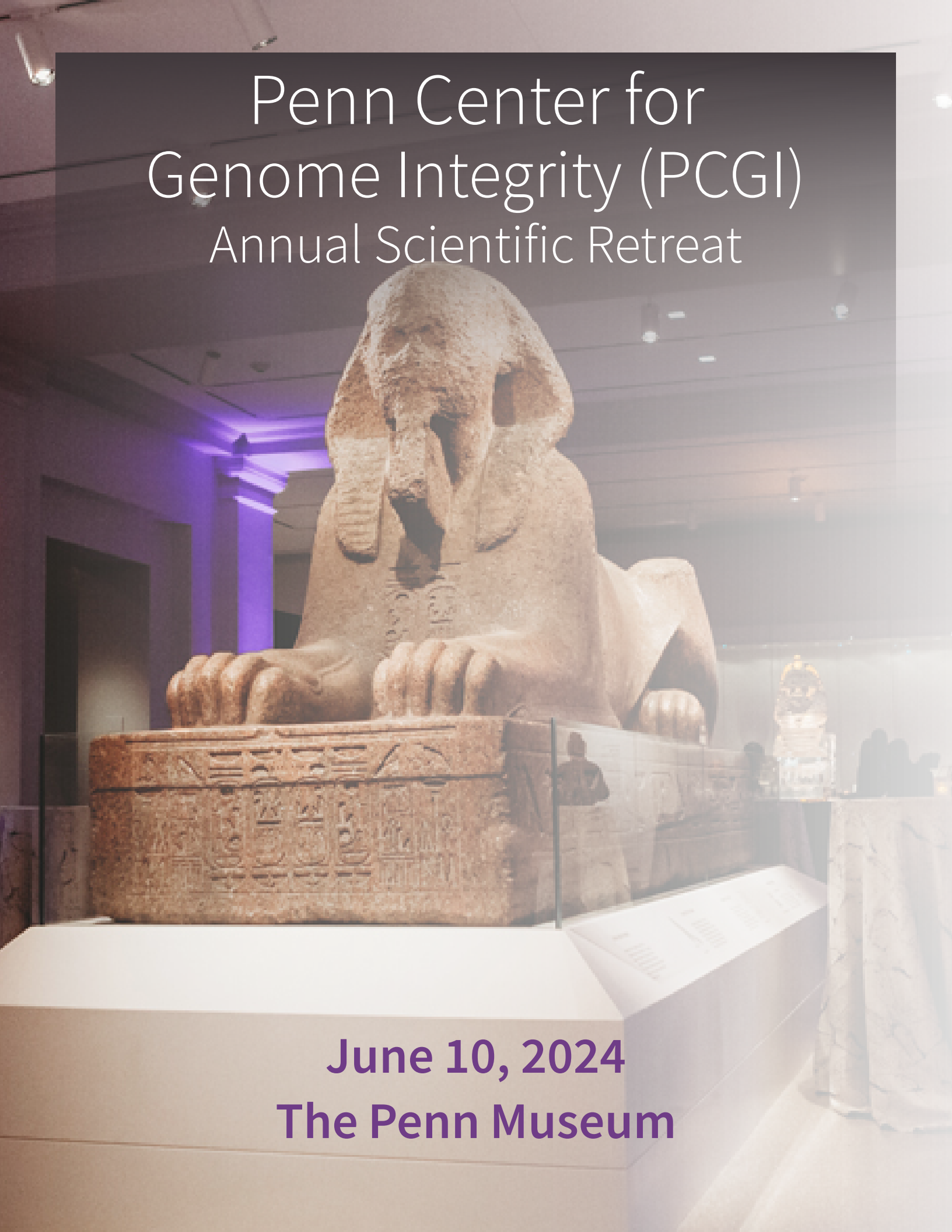

Penn Center for Genome Integrity (PCGI)

Annual Scientific Retreat

June 10, 2024

The Penn Museum

PCGI Annual Scientific Retreat Program

Monday, June 10, 2024 - The Penn Museum

8:30-9:00 am
Registration & Breakfast Buffet
Widener Lecture Hall

Session One
Moderator: Tianpeng Zhang, Greenberg Lab

9:00-9:10 am
Introduction: Roger Greenberg, MD, PhD
Director, Penn Center for Genome Integrity (PCGI)
J. Samuel Staub, MD Professor of Cancer Biology
Director of Basic Science, Basser Center for BRCA
University of Pennsylvania Perelman School of Medicine

9:10-9:25 am
Piero Lamelza, PhD
Postdoctoral Fellow, Lampson Laboratory
University of Pennsylvania School of Arts & Sciences

"Species divergence in de novo pericentric heterochromatin formation"

9:25-9:40 am
Gabriel Birchak
CAMB PhD Candidate, Black Lab
University of Pennsylvania Perelman School of Medicine

"Extending the reach of single-copy HACs with protein-only epigenetic centromere seeding"

9:40-10:00 am
Wei Tong, PhD
Professor and Distinguished Chair in Pediatrics Hematology, Children's Hospital of Philadelphia
Co-Director, Hematopoietic Stem Cell Program, Institute for Regenerative Medicine,
University of Pennsylvania Perelman School of Medicine

"Regulation of replication stress in hematopoietic stem cell regeneration"

Introduction: Ben E. Black, PhD
Eldridge Reeves Johnson Foundation Professor of Biochemistry and Biophysics
Co-Director, Penn Center for Genome Integrity (PCGI)
Member, Abramson Cancer Center
Executive Board Member, Epigenetics Program
University of Pennsylvania Perelman School of Medicine

10:00-10:40 am
Keynote Address: Don Cleveland, PhD
Distinguished Professor and Chair
Department of Cellular and Molecular Medicine
University of California, San Diego

"Evolution of genome instability in cancer"

10:40-11:00 am
Coffee Break

Session Two
Moderator: Kristie Darrah, Bernstein Lab

11:00-11:15 am
Jie Chen, PhD
Research Associate, Greenberg Laboratory
University of Pennsylvania Perelman School of Medicine

"Identifying the endogenous and enigmatic immunogenic double-strand RNAs"

11:15-11:30 am
Muzaffer Kassab, PhD
Research Associate, Brown Lab
University of Pennsylvania Perelman School of Medicine

"Impact of DNA repeat silencing on ATR inhibitor-driven genomic breaks"

11:30-11:50 am
Ahmed Diab, PhD
Assistant Professor of Otorhinolaryngology, Head and Neck Surgery
Member, Abramson Cancer Center Therapeutics Program
Core Member, Penn Center for Genome Integrity (PCGI)
University of Pennsylvania Perelman School of Medicine

"WEE1 inhibition triggers tumor microenvironment-dependent antitumor immunity against HPV+ HNSCC tumors"

Session Three: Lunch and Roundtable Discussions

12:00-1:00 pm
Lunch
Chinese Rotunda, 3rd Floor

Program continued next page...

PCGI Annual Scientific Retreat Program (continued)

1:00-1:30pm
Roundtable Discussions:

- *"Landing a faculty position"*
  Led by Drs. Ahmed Diab & Xue (Sherry) Gao in the Chinese Rotunda
- *"Entrepreneurial endeavors"*
  Led by Drs. Eric J. Brown, Roger Greenberg, & Ben Black in the Widener Lecture Hall
- *"Grant writing"*
  Led by Drs. Matthew Weitzman, Sunny Shin, & Kara Bernstein in the Upper Baugh, 3rd Floor

Alternately, please feel free to browse the museum

Session Four
Moderator: Sung-Ya Lin, Levine Lab

Introduction: Dennis Discher, PhD
Robert D. Bent Professor of Bioengineering,
Chemical and Biomolecular Engineering, and Mechanical Engineering and Applied Mechanics
University of Pennsylvania School of Engineering & Applied Science

1:30-2:00 pm
Faculty Keynote Address: Xue (Sherry) Gao, PhD
Associate Professor, Departments of Chemical and Biomolecular Engineering, and Bioengineering
University of Pennsylvania School of Engineering & Applied Science

"Engineered CRISPR systems for disease treatment and diagnostics"

2:00-2:15 pm
Steven Phan
Graduate Student, Discher Lab
University of Pennsylvania Perelman School of Medicine

"ChReporter tracking of heritable genetic changes caused by confinement"

2:15-2:30 pm
Sehbanul Islam, PhD
Postdoctoral Researcher, Busino Lab
University of Pennsylvania Perelman School of Medicine

"Enhanced detection of intracellular drug targets using tandem-affinity purification"

2:30-2:45 pm
Ting Zao, PhD
Postdoctoral Researcher, Song and Ming Laboratories
University of Pennsylvania Perelman School of Medicine

"Ythdc1 safeguards genome integrity during embryonic cortical neurogenesis"

2:45-3:00 pm
Sarai Mendoza-Figueroa, PhD
Postdoctoral Fellow, Liu Lab
University of Pennsylvania Perelman School of Medicine

"Building the nucleolus: How ribosome biogenesis shapes nucleolar architecture"

3:00-3:15 pm
Coffee Break

3:15-3:30 pm
Amy Gladstein
Graduate Student, Genetics and Epigenetics Program, Feldser Lab
University of Pennsylvania Perelman School of Medicine

"The H3K36M oncohistone is a tumor suppressor in lung adenocarcinoma"

3:30-3:45 pm
Namrata Kumar, PhD
Postdoctoral Research Fellow, Weitzman Lab
Children's Hospital of Philadelphia (CHOP)

"RAD51 mediates early viral transcription during HSV-1 infection"

3:45-4:00 pm
Mikael Garabedian, PhD
Postdoctoral Researcher, Good Lab
University of Pennsylvania Perelman School of Medicine

"Biomolecular condensates in DNA Damage Response"

4:00-5:00 pm
Poster Session
Upper Baugh, 3rd Floor

5:00 pm
Reception
Warden Garden Courtyard
(*Chinese Rotunda if inclement weather*)

PCGI Annual Scientific Retreat Program Speaker Biographies

Piero Lamelza, PhD

Dr. Lamelza's thesis work was completed in Dr. Michael Ailion's lab at the University of Washington, where his focus was on how divergent mitochondrial-nuclear conflict might contribute to reproductive barriers between species. Dr. Lamelza is currently a Postdoctoral Fellow in Dr. Michael Lampson's laboratory at the University of Pennsylvania, where he uses comparative molecular analysis, cell biology and interspecies hybridization to study the functional consequences of rapid centromere and pericentromere evolution.

Gabriel Birchak

Gabriel (Gabe) Birchak obtained a Bachelor of Science degree in molecular and cellular biology from the University of Arizona. He subsequently spent a year in Dr. Norbert Perrimon's lab at Harvard Medical School developing and refining CRISPR tools and strategies to manipulate the Drosophila genome. He has since been working as a PhD student in Dr. Ben Black's laboratory to engineer yeast that hijack the mammalian cell's centromere persistence mechanism to form new mammalian artificial chromosomes with a myriad of designable features.

Wei Tong, PhD

Dr. Tong is a Professor of Pediatrics and Distinguished Chair in Pediatric Hematology, Children's Hospital of Philadelphia (CHOP) and Perelman School of Medicine at the University of Pennsylvania (UPENN). She is the co-Director of the Hematopoietic Stem Cell Program at PENN Institute for Regenerative Medicine, and a member of the Leadership Committee of the Pediatric Faculty Advising Program at CHOP. Dr. Tong's laboratory investigates both normal and oncogenic signaling processes that control hematopoietic stem cell self-renewal and leukemic transformation. Their studies have identified novel signaling molecules that promote stem cell expansion with the potential to enhance gene therapy for the treatment of bone marrow failure syndromes. Dr. Tong's group has also made significant contributions to our understanding of kinases, ubiquitin enzymes and protein post-translational modifications that play important roles in various aspects of stem cell biology and leukemia.

Don Cleveland, PhD

Dr. Don Cleveland is Professor and Chair of Cellular and Molecular Medicine at the University of California, San Diego. He has been elected to the U.S. National Academy of Sciences and National Academy of Medicine. He is also an Elected Fellow of the American Association for Cancer Research. Dr. Cleveland has identified principles of genome instability in cancer, demonstrating that single chromosome missegregation can trigger repeated chromosome shattering (chromothripsis) that initiates and drives genome evolution in cancer. For this work, he became the 15th recipient of India's Genome Valley Excellence Award in 2019, and received the 2022 E.B. Wilson Medal from the American Society for Cell Biology.

In neurosciences, Dr. Cleveland purified and characterized the first microtubule associated protein – tau – which misassembles in affected neurons in Alzheimer's disease and chronic brain injury. He uncovered mechanisms underlying the major genetic forms of Amyotrophic Lateral Sclerosis (ALS) and developed "designer DNA drugs" for silencing disease-causing genes responsible for the major diseases of the nervous system, with clinical trials now ongoing in ALS, Huntington's, Parkinson's, and Alzheimer's diseases. For his efforts in neurosciences, he received the 2018 Breakthrough Prize in Life Sciences and the 2023 Rainwater Prize.

Jie Chen, PhD

Dr. Chen earned his PhD in 2016 from the University of Hong Kong. In his thesis work, he characterized functional roles of RNF169-DYRK1A complex in DNA double-strand break signaling and repair. After completing his PhD, he joined the Greenberg laboratory at University of Pennsylvania for postdoctoral training. His research in the Greenberg Lab focuses on communication between chromosome damage and immune responses. Dr. Chen is also the recipient of the Michael Brown Penn-GSK Postdoctoral Fellowship Award.

PCGI Annual Scientific Retreat Program Speaker Biographies (continued)

Muzaffer Ahmed Kassab, PhD

Dr. Kassab is a Senior Research Investigator in the laboratory of Dr. Eric J. Brown in the Department of Cancer Biology at the University of Pennsylvania wherein he is investigating the mechanisms that cause sensitivity and resistance of cancer cells to DNA damage response inhibitors. Dr. Kassab completed his postdoctoral research with Dr. Xiaochun Yu at City of Hope, where he worked on uncovering the role of RNA epitranscriptional modifications in the maintenance of gene expression/ genomic homeostasis in germ cells. Specifically, Muzaffer elucidated the role of R-loop associated modification in B cell function during class switching DNA recombination.

Additionally, Muzaffer has worked on the regulation of PARylation and identified the role NADP+ as an endogenous regulator of PARP during DNA damage response. He also elucidated the mechanism of branched PAR formation and showed that PARP2 mediates branched poly ADP-ribosylation. Dr. Kassab received his PhD in Molecular Biology from All Institute of Medical Sciences, New Delhi, India, and his thesis work focused on the modulation of gene expression in HPV-18.

Ahmed Diab, PhD

Dr. Diab is an Assistant Professor of Otorhinolaryngology at the University of Pennsylvania Perelman School of Medicine, and a Core Faculty Member of the Penn Center for Genome Integrity. He received his PhD in Cancer Biology from Purdue University and completed his postdoctoral training in viral oncology at the Fred Hutchinson Cancer Center in Seattle, WA. Dr. Diab's graduate and postgraduate training focused on understanding the mechanisms of cell cycle deregulation during viral oncogenesis. His work identified virus-specific vulnerabilities that can be targeted therapeutically to control cancer progression. Current work in the Diab laboratory focuses on how human papilloma viruses disrupt cell cycle and DNA damage repair machinery and alter the larger tumor microenvironment.

Xue (Sherry) Gao, PhD

Dr. Gao joined the University of Pennsylvania in 2024 as the Presidential Penn Compact Associate Professor in the Department of Chemical and Biomolecular Engineering, and the Department of Bioengineering. Dr. Gao also serves as a core faculty member at Penn's Center for Precision Engineering for Health.

Prior to joining Penn, Dr. Gao held the position of Ted N. Law Assistant Professor at Rice University in the Department of Chemical and Biomolecular Engineering from July 2017. The Gao lab research is situated at the intersection of biomolecular engineering, biochemistry, and chemical biology, with a primary focus on small- and macro-molecules for advancements in human health.

Dr. Gao earned her doctoral degree in Chemical and Biomolecular Engineering from the University of California, Los Angeles, in 2013. Following her PhD, Dr. Gao pursued postdoctoral research at Harvard University and the Broad Institute of MIT and Harvard. Her academic achievements include receiving the 2024 BMES-CMBE Rising Star Award, the 2022 NSF Career Award, the 2022 Outstanding Young Faculty at Rice School of Engineering, and the 2020 NIH MIRA R35 Award, among others.

Steven Phan

Steven received his BS in Chemical Engineering from Pennsylvania State University. He is currently a 3rd-year Chemical and Biomolecular Engineering PhD student in Dr. Dennis Discher's lab. His studies in the lab focus on how mechanically confined microenvironments affect chromosome loss in solid tumors using live-cell chromosome tracking.

Bios continued next page...

PCGI Annual Scientific Retreat Program
Speaker Biographies (continued)

Sehbanul Islam, PhD

Dr. Islam received his master's degree in biotechnology from Aligarh Muslim University, India. He then completed his PhD degree at the National Centre for Cell Science (NCCS) in Pune, India. Currently, he is a Postdoctoral Fellow in Dr. Luca Busino's Lab at the University of Pennsylvania. Sehbanul's research focuses on targeting oncogenic proteins through targeted protein degradation (TPD) using small molecules. He developed the TAP-DBP (Tandem Affinity Purification for Identification of Drug-Binding Proteins) method for identifying drug-binding protein targets in cells.

Ting Zao, PhD

Dr. Zhao finished his graduate training at Emory University working on Huntington's disease (HD), a neurodegenerative disorder. His PhD thesis focused on understanding the turnover of mutant huntingtin protein, the HD protein, in neurons and astrocytes. For postdoctoral training, he joined Dr. Hong-Jun Song's lab where he studies epigenetic and epitranscriptomic mechanisms in the brain development. Dr. Zhao's long-term career goal is to become an independent neuroscientist studying epitranscriptomic regulation of DNA repair in brain cells.

Sarai Mendoza-Figueroa, PhD

Dr. Mendoza-Figueroa received her PhD in Biochemistry from the Center for Research and Advanced Studies of the National Polytechnical Institute at Mexico City, Mexico. Currently, she is a Postdoctoral Fellow in the laboratory of Dr. Kathy Fange Liu in the Department of Biochemistry & Biophysics at the University of Pennsylvania. Dr. Mendoza-Figueroa's research focuses on the relationship between ribosomal RNA processing and the nucleolar architecture. Additionally, she studies the catalytical and non-catalytical roles of rRNA modifying enzymes.

Amy Gladstein

Amy is a fifth year Genetics and Epigenetics PhD candidate in the laboratory of Dr. David Feldser. She obtained a BA in Molecular Biology and Biochemistry from Rutgers University, working in the lab of Dr. Kim McKim. While there, she studied the regulation of meiotic spindle assembly and cohesion in Drosophila oocytes. Her project in the Feldser lab focuses on the function of H3K36 methylation in lung adenocarcinoma. Amy has uncovered opposing roles for H3K36me2 and H3K36me3 in lung cancer growth and immune surveillance via regulation of endogenous dsRNAs.

Namrata Kumar, PhD

Dr. Kumar received her PhD in Molecular Genetics from the University of Pittsburgh where her thesis work was focused on the interplay between different DNA excision repair pathways in the recognition and removal of telomeric oxidative damage. In 2022, Dr. Kumar joined Dr. Matthew Weitzman's laboratory at CHOP as a Postdoctoral Fellow, where she is currently trying to understand the role of DNA damage response during viral infections. Today her talk will mainly focus on the role of the homologous recombination protein RAD51 in facilitating herpes simplex virus (HSV) replication.

Mikael Garabedian, PhD

Dr. Garabedian earned his PhD at Brandeis University, where his thesis work characterized mechanisms of actin cytoskeleton assembly. His interest in biochemistry and protein self-assembly led him to join the laboratory of Dr. Matthew Good in the Department of Cell and Developmental Biology for his postdoctoral training. Dr. Garabedian's current efforts are focused on understanding how protein phase separation into biomolecular condensates contribute to DNA repair and maintaining genomic integrity. His work has been supported by an American Cancer Society Postdoctoral Fellowship and is now funded by an NIH K99/R00 award.

Notes

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