

WorthWEILL

CLASS OF 2018: WELCOME TO WCGS!

On behalf of the Weill Cornell Graduate School community, I am pleased to welcome the Graduate School's newest class of incoming students!

This year, WCGS received over 600 applications for seven multidisciplinary Ph.D. programs and we are delighted to have 71 new Ph.D. students with an additional 15 students in the Tri-Institutional Ph.D. Programs. Those admitted hail from a wide variety of backgrounds: 15 different countries and prestigious institutions such as MIT, Duke, University of Chicago and Cornell University, to name a few. Most of you have extensive research experience, including 26 publications, seven of which are first-author publications. We are certain that your outstanding academic credentials will enhance our list of students' accomplishments.

We also welcome our incoming Masters students with nine students in the Clinical Epidemiology program, 31 in Clinical and Translational Investigations, 65 in the Healthcare Policy and Research program, and 47 in the eMBA/MS program. This year, our Physician Assistants program will have its largest class ever with 37 incoming students. Finally, our newest program, Computational Biology has six incoming students.

Our goal as a graduate school is to train you, the next generation of scientific leaders in biomedicine. We aim to do this by not only positioning you to make innovative advances throughout your time here and beyond, but also by building an environment that shows all students how to work in laboratory, local, and global communities of scholars, with science as a bridge across national, cultural, political, religious and ethnic identifications. I encourage you to take a few moments to read our vision statement at <https://gradschool.weill.cornell.edu/about-us/wcgs-vision-statement>.

We are wholly committed to supporting our students' academic success and overall well-being throughout your graduate training. We work to ensure that our curriculum keeps up with rapid scientific advances and closely monitor your mentoring and training experience. We also have a growing portfolio of co-curricular activities, including fellowship and manuscript writing workshops, presentation workshops and the Three-Minute Thesis competition, entrepreneurship activities, and externship and internship possibilities. Furthermore, we are thrilled to have a new Associate Director for Career & Professional Development to provide career coaching and prepare you for post-student life, and will be rolling out new, exciting career development workshops in the coming months. Most importantly, you should know that we take your wellness very seriously – I invite you to familiarize yourself with our various [student support services](#) available to assist you with concerns and issues that might arise during your graduate training.

WCGS leadership has a strong partnership with the Graduate Student Executive Council (GSEC). GSEC, our school's student council, is a strong advocate for students' administrative, academic, and social needs. Over the past few years, GSEC, along with other student leaders, helped enact meaningful changes to the training experience and established several new clubs and student-led initiatives. We encourage all of our students, both new and returning, to engage with GSEC and learn more about the resources our institution offers, as well as the many academic and social activities and events that can enhance your experience in graduate school.

I'm looking forward to getting to know our new class and cannot wait to see what you accomplish during your time with us and beyond!

Best wishes,
David Christini, Ph.D.
Vice Dean

Starting graduate school or moving to a new city (or both) can be extremely exciting, but can also be stressful. As we prepare for the 2018-19 academic year, WCGS's staff, faculty and your fellow graduate students are here to help you make a smooth transition to grad school life — both academic and non-academic. Here is some useful information to help you get started!

We look forward to meeting you as you begin your graduate journey, and wish you success in your academic endeavors.

Explore **WCGS HotSpot**, your one-stop shop for information on student clubs, activities, counseling and health, events calendar, academic policies and procedures and many more!

<https://login.weill.cornell.edu/ds/canvas/>

Where can I get my transcript or enrollment verification letter?

Registrar Office
1300 York Avenue
Room C-114

registrar@med.cornell.edu

Remember to carry your Weill Cornell ID for neighborhood restaurant/deli/shop discounts.

WCM aims to promote overall well-being, inclusion and a sense of belonging to enable students to succeed as scientists and leaders. Visit **WELL at WEILL** for a list of wellness programs and activities.

<https://studentservices.weill.cornell.edu/student-life/well-weill>

Low on Money?

Contact **Education Events** for student discounts on movie tickets, social and cultural events.

Olin Hall, Room 321
eduevents@med.cornell.edu

For all general inquiries:

Graduate School Office
1300 York Avenue Room A-131

212.746.6565

YES!

This is the primary and official form of communication. Furthermore, checking your email regularly is sure to provide you with access to FREE FOOD. ☺

Is it important to check my WCM email account?

Be sure to check the WCGS webpage for up-to-date information and important resources.

<https://gradschool.weill.cornell.edu/>

Passion to Teach and Love for Science...

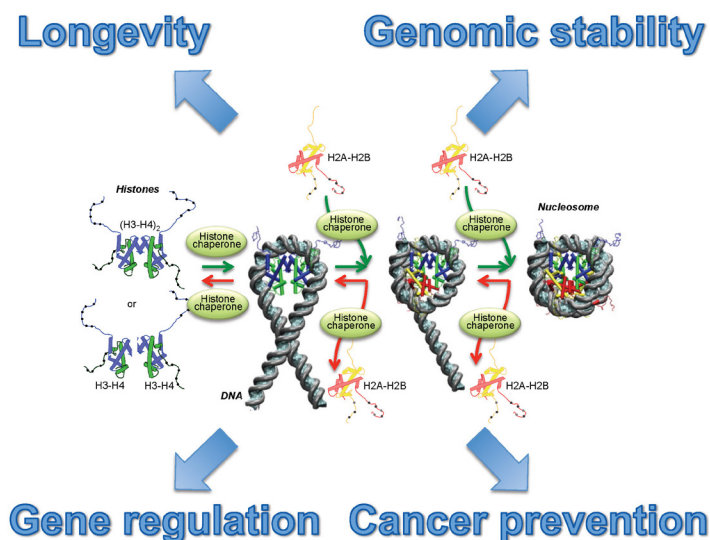
In October of 2017, Jessica Tyler, Ph.D., was one of 396 scientists elected as a fellow of the American Association for the Advancement of Science (AAAS), the world's largest general scientific society. Dr. Tyler is recognized for her contributions to the field of epigenetics — the study of biological changes outside the DNA sequence that impact gene expression.



**“Find a science problem
that you love and go
wherever it takes you.”**

Dr. Tyler grew up in England, 100 miles northeast of London, three miles from the east coast in a town called Holbeach near the original Boston where the Pilgrims originated. Growing up, Dr. Tyler aspired to become a teacher, and for years envisioned herself as a doctor. However, when Dr. Tyler learnt more about medical school at 16, she realized that she wanted to discover how biology worked, rather than learning what other people had already discovered. “I also wanted to teach others the wonder of being the first to discover new biological mechanisms,” she says. “So I thought that running a research lab would be the perfect career for me.”

After receiving her BS in Biochemistry from University of Sheffield in England, Dr. Tyler earned her Ph.D. in 1994 at the Medical Research Council (MRC) Virology Unit in Glasgow, Scotland. This was followed by postdoctoral training at UC San Diego in the laboratory of James Kadonaga, Ph.D. Her achievements and success have taken her from setting up her first lab at the University of Colorado to MD Anderson Cancer Center in Houston. In 2015, Dr. Tyler joined Weill Cornell Medicine as a Professor in the Department of Pathology and Laboratory Medicine. She is also a senior editor at eLife, a non-profit organization inspired by research funders and led by scientists.



Overview of studies to understand how chromatin assembly and disassembly regulates aging, cancer, DNA repair and gene expression.



My lab's research aims to learn more about the basic biology of the maintenance of genome stability and the process of aging so that we can develop therapeutic interventions to extend lifespan and health span. We study how epigenetics, i.e. chromatin, regulates genomic integrity and aging using human cells and the model organism budding yeast because these fundamental processes were very highly conserved through evolution.

My motivation to study epigenetics stems from my undergrad and Ph.D. research — few people were doing cutting-edge experiments and discovering that chromatin regulated gene expression. Over the years, we have looked at how chromatin structure regulates gene expression, DNA replication and now DNA repair, focusing on the function of histone chaperones in assembling and disassembling chromatin. It is fascinating to discover unexpected results that take you into new areas of biology and I am constantly learning new things. Furthermore, we are using newly discovered methods to biochemically isolate old cells which is allowing us to characterize the aging process at an unprecedented level of understanding. Our work has been made a lot easier by techniques like CRISPR-Cas9, which would not have been possible in the past.

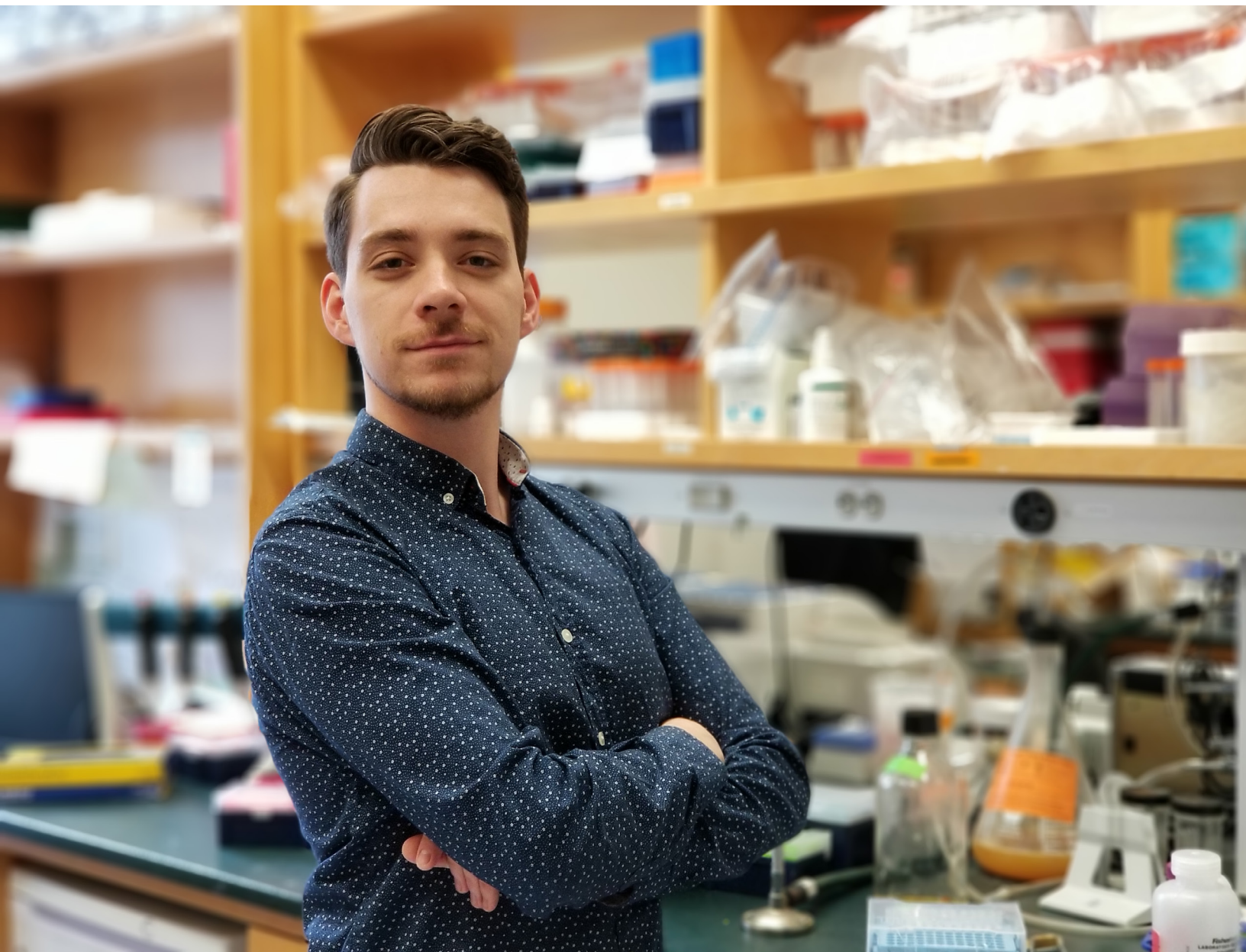
Being at WCM has brought me into contact with new colleagues that are stimulating my research program and provides me with access to great students. The outstanding graduate students were a great attraction to me as I find mentoring to be the most rewarding aspect of my work, and also the rich expertise in chromatin and genome stability within the Tri-I research community. I benefit from postdocs who love to come to New York City as well.

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Mentoring is the most rewarding aspect of my work.

As for being a female scientist, I feel that it's been an advantage in terms of quotas of female speakers at conferences that need to be met, and I feel it is especially important for female scientists to seek out respectful colleagues and a supportive academic environment.

My advice for incoming graduate students is to find a science problem that you love and go wherever it takes you. It is that love of the science problem that will drive you to work as hard as possible and to get through the challenges you may face. That is what took me to Scotland as a Ph.D. student and to the USA as a postdoc, incited by very specific science problems that I was driven to work on.

Being English, I love to garden — yes, it is possible in Manhattan! I like to do Bodycombat, a mixed martial arts-inspired workout. I love to be in the sun, preferably near water. What is more, I love spending time with my triplet children, watching them blossom into unique, funny and interesting individuals.



CHRISTOPHER NÖTZEL, Ph.D. Student
BCMB Allied Program (Molecular Biology)

Christopher Nötzel arrived at Weill Cornell in the Fall of 2015 for graduate study with a longstanding interest and involvement in science. His father was a doctor, so Nötzel had early exposure to medical and biological sciences. More than anything, Nötzel was captivated by “the cell biological foundations of our bodies and the natural world” rather than the idea of treating patients. “Not that is not an amazing thing to do, but personally, I was worried that as a doctor, I would often just follow specifically outlined procedures,” explains Nötzel. “The job of a scientist sounded more fun to me. Of course, scientists often follow pretty straightforward protocols, but there is a lot of room for imagination and surprises.”

Nötzel has published five scientific papers throughout his undergraduate and graduate career where he is the

co-first author in two papers. Recently, he received the Jacques Cohenca Predoctoral Fellowship given by WCGS to students who demonstrate exemplary academic and research achievements. And he hasn’t regretted his career path, as his future plans involve remaining in academia and one day having a lab of his own.

ROAD TO WEILL CORNELL

Nötzel was born in Hamburg, Germany and grew up in a small town nearby called Bargteheide. After finishing high school, he spent a year in France, then moved to Göttingen, Germany, where he earned his Bachelor and Master’s Degrees in Molecular Medicine focusing on protein trafficking in yeast.

During his Master’s research, Nötzel decided to move to the United States for his Ph.D. studies. Although Europe, in particular Germany, offered a lot of excellent research

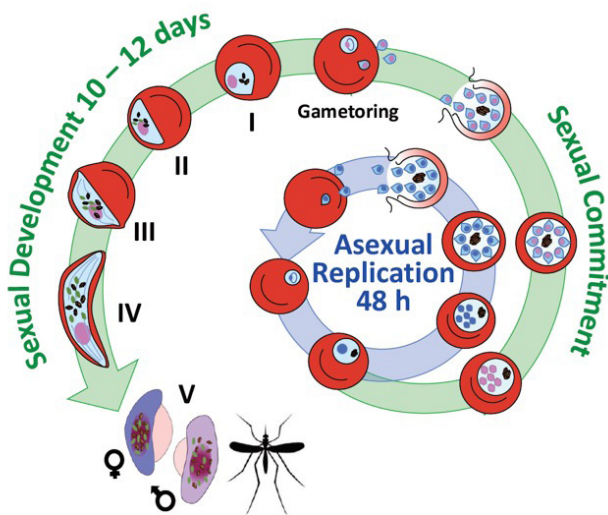
opportunities, Nötzel favored the American Ph.D. education structure. The key factor for his graduate training was an American Ph.D. program providing the foundational coursework necessary for successful graduate work. Moreover, Nötzel was drawn to laboratory rotation opportunities that allow students to find a good match for a thesis lab, advisor and research topic. “After all,” he says, “you end up spending many years in this environment, so a good fit is important.”

Nötzel applied to over a dozen reputable schools and interviewed with a handful of them. He knew he wanted to be in a place with a strong sense of community and an overall positive, supportive research environment doing cutting-edge and collaborative work. His decision, therefore, to matriculate at WCGS was fully confirmed during his interview visits. “What stood out about Weill Cornell was that the students are really happy,” Nötzel says, “In addition, the idea of living in a vibrant and multi-cultural place like New York City was a big plus. After three years of being here, I can say that it was a fantastic decision.”

RESEARCH

Nötzel met Bjorn F. Kafsack, Assistant Professor of Microbiology and Immunology at the annual BCMB scientific retreat. This informal meeting solidified Nötzel’s passion and motivation for translational science. “I realized that in his lab, I could do basic research on a unicellular eukaryote while working on an actual pathogen that causes disease, giving my research more immediate medical relevance.”

The Kafsack Lab studies the regulation of gene expression during differentiation of *Plasmodium falciparum*, the parasite that causes the most severe forms of malaria. Intervention at a certain point in the life cycle is of great interest for the malaria research community because it would allow them to block transmission of the disease.



Asexual stages replicate continuously in red blood cells, releasing new merozoite progeny every 48 hours. A subset of replicating parasites commit their progeny to differentiate into gametocytes upon re-invasion. Development of mature (Stage V) male and female gametocytes infectious to the mosquito vector takes 10-12 days.

Given his background in basic cell and molecular biology, Nötzel hopes that his Ph.D. studies will have a tangible impact on human health. His dissertation research focuses on characterizing the role of epigenetic regulators during the parasite’s sexual differentiation using a combination of molecular genetics, biochemical assays and chemical biology.

There are two main aspects that motivate him to do research, Nötzel says: “On one hand, it is rewarding to know that what I do is either directly or indirectly going to benefit human health. On the other hand, I find it very satisfying to think that by asking and then answering questions nobody has asked before, we are creating knowledge! It is a timeless contribution to society, maybe comparable to a musician writing a timeless song.”

“After three years of being at Weill Cornell, I can say that it was a fantastic decision.”

COLLABORATIVE EFFORT

When Nötzel began his doctoral work in the Kafsack Lab in Spring 2016, he was offered to work on a collaboration with Olivier Elemento’s lab, specifically with Asaf Poran, then a third-year Ph.D. student in the Physiology, Biophysics and Systems Biology graduate program. Poran spent his first year of graduate training setting up an MIT-developed technique for highly parallel, genome-wide gene expression profiling of individual cells in the Elemento lab and Kafsack was very interested in applying it to malaria parasites.

The two worked closely together for 1.5 years — performing a series of single-cell RNA sequencing experiments that revealed the specific changes in gene expression that occur during the earliest steps of the transition from asexual replication to sexual differentiation of malaria parasites. “Traditional approaches to gene expression profiling that analyze cells in bulk had previously failed to identify these changes since our cellular subpopulation of interest is small and otherwise very similar to their asexual counterparts during these very early steps of transitioning to sexual development,” explains Nötzel.

“Quite obviously, I am proudest of our collaborative work here at Weill Cornell,” Nötzel says, “Not only was the project an academic success, but Asaf and I are now also really good friends.” Nötzel and Poran’s collaboration extended beyond the work in the lab, as it enabled them to travel and present their work at national conferences.

WCM’s emphasis on interdisciplinary collaboration has therefore been particularly beneficial as the team’s new insights were published in the journal *Nature* in November

2017. In addition, Nötzel and Poran were awarded the Julian R. Rachele Prize for their co-first authored paper at the 2018 WCGS Convocation and Award Ceremony.



DETERMINATION

As with anything, this project was not all smooth sailing — “a rewarding and extremely challenging experience,” Nötzel calls it. After starting the single-cell RNA sequencing project, Nötzel and Poran quickly realized that other groups had been working on similar findings and were looking to get their own work published.

“We ended up being in peer review back to back with two other manuscripts and one of the main additions to the work the reviewers asked for was the validation of our single-cell RNA sequencing-based findings with an independent method,” Nötzel says. “I spent the next few months trying to implement a protocol for it, which was nerve-racking. Just two weeks before the resubmission deadline we got the results we needed and our work got published. The day I looked at the data to see it had finally worked was easily the best day of my scientific career so far.”

Nötzel credits the Weill Cornell community and his mentor for positioning him to be successful. “I am really thankful for the opportunities and appreciate the continued support I receive from my mentor, Dr. Kafsack and the graduate school as a whole.”

ADVICE FOR NEW STUDENTS

As someone who’s been through it already, Nötzel has some advice for those just entering a graduate program. “During your first few days and weeks, focus on kickstarting great connections with your fellow grad students,” he says. “These people will be your colleagues and great friends throughout the next few years.”

As you’d expect from someone who works in a lab, he thinks finding the right lab is a definite priority. “Really take the time to get to know the research community you just joined,” he says. “Meet and talk to as many faculty members as you can.

Go to plenty of research talks and seminars. When picking your rotations, allow yourself to try something weird, maybe a research field or a model organism you would have never thought about before. You might be surprised how much you like it.”

Of course there’s course work too, and while it may not be as exciting or as interesting as the work done in the lab, it’s still important. “It should never get in the way of you finding your thesis lab, which is the most important task for your first year,” Nötzel says. “However, you obviously need to take it seriously. Try to enjoy it and see it as a tool to get you on track for the years to come, but don’t get too anxious about it. You are all here because you are smart and you will be fine.”

OUTSIDE THE LAB

In his free time, Nötzel likes to run, but he’s serious about that too. “I will be running my fourth marathon this year,” he says, “here in New York City in November.” And after playing soccer for 10 years in his native Germany, he started a Sunday league soccer team at Weill Cornell. Like the other club teams, they’re called the Isotopes.

During his travels—Nötzel has visited 30 countries—he discovered scuba diving, which is exercise and exploration and meditation all wrapped up in one. “It’s probably one of my favorite activities there is,” he says. “Being immersed in the water and moving around so freely is the closest I’ve come to flying so far. It gives you the chance to explore a beautiful and strange world that is otherwise pretty much inaccessible, and it allows you to slow down your mind. In that way, it really is a form of meditation for me.” He also plays electric guitar and writes his own music.



GRIEF IN GRADUATE SCHOOL: WHAT YOU AND YOUR SCHOOL CAN DO TO HELP *

BY Meredith Wright

Recently I was scanning my lab notebook in our biosafety level 3 (BSL3) facility so that it would be electronically backed up. As I was scanning, I got to the part of my notes dated October 2015, and my heart sank.

My Mom had a heart attack on October 10, 2015. Following a few weeks of promising recovery, she had a second heart attack on October 27, 2015, and passed away. She was my biggest supporter, closest confidante, and my best friend. It feels empty to describe our relationship with such cliché descriptions of a mother-daughter relationship, but it's true. Needless to say, my world turned upside-down that October.

So What Do My Lab Notes Have To Do With It?

I have the world's most supportive PI, and for both my Mom's initial heart attack and the second which caused her death, I was allowed time to go home and help my family. This means that when I flip through the pages of my notebook, diligently dated in the top right hand corner, I find gaps in time for both absences. It's the strangest feeling to see the first (and only) time point of a growth curve on October 26, 2015, and to have the next page dated November 30, 2015 (marking the point at which I finally felt capable of working in the BSL3 facility without tears landing on my facemask). As I turn that page, I am reminded of the pit in my stomach when my Mom didn't answer her phone on October 27th, and the awful days that followed when it turned out my worst nightmare had happened.

It's now the second year mark since my Mom passed. I've adjusted as best I can to the million ways that life has changed in her absence. And I think I'm ready to share my experience with managing grief in graduate school—because sadly, I know I'm not the only one dealing with this. My hope is that this post can serve as solidarity and a resource for other ECRs dealing with loss.

The Facts On Loss in Graduate School

Data is scarce on the impact of losing a parent in graduate school. But we at the PLOS ECR blog are all about finding data to corroborate personal experience, so I'll share what I did manage to find (and please, comment if you know of research that I've missed). Through [this excellent piece aimed at students and professors](#), I discovered the work of Dr. Mary Alice Varga, an Associate Professor of Educational Research at the University of West Georgia. [Varga's work](#) focuses on student grief and bereavement, and it appears she is the first to delve into the experience of graduate students, as most of the bereavement field focuses on [children](#) and [undergraduates](#).

In a survey of 1,575 graduate students, Varga showed that **26% of graduate students experienced the loss of a significant person or pet within the preceding 24 months**. She also examined the ways in which graduate students sought help; this work is revealing about how graduate schools could be serving their students better. Of her survey cohort, 93% of students found support from family, and 86% found support

from friends. **These numbers dwindle when it comes to seeking help from professors, professional counseling, or a student counseling center, with 11%, 4%, and 6% usage rates respectively.**

Of course, you will instinctively lean on the people closest to you during mourning—my family, friends, and fiancé have been crucial to my personal process. But it's in your own best interest and that of your PI and graduate school if everyone takes steps to help you adjust. Here's what's worked for me:

Don't Be Afraid To Tell Your PI and Labmates About What You Are Dealing With

In my first meeting with my PI after returning to the lab, she encouraged me to always be open with her about anything I might need as I took on more responsibility with my family and dealt with my own grief. She said that being informed would allow her to be a better mentor. A good PI will want the best for you, both professionally and personally. Mine continues to be understanding about when I need to take a half day to help out at home, with the knowledge that not being stressed about these obligations will enable me to work better when I am at lab. I've also been able to confide in some other key mentors within my lab, whose words of wisdom helped me to get back on my feet in lab.

If I'd suffered in silence, my work and my grieving process would be in a very different place. I think a lot of us worry that speaking up about a loss will make us seem weak, or put us at risk of being left out of certain

opportunities. I've found that being open is the better route, and that speaking up about your personal needs in a professional setting and manner is an important skill to learn. And yes, probably those first weeks or months, your labwork will take a backseat. It's reality that you will have to deal with funeral arrangements, sorting out care for young siblings/siblings with special needs/elderly family, etc. This is how it goes, and graduate students, more so than children or undergraduates I would imagine, end up thrust into decisionmaking roles within a family. Some probably even took on a decisionmaking role during the illness of our loved ones, since we're well-versed enough in science and medicine to communicate with the doctors and read up about the medications being prescribed. Lab will be there when you are ready—[there is nothing wrong with taking the time you need](#).

Take Advantage of Mental Health Services Available Through Your Institution

Between grief itself and navigating your altered role in your family, odds are that life is suddenly a lot more complicated. For this reason, I'm baffled that in Varga's study, only 6% of people used their student counseling center. My PI gets the "PI of the century" award for getting me signed up for the mental health services at my school. I'm not sure I would have carved out the time for it without her encouragement. Fortunately, Weill Cornell has a [wonderful program](#) through our student insurance where I never even see a bill. We also have [many wellness programs](#) including 'Peers Advocating Wellness,' where students can meet with fellow students for support. Don't be shy to utilize whatever your school has to offer, or advocate for services if they don't exist yet. It will help you

sort out all the change in your life to have a neutral, objective person with whom you can talk. Good faculty want the best for their students' mental health; if your institution doesn't have ample mental health services, seek out a trusted faculty member to get support in petitioning for change.

Be Kind To Yourself

Between juggling grief, new responsibilities, and lab, don't forget to make time for yourself. Journaling, yoga, a weekend away; whatever will make your mind and body happier or healthier, I say go for it. [As our blog has discussed before](#), academia is anxiety-inducing enough all on its own. And then life will happen to you while you're in graduate school, in good ways and bad. Cherish all the good times, and seek strength in your favorite pastimes, your personal network, and your professional community during the bad times. ♦

* Published in the PLOS Early Researcher Community (ECR) on November 3, 2017

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Additional resources on page 15



ALUMNI Q&A

Before joining the Ph.D. program in pharmacology at Weill Cornell Graduate School of Medical Sciences, Emily Joel Mercer, Ph.D. '17 worked in the lab of Dr. Steven Gross as part of a work experience program with the University of Surrey (UK), where she obtained her undergraduate degree. "I got a bit hooked on New York," she says of the experience. "The sense of community in the pharmacology department is what pulled me back to WCGS when I decided to come to New York for my Ph.D."

Mercer says she has had a lifelong curiosity about the way things work, and loved problem solving and puzzles, which led her to join the Todd Evans Lab where she studied genes that are important in heart development and function. "I don't think I knew how much I was going to enjoy research until I spent some time working in a lab," she says. "My interest in genetics was spurred on by genetic disease in my own family and amped up a level when I wrote an undergraduate paper on my choice of the most important scientific discovery of the decade: induced pluripotency. I've followed the regenerative medicine field ever since." In Dr. Evans's lab, Mercer used both zebrafish and human stem cell models, leveraging some of the genome editing technologies (TALEN and CRISPR) that are such exciting prospects in today's drug development pipeline.

Dr. Mercer joined IQVIA, a contract research organization as an Associate Consultant shortly after graduating in 2017.

Please tell me about your current position and what is a typical day for you?

I'm an Associate Consultant at IQVIA, a human data science company. I work as a part of a team of consultants who solve problems for clients in the healthcare space. My days are a combination of meetings, story building, secondary research (reading papers), primary research (conducting interviews), attending seminars or training to stay up to date on the healthcare industry, client presentations, data analysis, emails and making presentation 'decks' (PowerPoints). There isn't really one 'typical' day — I change projects every couple of months and each one is different. I'm doing whatever it takes to answer the question!

How did your career plans or goals change by the time you were finishing your Ph.D.?

When I first started grad school, I wanted to run my own lab one day, but there are a lot of pieces of that journey that I didn't fully appreciate until I spent more time in academia. I started thinking about what I wanted my career to look like a few years into graduate school. I wanted a way to stay involved in drug development, but be closer to the finished project. Consulting appealed to me because of the project variety, especially for junior team members. I thought it would give me the opportunity to explore different aspects of the healthcare industry.

How did you transition into a consulting career?

There are actually a lot of resources to help Ph.D. students make this switch. A lot of consultancies run exposure programs for Advanced Professional Degree candidates. There are textbooks you can buy to help prepare for the specialized interview process and the Tri-I has an active Consulting Club. An important part of transitioning for me was understanding the nuances between different consultancies — to understand what was going to be the best fit for me.



The main skill sets for being able to do the job are critical thinking, logic and communication — most of these were refined for me during graduate school.

Does being an international student add another layer of challenge?

For me it hasn't been an issue so far, but it's important to understand where the barriers are. The first year of work after graduating is usually covered by an extension to the student visa, but after that, it becomes more complicated. Larger organizations are more equipped to help you navigate the legalities of working in the U.S. than smaller ones, which may be wary of the costs and challenges that come with hiring international employees. Additionally, some of the work extension programs available require your work to be explicitly within STEM, which could be a challenge for graduates who are interested in changing fields.

What's the best thing about your job? Do you miss bench work?

The people, the problem solving and the variety. It's a challenge to get up to speed quickly on new therapy areas or a particular type of issue faced by a pharmaceutical company or nonprofit, but it's satisfying to watch all the pieces fall into place. I do miss bench work. It's much rarer now that I get the buzz of having totally new data to analyze and I never have beautiful fluorescent images or plates of contracting cardiomyocytes. There's also less time when I can let my brain relax like I could in a tissue culture hood — my podcast queue is definitely longer.

Were you involved in any organizations or activities while in graduate school that helped lead you to where

you are now?

I was an active member of GSEC for a lot of my time in graduate school, initially as a Recruitment Chair, then Treasurer and Vice President. These experiences were actually very important for me in understanding my own strengths and weaknesses outside of the lab, as well as providing a lot of useful interview anecdotes. I also think forming close relationships with members of different programs, and classes above and below mine helped me get a broad perspective on the options available coming out of grad school. Additionally, I gained a lot from the Consulting Club, listening to representatives from different consultancies explain their roles and practicing interview techniques with other interested Tri-I members. Looking back, I wish I had got more involved in some of the other organizations and activities that I see really flourishing now, like Bench to Bedside and the Biotech Club.



Of the skills you developed as a graduate student, which are most useful to you in your current position?

My time at WCGS had a multifaceted contribution. Firstly, the scientific literacy and subject matter expertise I gained during my Ph.D. means I can quickly get up to speed on new topics, hold my own in conversation with experts in the field and know which evidence points and questions are likely to be critical. Coupled with an ability to think critically, this is really the linchpin for success in my current role. Secondly, the opportunities to present my thesis work in situations ranging from departmental meetings to national conferences honed my ability to communicate effectively and at an appropriate level, which is a skill I employ every day.

In your opinion, what are the main skill sets necessary

to become a consultant?

I think the main skill sets for being able to do the job are critical thinking, logic and communication, and I think most of these were refined for me during graduate school. However, for consulting to be a good fit, and to do well, I think you also need to be a people person, something that I didn't see as so important in grad school. People skills are important for dealing with clients, but also critical for networking within the organization. Project assignment is more freeform than I imagined and being able to work on what I'm interested in has been partly through just chatting to different colleagues at social events, or volunteering to help out with business development pitches for projects I'm interested in.

Where do you see yourself going from here?

I think I'll stay in consulting for a little while. My company has a lot of different 'Centers of Excellence' that specialize in tackling different types of problems and I would like to figure out what's the best fit for me. From there I can decide if I want to become an expert consultant in that space, or find a non-consulting job that matches my interests. For example, I've been working recently at the intersection between non-profit patient advocacy groups and pharma, helping to understand how clinical trials can be optimized for populations with rare diseases, which has been extremely interesting. I'm also excited to be working on projects that are helping to understand how the cutting-edge technologies we use in the lab, like iPSC-derived tissues and CRISPR, can succeed as therapeutics.

Knowing what you know now, would you still go into your current job?

Yes, I think so. It's definitely not easy, the hours can be long and projects aren't always ideally suited to my interests. However, the variety and challenge are great. I'm starting to develop a focus on topics that are the most interesting to me, and to understand how to build up the knowledge base, skill sets and network to identify and achieve my career goals.



Forming close relationships with members of different programs, and classes above and below helped me get a broad perspective on the options available coming out of graduate school.



What advice would you offer to others interested in a career in consulting?

Firstly, talk to people and go to info sessions to understand what the options are — 'consulting' actually covers a range of different companies and they have some important differentiators. Secondly, start early. It will take time to build up enough relevant experience to make your résumé appealing, and many consultancies have a long recruitment cycle. For example, I interviewed in August for jobs that were starting the following July.

What do you like to do in your spare time?

This summer I'm learning to sail. I got my Basic Keel Boat certification and have my eyes on the next couple of American Sailing Association levels before the fall. I always say I'm an excellent un-official NYC tour guide — I have a top hits list of restaurants, bars, activities and things to see that I've built up by trying things out over the years. I also love to travel and try to reach a couple of new countries every year.

The Maciejowski Lab seeks to understand the mechanisms that give rise to these complex mutational phenomena with the long-term aim of determining how they impact cancer progression, heterogeneity, and response to therapy. To achieve these goals the lab is taking a multi-disciplinary approach that includes live-cell imaging, genetic and genomics-oriented methodologies.

John Maciejowski, Ph.D.
Assistant Professor
Molecular Biology Program

Eukaryotic cells are defined by the presence of membrane-bound organelles that provide isolated environments for specialized cellular functions. In order for cells to function, however, these organelles need to coordinate their diverse activities. **The Hite Lab** investigates how chemical signals are transmitted between these cellular compartments. We are particularly interested in understanding how the movement of ions such as H⁺, K⁺, Na⁺ and Ca²⁺ into and out of specific organelles can be used to communicate information about cellular homeostasis and ensure that all of the disparate compartments of the cell are functioning together.

To better understand how the movement of ions influences cellular homeostasis, we are investigating the function of ion channels that enable the regulated transmission of ions across various organellar membranes. We use structural and biophysical tools such as cryo-electron microscopy and patch-clamp electrophysiology to elucidate the mechanisms that govern the conductance, selectivity and gating of these channels. By understanding the mechanisms by these channels function, we can design specific genetic and chemical perturbations to characterize their roles in both normal cells and in disease states.

Richard Hite, Ph.D.
Assistant Professor
Physiology, Biophysics & Systems
Biology Program

The Tammela Lab is interested in understanding the remarkable phenotypic heterogeneity of cancer cells within tumors. We approach this question using a combination of sophisticated genetically engineered mouse models, single cell transcriptomics, tracing and ablation of distinct tumor cell lineages, CRISPR-mediated gene regulation, and advanced imaging techniques. We utilize the exceptional resources developed by our MSK collaborators, such as organoids and xenografts, for the translation of our findings into new treatments for human cancer. Our goal is to discover pathways that drive distinct cellular phenotypes and to develop new therapeutic concepts aimed at reducing cellular heterogeneity in tumors.

Tuomas Tamella, MD/Ph.D.
Assistant Professor
Cell & Development Biology Program

The Chandwani Laboratory investigates the epigenetic mechanisms that underlie cancer initiation. Whereas genetic drivers of tumorigenesis are increasingly well-understood, the chromatin alterations that subvert terminal differentiation, disrupt homeostasis, and drive phenotypic change remain poorly characterized. Using pancreatic cancer as our disease of interest, we apply chromatin-based techniques to delineate the dynamics of chromatin in tumor initiation and define novel mechanisms of disease. Active projects include (1) identifying an epigenetic memory of inflammation in the pre-neoplastic pancreas; (2) understanding differential chromatin dysregulation across multiple oncogenic *Kras* mutations; (3) characterizing the role of enhancer licensing in tumorigenesis; and (4) implicating pioneer transcription factors in disruption of chromatin structure. Our research program aims to implicate the reprogramming of epigenetic landscapes, in addition to genetic mutation, as a critical driver of the process of tumorigenesis.

Rohit Chandwani, MD/Ph.D.
Assistant Professor
Molecular Biology Program

The Intlekofer Lab investigates how metabolic pathways influence cell fate decisions and how deregulated cellular metabolism contributes to cancer development. In particular, the lab uses cutting-edge metabolic assays and genetic approaches to decipher how the L- and D- enantiomers of the metabolite 2-hydroxyglutarate (2HG) regulate the differentiation and function of normal stem cells, immune cells, and cancer cells. The overall goal of the research is to manipulate cellular metabolism as a strategy to improve stem cell function, boost immune responses, or inhibit cancer cell growth.

Andrew Intlekofer, MD/ Ph.D.
Assistant Professor
Cell & Development Biology Program

The Abdel-Wahab Lab is focused on understanding the functional implications of somatic mutations found in patients with hematopoietic malignancies with the hopes of improving our understanding of disease biology and develop novel therapies. Currently, we are focused on the role of mutations affecting the transcriptional regulation in leukemias. This includes mutations in epigenetic modifiers in leukemia pathogenesis including mutations in Polycomb-group proteins (EZH2, ASXL1, ASXL2, and BAP1) as well as proteins regulating DNA methylation.

More recently, we have generated substantial reagents to study the role of mutated RNA splicing factors in myeloid malignancies, including several murine models of mutations in the genes *Srsf2* and *Sf3b1*. We utilize these models to create novel murine models of myeloid malignancies for epigenomic, functional, and preclinical therapeutic studies. Finally, we are also interested in hematological malignancies driven by MAP kinase pathway alterations.

Omar Abdel-Wahab, MD
Associate Professor
Molecular Biology Program

The overall goal of the research projects in the **Khelashvili Lab** is to uncover dynamic mechanisms in fundamental biological processes of signal transduction by cell surface proteins in the categories of receptors (such as G protein-coupled receptors, GPCRs), transporters in the family of Neurotransmitter: Sodium-Symporters (NSS), and lipid scramblases. Special emphasis is on understanding how the spatial organization and function of these molecular machines are regulated by the cell membrane, its components (i.e. cholesterol, various lipids such as inositol lipids), and interactions with the rich environment of the cell's proteins. These research topics are studied with advanced quantitative methods of theoretical and computational biophysics, developed and utilized at the highest level of each specialty.

The lab pursues interdisciplinary and multi-scale strategies that integrate biophysical theory and computation with biophysical measurements and molecular cell biology experimentation. This approach takes advantage of an abundance of molecular level insights from experimental explorations of the function and interactions of membrane-associated signaling proteins, and interprets them in a novel quantitative multi-scale framework to yield insights based on energetics, and experimentally testable hypotheses that are validated with respect to mechanisms by which membrane properties and remodeling (e.g. curvature, lipid segregation) affect protein function, organization and signaling-associated interactions that are of major importance to cell physiology.

George Khelashvili, Ph.D.
Assistant Professor
Physiology, Biophysics & Systems
Biology Program

The Mendias Lab conducts basic and translational studies in skeletal muscle and connective tissue biology. In skeletal muscle, we study how regeneration is coordinated through the activity of muscle progenitor cells, immune cells, fibroblasts, and muscle fibers themselves. For connective tissue, we study how progenitor cells and mature fibroblasts sense mechanical signals from the extracellular matrix to trigger the activation of intracellular signaling pathways that control tissue growth and regeneration. We use genetically modified mouse and rat models to study these processes, and bioinformatics techniques that integrate transcriptional, proteomic, and metabolomic measures. Our lab also conducts clinical trials in patients with musculoskeletal injuries, allowing us to translate our findings in the lab to patients.

Christopher Mendias Ph.D.
Associate Professor
Physiology, Biophysics & Systems
Biology Program

Dr. Park-Min's lab investigations focus on the development of bone-resorbing cells known as osteoclasts, which play a significant role in metabolic bone disorders, such as osteoporosis and in inflammatory bone destruction including Rheumatoid Arthritis (RA). Defined by compromised bone strength and an increase risk of fractures, osteoporosis is caused by an abnormal activity of osteoclasts. Hyperfunctional osteoclasts in disease settings can cause progressive bone destruction, leading to fractures, disability, and pain. Furthermore, chronic inflammation that characterizes RA combined with estrogen loss and aging doubles the risk of fractures and bone loss. Therefore, we aim to better understand the pathologic mechanisms involved in this process and to develop therapies that can arrest these events.

Kyung-Hyun Park-Min, Ph.D.
Assistant Professor
Cell & Development Biology Program

The Kuceyeski Lab focuses on understanding how damage and disease impacts the brain's structural and functional connectivity networks, how this damage maps to subsequent impairments and how the brain compensates for such damage. We use computational approaches, ranging from biophysical modeling to machine learning techniques, applied to *in vivo* neuroimaging data (diffusion and functional MRI) collected from subjects with diseases such as stroke, multiple sclerosis and traumatic brain injury, to understand these mechanisms. Once we understand these mechanisms, we will be able to develop novel, personalized rehabilitation methods that enhance the natural recovery processes in the brain to support restoration of cognitive and physical abilities.

Amy Kuceyeski, Ph.D.
Assistant Professor
Neuroscience Program

Dr. Meyerson's lab investigates questions of molecular structure and mechanism. In particular, the lab is focused on ion channel structural dynamics and function, and makes extensive use of high-resolution single particle cryo-EM and sub-tomogram averaging, along with an array of biochemical and biophysical methods. Additionally, the lab is interested in using cutting-edge correlative, tomographic imaging approaches to address frontier questions of 3D molecular organization, structure, and mechanism *in situ*. Students in the lab will gain expertise in approaches that include cryo-EM, membrane protein biochemistry, molecular biology, ion channel biophysical characterization, high-performance computing, and image processing.

Joel Meyerson, Ph.D.
Assistant Professor
Physiology, Biophysics & Systems
Biology Program

The Lai Lab studies diverse post-transcriptional gene regulatory mechanisms using *Drosophila* and mammalian model systems. We have long been fascinated with the nervous system as an exemplary tissue with striking needs for multiple unusual regulatory strategies. For instance, using this system, we have uncovered many novel and conserved aspects regarding the mechanisms and biological utilizations of microRNAs, alternative mRNA processing, and RNA modifications.

To do so, we integrate multiple approaches, including (1) in vitro biochemistry to define precise molecular mechanisms, (2) in vivo genetics to elucidate phenotypically critical consequences of gene deregulation during development patterning and behavior, and (3) deep sequencing assays and comparative genomics to reveal broad genomic and evolutionary perspectives of regulatory pathways.

More recently, we have let the biology guide us into exciting and unexpected directions in small RNAs and RNA processing, including suppression of intragenomic conflict by the RNAi pathway in the *Drosophila* testis as well as the role of Argonaute2-mediated RNA cleavage in the mammalian erythroid system.

Eric Lai, Ph.D.
Professor
Neuroscience Program

The Betel Lab is a computational biology group that is interested in genomic and epigenomic processes related to cancer genomics and stem cell biology. We develop and apply computational and statistical learning algorithm to study mechanism of drug response, the impact of microbiome on host tumorigenesis, and the contribution of age to neurodegenerative diseases. These studies are in close collaboration with medical oncologists and stem cell biology groups where we perform advance genomics, epigenomic and single-cell characterization of clinical samples and mouse models. Example projects are:

- Single-cell characterization of esophageal tumor microenvironment.
- Studying the impact of stomach microbiome on development of Gastric Cancer.
- Investigation of cellular aging process and its contribution to Parkinson Disease using stem cell models.

Our research spans multiple biological and clinical domains which share common characteristics that are at the core of our research. Namely, collaboration with experimental and clinical investigators with strong emphasis on translational component. Second, they are based on integrative analysis of various genomic data (gene expression, genetic polymorphism, microbial species) and epigenomics (DNA methylation, histone modification, open chromatin states) to gain new insights about specific biological question or clinical challenge. Potential grad students will have the opportunity to develop analytical and computational skills in three main areas: i) practical and efficient methods for management and integration of large data sets from diverse sources; ii) development, implementation and proper usage of statistical methods in data analysis; and iii) application of i & ii in collaborative setting to address specific questions.

Doron Betel, Ph.D.
Assistant Professor
Physiology, Biophysics & Systems Biology Program

Continued from page 9

Additional Resources

There are so many things about my experience that I'd like to share, but rather than attempting to cover it all and neglecting something important, I'll instead close by mentioning some books/articles that have helped me, or that friends recommended. Please feel welcome to comment with other resources. From one grieving graduate student to another, I wish you fortitude and peace as you navigate this altered life.

- [When the Unexpected Happens](#), Lorna Collier, July/August 2015, American Psychological Association.
- Option B: Facing Adversity, Building Resilience, And Finding Joy, Sheryl Sandberg & Adam Grant, 2017.
- Grieving Mindfully: A Compassionate and Spiritual Guide to Coping with Loss, Sameet M. Kumar, 2005.
- The Year of Magical Thinking, Joan Didion, 2005.
- Small Miracles from Beyond, Yitta Halberstam, 2014.
- Journal Through Your Grief, Robyn Lindsey, 2016.

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