Genetics & Epigenetics Newsletter 2025

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center | UTHealth Houston
Graduate School of Biomedical Sciences

What's Inside?

Genetics & Epigenetics Retreat

Friday Nov. 7th, 2025

Pinstripes, Houston, TX

Beyond the Bench: The Academic-to-Industry Transition

By: ***Llaran Turner***

For years, academia — with the pursuit of tenure — was the expectation for PhD graduates with the end goal of gaining tenure at a university. However, the number of available faculty positions and funding opportunities has remained stagnant or decreased, while the number of PhD graduates continues to increase. In fact, a 2023 article from Vanderbilt University School of Medicine highlighted how PhD students often changed their career goals and explored career options outside of the traditional postdoctoral training[1]. Similarly, The University of Texas MD Anderson UTHealth Houston Graduate School of Biomedical Sciences (GSBS) graduates have also explored alternative career choices beyond academia in recent years. According to the 2020 GSBS Alumni Outcomes Report, nearly 40% of alumni found positions in the for-profit sector. This movement is a response to evolving workforce realities, changing values, and a broader redefinition of what success looks like after graduating.

A Culture Shift in Training and Values

Where are GSBS Alumni?

With the emergence of more non-academic roles becoming available to biomedical PhD students, prospective applicants and current students are developing broader interests beyond the pipettes and publications. Students are becoming more driven by opportunities that offer real-world impact, innovation, and competitive pay. Industry roles in biotech and pharma offer students a space to leverage soft skills like problem-solving and science communication to contribute to interdisciplinary workspaces. A 2021 study found that PhD students have an expectation of increased support from their institutions to help them be more competitive applicants in the job market through networking and professional development programming[2]. In efforts to address these interests, many universities (like GSBS) have hosted programs through the Career Development Office such as career symposiums and alumni networking events for current students to hear from former students about their career trajectories.

The Industry Advantage: Real-World Application

One of the biggest appeals of industry positions is the ability to see scientific discoveries rapidly translated into real-world therapies and technologies. While academia often focuses on hypothesis-driven exploration and long-term discovery, industry focuses on problem-solving with defined outcomes and streamlined timelines. There is an emphasis on being a contributor to cross-functional teams with a myriad of expertise, which can be a new experience for graduate students who often are working in labs where the expertise related to their research goals is often more specialized. Furthermore, there are other factors students must consider in their career exploration. In 2024, Northeastern University published an article discussing considerations when determining your next career steps, and some of those items include types of responsibilities, workplace dynamics, and salary expectations[3]. Although these considerations are important in both academic and non-academic roles, they can influence career decisions differently depending on individual needs and goals.

Looking Ahead

As the biomedical landscape evolves, so does the path of the PhD. GSBS students are uniquely positioned to lead in both academia and non-academic sectors because of our program's rigorous training and interdisciplinary focus. For those considering non-traditional paths, the message is clear: you're not leaving academia — you're expanding the definition of what it means to be a scientist.

Continued on page 2; Beyond the Bench

Continued from page 1; Beyond the Bench

References

1. Brown AM, Meyers LC, Varadarajan J, et al. From goal to outcome: Analyzing the progression of biomedical sciences PhD careers in a longitudinal study using an expanded taxonomy [published correction appears in FASEB Bioadv. 2023 Dec 01;6(1):40. doi: 10.1096/fba.2023-00134.]. FASEB Bioadv. 2023;5(11):427-452. Published 2023 Oct 5. doi:10.1096/fba.2023-00072

2. Ganapati S, Ritchie TS. Professional development and career-preparedness experiences of STEM PhD students: Gaps and avenues for improvement. PLoS One. 2021;16(12):e0260328. Published 2021 Dec 16. doi:10.1371/journal.pone.0260328

3. Northeastern University. (n.d.). Working in industry vs. academia: What's the difference? Northeastern University Graduate Programs. https://graduate.northeastern.edu/knowledge-hub/working-in-industry-vs-academia/

From the Director's Desk...

Drs. Rachel Miller and George Eisenhoffer have finished the first year of their terms as director and co-director, respectively. "G&E is special in that it is driven by students," said Dr. Miller. Throughout discussions with the directors, a theme of support and recognition came up. Over the summer, G&E held an Awards Night to focus on this. By giving scientific and non-scientific awards, we came together as a community to celebrate each other. "The G&E community is strong," said Dr. Eisenhoffer. Students in the program have taken part in advanced courses, fellowships, Board of Regents, and administrative roles. "G&E students are contributing to GSBS and beyond," she added. The directors emphasized how many people don't realize how diverse research in G&E is. It is this wide range of research in G&E that makes the program so strong. "The annual retreat fosters creativity at intersections of different scientific fields," expressed Dr. Miller.

Over the past year, Drs. Miller and Eisenhoffer have made multiple changes to the program. Starting off, the traditional rotation talks that used to be ~10 minutes each are now flash talks at ~3 minutes each. This change came about as attendance and scheduling became increasingly difficult. However, shortening the talks allows for more interactions and greater attendance. To further support this, a carpooling system including parking passes has been implemented. This was created to provide access to students whose labs are not near BSRB to attend events hosted there. In addition, two new courses have been added: *Advanced Fluorescence Microscopy*, led by Dr. Adriana Paulucci, and *Principles of Experimental Mouse Pathology*, led by Dr. Fabien Delerue. These classes also provide new ways of supporting Master's students' graded class requirements. Furthermore, the spring symposium has been combined with the previously held Faculty Insight Series to create the Career Insight Series (CIS). In July, the program hosted its first distinguished Alum speaker, Dr. Marco Leung, with additional support from the Grady Saunders endowment and the Department of Genetics at MD Anderson. This effort "highlights how strong our students are," Dr. Eisenhoffer said. CIS also sheds light on what can be accomplished with a degree in G&E.

The implementation of CIS also serves as a way to be proactive about any budget changes from the UT system. With uncertainty of policy changes coming down from parental institutions or the government, G&E is positioned to remain stable. Drs. Miller and Eisenhoffer recognize the harm that grant, and career uncertainty, is doing to students. Therefore, feedback from students is as important as ever. As another proactive measure, this year's retreat, held on November 7th, will be a one-day event held at Pinstripes, a bowling and event space.

G&E Program Director
Rachel Miller, PhD
Associate Professor, Department of Pediatrics, McGovern, UTHealth-MS

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Phone: 713-500-6537
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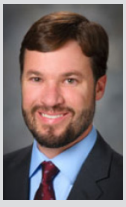


G&E Program Co-Director
George Eisenhoffer, PhD
Associate Professor, Department of Genetics, MD Anderson Cancer Center

Office: BSRB S11.8136C
Phone: 713-563-2754
Email: gteisenhoffer@mdanderson.org

G&E Program Resources

G&E offers a vibrant array of resources designed to support student growth both inside and outside the lab. G&E celebrates the outstanding contributions of 10-12 students through service awards that recognize leadership in program committees, career development, research planning, and many other areas. These awards shine a spotlight on the many ways our students strengthen and uplift our community. G&E supports students with an annual society membership, as well as travel awards for conferences or short courses, and workshops, opening doors to invaluable networking and professional growth opportunities. Additionally, the G&E library has over 35 books that cover a variety of topics, including scientific writing, programming, biomedical sciences, and productivity. Books can be checked out for two weeks and are located at Amy Carter's (Program Manager) office in BSRB.

These are just a few available resources; more detailed information on these resources and others can be found here:

Upcoming Community Events

August

8/14 ..... GEM Seminar Series

September

9/4 ..... G&E Ice Cream Social

9/11 ..... G&E Data Science Working Group

October

10/9 ..... Faculty Insight Series

10/16 ..... G&E Data Science Working Group

November

11/7 ..... G&E Retreat

11/13 ..... G&E Data Science Working Group

December

12/18 ..... G&E Data Science Working Group

Rebuilding Trust: Understanding and Combating Health-Related Misinformation

A brief report based on interviews with professional scientists and non-scientists.

During our interviews with non-scientists, we encountered many such flawed statements that reflected genuine public concerns. These reflect not ignorance, but widespread confusion fueled by scientific misinformation, defined as "information that implies claims that are inconsistent with the weight of accepted scientific evidence". This misinformation creates a profound gap in scientific understanding that often separates the public from the scientific community.

Such misinformation not only misleads the public but also erodes public trust in science, which in turn hinders scientific progress in ways we often overlook. Without trust from the public, including decision makers, funding dries up, evidence-based policies falter, and critical innovation faces resistance. For instance, from 2021 to 2023, 32–36% of Americans reported distrusting COVID-19 vaccine science, which led to growing hesitancy among funders toward long-term infectious disease research. And this crisis of trust extends far beyond vaccines.

Common Themes of Health-Related Misinformation

- **Gene Stigma:** The term "gene" often triggers confusion, misunderstanding, and even fear.
- **CRISPR:** Most associate it with controversial uses like unethical embryo editing, not the therapies developed under regulations.
- **GMOs:** Widespread confusion between GMOs, gene editing, and breeding exists. Consumers often distrust GMOs, willing to pay 29-45% more for non-GMO products.
- **Vaccine:** Persistent myths that vaccines are more harmful than diseases or unnecessary contribute to vaccine hesitancy and disease outbreaks, such as the measles resurgence in 2025.
- **New Therapies:** Exaggerated claims from media for unproven or experimental therapies mislead the public.
- **Research Transparency:** Lack of public trust in how funding is used and little awareness of the rigorous procedures in translational science from bench to bedside.
- **Lab Animals:** Ethical objections are common, often without awareness of the stringent regulations protecting lab animals.

Given that public trust is essential for securing research funding and driving scientific progress, it is time to acknowledge that scientists, not just governments and media, share responsibility in combating misinformation. This begins with understanding its roots: a "knowledge vacuum" from limited understanding and poor access to reliable information, filled by misleading media and amplified by attention bias. Scientists can disrupt this cycle at multiple levels.

1. Fill the knowledge vacuum by starting from your circle.

2. Participate in community outreach.

3. Engage thoughtfully on media platforms.

4. Master the simple explanation.

Building public understanding of scientific breakthroughs can sometimes be as challenging as the research itself, but it is no less important. Scientific progress depends not only on breakthroughs in the lab, but on communication, connection, and trust. By being mindful of misinformation and acting to combat it, we as scientists can help build a more informed and engaged public.

Read More Here

Welcome New G&E Faculty!

Fabien Delerue, PhD

MD Anderson Cancer Center (MDACC) - Dept of Genetics

Research Interest: Gene editing, animal models, neuroscience, rare genetic disorders

Accepting Students; MS and PhD

Andrew Dunbar, MD

MDACC - Dept of Hematopoietic Biology & Malignancy

Research Interest: Molecular pathogenesis of blood cancers, clonal evolution, epigenetics, single-cell genomics, pre-clinical drug investigation

Accepting Students; PhD Only

Jlenia Guarnerio, PhD

MDACC - Dept of Genetics

Research Interest: Tumor microenvironment, cancer immunology, cancer-associated fibroblasts, circular RNAs, spatial transcriptomics

Accepting Students; MS and PhD

Jayhun Lee, PhD

UT Health - Dept of Microbiology & Molecular Genetics

Research Interest: Flatworm development, parasite biology, parasite-host interaction, stem cells, and functional genomics

Accepting Students; PhD Only

Pavlos Msaouel, MD, PhD

MDACC - Dept of Genitourinary Medical Oncology

Research Interest: Therapeutics discovery and validation, data science, novel trial design, rare cancers

Accepting Students; PhD Only

Adriana Paulucci, PhD

MDACC - Dept of Genetics

Research Interest: Advanced Microscopy including live-imaging, super-resolution and state-of-the-art technologies such as FRET, FRAP and single molecule-studies

Lulu Shang, PhD

MDACC - Dept of Biostatistics

Research Interest: Statistical genomics and genetics, single cell and spatial multi-omics, deep learning

Accepting Students; PhD Only

Ye Zheng, PhD

MDACC - Dept Bioinformatics & Computational Biology

Research Interest: Statistical Genomics, Computational Biology, Epigenomics, Single-cell and Bulk-cell Multi-omics, Cancer Genomics

Accepting Students; MS and PhD

G&E Graduates & New Students

Congratulations G&E Graduates!

August 2024 to July 2025

Jace Aloway, PhD

Advisor: Richard Behringer, PhD

PhD Thesis: "The Role of Wt1 in Mullerian Duct Development"

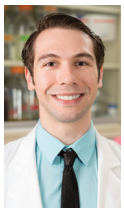
Postdoctoral Fellow, University of Colorado, Denver

Han Bit Baek, PhD

Advisor: Swathi Arur, PhD

PhD Thesis: "Uncovering a fundamental mechanism underlying female oocyte quality and RASopathies using C. elegans as a model system"

Postdoctoral Fellow, Genetics, MD Anderson Cancer Center



Jared Fradette, MS

Advisor: Don L. Gibbons, MD, PhD

MS Thesis: "Assessing the Temporal Role and MiR-200 Loss in Murine Models of NSCLC"

Research Investigator, Thoracic Head & Neck, Medical Oncology, MD Anderson Cancer Center

Melissa Frasca, PhD

Advisor: Francesca Cole, PhD

PhD Thesis: "Epic Search for the Perfect Partner: MutSgamma Promotes Efficient Meiotic Recombination and Homolog Pairing in Mouse Spermatocytes"

Research Data Coordinator, Radiation Oncology Clinical Research, MD Anderson Cancer Center

Rocio (Renee) Rubiano, MS

Advisor: Margarida Santos, PhD

M.S. Thesis: "Exploring the Role of the Arginine-Methylation Writer-Reader Pair PRMT5/SND1 in JAK2-Mutant Myeloproliferative Neoplasms"

PhD Student, MD Anderson UTHealth Houston Graduate School of Biomedical Sciences

Sreepradha Sridharan, PhD

Advisor: Michael Galko, PhD

PhD Thesis: "Investigating the Role of Insulin-Like Signaling in Paclitaxel-Induced Nociceptive Hypersensitivity Using Drosophila Melanogaster"

Genomics Core Manager, Biomedical Instrumentation Center, Uniformed Services University

Hanghui Ye, PhD

Advisor: Nicholas Navin, PhD

PhD Thesis: "A Pan-Cancer Single-Cell Analysis of Intratumoral Copy Number Diversity and Evolution"

Research Fellow, Dana-Farber Cancer Institute

Welcome New G&E Students!

Evelyn Carrion

MS Advisor: Richard Behringer, PhD

Department of Genetics, MD Anderson

Maryam Elizondo

PhD advisor: Michael Galko, PhD

Department of Genetics, MD Anderson

Haowen Li

MS Advisor: Richard Behringer, PhD

Department of Genetics, MD Anderson

Jacob Mattia, *2nd ARC*

PhD Advisor: Wenbo Li, PhD

Department of Biochemistry and Molecular Biology, McGovern Medical School

Rocio (Renee) Rubiano, MS

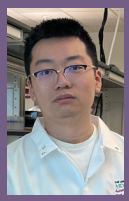
PhD Advisor: Alejandro Aballay, PhD

Department of Genetics, MD Anderson

Mackenzie Wienke

PhD Advisor: Charles Ishak, PhD

Department of Epigenetics & Molecular Carcinogenesis, MD Anderson



Dexin Yang, MS, *2nd ARC*

PhD Advisor: Ruoyan Li, PhD

Department of Systems Biology, MD Anderson

G&E Student & Faculty Awards & Recognitions 2024-2025

Congratulations to our students for their outstanding achievements!

STIPEND SCHOLARSHIPS & FELLOWSHIPS

American Heart Association (AHA) Pre-Doctoral Fellowship
Julianna Quinn *(Jun Wang, PhD), 2025*

Charlene Kopchick Fellowship
Richa Nayak *(Yejing Ge, PhD), 2025*

Dr. John J. Kopchick Fellowship
Ryan Sloan *(Jayhun Lee, PhD), 2025*
Mo-Fan (Elena) Huang *(Dung-Fang Lee, PhD), 2024, 2025-Renewal*

Janet Elaine Pierce Frye Scholarship for Cancer Research
Dexin Yang *(Wenbo Li, PhD), 2025*

Jess Hay Endowment for Chancellor's Graduate Student Research Fellowship
Sseu-Pei Hwang *(Catherine Denicourt, PhD), 2025*

Larry Deaven PhD Fellowship in Biomedical Sciences
Sseu-Pei Hwang *(Catherine Denicourt, PhD), 2025*

Michael E. Kupferman, M.D. Fellowship
Julianna Quinn *(Jun Wang, PhD), 2024*

Ray Meyn Scholarship for Cancer Research
Kate Cho *(Kadir Akdemir, MD, PhD), 2025*
Lei Yang *(Nicholas Navin, PhD), 2025*

Russell and Diana Hawkins Family Foundation Discovery Fellowship
Heather Tsong *(Andrea Stavoe, PhD), 2024*

Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship (NRSA – F31)
Shannon Erhardt *(Jun Wang, PhD), 2024*

R.W. Butcher Student Achievement Scholarship
Sseu-Pei Hwang *(Catherine Denicourt, PhD), 2025*

Schissler Foundation Fellowship
Mo-Fan (Elena) Huang *(Dung-Fang Lee, PhD), 2025*

Schissler Foundation Fellowship
Richa Nayak *(Yejing Ge, PhD), 2024*
Shannon Erhardt *(Jun Wang, PhD), 2024*

T32 Center for Clinical and Translational Sciences Training Program Fellowship
Brandy Walker *(Rachel Miller, PhD), 2025*

T32 Translational Genomics and Precision Medicine in Cancer Training Fellowship-NCI
Annette A. Machado *(Jason Huse, MD, PhD), 2024*
Shuaitong (Ciara) Cheng *(Wantong Yao, PhD), 2024*

The George M. Stancel, PhD Fellowship in Biomedical Sciences
Anna Miao *(Don Gibbons, MD, PhD), 2025*

The Pauline Altman-Goldstein Discovery Fellowship
Mith V *(Guillermina Lozano, PhD), 2024*

UTHealth Houston Leads MD Anderson UTHealth Houston Graduate School Fellowship
Bhargavi Brahmendra Barathi *(Jason Huse, MD, PhD), 2024-2025*

VAI Epigenomics Workshop Scholarship
Mo-Fan (Elena) Huang *(Dung-Fang Lee, PhD), 2025*

STUDENT AWARDS

ASBMR Young Investigator Award, 2024
Mary Adeyeye *(Brandan Lee, MD, PhD & Jun Wang, PhD)*

Center for Craniofacial Research and Pediatric Research Center Annual Retreat, 2025
Julianna Quinn *(Jun Wang, PhD)*
- 1st Place – Flash Talk Presentation
- 1st Place – Poster Presentation
Shannon Erhardt *(Jun Wang, PhD)*
- 2nd Place – Flash Talk Presentation

Dean's Research Scholarship Award, 2024
Mo-Fan (Elena) Huang *(Dung-Fang Lee, PhD)*

Dean's Research Scholarship Award, 2025
Sseu-Pei Hwang *(Catherine Denicourt, PhD)*

Gary Lopashuk Graduate Student Award Finalist – The International Academy of Cardiovascular Sciences-North American Section, 2024
Shannon Erhardt *(Jun Wang, PhD)*
- Finalist – Oral Presentation

GSBS Graduate Student Research Day, 2024
Richa Nayak *(Yejing Ge, PhD)*
- 1st Place – Elevator Pitch Competition

GSBS Graduate Student Research Day, 2025
Renee Rubiano *(Alejandro Aballay, PhD)*
- 1st Year Poster Award – Pre-Candidacy
Richa Nayak *(Yejing Ge, PhD)*
- Best Poster Award – Post-Candidacy
Ryan Sloan *(Jayhun Lee, PhD)*
- Best Poster Award – Post-Candidacy
Shannon Erhardt *(Jun Wang, PhD)*
- 1st Place – Post-Candidacy Oral Presentation

GSBS Travel Award
Alejandra Davilavaladez *(Rachel Miller, PhD)*
Amaya Craft *(Rachel Miller, PhD)*
Annette A. Machado *(Jason Huse, MD, PhD)*
Diana Machado *(Richard Behringer, PhD)*
Emely Larios *(Francesca Cole, PhD)*
Ericka Humphrey *(Yejing Ge, PhD)*
Maria Jose Gacha Garay *(Tingting Mills, PhD)*
Richa Nayak *(Yejing Ge, PhD)*
Shannon Erhardt *(Jun Wang, PhD)*

G&E Retreat – Post-Candidacy, 2024
Ericka Humphrey *(Yejing Ge, PhD)*
- 2nd Place – Poster Presentation

G&E Retreat – Pre-Candidacy, 2024
Annette A. Machado *(Jason Huse, MD, PhD)*
- 2nd Place – Platform Talk
Julianna Quinn *(Jun Wang, PhD)*
- 1st Place – Poster Presentation

President's Research Excellence Award, 2024-2025
Brandy Walker *(Rachel Miller, PhD)*

SMDP Biotech Scholar Award, 2025
Annette A. Machado *(Jason Huse, MD, PhD)*

Society of Chinese Bioscientists in America-Texas Chapter Annual Symposium, 2025
Julianna Quinn *(Jun Wang, PhD)*
- Finalist – Oral Presentation
Shannon Erhardt *(Jun Wang, PhD)*
- Finalist – Oral Presentation

The Antje Wuelfrath Gee and Harry Gee, Jr. Family Legacy Award, 2024-2025
Lanxin Bei *(Wenbo Li, PhD)*

Translational Molecular Pathology Retreat, 2024
Annette A. Machado *(Jason Huse, MD, PhD)*
- 1st Place – Poster Presentation

Weinstein Cardiovascular Development and Regeneration Conference, 2024
Shannon Erhardt *(Jun Wang, PhD)*
- Poster Presentation Award/Presented by Banque National

2024 AND 2025 STUDENT SERVICE AWARD

Anna Miao *(Don Gibbons, MD, PhD)*
Bhargavi Brahmendra Barathi *(Jason Huse, MD, PhD)*
D'Shaunique Walters *(Lauren Colbert, MD)*
Ericka Humphrey *(Yejing Ge, PhD)*
Heather Tsong *(Andrea Stavoe, PhD*
Jace Aloway *(Richard Behringer, PhD)*
Josh Lindenberger *(Guillermina Lozano, PhD)*
Julianna Quinn *(Jun Wang, PhD)*
Lanxin Bei *(Wenbo Li, PhD)*
Llaran Turner *(George Eisenhoffer, PhD)*
Melissa Frasca *(Francesca Cole, PhD)*
Mith V *(Guillermina Lozano, PhD)*
Renee Rubiano *(Alejandro Aballay, PhD)*
Richa Nayak *(Yejing Ge, PhD)*
Shannon Erhardt *(Jun Wang, PhD)*

Faculty Awards & Recognitions 2024-2025

Swathi Arur, PhD
Recognized with the highest commendation for the breadth and excellence of her service to graduate education from MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences

Richard Behringer, PhD
President, Society for Developmental Biology, 2025

Francesca Cole, PhD
Elected Vice Chair (2026) and Chair (2028) – Gordon Research Conference on Meiosis

Editorial Board Member – Annual Review Genetics

Promoted to Associate Dean, Academic Affairs at the MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences

President's Recognition of Faculty Excellence for Education and Mentoring, University of Texas MD Anderson Cancer Center, 2024

Boyi Gan, PhD
Distinguished Faculty Mentor Award, University of Texas MD Anderson Cancer Center, 2025

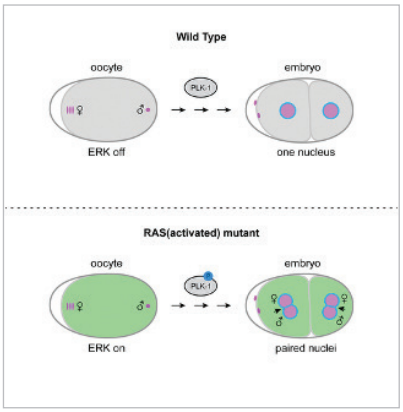
Han Liang, PhD
Outstanding Achievement Award in Basic Cancer Research – American Association for Cancer Research (AACR), 2025

Rachel Miller, PhD
Instructor, Cell & Developmental Biology of Xenopus: Gene Discovery & Disease, Cold Spring Harbor Laboratory, 2025

Wenyi Wang, PhD
Keynote Speaker, RECOMB-CCB, Seoul, Korea, 2025

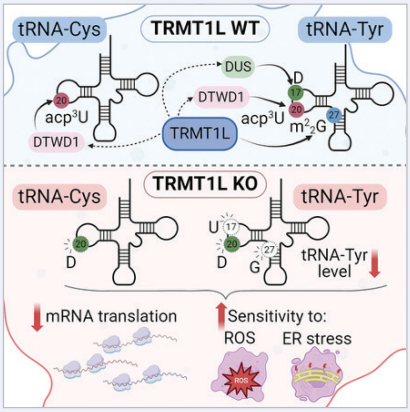
Student Publication Highlights

Han Bit Baek, alumna from Dr. Swathi Arur's lab, published her PhD thesis research in Cell Reports in January 2025. ERK activity oscillates between sustained activation during oocyte formation and transient inactivation during oocyte maturation, fertilization, and early embryogenesis. However, the consequences of ectopic ERK activity upon oocyte maturation and early embryogenesis are unknown. Using C. elegans as a model, Baek et al show that ectopic ERK activity upon oocyte maturation (metaphase I oocytes) results in embryos with abnormalities in nuclear divisions leading to embryonic death. She uncovers that ERK directly phosphorylates Polo-like kinase I (PLK-1) to inhibit nuclear envelope breakdown (NEBD) in early embryogenesis. The RAS/ERK/PLK-1 pathway poisons zygotic NEBD and inhibits the merging of parental genomes, underlining the importance of turning off ERK prior to embryogenesis. Given the conserved nature of both ERK signaling to oocyte development and PLK1 to embryonic divisions, this work has important implications for women undergoing in vitro fertilization where ectopic ERK activation during superovulation may diminish oocyte quality and influence zygotic development.



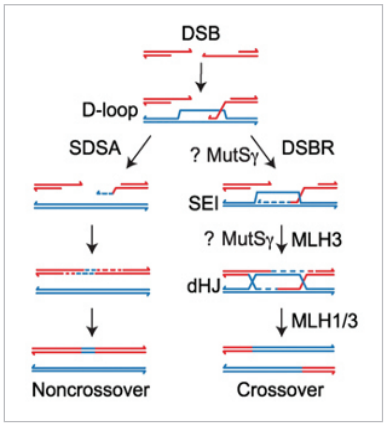
Baek, Han Bit, Das, Debabrata, Chen, Shin-Yu, Li, Hongyuan, & Arur, Swathi. (2025). ERK activation dynamics in maturing oocyte controls embryonic nuclear divisions in Caenorhabditis elegans. Cell Reports, 44(1), 115157. https://doi.org/10.1016/j.celrep.2024.115157

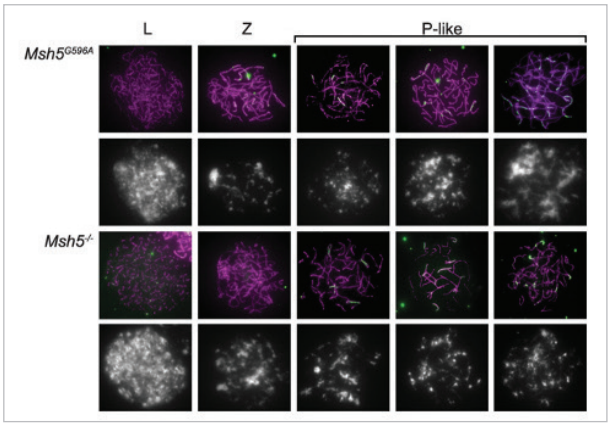
Sseu-Pei Hwang, a PhD candidate from Dr. Catherine Denicourt's lab, published her study in Cell Reports in January 2025, uncovering the role of tRNA methyltransferase TRMT1L. tRNA modifications are essential for their proper decoding, folding, and stability. Using a multifaceted approach encompassing eCLIP-seq and nanopore tRNA-seq, Hwang et al extensively studied the function of human tRNA methyltransferase TRMT1L. Mechanistically, she demonstrated that TRMT1L specifically catalyzes the N2,N2-dimethylguanosine (m22 G) at position 27 of tRNA-Tyr(GUA). Surprisingly, TRMT1L depletion also impaired the deposition of other tRNA modifications, including acp3U and dihydrouridine (D) on a subset of tRNAs. TRMT1L knockout cells exhibited a marked reduction in tyrosine tRNA levels, accompanied by decreased global translation rates and hypersensitivity to oxidative stress. Her results establish TRMT1L as the elusive methyltransferase catalyzing the m22G27 modification on tRNA Tyr, resolving a long-standing gap of knowledge and highlighting its potential role in a tRNA modification circuit crucial for translational maintenance and cellular stress resilience.



Hwang, Sseu-Pei, Liao, Han, Barondeau, Katherine, Han, Xinyi, Herbert, Cassandra, McConie, Hunter, Shekar, Amirtha, Pestov, Dimitri G., Limbach, Patrick A., Chang, Jeffrey T., & Denicourt, Catherine. (2025). TRMT1L-catalyzed m2 2G27 on tyrosine tRNA is required for efficient mRNA translation and cell survival under oxidative stress. Cell Reports, 44(1), 115167. https://doi.org/10.1016/j.celrep.2024.115167

Melissa Frasca, an alumna from Dr. Francesca Cole's lab, published her PhD thesis research in GENETICS in May 2025. Meiotic recombination promotes but also relies upon pairing between homologs. However, this mutual dependence - and the differing degrees to which recombination and pairing rely on each other - has been difficult to dissect in the mammals To address this gap, Frasca et al used recombination and cytological assays to infer the role of MutSγ, a heterodimer between MSH4 and MSH5 that promotes crossover-specific recombination, in mouse spermatocytes. She found that both a null and ATPase-domain mutant of Msh5 severely impaired recombination in spermatocytes, yielding few non-crossovers. However, these mutant spermatocytes were more proficient in interhomolog pairing particularly on the longer chromosomes than spermatocytes lacking meiotic recombination entirely. Her findings suggest that in mice, unlike in budding yeast MutSγ plays an earlier role by stabilizing D-loops upstream of all interhomolog recombination. Further, she proposes that early, nascent recombination intermediates can promote successful interhomolog pairing even when recombination does not proceed to completion.



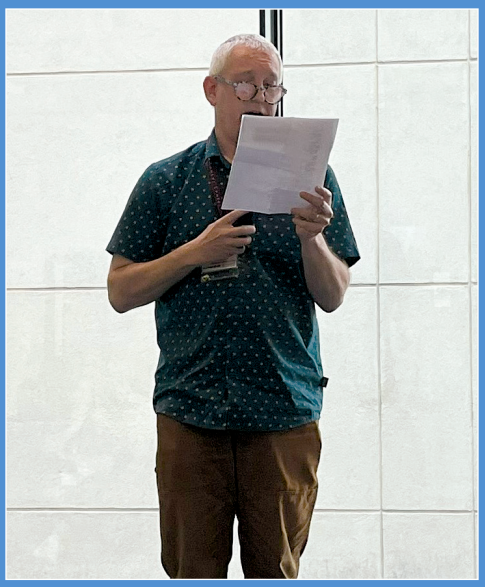


Frasca, Melissa, Paniker, Lakshmi, Kang, Rhea, Chakraborty, Parijat, Pandey, Aastha, LoPresti, Jessica, & Cole, Francesca. (2025). MutSgamma promotes meiotic recombination and homolog pairing in mouse spermatocytes. GENETICS, iyaf099. https://doi.org/10.1093/genetics/iyaf099translation and cell survival under oxidative stress. Cell Reports, 44(1), 115167. https://doi.org/10.1016/j.celrep.2024.115167

More Student Publications Here

Art Showcase

Each year, the G&E and Neuroscience programs come together to co-host an Art Showcase. This year's event featured poetry, musical performances (both vocal and instrumental), and paintings created by students and faculty alike.



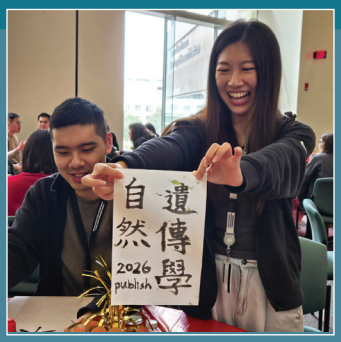
Ice Cream Social

Our annual Ice Cream Social brings together faculty and students for a cold, delicious treat to help beat the summer heat. We had the pleasure of being served by our fantastic program director and co-director, Drs. Rachel Miller and George Eisenhoffer.

G&E Events Round-Up

Lunar New Year

This year, we celebrated the Year of the Snake! The G&E program, in collaboration with the International Student Association (ISA), hosted its annual Lunar New Year celebration. Students and faculty were invited to enjoy traditional refreshments and participate in fun cultural activities, including Chinese calligraphy, origami, and clay crafts.



Special thanks to our Lunar New Year and ISA students for making this celebration memorable:

Anna Miao
Elena Huang
Mith V
Bhoomika Lakshmisha Muruvekere
Haoyi Wu
Shraddha Subramanian
Guillaume Trusz
Dr. Kadir Akdemir
Dr. Michelle Hildebrandt

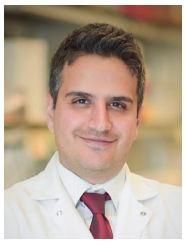
Retreat

This year, our annual retreat was held at South Shore Harbour Resort in League City, TX. Students, faculty, and other trainees came together for a two-day retreat filled with engaging activities, including poster sessions, platform talks, a lively costume contest, and even more entertainment during G&E's Got Talent.

We were honored to welcome Dr. Susan Rosenberg, Professor of Molecular and Human Genetics at Baylor College of Medicine and Co-Leader of the Chromatin Biology Program. Dr. Rosenberg shared her groundbreaking research on DNA damage, its role in genomic instability, and the implications for evolution and cancer.

Special thanks to our Fall 2024 Retreat Committee:

Annette Machado – *Co-chair*
Amaya Craft – *Co-chair*
Josh Lindenberger
Renee Rubiano
Justin Underwood
Charmelle Williams
Dr. Michael Galko – *Faculty Advisor*
Dr. Keila Torres – *Faculty Advisor*
Dr. Peter Van Loo – *Faculty Advisor*
Amy Carter – *Program Manager*



Vahid Bahrambeigi

Could you briefly describe your current job role?

I graduated from GSBS in 2024 from Dr. Anirban Maitra's laboratory and am currently a Clinical Fellow in the Laboratory of Genetics and Genomics (LGG) at Yale University. The LGG Fellowship is a training program under the American Board of Medical Genetics and Genomics (ABMGG). The goal of the LGG Fellowship is to train future directors of clinical diagnostic laboratories, equipping them with the expertise to manage all aspects of laboratory operations for the diagnosis and management of inherited genetic disorders and cancers.

Please describe a typical workday in your current role. What are your primary responsibilities, and what skills are most critical for success?

My daily responsibilities vary and include laboratory observations and experiments, data analysis, documentation and reporting, scientific presentations, teaching, and clinical observation. During the fellowship, my rotations in the DNA Diagnostics and Cytogenetics Laboratories cover a broad range of areas from pre- and post-natal to cancers, such as cancer genetic and cytogenetics, repeat expansion testing, methylation studies, exome and genome sequencing, mitochondrial genome analysis, chromosome analysis, FISH testing, and microarray analysis. Admission to an LGG program requires a strong foundation in clinical genetics, computational analysis, and laboratory techniques, with particular emphasis on prior experience in diagnostic settings. Attention to detail, technical accuracy, and problem-solving skills are essential for success in this field.

How did you navigate this career transition? What advice would you have for current G&E students who are exploring different career paths?

My transition into the LGG Fellowship was smooth, because I was already familiar with the field and the structure of the program. Prior to beginning my PhD, I worked for two years as a Clinical Molecular Specialist at the Greenwood Genetic Center (GGC) in South Carolina, where primary responsibilities included analyzing whole exome sequencing data. Before joining GGC, I completed an MSc in Diagnostic Genetics at the School of Health Professions at MDACC. Through a combination of prior work at GGC, research on genomic disorders, hands-on clinical laboratory experience, and translational doctoral work on cancer liquid biopsies, I developed skills necessary to pursue LGG training. For current G&E students exploring various career paths, my advice is to build relevant foundational skills based on the requirements of their areas of interest. It's important to start early by seeking out projects, mentorship, and experiences aligned with their intended career goals.

Where do you see yourself in the next 5-10 years? Do you have any specific long-term career goals?

After completing my training, I intend to serve as a clinical director at a leading cancer center, where I can divide my time between clinical responsibilities and academic activities. My long-term career objective is to contribute to the development and implementation of innovative genetic technologies to improve patient diagnosis and care.

43 Industry STEM Position Guide

Sreeja Sridharan

Can you briefly describe your job role and responsibilities?

I work for the Uniformed Services University, a university that caters to training military medical students and conducting military-focused research. I serve as the Genomics Core Manager, where I am responsible for maintaining laboratory instruments, perform sequencing and synthesizing oligonucleotides. I also train people in techniques, such as Polymerase Chain Reaction (PCR). My job title is research assistant, but I am a core manager, functionality-wise. Currently, there's no core director, so I manage the entire core.

Can you tell us a little bit about your PhD journey and your post PhD life?

Being in Dr. Michael Galko's lab, really set me up well to pursue working in a core facility. While in the Galko lab, I explored multiple opportunities to boost my skillsets. I trained under Adrianna in the microscopy core in the Genetics Department, took microscopy courses at Marine Biological Laboratory (MBL). Dr. Galko was extremely supportive, helping obtain and fund these opportunities, which really set me up to look for positions at core facilities. In my job, I do a lot of sequencing, which I did not do frequently in my PhD training, but from my various experiences I think my PhD set me up for success in all aspects, including mentoring, a critical part of my current position.

How early did you realize that working in a core was something you wanted and how did you position yourself for the career?

It took several years to figure out what I wanted to do. I started my PhD, thinking I wanted to pursue Research and Development (R&D) in industry, but quickly learned that I did not want to be at the bench all day and wanted more freedom. As I started questioning how I wanted to utilize my PhD, I received an informational brochure from Cheeky Scientists, which detailed about 40 different careers, job titles, and responsibilities, and that became my starting point. (Editor's Note: We've attached the PDF in the full text version of the interviews). I then started networking, talking to Dr. Raquel Salinas, GSBS Assistant Dean, Career and Alumni Engagement, to conduct informational interviews with GSBS alums. By doing this, I eliminated certain career possibilities and was able to identify that training young researchers really brings me joy. Knowing my priorities in terms of family life also helped me land on becoming a core director or core manager. Being a core manager, I do everything I love, I provide hands-on training, and I can help individuals troubleshoot or compose projects, all while having my own freedom.

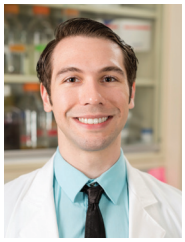
Advice for current G&E students

I suggest doing those informational interviews and just talking to people. I talked to a lot of people out of curiosity, to make sure I was well prepared for any type of career. Raquel's a great resource for getting in touch with people for these interviews. My advice is to reach out to former students and take advantage of meeting new people at conferences. I understand it can be daunting to randomly email or go up to someone, but people are happy to talk to current students, and you end up building connections.

What was your favorite thing about the G&E program?

My favorite thing was how close knit the G&E community is. Our community does a lot to help students connect with one another. I specifically remember, that during my candidacy exam prep, all the senior students were happy to support me and help me practice, a real benefit of being a G&E student.

G&E Alumni Interviews



Jared Fradette

What is your current role and how was your post-graduation transition?

I'm currently the lab manager for Dr. Don Gibbons' laboratory at MD Anderson. I would describe it as a mid-tier position. I still get to be involved in a lot of science and academia, but with the autonomy that comes with this role, including no pressure to publish or write grants if I do not want to. So basically, I get to enjoy all the perks of being in science without the stress. When I was still a student, our lab manager left, and because I was already helping out a lot with all aspects of the lab, after I graduated I transitioned into laboratory management. When I started, there were various managerial aspects that needed taking care of, such as making sure that we were meeting compliance when it came to all the lab safety. The harder transition was formally reintroducing myself to everyone as the lab manager, making sure the lab rules were enforced. Making the change from student to employee, along with the change in responsibility, was harder.

Please talk a little bit about your typical day and the sort of responsibilities that you have as a lab manager.

There really is no typical day. Every day is kind of like putting out a new fire. It's one of the things I like about the job, in that every day is a new day. But I do try and keep a rough schedule. I place new orders for the lab once a week and ensure that all necessary paperwork is in order. I also try to stay up to date with those in the lab regarding their experiments and making sure we are compliant with animal regulations. Basically, in my role, I try to anticipate what our lab members need regarding their experiments, so I can stay ahead of regulations and ordering. I also handle a lot of budgeting and accounting to make sure we properly use our funding in a timely manner with our experiments.

What made you choose to become a lab manager?

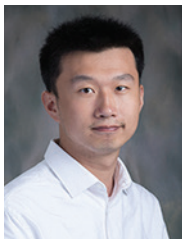
I think it was always something I was considering. I am a bit older, so the idea of pursuing a full PhD felt daunting. I explored options in industry, but I did not resonate with sales or grant writing roles. I knew I wanted to stay in science. I enjoy managing and organizing things, it comes naturally to me. As a child, I wanted to be librarian. In retrospect, I subconsciously married my skills with my interests to be a lab manager, who is really a science-librarian if you think about it.

What advice do you have for master's or PhD students who are now looking into exploring careers and trying to find what would best suit them?

After completing a master's degree, there are different options. "Do you want a job right away? Or do you want to pursue a PhD?" The key is to reach out to as many people as you can. Reach out and expose yourself to as many different careers as possible. It boils down to introspection; find out what you love doing and consider you can make a career out of it. The general advice I have for current students is to stay on top of your organization. A graduate degree is a lot of work, and when it's time to put together your thesis, you'll thank your past self for pre-organized data. Put in the work early to stay organized, it will greatly benefit you in the long run.

Where do you see yourself in the next five, ten years?

The next thing I would really like to do is take on more project-specific management. In the Gibbons' lab, we do a lot of collaborations with industry or other academics. Large collaborative projects need responsible, detail-oriented people to take up responsibility and bridge communication between stakeholders. I think I would be good at that. I always like a challenge and I'm open to exploring project management.



Ruoyu Wang

Could you briefly describe your current postion.

I'm a second-year postdoctoral fellow in the University of Texas Southwestern (UTSW) medical center. I graduated from the G&E program at the end of 2023 from Dr. Wenbo Li's lab. My PhD work was to better understand genomic regulation in human health and disease. As a postdoc, I am currently building deep learning-based sequence models to better understand the roles of individual genomic sequences and human gene regulation.

Why did you choose to complete post-doctoral training?

I always considered academia as my first option throughout graduate school. Like everyone else, I have also definitely questioned the academic career path a few times during my PhD. But at the end of the day, I want to pursue independent research in the future, to fuel my continued scientific curiosity. I wanted to utilize my postdoctoral training to dig deeper, employ leading edge computational tools, and answer understudied questions relating to the human genome.

How do you think your PhD journey in the G&E program set you up for your current post-doc? Are there any specific experiences in graduate school or the program that helped you?

For me, the topic of genetics and epigenetics, is really interesting. My interest was supported by heavy training and diverse courses in the G&E program, which spurred me on to pursue genomics research as a long-term career. The research training and the courses offered, properly equipped me with my current skill set, which help me in my postdoc today. In my current field, a lot of people are very good at AI or deep learning, but they don't have very comprehensive training or knowledge base as we did in the GSBS G&E program. I feel that unique blend of comprehensive training in genetics, epigenetics and other computational tools gives me an edge.

What has been a challenge in changing from student to postdoc?

My research focus has shifted. Although it's still about genomics and epigenomics, it's more of a deep learning and AI-centered approach. The hardest change has been the mathematical understanding. Cutting-edge AI research is extremely math intensive, even in the research papers, their language is all math. So, that was a steep learning curve in the first few months.

Advice for current students? Advice for finding a postdoc lab?

Keep your curiosity alive. Don't think too much and don't think too far away, just follow your curiosity. Really think about what you want to do, whether it be industry or academia. It's not where you're going to be, it's about what you want to do. You'll be fine, don't worry too much, but do remember that. In finding a postdoc, the research topic matters a great deal. If you're not excited by the topic, that would not be a good fit. Also, it is important for you seek out supportive mentors. Remember to reach out early, maybe half a year before you graduate. Don't be shy, proactively reach out to multiple professors. Be bold, try different research areas, and different opportunities.

Complete Alumni Interviews Can Be Found Here

GSBS COMMUNITY OUTREACH

Proud to be First-Gen

GSBS Graduate Student Association

THE GRADUATE SCHOOL OF BIOMEDICAL SCIENCES GSBS SYNERGY IN SCIENCE

ISA INTERNATIONAL STUDENT ASSOCIATION

Association of Science Communication

AMBR

Student Organization Highlights

GSBS is home to official student-led organizations that aim to enrich the overall learning experience. G&E students participate and lead many of these organizations. **If you want to learn more, please see QR code to the right.**

Oh, the places you'll go!















Student Discounts & Meet the Editors

Sign up on UNiDAYS and Student Beans to get student discounts on clothing, fitness, food, and subscriptions
www.myunidays.com/US/en-US
www.studentbeans.com/us

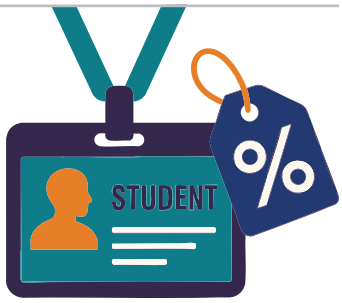
Check out the UTHealth discount page for UTH special discount codes
www.uth.edu/uthealth-discount-program/my-discount-resources.htm

Discounts on electronics:

- **Apple:** If you purchase an Apple product, such as a MacBook or iPad, from the Apple Edu Store https://www.apple.com/us-edu/store, you can qualify for a gift card up to $150, 20% off AppleCare+, and more.
- **Best Buy:** There's no specific discount, but you may be able to find special deals through the Back-to-School Student Hub.
- **HP:** Get up to 40% off when you register for the Education Store.
- **Lenovo:** Students can save an extra 5% storewide when verified through ID.me.
- **Logitech:** Up to 30% off when you join UNiDAYS.
- **Samsung:** Up to 30% off when you register for the Education Offers Program.

Discounts on software

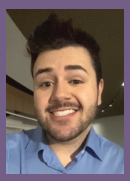
- **Notion:** Workspace for notes, tasks, and planning – free for students. www.notion.com/help/notion-for-education
- **Amazon Prime Student:** Free for the first six months, and then half-price ($7.49/month) after that.
- **Evernote:** Up to 40% off a full year of Evernote Professional.
- **Spotify:** Spotify Premium Student is available for $5.99/month and includes access to Hulu (with ads) plan.
- **YouTube Premium:** Student plan available for $7.99/month.
- **Babbel** offers a student discount of 65% on 3 months of Babbel language-learning.
- **Headspace** offers 85% off well-being resources (mindfulness, sleep, breathing, happiness, etc.), making the plan $9.99/year for students verified with SheerID.



Discounts on Meal Kits:

- **Blue Apron:** Offers 50% off the first four weeks of meals when verifying student status.
- **EveryPlate:** Provides 75% off the first box, free shipping, and a 15% ongoing discount for a year for students registered with UNiDAYS.
- **HelloFresh:** Features 55% off the first box, free shipping, and a 15% ongoing discount for students registered with UNiDAYS.
- **Home Chef:** Offers 50% off the first four boxes, equivalent to free food for 18 meals, after verifying student status with Student Beans.

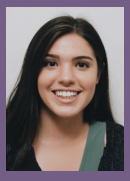
Meet the Editors



Joshua Lindenberger
PhD candidate, 4th year
PI: Guillermina Lozano, PhD
Department of Genetics, MD Anderson Cancer Center
Research: breast cancer, dormancy
Hobbies: listening to music, reading, exploring museums

Kiara Bornes
PhD candidate, 2nd Year
PI: Callie Kwartler, PhD & Dianna Milewicz, MD, PhD
Department of Internal Medicine, UTHealth Houston
Research: vascular disease, genetic basis of disease and smooth muscle cells
Hobbies: reading, completing Lego sets, and escaping escape rooms

Bhargavi Brahmendra Barathi
PhD candidate, 4th year
PI: Jason Huse, MD, PhD
Department of Translational Molecular Pathology, MD Anderson Cancer Center
Research: risk allele, glioma biology
Hobbies: listening to podcasts, reading, playing chess



Shannon Erhardt
PhD candidate, 3rd Year
PI: Jun Wang, PhD
Department of Pediatrics, UTHealth Houston
Research: hippo pathway; Yap and Taz; heart development, congenital heart defects
Hobbies: working out, reading, crafting

Richa Nayak
PhD candidate, 4th year
PI: Yejing Ge, PhD
Department of Cancer Biology, MD Anderson Cancer Center
Research: retrotransposons, epigenetics, stem cells
Hobbies: photography, reading, crafting

Llaran Turner
PhD candidate, 4th year
PI: George Eisenhoffer, PhD
Department of Genetics, MD Anderson Cancer Center
Research: Zebrafish, epithelial homeostasis
Hobbies: Pilates, travel, reading

Lanxin Bei
PhD candidate, 2nd year
PI: Wenbo Li, PhD
Department of Biochemistry and Molecular Biology, UTHealth Houston
Research: transcriptional regulation, non-coding RNA
Hobbies: badminton, listening to podcasts

Amy Carter, BS
G&E Program Manager
GSBS
Hobbies: oil painting, reading, baking, true crime podcasts

Evangelia Koutelou, PhD
Assistant Professor
Department of Epigenetics and Molecular Carcinogenesis, MD Anderson Cancer Center
Research: epigenetic regulation in cancer, mouse genetics, chromatin modifiers
Hobbies: running, swimming, camping, snorkeling, cooking Greek food

Charles Ishak, PhD
Assistant Professor
Department of Epigenetics and Molecular Carcinogenesis, MD Anderson Cancer Center
Research: epigenetic regulation of transposable elements in cancer
Hobbies: hockey, skating