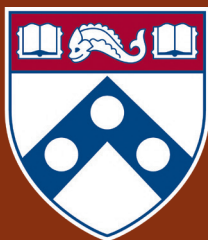


Penn Center for Genome Integrity (PCGI) Annual Scientific Retreat

Tuesday, June 10, 2025
The College of Physicians
@ The Mütter Museum



PCGI Annual Scientific Retreat Program

Tuesday, June 10, 2025

College of Physicians of Philadelphia/Mütter Museum

8:30-9:00 am

Registration & Breakfast Buffet

Mitchell Hall & Ashhurst Room, Second Floor

Session One: Dr. Qin Li Moderating

9:00-9:10 am

Introduction: Roger A. Greenberg, MD, PhD

Director, Penn Center for Genome Integrity (PCGI)

J. Samuel Staub, MD Professor of Cancer Biology

Director of Basic Science, Bassett Center for BRCA

University of Pennsylvania Perelman School of Medicine

9:10-9:25 am

Sangin Kim, PhD

Postdoctoral Researcher, Greenberg Laboratory

University of Pennsylvania Perelman School of Medicine

“ATM-Mediated rDNA Silencing Regulates Immune Response to DNA Damage”

9:25-9:40 am

Si Han Li, PhD

Postdoctoral Researcher, Genetics, Qin Li Laboratory

University of Pennsylvania Perelman School of Medicine

“MDA5-mediated self-sensing to endogenous dsRNAs as a potential trigger in autoimmune diseases”

9:40-9:55 am

Ellen Lavorando

Graduate Student, BMB, Liu Laboratory

University of Pennsylvania Perelman School of Medicine

“Vaccinia virus protein K7 targets the sex-specific RNA helicase DDX3X, but not DDX3Y, in the innate immune response”

9:55-10:00 am

Introduction to Keynote by Dr. Roger Greenberg

10:00-10:40 am

Keynote Address: Shan Zha, MD, PhD

James A Wolff Professor of Pediatrics, Pathology and Cell Biology,

Microbiology & Immunology

Institute for Cancer Genetics and in the Herbert Irving Comprehensive Cancer Center, Columbia University

“From Breaks to Barriers: Ku as a Guardian of Genome Integrity and RNA-Driven Immunity”

10:40-11:00 am

Coffee Break

June 10, 2025 PCGI Scientific Retreat Program, continued:

Session Two: Emily Smith Moderating

- 11:00-11:15 am** **Md Akram Hossain, PhD**
Postdoctoral Researcher, Tong Laboratory
University of Pennsylvania Perelman School of Medicine

“Lnk/Sh2b3 Deficiency Enhances Translesion Synthesis to Alleviate Replication Stress and Promote Hematopoietic Stem Cell Fitness”
- 11:15-11:30 am** **Hyuk-Joon Jeon, PhD**
Postdoctoral Researcher, Levine & Lampson Laboratories
University of Pennsylvania School of Arts & Sciences

“A parent-of-origin effect on embryonic telomere elongation determines telomere length inheritance”
- 11:30-12:00 pm** **Faculty Talk: Timour Baslan, PhD**
Assistant Professor of Systems Pharmacology and Translational Therapeutics
Assistant Professor, Department of Biomedical Sciences,
University of Pennsylvania School of Veterinary Medicine

“Discrete phases of cancer genome evolution underlie sarcomagenesis”

Session Three: Lunch & Roundtable Discussions

- 12:00-12:45pm** **Lunch Break**
- 12:45-1:15 pm** **Roundtable Discussions:**
- “Landing a faculty position”*
Led by Drs. Timour Baslan, Shan Zha, & Alberto Marin-Gonzalez
Thompson Gallery, First Floor
- “Entrepreneurial endeavors”*
Led by Drs. Roger Greenberg, Eric J. Brown, Ben Black, & Kathy Liu
Ashhurst Room
- “Grant writing”*
Led by Drs. Matthew Weitzman, Foteini Mourkioti, & Kara Bernstein
Mitchell Hall

Please note:

The Mutter Museum will be open for any who wish to tour the exhibits from 12:00 to 2:00 pm

June 10, 2025 PCGI Scientific Retreat Program, continued:

Session Four: Dr. Haoyang Jiang Moderating

- 1:15-1:30 pm** **Faculty Talk: Fange (Kathy) Liu, PhD**
Associate Professor of Biochemistry and Biophysics
Co-Director, Penn Center for Genome Integrity
Member, the Penn Institute for Regenerative Medicine
Member, Penn Epigenetics Institute
University of Pennsylvania Perelman School of Medicine

“From Genome Integrity to RNA Biology: Integrative Collaboration Between PCGI and Penn RNA Institute”
- 1:30-2:00 pm** **Alberto Marin-Gonzalez, PhD**
Postdoctoral Fellow, Laboratories of Drs. Taekjip Ha and Ralph Scully,
Harvard Medical School

“Homology search in the 3D genome”
- 2:00-2:15 pm** **May Wai**
Graduate Student, Genetics, Joyce Lab
University of Pennsylvania Perelman School of Medicine

“A tug-of-war between nuclear bodies regulates cohesin activity and chromatin organization”
- 2:15-2:30 pm** **Nootan Pandey, PhD**
Postdoctoral Researcher, Black Lab
University of Pennsylvania Perelman School of Medicine

“The cellular consequences of PARP hyperactivity”
- 2:30-2:45 pm** **Joanna Georgiou**
Graduate Student, Discher lab
University of Pennsylvania School of Engineering & Applied Science

“Stresses, like heat and fat, on cancer cells can cause chromosome losses/gains and mitotic disruptions”
- 2:45-3:15 pm** **Faculty Talk: Foteini Mourkioti, PhD**
Associate Professor of Orthopaedic Surgery
Co-Director, Penn Institute of Regenerative Medicine,
Musculoskeletal Regeneration Program
University of Pennsylvania Perelman School of Medicine

“Thinking outside the telomeres: a distinct function of TRF2 in acute and chronic muscle injuries”
- 3:15-3:30pm** **Coffee Break**

June 10, 2025 PCGI Scientific Retreat Program, continued:

Session Five: Dr. Tanner Tessier Moderating

3:30-3:45 pm	Kristie Darrah, PhD Postdoctoral Researcher, Bernstein lab University of Pennsylvania Perelman School of Medicine <i>“Comprehensive Analysis of Breast and Ovarian Cancer-Identified RAD51D VUS”</i>
3:45-4:00 pm	Pierce Longmire, PhD Postdoctoral Researcher, Weitzman Lab The Children’s Hospital of Philadelphia <i>“Human cytomegalovirus regulates host DNA repair machinery for viral genome integrity”</i>
4:00-4:15 pm	Kim Manning Graduate student, CAMB, Diab Lab University of Pennsylvania Perelman School of Medicine <i>“Examining the Consequences of Somatic Mutagenesis Induced by APOBEC3B in Head and Neck Cancer ”</i>
4:15-4:30 pm	Sehbanul Islam, PhD Postdoctoral Researcher, Busino Lab University of Pennsylvania Perelman School of Medicine <i>“Unveiling Synergistic Potential of VHL and KEAP1-based PROTACs for Targeted Protein Degradation”</i>
4:30-4:45 pm	Jiayuan Fu, PhD Postdoctoral Reseracher, Miner Lab University of Pennsylvania Perelman School of Medicine <i>“TREX1-targeted small molecules for the treatment of human disease”</i>
4:45-5:00 pm	Closing remarks
5:00 pm	Reception Sir John Templeton Veranda and Medicinal Herb Garden (Thompson Gallery if there is inclement weather)

Please note:

The Mütter Museum will again be open for any who wish to tour the exhibits from 5:00-6:00 pm

About our Keynote

Shan Zha, MD, PhD

Dr. Shan Zha is the James A. Wolff Professor of Pediatrics at Columbia University Medical Center and an elected member of the American Society for Clinical Investigation (ASCI). Her laboratory investigates the mechanisms of DNA damage response and double-strand break repair, with a particular focus on non-homologous end-joining (NHEJ). Using genetically engineered mouse models and quantitative live-cell imaging, her team has elucidated the physiological consequences of DNA repair defects on immune development, lymphomagenesis, and the hematologic toxicities associated with cancer therapy. Over the past decade, her group has generated and characterized multiple models with NHEJ deficiencies and catalytically inactive mutations in ATM, ATR, DNA-PKcs, and PARPs, revealing a catalysis-coupled allosteric regulation of key DNA repair factors. Most recently, her lab uncovered an unexpected role for Ku and DNA-PKcs in RNA biology and RNA-mediated innate immune responses, opening new directions at the intersection of genome integrity and immunology.



A dedicated mentor, Dr. Zha has trained over 20 students and postdoctoral fellows and served on more than 30 thesis and defense committees. She is deeply committed to community-building in science and is always generous in sharing reagents and protocols. In 2020, she founded the Social DNAing weekly webinar series during the COVID-19 pandemic, which has since featured over 300 speakers from more than 50 countries. She has also served as an organizer and chair for Gordon Research Conferences (GRC) and Cold Spring Harbor Laboratory (CSHL) meetings.

Dr. Zha grew up in Beijing, China, and earned her medical degree from Peking University Health Science Center. She received her Ph.D. from the Johns Hopkins Medical Institute, where she studied the genetics and lipid metabolism of human prostate cancer, and completed her postdoctoral training with Dr. Frederick Alt at Harvard Medical School and Boston Children's Hospital/HHMI. Outside the lab, she is a daughter, wife, and proud mother of two teenage boys and a fluffy Bichon Frise named Cottonball. She enjoys cooking, traveling, photography, and running in her spare time.

Guest Speaker

Alberto Marin-Gonzalez, PhD



Dr. Marin-Gonzalez is a Postdoctoral Fellow at Harvard Medical School working in the labs of Taekjip Ha (Boston Children's Hospital) and Ralph Scully (Beth Israel Deaconess Medical Center). His current work aims to understand the mechanisms of homology search in the context of the 3D genome. Dr. Marin-Gonzalez obtained a PhD in Biophysics in 2020 at the Autonomous University of Madrid (Spain), where he employed biophysical and computational tools to study the structure of nucleic acids. For his postdoctoral studies, he decided to change topics, and joined the lab of Taekjip Ha (then at the Johns Hopkins University), where he helped develop a multi-target CRISPR tool that allows induction of hundreds of DNA breaks on demand in mammalian cells. He then applied this tool to study the changes in 3D genome architecture that accompany the processes of Cas9 break repair. These measurements revealed that chromatin loops are formed de novo at Cas9 breaks, where they aid the homology search during homologous recombination. After the Ha lab moved to Harvard Medical School in 2023, Dr. Marin-Gonzalez co-joined the lab of Ralph Scully, where he is currently establishing cellular reporters to study the role of loop-extruding cohesin in homologous recombination outcomes. Dr. Marin-Gonzalez's future goals are to develop new biophysical and computational tools to further elucidate the complex mechanisms of mammalian homologous recombination.

Faculty Speakers

Timour Baslan, PhD



Timour Baslan, PhD, is an Assistant Professor in the Department of Biomedical Sciences at the School of Veterinary Medicine, University of Pennsylvania. He received his PhD from Stony Brook University and Cold Spring Harbor Laboratory. He then completed postdoctoral training at Sloan Kettering Institute, Memorial Sloan Kettering Cancer Center. His group's current research is focused on studying cancer genetics and biology in an effort to advance early-stage interception methods as well as therapeutics for the targeting of cancer cells. To do so, his lab employs a multidisciplinary approach that integrates sequencing-based computational method development and analytics (ex: long and short read sequencing, statistics, unsupervised learning/ML) with experimental perturbation approaches in cancer models systems (ex: shRNA, CRISPR, and chemical screens in in-vitro cell lines, organoids, and mouse models). Pancreatic and breast cancers, as well as acute leukemias and sarcomas, are areas of focus.

Fange (Kathy) Liu, PhD

Dr. Kathy Fange Liu obtained her Ph.D. from Georgia State University in 2013 and completed her postdoctoral training at the University of Chicago in 2017. She launched her independent laboratory in 2018 in the Department of Biochemistry and Biophysics at the University of Pennsylvania. The Liu Lab investigates the mechanisms and consequences of the interplay among multiple RNA modifications in mRNA, tRNA, and rRNA, with a focus on their roles in human disease. A second major focus of her lab is understanding how sex chromosome biology contributes to sex bias in human cancers. Dr. Liu is the recipient of several prestigious awards, including the NIH MIRA Award, American Cancer Society Research Scholar Award, Damon Runyon-Rachleff Innovation Award, Alex's Lemonade R accelerator Award, and the Linda Pechenik Montague Investigator Award. She is also a newly appointed Co-Director of the Penn Center for Genome Integrity (PCGI), where she will lead efforts focused on RNA-based mechanisms of genome integrity.



Foteini Mourkioti, PhD



Dr. Mourkioti is an Associate Professor in the Departments of Orthopaedic Surgery and Cell and Developmental Biology at the University of Pennsylvania, Perelman School of Medicine. She is also the co-Director of the Penn Institute for Regenerative Medicine, Musculoskeletal Program. Dr. Foteini Mourkioti has a profound interest in muscle disease mechanisms. She is driven by her scientific desire to understand the role of progenitor cells in muscle diseases, and she has a strong background in skeletal and cardiac muscle biology, telomere biology, muscle mechanobiology skills and substantial stem cell expertise from more than 20 years working in the muscle field, including experience with cellular mechanisms in several muscle diseases and genetic mouse models. Her lab aims to unravel 3 fundamental aspects of cell biology: how stem cells sense their tissue environment; how they communicate this information; and what are the nuclear mechanisms by which telomeric proteins sustain genome integrity in vivo. She pioneered the role of telomere biology in skeletal muscles as well as the development of state-of-the-art imaging approaches to directly observe and dissect the mechanisms that regulate tissue regeneration in vivo. The long-term goal of the Mourkioti lab is to leverage these insights into future therapies that target aberrant cell-cell communication and signaling dysregulation in affecting tissue-tissue interactions during regeneration.

Trainee Speakers

(By order of presentation)



Sangin Kim, PhD

Dr. Kim received his B.S. and Ph.D. in Biological Sciences from UNIST in South Korea. During his PhD studies, he focused on PCNA cycling and ubiquitination, providing insights into R-loop dynamics at transcription-replication conflict sites. His work also contributed to understanding the role of polyubiquitinated PCNA during break-induced replication (BIR) in the context of alternative lengthening of telomeres (ALT). He joined the Greenberg Lab as a Postdoctoral Researcher March 2024 to investigate the underlying mechanisms of ATM-mediated double-strand break (DSB) silencing and its relevance to the innate immune response. Dr. Kim was awarded the prestigious Damon Runyon Postdoctoral Fellowship in November 2024.

Sihan Li, PhD

Sihan Li received her PhD from China Agricultural University where she studied the host-pathogen interaction, especially how miRNAs regulate virus replication. She joined the laboratory of Dr. Qin Li as a postdoc in May, 2024. Currently, she is interested in understanding the contribution of ADAR1-dsRNA-MDA5 axis in autoimmune diseases. She focused on effectively distinguishing the activated, oligomerized MDA5, from the in-activated, monomer MDA5 and specifically pinpointing cells with MDA5 activation in patient-derived cells and tissues. She aims to uncover the role of MDA5-mediated immune response in autoimmune diseases by pinpointing specific cell-types where MDA5 incorrectly senses “self” RNAs, therefore potentially revealing novel therapeutic avenues to delay or even prevent the disease onset.



Ellen Lavorando

Ellen is a PhD candidate in Dr. Kathy Liu's lab. She studies the X & Y chromosome homologous proteins DDX3X & DDX3Y with the overall goal of understanding the roles of sex chromosome proteins in human health and disease. She completed her undergraduate studies at UC San Diego, where she majored in Biochemistry and Chemistry. While at UCSD, Ellen worked in labs in the Chemistry Department and at the nearby SBP Medical Discovery Institute. Ellen worked as a staff research associate at UCSD for two years after college in Dr. Colleen McHugh's lab where she studied the lncRNA MALAT1 and learned to love RNA and RNA binding proteins. In addition to conducting research, she enjoys expanding her collection of plants in lab and at home, and spending time with her cat and new puppy.

Md Akram Hossain, PhD

Dr. Md Akram Hossain is a Postdoctoral Research Trainee in the Department of Pediatrics, Division of Hematology at Children's Hospital of Philadelphia (CHOP). He earned his TL1/U2C Fellowship from the Department of Medicine, Division of Hematology-Oncology at Perelman School of Medicine, UPenn. He received a Bachelor's degree and a Master's degree in Microbiology from University of Dhaka, Bangladesh. He earned his doctorate (PhD) in Cell & Molecular Biology from the Department of Biological Sciences at the University of North Carolina at Charlotte. Dr. Hossain investigates the mechanisms by which Lnk/Sh2b3 deficiency alleviates Replication stress during DNA Replication, preserves hematopoietic stem cell (HSC) function, and promotes Stem Cell Fitness in FA. His study findings will provide new insights into Stem cell function and therapeutic strategies for treatment of various blood cell disorders.



Trainee Speaker Biographies, continued:



Hyuk-Joon Jeon, PhD

Dr. Jeon completed his thesis work in Dr. Jeong Su Oh's lab at Sungkyunkwan University, in Seoul, South Korea, where he focused on understanding the role of translationally controlled tumor protein (TCTP) and telomere physiology in mouse oocytes. After earning his PhD, Dr. Jeon joined Dr. Michael Lampson's laboratory at the University of Pennsylvania as a Postdoctoral Fellow, where he is studying the effect of parent-of-origin on telomere elongation in preimplantation embryo and its impact on telomere length inheritance.

May Wai

May Wai is a PhD Candidate in Genetics and Epigenetics. She earned her BS in Molecular and Cellular Biology from Johns Hopkins University. Currently, May works in the lab of Dr. Eric Joyce to investigate the molecular mechanisms of cohesin-mediated 3D chromatin organization. Through the completion of a genome-wide screen for novel regulators of chromatin folding, she has proposed a novel role for spatially segregated nuclear bodies to reinforce domain boundary strength and maintain proper chromatin organization. This discovery stands to inform the conflicting patterns of gene expression changes observed in cohesin dysfunction such as in developmental disorders like Cornelia de Lange Syndrome.



Nootan Pandey, PhD

Dr. Pandey earned her Ph.D. in Molecular, Cellular, and Developmental Biology at the University of Kansas. She joined Dr. Yoshiaki Azuma's lab at the University of Kansas in 2014, where her thesis work focused on the role of Topoisomerase II alpha SUMOylation in mitotic progression. Upon graduating from the University of Kansas in 2019, Dr. Pandey joined Dr. Ben Black's laboratory at the University of Pennsylvania as a Postdoctoral Fellow, where she is currently studying the cellular outcomes of DNA damage-independent PARP hyperactivation. In the Black lab, Dr. Pandey has also led centromere research, identifying a relationship between centromere DNA sequence and centromere function. Dr. Pandey received a Bassett Fellowship from the Bassett Center for BRCA for her research on PARP-1.

Joanna Georgiou

Joanna is a second-year Chemical and Biomolecular Engineering PhD student in the Discher Lab. Joanna graduated from Princeton University in 2022 and prior to coming to Penn, she completed a 10-month Fulbright research grant at Seoul National University in South Korea. During her time at Princeton and throughout her Fulbright, Joanna worked on encapsulating small molecule therapeutics into nanoparticles for tuberculosis and cancer treatment. She is interested in studying cancer cells and mutagenesis.



Kristie Darrah, PhD

Dr. Darrah received her PhD in Chemistry from the University of Pittsburgh in 2021. During her thesis work, she synthesized and evaluated chemical biology tools to precisely control protein function, expression, and degradation. After completing her PhD, she started her post-doc in Dr. Kara Bernstein's lab at Pitt before moving with the lab to the University of Pennsylvania in 2022. Her current research is focused on evaluating the pathogenicity of RAD51 paralog missense variants of unknown significance (VUS) identified in breast and ovarian cancer patients in efforts to inform their formal clinical reclassification and identify opportunities for precision therapies.

Trainee Speaker Biographies, continued:



Pierce Longmire, PhD

Pierce Longmire earned his Ph.D. in Molecular Medicine from The University of Arizona. He became fascinated with DNA repair as a master's student investigating the role of homologous recombination in resistance to platinum-based chemotherapies. His doctoral work explored how the ubiquitous herpesvirus, human cytomegalovirus, hijacks host DNA replication and repair pathways for viral objectives, including viral genome integrity and antiviral resistance. This interest in complex virus-host interactions led him to join Dr. Matthew Weitzman's lab at the Children's Hospital of Philadelphia as a postdoctoral researcher to expand his studies on the intersection of persistent viral infections and host DNA repair.

Kim Manning

Kim is a second-year graduate student in the Diab Lab. She completed her undergraduate studies at Elizabethtown College, where she majored in Biotechnology. While at Etown, she discovered her love of research alongside Dr. Jane Cavender. After graduating, she matriculated into the Cancer Biology Program at UPenn. Her research investigates the impact of cytidine deamination by APOBEC3 enzymes in Head and Neck Cancer (HNSCC). With a strong interest in cancer genomics and immunology, Kim focuses on how APOBEC3-induced mutations contribute to the development and immune response of these tumors. Her work aims to uncover the phenotypes that arise due to mutations induced by A3B, to inform the design of pre-clinical models to test novel therapeutic interventions.



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. Dr. Islam is a recipient of the prestigious American Cancer Society Postdoctoral Fellowship. His research focuses on targeting oncogenic proteins through small molecule-induced targeted protein degradation (TPD). In his recent work, Dr. Islam demonstrated that the combinatorial use of two PROTACs targeting the same oncogenic protein but recruiting distinct E3 ligases (VHL and KEAP1), can synergistically enhance target degradation and overcome the hook effect. In addition, Dr. Islam developed TAP-DBP (Tandem Affinity Purification for Drug-Binding Protein identification), a robust method for discovering cellular

targets of small molecules. His research continues to advance the understanding of protein degradation strategies in cancer therapeutics.

Jiayuan Fu, PhD

Jiayuan Fu obtained her Bachelor's degree in Chemistry at Beijing Normal University. She then completed her PhD training at Stony Brook University in the laboratory of Dr. Elizabeth Boon, where she used biochemistry and genetic tools to study the molecular mechanisms related to disease-causing bacteria. During her PhD studies, she developed a great interest in signaling pathways and decided to elucidate the fundamental molecular mechanisms of dysregulated signaling pathways in autoimmune diseases. Dr. Fu is currently a postdoctoral researcher at Dr. Jonathan Miner's lab at Penn. She has developed robust cell-based screening assay to identify highly effective and selective TREX1-targeted small molecules for the treatment of both common and rare human diseases.

