The greatest export of scientists: A child-like way of seeing the world

by Michael Galko, PhD
Professor, Department of Genetics, MD Anderson

Childhood is often described as a time of wonder. I grew up on the Rhode Island shore in the seventies—well before helicopter parenting was invented. It was a feral youth—with long stretches of time spent floating barefoot on a small rowboat on the tidal salt ponds of the Rhode Island shore. I spent day after day essentially doing one thing with my brothers and cousins—exploring and watching the world around us. We observed fish of many types; green crabs and blue crabs; seaweed; shorebirds; the pond itself, its tides and sand bars and shifting channels. If asked then what I wanted to be when I grew up I probably would have invented something standard— but in reality I wanted what I already had—to spend my days interacting with and observing the world. What I enjoyed was simply looking at things and trying to understand them.

As a teenager my family moved to Texas. My high school chemistry and biology teachers taught challenging classes that sparked my first interest in science. When I went to college I had no idea what it might mean to be a scientist for a profession. I had a vague idea of becoming a marine biologist—it seemed like it might be similar to my youthful days fishing, swimming, and avoiding chores. Because I was starting to think about a life in science my college biology professor recommended a thick book—“The Eighth Day of Creation” by Horace Freeland Judson. This history of the early days of molecular biology outlined, often through the correspondence of the participating scientists, the discovery of DNA structure and the experiments that unraveled the central dogma of genetic inheritance: DNA > RNA > Protein. I was fascinated by this new “indirect” way of interrogating the world through experiments that could be interpreted as favoring or ruling out a hypothesis.

Laboratory courses in college got me even more excited by science. Looking down a proper microscope for the first time at various types of cells was, simply put, a revelation. Just like fish or other animals, you could identify cells by the way they looked and how they grouped themselves with respect to their neighbors. There were square cells packed like bricks (epithelia), round cells that wandered alone (macrophages), and spindly cells that reminded of a tangled electrical power station (neurons). I was hooked and for the first time in my life I thought—here is something worth doing—spending my days looking through a microscope and determining how these different cells behave and fit themselves to the microscopic world about them. It seemed like becoming a scientist would allow a rare luxury—to continue looking at the world in wonder even as an adult.

When I think of my colleagues, my past students and postdocs, and myself, there are many superficial qualities that distinguish us. How we grew up, Where we trained. Who originally inspired us to go into science. This has led to a diversity of scientific topics that inspire us- DNA
When we think of what makes for a strong graduate program it is hard to know where to start - there are many qualities that make a difference. But, one essential element is the people who promote the scientific careers, as well as individual welfare, of our graduate trainees. Our students are in turn at the center of who we are, and make possible lasting research advances. G&E has a large faculty spread across multiple departments within MD Anderson and UTHealth. It benefits from the amazing folks at the GSBS, as well as in other parts of our institutions, such as those who contribute as postdocs (e.g. who often engage in day-to-day mentoring of students), staff (e.g. enabling the organization of student events and travels), and those in administration (e.g. providing funding of our graduate school and its programs, and procuring visas).

An aspect of G&E that you will notice is the level of graduate student involvement in pulling together and running many educational events, from monthly student seminar series to major annual program retreats and symposia. We take this as a sign that we are on the right track, and would welcome newly arriving and curious trainees to reach out and participate in G&E scientific exchanges during their first and hopefully following years, as well as social and outreach events, with some such events being mentioned or highlighted in this newsletter.

Feel free to turn to one of us, or the G&E website or social media, to learn of our emphasis upon exploring fundamental biological questions. In brief, our laboratories address the mechanisms that drive cancer as well as other pathologies, or alternatively, that enable normal development or homeostasis. Because the G&E program stands out in applying multiple animal model systems, it has the potential to offer additional depths of insight, as well as fun through collaborations (e.g. we work with mice, primary or cultured cell lines, zebrafish, C. elegans/nematodes, Xenopus laevis/ frogs, yeast, bats and more). In brief, we foster a collegial and interactive environment in which students develop their experimental reasoning, communication and networking skills, while they mature their core scientific knowledge.

While we live in a world where there are many opportunities for graduate students at an early stage, there may also be some uncertainties. For example, a sizable portion of incoming graduate students are curious about academics and at the same time other areas, such as biotech/pharma, scientific policy, intellectual property and more. How does one prepare oneself, or decide between such multiple interests? While no one answer will suffice, the last sentence of the prior paragraph is what G&E aims and hopes to achieve while a trainee is with us. G&E places emphasis on the regular mentoring of trainees through student committees, in combination with other experiences. For example, we encourage participation in national meetings and courses, as they expand one’s network and will help place your contributions in the context of the field.

Finally, even with a strong environment and group of colleagues, so much of one’s experience remains up to each of us as individuals. In our Texas Medical Center with its wealth of institutions, a rich array of potential collaborators awaits you, and as importantly, idea-providers that could enhance the impact of your research or otherwise further your training. While it may require your resolve to step away from one’s comfort-zone on a weekly basis to attend lectures or read articles in diverse scientific areas, G&E will try to insist you do so. Such unexpected outside viewpoints, or perhaps new approaches introduced, will push your thesis work forward, or help you think about career stages following your time in graduate school.

We will end by thanking all those inside and outside of G&E who help make our community what it is – it takes a village! ;).

Pierre McCrea, PhD
G&E Program Director
Professor, Department of Genetics
MD Anderson Cancer Center
Office: BSRB S9.8136A
Phone: 713-834-6277
Email: pdmcrea@mdanderson.org
New Students Joining the G&E Community

Welcome to G&E!!

L-R: Tanner Wright (Dr. Mark Bedford), Melissa Frasca (Dr. Francesca Cole)

L-R: Frederick Robinson (Dr. Giulio Draetta), Ahmed Eman (Dr. Bin Wang), Jace Aloway (Dr. Richard Behringer), Raisa Reyes Castro (Dr. Swathi Arur), Mabel Perez-Oquendo (Dr. Don Gibbons)

Not Pictured: Han Bit Baek (Dr. Swathi Arur), Archit Ghosh (Dr. Kunal Rai), Diana Machado (Dr. Richard Behringer), Sreepada Sridharan (Dr. Vidya Gopalakrishnan), Amber Thomas Gordon (Dr. Jan Parker Thornburg), Hanghui Ye (Nicholas Navin), Jie Ye (Dr. Jianjun Zhang)

Welcome New G&E Faculty!

Yejing Ge, PhD
Assistant Professor, Department of Cancer Biology, MD Anderson
Research Interests: Understanding stem cell lineage plasticity in skin wound repair, cancer & aging.

Edwin Ostrin, MD, PhD
Assistant Professor, Department of General Internal Medicine, MD Anderson
Research Interests: Lung premalignancy, lung cancer development, immune-tumor cell interaction.

Jun Wang, PhD
Assistant Professor, Department of Pediatrics, McGovern Medical School, UTHealth
Research Interests: Molecular regulation of head and heart development, diseases and regeneration.

Wantong Yao, MD, PhD
Assistant Professor, Department of Translational Molecular Pathology, MD Anderson

Jianjun Zhang, MD, PhD
Assistant Professor, Department of Thoracic/Head & Neck Medical Oncology, MD Anderson
Research Interests: Tumor heterogeneity and molecular/immune evolution of lung cancers and precancers.

Class of 2019

Hsueh-Ping Chao, PhD (Advisor: Dr. Dean Tang)
Thesis: Integrative bioinformatic approaches to elucidating prostate cancer cell heterogeneity plasticity and treatment response
Data Scientist, Pheramor/Business Development Assoc, MyBioGate

Kevin Farquhar, PhD (Advisor: Dr. Gabor Balazsi)
Thesis: The role of gene expression noise in mammalian cell survival
Position to be decided

Aimee Farria, PhD (Advisor: Dr. Sharon Dent)
Thesis: GCN5 loss impacts MYC-driven cancer in mice and human cells
Postdoctoral Fellow, MD Anderson (Dr. Sharon Dent)

Rhea Kang, PhD (Advisor: Dr. Francesca Cole)
Thesis: Higher order chromosome organization and recombination dynamics of meiotic prophase I in mouse spermatocytes
Postdoctoral Fellow, MD Anderson Cancer (Dr. Francesca Cole)

Uyen (Mimi) Le, PhD (Advisor: Dr. Ann Killary)
Thesis: The role of tumor suppressor DEAR1 in the acquisition of mammary stem/progenitor cell properties
Research Laboratory Manager, Emory University School of Medicine, Atlanta, GA

Kenneth Trimmer, PhD (Advisor: Dr. Swathi Arur)
Thesis: Plasticity of C. elegans germline stem cells under nutritional and metabolic stress
Postdoctoral Fellow, MD Anderson (Dr. Swathi Arur)

Sarah Wu, MD,PhD (Advisor: Dr. Elsa Flores)
Thesis: Investigating the role of the p63 isoform ΔNP63 in lung stem cell populations and lung cancer
Anatomic Pathology Resident, Brigham and Women's Hospital, Boston, MA

Zhenna Xiao, PhD (Advisor: Dr. Li Ma)
Thesis: Deubiquitinating enzymes promote cancer progression and metastasis via regulating protein stability
Postdoctoral Fellow

Yongming Xue, PhD (Advisor: Dr. Xiaobing Shi)
Thesis: Role of P300 ZZ domain in chromatin association and histone acetylation
Postdoctoral Fellow, MD Anderson (Dr. Cassian Yee)

Ruoji Zhou, PhD (Advisor: Dr. Dung-Fang Lee)
Thesis: Modeling cancer using Li-Fraumeni syndrome patient-derived induced pluripotent stem cells
Position to be decided
Describe your current role and job responsibilities.

I am a professor in the department of Genetics at Yale University, in the School of Medicine. I am a PI and run a lab focused on genetic and epigenetic regulation of gene expression in the germ cells of C. elegans. I also am a director of an NIH training program that directly supports 14 students annually, along with other students affiliated with the program. Finally, I am vice-chair of the department and am responsible for several departmental programs and initiatives.

What is your favorite GSBS memory?

I’m not sure I have one entertaining or pertinent memory of the GSBS in particular, except perhaps winning a poster award during a GSBS event, which I was quite proud of at the time! However I will say that one of the amazing things about the GSBS, that we all took for granted at the time, was how much the faculty and administration were committed to providing the best possible graduate education. With perspective, I can really appreciate how well-prepared my fellow students and I were for all that lay ahead!

Describe your career path since completing your Doctorate.

I have taken a pretty standard academic trajectory. I completed my PhD in 1996, but stayed in Gigi Lozano’s lab for about 18 months as a postdoc while I figured out my next step. Then I took a postdoc position at Stanford in Stuart Kim’s lab, where I was the first to adapt microarray technology - cutting edge at the time - to C. elegans. In the fall of 2000, I joined the faculty at Yale as an Assistant Professor, where I have stayed ever since. I received tenure in 2010 and became a full professor in 2016.

Which part of graduate school training has become your biggest strength at your current position?

It definitely was having Gigi Lozano as a role model. I learned firsthand from her that if the science came first, everything else would follow. I was pretty much a blank canvas, so I first had to learn from her the specifics about how to properly conduct an experiment, implement proper controls, and set rigorous standards and expectations for the quality of the work. But then I also watched how Gigi strategized papers and grant funding, and mentored lab members. I use so much of what I learned from these early observations every day in all the different aspects of my own career.

Which is your favorite hangout spot in Houston?

I would have to say that it was Chuy’s or maybe Valhalla, the grad student pub on Rice Campus. Does that still exist? On Friday afternoons, they would have 25 cent beers, and we would sit on the lawn and drink swill and talk science.

With your experiences so far, what advice would you give to current graduate students?

One thing I tell students is that time is the enemy. At the beginning of graduate school, it seems like you have forever, but there’s so much to do and time speeds by. Plan your experiments wisely, and keep in mind short term and long term objectives, both in the lab and for your career. Good organization is your best friend! You’ll spend less time failing, more time progressing, and your attitude will stay more positive. Also, seek out the resources you need, both scientifically and personally. Grad school is hard, and we all need support at one time or other.

Describe your current role and job responsibilities.

I am a Medical Science Liaison (MSL). I provide medical & scientific support to healthcare professionals. I also serve as liaison between clinical investigators and the company, and provide scientific support to managed market experts.

What was your transition from graduate School to Industry like?

I utilized my time during graduate school to not only finish my dissertation but prepare for the MSL role. This allowed a smooth transition into the MSL role since it is very different than graduate school. I prepared by networking with people currently in the role and discussing with them the knowledge and experience I should try to cultivate before I applied to the position.

What is your favorite GSBS Memory?

During my first year in graduate school, my class put together a table for Science Outreach night on chemistry. We taught everyone how to make ice cream utilizing the energy of ice melting to freeze the milk with salt. It was a great experience to see kids excited about science. The annual G&D (G&E now) retreats were also a lot of fun and something I look back on fondly.

Which part of graduate school training has become your biggest strength at your current position?

In my current role, I present to a wide variety of audiences with different scientific backgrounds, so having the ability to learn and practice presenting in graduate school was important. It made my presentation skills one of my biggest strengths when I obtained my MSL position and may have been one of the reasons I got the job in the first place!

What is your favorite hangout spot in Houston?

While I don’t get a chance to go there frequently anymore, I loved hanging out at Valhalla with the other graduate students. Cheap beer and great conversation, what is not to like?

Did you have any internships/pre-professional experiences while at GSBS? If yes, please describe them in short.

I didn’t have any formal internships or pre-professional experiences but I did network with a large number of people that were current MSLers. I also was able to shadow a physician doing Phase I and investigator initiated trials. Both of these experiences were critical to get my job.
With your experiences so far, what advice would you give to current graduate students?

If you want to transition to industry, don’t wait until you are graduating to look for opportunities to learn about the job you want to do. Utilize all the time you have during graduate school and the resources available at your fingertips to help give you a head start. It may help circumvent a transitional role and allow you to go straight into your dream job.

Avinash Venkatanarayan
Postdoctoral Research Fellow, Genentech, Inc
PhD 2015
Advisor, Dr. Elsa Flores
a.venkatanarayan@gmail.com

Describe your current role and job responsibilities.

I am Postdoctoral Fellow in the MAPK Signaling lab, in the Dept. of Discovery Oncology at Genentech, Inc. where I lead my own independent research project. Most post-doctoral projects at Genentech are early discovery and target ID validation projects. Post-docs specifically pursue basic science projects to enable publications, which could eventually fit into the company’s portfolio and drug pipeline. As a post-doc, I am trained to function independently and establish collaborations that cross functionally across departments and also with other postdocs. The post-doc program at Genentech is a highly competitive 4-5 year program that trains one to either go back to academia or pursue a career in industry.

What was your transition from graduate School to Industry like?

Mine was relatively smooth thanks to Genentech for continuing to promote a very academic and collaborative environment, and also because of my training at MD Anderson. A few things I’ve learnt in industry is that collaborations with other academic labs or even shared reagents/resources like Addgene are not available. We have to either make everything on our own or buy them. Thankfully, at Genentech we have an excellent infrastructure to make everything we need to accelerate your research. The second thing I thought was interesting was access to financial freedom. Since we do not depend on funding from external sources, we can buy/ outsource anything to support our research without any questions. The idea being “time is money. I’ve also started to understand that projects keep moving really fast and deadlines are key.

What is your favorite GSBS Memory?

I had an amazing time as a graduate student at GSBS. I have many fun memories, but one that still makes me laugh was a skit I was in during the entertainment session at one of the G&D retreats.

Which part of graduate school training has become your biggest strength at your current position?

At first, I was unsure what I had signed up for as graduate school seemed quite daunting. I was in the largest medical center surrounded by the brightest minds. I was trained as a developmental biologist using flies as a model organism. In fact, 2 out of my 3 rotations were in fly labs. But, I decided to take a risk and joined Dr. Elsa Flores’ lab to work on mouse genetics and particularly to delineate the role of p63 and p73 transcription factors in human cancers. Dr. Flores was an amazing mentor, who always encouraged me to “think big” and ask the important questions and take risks. My thesis project was high-risk but I had the support of an excellent thesis committee which eventually resulted in an excellent publication. A few things I learnt from my mentor, which I still try to practice and it’s not easy, was to stay focused, motivated and never give-up. I did not take a very traditional approach in my post-doctoral career, but I took a risk to pursue very much academic research in industry with a hope that some of our discoveries could be translational and one day impact people’s lives.

What is your favorite hangout spot in Houston?

I really enjoyed the food scene in Houston and used to write a Houston restaurant blog. Two places that make me remember my friends and lab members from graduate school are 1) Our happy hour trips to Valhalla at Rice University and 2) Hugo’s Mexican Restaurant.

Did you have any internships/pre-professional experiences while at GSBS?

Unfortunately, I did not. I think an internship could be a great opportunity as it could help one find a post-doc position or even the next job, and it doesn’t need to be limited to industry. It can be a training period with another university lab to learn or apply a new technique. Most SF Bay Area schools like Stanford, UCSF and UC Berkeley, encourage their graduate students to pursue internship opportunities in the summer. I think they increase the visibility for the students and also the program/school.

With your experiences so far, what advice would you give to current graduate students?

My mentor, Dr. Elsa Flores, always stressed the importance of publishing in a good journal. I continue to believe that publishing is the key to visibility in the Biomedical field. It’s important to really start drafting a story early and try to do only the most important experiments to answer the gaps. This process will definitely accelerate your timeline to graduation. It’s important to have a productive training period and not necessarily a long one. Also, I continue to think of my role models at different stages of my scientific career. I was lucky enough to be mentored by highly-motivated women scientists from my Master’s through my post-doctoral training. They helped me stay focused and motivated during times when your hypothesis fails and when you need to start all over again.

Sandeep Dayal, PhD
Health Science Policy Analyst, NIH
PhD 2004
Advisor, Dr. William Klein
sandeep.j.dayal@gmail.com

Describe your current role and job responsibilities.

I am a Health Science Policy Analyst in the Office of Scientific Program and Policy Analysis (OSPPA) at the National Institute of Diabetes & Digestive & Kidney Diseases (NIDDK) at the NIH, focusing on kidney disease research. I manage a variety of projects critical for advancing NIDDK’s mission, often through writing documents and materials for the lay public, Congress, the White House, professional societies, and the research community. My job functions include: writing/coordinating NIDDK’s contribution to the President’s Budget; responding to Congressional inquiries; coordinating production of NIDDK’s annual report; monitoring legislation; and assisting the NIDDK Director when issues arise that require scientific expertise and analysis.

G&E Alumni Success
Describe your Career Trajectory so far.

While at GSBS, I was planning for an academic career. However, early in my postdoctoral fellowship, I began to realize that academia wasn’t the right path for me. I networked extensively to explore career options, and realized that science policy fits my strengths and interests (e.g., written and interpersonal communication, thinking broadly about the research enterprise, politics, strategic thinking). As a postdoc, I looked for every opportunity to gain as much experience as I could in non-scientific writing and leadership. These experiences greatly strengthened my CV; I applied for and was offered the position in NIDDK’s Office of Science Policy. Importantly, networking was critical in the process—I might not have seen the job ad if a networking contact had not alerted me to it.

What is your favorite GSBS Memory?

Wow—so many great memories to choose from! I guess I’ll cheat and list two. The first would be the G&D retreats! They were just so stimulating and so much fun. They gave us a chance to talk about our research, learn about latest scientific developments in G&D labs, and get to know the faculty better and in a different way. But it was also (of course) a chance to hang out with friends! So much fun. The second memory might be a cliche—it was the day I successfully defended my dissertation. My committee didn’t make it easy, but I will never forget that feeling of pride and accomplishment when it was done. It was quite a thrill.

Which part of graduate school training has become your biggest strength at your current position?

I think the many opportunities to give talks—seminars, journal clubs, etc.—in graduate school were critical for developing the communication skills that have been incredibly useful in my current position. Since leaving GSBS, I have met fellow scientists who trained at many other universities, and it’s clear to me that few places offer the same opportunities that I had in the G&D program. Of course, a solid research background is really important for a career in science policy, but many places can also offer that. The opportunities outside of the laboratory in the G&D program at GSBS provided “transferable skills” that really gave me an edge in getting my job and excelling in the position.

What is your favorite hangout spot in Houston?

I really enjoyed hanging out at The Ginger Man—love that place.

Did you have any internships/pre-professional experiences while at GSBS? If yes, please describe them in short.

I didn’t have any official internships, but I did gain a number of pre-professional experiences while at GSBS. I was the President of the GSBS Graduate Student Association, I visited local elementary schools to talk about science as part of an outreach effort, I co-founded a journal club, and I demonstrated cool science experiments to high school students as an MD Anderson goodwill ambassador. Looking back, I realize that my strong interest in these types of activities were hinting at an interest in policy. They also helped me gain policy and leadership experiences that were critical for developing my career.

With your experiences so far, what advice would you give to current graduate students?

A few pieces of advice. First, talk to everyone you can to help you figure out which career path is best for you. Second, take time out of your (admittedly busy) schedule to develop skills outside of the lab. For some career paths, publishing one extra paper or in a journal with a slightly higher impact factor is less important than demonstrating other transferable skills. Focus at least some time and effort in career development as soon as possible. Finally, have fun and make memories! Graduate school was one of the most enjoyable times of my life. Some of the people around you now will be your lifelong friends, colleagues, and network contacts. It’s the people of GSBS—students, faculty, and administration—that make it a truly special place!
G&E Spring Career Symposium

This year’s annual spring symposium focused on career exploration and development. It was held in April at MD Anderson’s Science Park campus in Smithville, Texas, home of the Department of Epigenetics and Molecular Carcinogenesis. Organized by Alexandria Blackburn (co-chair), Jovanka Gencel Augusto (co-chair), Amelie Albrecht and Jianji Chen, the all-day, highly interactive event featured presentations and roundtables with scientists representing diverse careers paths, plus opportunities to interact with G&E faculty.

G&E Elevator Speech Contest

In May, G&E had its first elevator speech contest. 10 students gave lively 90 second speeches, in lay terms, about their research. First Place winner, Tanner Wright, represented G&E at the GSBS Graduate Student Research Day elevator speech finals in June. Malcolm Moses won the G&E People’s Choice award (holding certificate). We thank our judges, Dr. Georgios Karras, Amanda Minogue & Rebecca Deen, and our emcee, Lisa Gower.

G&E Directors Roundtables

Twice a year, the G&E directors meet with students over lunch to talk about the program. It’s a valuable opportunity for students to offer program suggestions, hear the latest program news, ask questions, discuss any concerns, and mingle with each other and the directors.

G&E Summer Ice Cream Social & Cookie Decorating Contest

G&E directors and students scooped at our annual ice cream social in July. Event organizers pictured above with program directors.

G&E Arts Showcase

Each year, we put on an Arts Showcase to celebrate the artistic talents within the G&E program community, featuring visual arts, musical performance, poetry reading and culinary arts. The 2019 showcase will be September 10th (see page 11).
The annual G&E retreat was held September 22-23, 2018 at La Torretta Resort on Lake Conroe. Program students, faculty and other trainees gathered together for two-days of student talks, posters, and scientific and social exchange. Dr. Scott Armstrong, from the Dana Faber Cancer Institute gave the keynote address on Targeting Epigenetic Mechanisms in Cancer. The retreat also included scientific talks by students, giving them a chance to hone their presentation skills. Over 45 posters describing G&E trainees' research were on display encouraging stimulating scientific discussions and perspectives. The retreat also included an evening entertainment session that saw Dr. Georgios Karras lead his team to win a science version of the Taboo game. The entertainment wrapped up with a lively round of karaoke sung by students and faculty together. In the morning, we had a fun round of “Biology ‘Field’ Games” in-between scientific sessions. The retreat was organized by a student panel chaired by Sara Martin and Roxsan Manshouri with tremendous help and support from the G&E Directors, Elisabeth Lindheim and Becky Brooks. Check out the oral presentation and poster presentation winners in the Student Awards section on page 11.
G&E students from Giulio Draetta's lab, Alex (Chieh-Yuan) Li and I-Lin Ho, published their research in Cell Reports demonstrating how clonal complexity can be leveraged to identify a gene signature that predicts chemoresistance in pancreatic cancer. Using molecular barcoding (an inheritable genomic label), they demonstrate that in-vitro cultures and in-vivo tumors are maintained by a common set of tumorigenic cells that can be used to establish clonal replica tumors (CRTs) in mouse models. Using the CRTs, they identify a unique gene signature associated with chemotherapy resistant lineages. In theory, this study’s output can be tailored to identify personalized medicine and therapy regimens to treat various types of cancer.

Seth, S, Li, C Y, Ho, I L, Corti, D, Loponte, S, Sapió, L, ... & Karpinets, T (2019). Pre-existing Functional Heterogeneity of Tumorigenic Compartments as the Origin of Chemoresistance in Pancreatic Tumors. Cell reports, 26(6), 1518-1532.

Rhea Kang, a G&E alumnus from the Cole lab, published her research in Nature Structural Biology. She used Hi-C on synchronized mouse spermatocytes in both early and late prophase of meiosis to reveal how chromosomes are reorganized to simultaneously support homolog pairing, synapsis as well as transcription at various sites. Results from her study provide evidence that chromosome associated cohesion complexes integrate into the chromosomal axis to serve as a platform form recombination by forming a stable loop array. The research also suggests the formation of ‘hubs’ of highly transcribed loci driven by transcription during pachynema. The study also lays down a detection strategy to define the physical parameters of homolog pairing as a cell progresses through prophase.


Alex Blackburn, a 4th year G&E student and Xenopus researcher from the Miller lab published her first author paper on congenital kidney and urinary tract defects in Genetics in Medicine journal. Using clinical data and loss-of function studies in Xenopus, her study revealed that pathogenic variants in DYRK1A, an important gene in kidney development, could induce intellectual disability-related congenital anomalies of the kidney and urinary tract. Results from her study endorse routine GU screening of individuals with DYRK1A variants to ensure optimized clinical management.


G&E student Jintan Liu from Giulio Draetta’s lab recently published his research in Nature Communications on the use of CRISPR/Cpf1 system to develop a multiplexed, high-throughput screening strategy that minimizes library size while maintaining gene targeting efficiency. Using AsCpf1, an orthologue of Cpf1, Liu et al. constructed the smallest whole genome CRISPR knockout library, the Mini-human, for the human genome that performs well compared to Cas9 libraries. The conventional Cas9-based pooled-libraries are more complex, therefore increasing costs and labor requirements. Therefore, this new multiplexed library has great promise in facilitating further advancement in gene editing technology.


Neeraj K. Aryal, a G&E alumnus from Dr. Guillermina Lozano’s lab, published a first author paper in PNAS paper in 2018 uncovering the role of Dicer1 in metabolism and aging. Aryal et al. used a mouse model to demonstrate that posttranslational modification of Dicer1 regulates aging, infertility and metabolic disorders in mammals. DICER1 mutations are associated with developmental diseases in humans, but not all Dicer1-associated diseases have DICER1 mutations. Currently, Dicer1 phosphorylation is not being investigated in clinic. Therefore, this discovery has promise in improving understanding and therapeutic development of Dicer1-associated diseases.

Congratulations to our students for their outstanding accomplishments!

STIPEND SCHOLARSHIPS & FELLOWSHIPS

Andrew Sowell and Wade Huggins Professor and Fellowship
Aimee Farria (Dr. Sharon Dent)

Cancer Prevention Research Institute of Texas (CRPIT) Graduate Scholar Awards
Pranavi Koppula (Dr. Boyi Gan)

NIH F31 NRSA Fellowship
Danielle Little (Dr. Jichao Chen)
Roxsan Manshouri (Dr. Don Gibbons)
Lorena Malli (Dr. Jacqueline Hecht)

Schissler Foundation Fellowship
Alexandria Blackburn (Dr. Rachel Miller)

Terry and Janet Klebe Fellowship
Amelie Albrecht (Dr. Xuetong Shen)

SCHOLARSHIPS, AWARDS & RECOGNITIONS

Alfred G. Knudson Jr. Outstanding Dissertation Award ($1000)
Charissa Kim (Dr. Nicholas Navin)

American Legion Auxiliary Fellowships in Cancer Research ($5000)
Sydney Moyer (Dr. Gigi Lozano)

Andrew Sowell-Wade Huggins Scholarships in Cancer Research ($5000)
Hieu Van (Dr. Margarida Santos)
Ruoj Zhou (Dr. Dung-Fang Lee)

Dr. John J. Kopchick Research Award ($50,000 for one-year of research expenses, intended to provide pilot funding for innovative research projects)
Pranavi Koppula (Dr. Boyi Gan)

Dr. John J. Kopchick Fellowship ($7500 to student and $7500 research support)
Roxsan Manshouri (Dr. Don Gibbons)
Sydney Moyer (Dr. Gigi Lozano)
Rachel Dittmar (Dr. Subrata Sen)

Faculty of Natural Sciences Award, University of Puerto Rico, Rio Piedras
Mabel Perez-Oquendo (Dr. Don Gibbons) [for accomplishments at GSBS]

Gigi Family Endowed Scholarship ($5000)
Zhenna Xiao (Dr. Li Ma)

Gordon Conferences
Sydney Moyer (Dr. Gigi Lozano), Discussion Leader

GSBS Graduate Student Research Day
Alexandria Blackburn (Dr. Rachel Miller), First Place Post-Candidacy Poster Award
Rhianne Morrissey (Dr. Gigi Lozano), First Place Pre-Candidacy Poster Award

Linda M. Wells GSBS Outreach Award ($1000)
Rachel Dittmar (Dr. Subrata Sen)

Scholarship for Excellence in Biochemistry and Molecular Biology at MD Anderson ($3000)
Melinda Soeung (Dr. Giulio Draetta)
Tolkappiyam Premkumar (Dr. Francesca Cole)

Steve Lasher and Janiece Longoria Graduate Student Research Award in Cancer Biology ($3500)
Pranavi Koppula (Dr. Boyi Gan)

Tzu Chi Scholarship Award for Excellence ($1000)
Odemaris Narvaez del Pilar (Dr. Jichao Chen)

G&E PROGRAM AWARDS

G&E Retreat Awards (2018)
Pranavi Koppula (Dr. Boyi Gan) - Second Place, Post-Candidacy Poster Award
Danielle Little (Dr. Jichao Chen) - Third Place/Tie, Post-Candidacy Poster Award
Roxsan Manshouri (Dr. Don Gibbons) - Third Place/Tie, Post-Candidacy Poster Award
Odemaris Narvaez del Pilar (Dr. Jichao Chen) - First Place Platform Award
Melinda Soeung (Dr. Giulio Draetta) - First Place, Pre-Candidacy Poster Award

G&E Travel Awards
Safia Essien (Dr. George Eisenhoffer)
Aimee Farria (Dr. Sharon Dent)
Melissa Frasca (Dr. Francesca Cole)
Jovanka Gencel Augusto (Dr. Gigi Lozano)
Danielle Little (Dr. Jichao Chen)
Lorena Malli (Dr. Jacqueline Hecht)
Sara Martin (Dr. Richard Wood)
Malcolm Moses (Dr. Richard Behringer)
Sydney Moyer (Dr. Gigi Lozano)
Odemaris Narvaez del Pilar (Dr. Jichao Chen)

G&E Student Service Awards
Alexandria Blackburn (Dr. Rachel Miller)
Pranavi Koppula (Dr. Boyi Gan)
Danielle Little (Dr. Jichao Chen)
Roxsan Manshouri (Dr. Don Gibbons)
Sara Martin (Dr. Richard Wood)

G&E Faculty Awards, Recognitions & Promotions 2018-2019

Swathi Arur, PhD
Director, Genetics Society of America, 2019-2022
Gordon Research Conference in Developmental Biology, Vice Chair-2021; Chair-2023

Richard Behringer, PhD
D. Dudley & Jody White Oldham Faculty Award, 2019

Francesca Cole, PhD
President’s Recognition of Faculty Excellence Award for Research, Anderson Cancer Wall of Science awardee, The University of Texas MD Anderson Cancer Center

Sharon Dent, PhD
Named one of four Women in Science with Excellence (WISE) by BioHouston

Giulio Draetta, MD, PhD
Named Chief Scientific Officer of MD Anderson, 2019

Michael Galko, PhD
The Thomas Stull Matney, PhD, Endowed Professorship in Cancer Genetics, GSBS

Vidya Gopalakrishnan, PhD
President’s Recognition of Faculty Excellence Award for Research, MD Anderson

Michelle Hildebrandt, PhD
Promoted to Associate Professor, effective September 1, 2019

David Johnson, PhD
President’s Recognition of Faculty Excellence Award for Education & Mentorship Advancement, MD Anderson

Ralf Krahe, PhD
President’s Recognition of Faculty Excellence Award for Education & Mentorship Advancement, MD Anderson

Gigi Lozano, PhD
The Jack and Beverly Randall Prize for Excellence in Cancer Research
EE Just Award, American Society of Cell Biology

William Matteo, PhD
Named to Academy of Health Science Education, MD Anderson Cancer Center

Pierre McCrea, PhD
The University of Texas System Board of Regents’ Outstanding Teaching Award

Rachel Miller, PhD
Junior Faculty Award, Society for Developmental Biology 78th Annual Meeting and Woods Hole

Nicholas Navin, PhD
Dallas/Fort Worth Living Legend Faculty Achievement Award in Basic Research
President’s Recognition of Faculty Excellence Award for Research, MD Anderson

Richard Wood, PhD
President’s Recognition of Faculty Excellence Award for Research, MD Anderson
Becky Brooks Retires & Rebecca Deen Joins G&E
Becky Brooks, long-time Science Park Program Coordinator for the Epigenetics and Molecular Carcinogenesis Graduate Program, and for G&E since 2017, retired in January. We thank Becky for providing outstanding support during the 20+ years she worked with Science Park students and coordinated their PhD program. Becky used to say that taking care of ‘her’ graduate students was the part of her job she loved the most. For six years, she and Elisabeth Lindheim managed the annual program retreats together. “I was very fortunate to plan and run retreats with Becky, and thank her for her fantastic, unflappable help. We were a great team”, said Elisabeth.

New G&E Scientific Writing Course Directors
The G&E fall writing class focuses on writing scientific papers with a particular spotlight on writing a review in the area of the student’s thesis research. In Fall 2019, Drs. Vicki Huff, Jan Parker-Thornburg and Siddharth Prakash take over from Drs. Richard Behringer and Rachel Miller who developed and taught the class the last few years. Of note, nine review articles started in their class have since been published in peer-reviewed journals.

Fall Events & Opportunities

G&E & Neuroscience Arts Showcase – September 10, 2019
Our annual Arts Showcase, held jointly with the Neuroscience Program this year, is September 10th at 4:00p in Onstead Forum. The showcase celebrates the artistic talents in our graduate program communities, and will feature a visual arts exhibition, musical performances, poetry reading and culinary arts. Organizers are Han Bit Baek, Pranavi Koppula, Melinda Soeung, and Elisabeth Lindheim for G&E, and Jeanne Manalo, Iman Sahnoune, and Amanda Williamson for Neuroscience.

Adobe Illustrator Hands-on Workshop – September 26, 2019
Science Park graphics specialists, Joi Holcomb and Chris Brown, will give a hands-on Illustrator Basics workshop for G&E students in Houston on September 26th.

Travel Awards
G&E offers $500 travel awards to students presenting the results of their research at conferences, or to students attending a ‘short course’ at places such as Cold Spring Harbor Laboratory, Marine Biological Laboratory in Woods Hole, or The Jackson Laboratory. The application is on the G&E website. https://gsbs.uth.edu/genetics-and-epigenetics/financial-support.htm

Laptop Program
G&E has started a laptop program, providing a limited number of students with laptops to use while in the G&E program. We plan to grow the laptop program over time so that eventually all G&E students can be supported as needed.

Professional Society Student Memberships
G&E covers the annual membership fee for a scientific society of the student’s choice.

Continued from cover: The greatest export of scientists: A child-like way of seeing the world
repair, cancer progression, developmental biology, oogenesis, epigenetics, and pain. But regardless of the specific focus of our work one constant for nearly all scientists is a retained capacity for child-like wonder at the world. Often, the scientific capacity for wonder infuses other aspects of our lives. This state of adult wonder is one of the wonderful (so to speak) things that scientists can regularly bring to their interactions with the non-scientists about us. The questions that scientists ask daily- How does this work? Why is this shaped this way? What happens if I….? are a way of sharing the basic scientific method with others. Asking these questions out loud is a great way to encourage others about us to continue to indulge, and to feel comfortable indulging, their natural curiosity about the world we all share.
Working with Caffeine in Houston

by Pranavi Koppula

If you've got that writing deadline for a paper, grant or the thesis fast approaching, but you find yourself slouched in your desk chair—just willing something to appear behind that menacing, blinking and ever-taunting text cursor, get out of the lab and head to a coffee shop to experience literary loquaciousness-induced, caffeine-induced creativity. With background noise levels of 70 decibels from clattering plates and the whirr of a coffee machine, a coffee shop is the ideal level of semi-distraction that encourages the brain to come up with innovative ideas. Here’s a list of Houston coffee shops that, aside from copious caffeine, have been rated well for a free, reliable Wi-Fi strength, friendly late operational hours, plenty of charging outlets and comfortable seating.

Peer Reviewed Restaurants

by Melinda Soeung

Science is a team effort. Therefore, take some time outside of the lab to go experiment the diverse food scene in Houston with your labmates! Here are some great restaurants nearby to have lunch or dinner that have been peer reviewed by your G&E colleagues!

Hu’s Cooking
2502 W Holcombe Blvd, Houston, TX 77030
Hungry for some spicy Sichuan cuisine? Hu’s Cooking is a great lunch/dinner spot with delicious food! Just remember to reserve a table a head of time if you are eating at peak hours because it is a very popular place!

Cooking Girl
2400 W Holcomb Blvd, Houston, TX 77030
Another great place for Sichuan cuisine! Cooking Girl has great food and atmosphere for a lab outing. Definitely try the ginger fish soup and other seafood items!

Fadi’s Mediterranean Grill
Fadi’s is a great place for Middle Eastern & Mediterranean food. The atmosphere is casual and there’s a great lunch buffet with a huge variety of food to choose from!

Local Foods in Rice Village
2424 Dunstan Rd, Houston, TX 77005
A good place for healthy but delicious food. Their menu offers vegan and vegetarian options. Also, I highly recommend you try the vegan meatball sandwich that is currently only offered at their Kirby location!

Inversion Coffee House - 1953, Montrose Blvd, Ste A, Houston
Toute Suite - 2001 Commerce St, Houston
Paper Co Cafe - 1100 Elder St, Houston
Agora - 1712 Westheimer Rd, Houston
Black Hole - 4504 Graustark St, Houston
Blacksmith - 1018 Westheimer, Houston
Mercantile - 3321 Stanford St, Houston
The Nook Cafe - 4701 Calhoun St, Ste 150, Houston
Cavo Coffee - 3773 Richmond Ave, Ste 1F, Houston
Throughgood Coffee - 732 W 27th St, Houston

Legend
Wi-Fi Noise Level Closing Time Pet Friendly

Hungry’s Rice Village
2356 Rice Blvd, Houston, TX 77005
A nice place for weekend brunch, lunch, or dinner! There is a great selection of delicious food here with large appetizers that are great for sharing!

Betsy’s at Evelyn’s Park
4400 Bellaire Blvd, Bellaire, TX 77401
One of the hidden gems of Houston’s food scene, Betsy’s is a great place for brunch/lunch! Also, Betsy’s is located in a beautiful park, so plan to have a picnic and do outdoor activities with your labmates as well!

Mai’s Kitchen
3403 Milam St, Houston, TX 77002
Working in the lab late and you need a place that’s opened past 9pm for a dinner break? Mai’s Kitchen, located in Midtown, is opened until 3AM/4AM and serves good Vietnamese food!