THE SACKLER MESSENGER

SCIENCE IN THE CITY
THE ORIENTATION EDITION

Features:

CHOOSING A THESIS ADVISOR
A PI's advice on how to choose the perfect thesis lab

REACHING OUT TO THE COMMUNITY
A recent Sackler alum offers wisdom on how researchers can impact the public

THE TIME OF THEIR LIVES
Two newly minted Sackler PhDs reflect on their time in graduate school
FROM OUR DESK TO YOURS
The Sackler Administrative team offers a warm welcome to the incoming graduate students

Welcome to Sackler! Every August is an exciting time, as we welcome our incoming class – this year, 32 students! For new students, we have created this short checklist of FAQs to help you orient your way through your first few weeks on campus.

WHERE IS THE SACKLER GRADUATE SCHOOL OFFICE LOCATED?
The majority of the office is located in the Old Public Health Building (OPH, 341 E. 25th Street, corner of 1st Avenue), on the 2nd floor. Naoko Tanese, PhD, Associate Dean for Graduate Biomedical Sciences, is located in the Skirball 3rd floor Administration area.

WHO ARE THE STAFF?
The Sackler Institute, led by Dr. Tanese, has six staff members:

- **Susanne Tranguch, PhD, MBA**
  Director, Academic Programs and Operations
- **Lisabeth Greene, MA**
  Assistant Director, Graduate Student Services
- **Arthee Jahangir, PhD**
  Research Strategy Analyst
- **Jessica Dong, MA**
  Project Manager, PhD Program
- **Cindy Godoy**
  Project Manager, MD/PhD Program
- **Amanda Tufekci**
  Project Coordinator, SURP Program/Events
- **Melissa Mangar**
  Project Associate, Master’s Program and Student Finance

ARE THERE ANY EMAIL LISTSERVs THAT I SHOULD JOIN?
You have all been included on the Sackler listserv, as well as the internal Sackler Students and Research Communities (available via http://atNYULMC.org). Once you are on-boarded, you will have access to this internal online resource and can access these Communities for important information. The Sackler Students Community is where we post events, career opportunities, funding announcements, and more! If you are interested in signing up for the "reagentmatch" listserv (where students, postdocs and faculty can request and provide reagents/equipment), please visit the Sackler Students Community under ‘What’s New’ to subscribe.
ARE THERE ANY RECURRING SACKLER-SPONSORED SEMINAR SERIES OR EVENTS I SHOULD ATTEND?

We have an Alumni “Where are they now?” series and a “Careers in STEM” series that typically occur once a month. You will receive these announcements via the Sackler listserv and be able to sign up for lunch with the invited speakers. We also hold monthly staff dinners at OPH, again communicated via email. Space is limited to 20 people, so sign up early! Of course, we also encourage that you attend the various Works in Progress and thesis defenses, so you can continually learn about the research of your peers. Schedules may be found on Sackler Students Community website.

IF I HAVE A QUESTION, WHOM SHOULD I CONTACT?

If you have a question about any life issues including payroll, please contact Susanne via email (Susanne.Tranguch@nyumc.org) or by visiting her at her weekly Coffee Breaks (Wednesdays, 9:30am, Smilow lobby outside the café). She can either direct you to the appropriate person or answer your question directly. The Coffee Breaks not only allow you to express any concerns or ask questions to Susanne, but you can also meet fellow students and discuss ideas with them. Many ideas and even collaborations have been inspired by these weekly coffee chats.

You can find Dr. Naoko Tanese (top left) in the Skirball 3rd Floor Administration area.

The rest of the Sackler Administration (shown left) can be found in the Old Public Health Building (OPH, 341 E. 25th Street, corner of 1st Avenue), on the 2nd floor.
Dear Sackler,

On behalf of Sackler Student Council (SSC), we are very excited to congratulate the incoming class of students on their admission to the NYU Sackler Institute of Graduate Biomedical Sciences. At NYU Sackler you will find a diverse community of scholars, a world-class research environment, and a well-rounded work/life balance. As your SSC we are here to represent the student body and encourage these three aspects of Sackler. Welcome to the Sackler family!

SSC is composed entirely of second years and having been in your shoes last year, we aim to make your transition into graduate school life as easy as possible. One of the ways we are facilitating this transition is by introducing the “Big Sib/Little Sib” mentoring program. Current Sackler students have been paired with incoming students to act as a guide in everything graduate school related (picking rotations, programs, classes, thesis lab, etc.) as well as day-to-day living in New York City. Thanks again to all those students who volunteered! We are excited to be bringing back classic events such as the Halloween and holiday parties, the spring social, and happy hours. In addition to new social and bonding events, we plan to offer opportunities for community outreach. One of the things we really value about Sackler is the support and inclusiveness of the Sackler community, and during the next year we will strive to maintain and strengthen it to make sure everyone finds their home here. We as SSC are also here to serve as your link between students, faculty and administration. By continuing to have class representatives attend meetings, we are striving to make every voice heard and encourage any feedback or questions. Feel free to contact any of us and get involved. Looking forward to a great year!

SSC 2016-2017
Emily Radke, President
David Ichikawa, Vice-President
Caroline Amendola, Treasurer
Sophie Dyzenhaus, Secretary
Alex Calderón, Diversity Chair
Greg Brittingham, Social Chair
Emily Kawaler, Social Chair

By Emily Radke
MEET THE GRADUATES

Some highlights from the May 2016 GSAS Convocation
BROADENING OUR IMPACT

Why and how we should put more emphasis on training graduate students in science communications and outreach

By Kristen D’Elia

While training in categories of intellectual merit such as sound experimental design and efficient scientific communication is robust in science higher education, training in categories of broader impacts is almost nonexistent. It is a wonder how this essential element of professional development in the sciences is still left untouched by curriculum and up to students to figure out.

Teaching the next generation of scientists how to explain and demonstrate the benefits of their research to the public is vital to maintaining a positive image of science research, particularly in the eyes of the taxpayers that fund our work. Contributions in service to the public, discipline, or university are important for later stages in some students’ careers when being considered for faculty positions and promotions. Additionally, graduate students are required to include broader impacts criteria in many federal student grant applications. Without training, students may find themselves struggling with this part of applications or discouraged from applying at all.

With the decrease in federal research funding and the consequential increase in competition to secure it, the stress in making the details of every grant application seamless is evident now more than ever. When new or revised criteria appear every so often, mixed opinions surface concerning the changes. A major shift in the grant application process in the past few decades involved the increased emphasis on the broader impacts any particular project or scientist will contribute to the greater community as a result of the funding acquired.

In 1997, the National Science Foundation (NSF) streamlined their reviewer evaluation criteria by combining the four into two: intrinsic scientific merit of the project and soundness of the team’s approach became ‘intellectual merit,’ and utility or relevance of the project and its effect of the infrastructure of science and engineering became ‘broader impacts.’

After the change, many proposals failed to thoroughly address the second criterion. This lead to an explicit announcement by the NSF in 2002 that no proposal would be considered if it did not distinctly and explicitly discuss the two criteria. It is important to note that this article’s discussion of broader impacts is not limited to NSF grant requirements, but applies to the connection between the scientific community and society in general.

If undergraduate or young graduate students are even aware of the necessity of incorporating broader impacts and outreach in their professional development, they may have little idea of effective ways to go about it. Many articles discuss the impact of this increased emphasis on broader impacts or the lack of evidence for any impact at all. There is sparse data showing how the projects grown out of these initiatives are affecting the community and a few reports show they are doing little, if anything at all.

Some see these reports as proof scientists should not be the ones ‘burdened’ with the responsibility of carrying out the broader impacts of their research. Some have suggested that there be funding specifically set aside to support people who only focus on outreach projects, leaving scientists to concentrate on their research.

"Teaching the next generation of scientists how to explain and demonstrate the benefits of their research to the public is vital to maintaining a positive image of science research"
creating activities for kids and evaluating the success of them. Students learned to remove the jargon from their writing without obscuring their research results and improved children’s knowledge of biodiversity.

There are many elements of the ‘Amplify the Signal’ course scattered throughout NYU’s resources. Sackler graduate students are required to take a grant writing course in their second year. There is an extremely popular science writing for the public course offered through downtown NYU that fills to capacity with students every year. As for outreach, many of the graduate students I know here at Sackler actively participate in outreach programs available at our institution.

Unfortunately, except for the grant writing course, these extra experiences to enhance student broader impacts require time and dedication that many do not have to spare. With classes, rotations, thesis work, and professional development, graduate students are very busy throughout their time here. Many of their thesis PI’s also may not be all too thrilled to have their student trade hours in the lab for hours doing outreach.

Maybe developing a short course that incorporates all these broader impacts would benefit graduate students at many institutions including NYU. This could solve some of the problems surrounding lack of education in broader impact areas. Having an opportunity to learn from experienced faculty, science journalists, or people who do outreach as part of their profession could be invaluable for students’ career development and future success as scientists. The resulting increase in communication and interaction between the scientific community and the general public will benefit society as a whole.

Kristen D’Elia volunteers at Brain Awareness Week, hosted by the Greater NYC Chapter of Society for Neuroscience.

On the other hand, these reports can be seen as reasons to increase emphasis on training in broader impacts if we want to see societal benefits. The NSF now also stresses that any broader impacts project should include an assessment of its success. While a step in the right direction, it takes skill and expertise to properly design an outreach activity and appropriately assess its productivity.

Perhaps integrating broader impacts training directly into the curriculum of graduate students would enhance the quality and effectiveness of the programs developed. An approach such as that taken by professors at the University of Illinois at Urbana-Champaign could be the answer.

A paper published in 2014 describes a course they developed called ‘Amplify the Signal’ to give graduate students interactive experiences with science communication, educational outreach, and grant writing. The students gained a better understanding of what is meant by broader impacts hearing directly from NSF program officers and funded faculty. Many of the students wrote and submitted their own grants during the course getting help from the course directors.

The students got an in-depth experience in writing about their research for the public and creating educational programs for young students. The course had them write online articles and short radio broadcasts for a general audience supplemented by interactions with writers, science journalists, and STEM education experts. The students also organized an outreach day at a children’s science museum.
THE PAST, PRESENT, AND FUTURE

Two of our stellar May 2016 graduates reflect on their time in graduate school and look to the future ahead

By Cynthia Chen

DIANA KLOMPSTRA, PHD
Thesis advisor: Jeremy Nance

Describe your Sackler experience...

Being a graduate student at Sackler was an incredible experience. It is unbelievable how many amazing people I met in my time here. I not only forged strong bonds with my fellow students, but also with faculty and postdocs. Sackler provided a scientific community that will last well beyond my years as a graduate student.

"I think it's normal for students to feel like they aren't cut out for grad school. In the end, it will all be okay. I would go back and tell myself not to be so hard on myself."

Knowing what you know now, what advice would you pass on to yourself...

...when you were just entering the program?
Get to know your fellow classmates. They will become your rock and support system during this incredible journey of which you are about to embark.

...during dark lab days?
I think it's normal for students to sometimes feel like maybe they aren't cut out for grad school. I know I certainly did at some points. But it's a universal feeling and, in the end, it will all be okay. I would go back and tell myself not to be so hard on myself on the days when things were not going my way.

...when you were getting close to finishing?
My anxiety level was at an all-time high when I wrote my thesis and prepared for the defense. I was particularly concerned with the committee-only portion, since I didn't know how it would go – but it wasn't so bad in the end. Your committee really does care about you and they want to see you succeed. They are not here to fail you.

Where are you off to now, after your PhD?
I've accepted a postdoc position in the lab of Shai Shaham, Ph.D. at The Rockefeller University. In the future, I hope to work at an undergraduate institution where I can combine my research and teaching experience to motivate the next generation of scientists. I know some are jaded after completing their Ph.D. and wish to not continue down the academic route. However, I love working at the bench and teaching. For me, a postdoc was the next obvious step in order for me to reach my goals.

How did you find your next position?
I saw Dr. Shaham speak at a conference during my third year of graduate school. I was blown away by his research and knew that one day, I wanted to be in his lab. After my committee gave me permission to defend, I sent an email with a cover letter and curriculum vitae to Dr. Shaham. He checked my references. I then gave a talk on my thesis research and conducted a day-long interview. After I met with everyone, I had one more meeting with Dr. Shaham and he offered me a position on the spot. After careful consideration and talking to previous postdocs from his lab, I decided to accept the position.

What's your favorite memory of your time at Sackler?
Superstorm Sandy really stands out for me. During this horrible time, it was remarkable to witness the way students and postdocs came together to assist in removing patients from the hospital and in saving precious research material in labs other than their own. It's a
"I forged strong bonds with fellow students, faculty, and postdocs. Sackler provided a scientific community that will last well beyond my years as a graduate student."

ture testament to the amazing community that exists at Sackler.

DEEPSHIKA RAMANAN, PHD

Thesis advisor: Ken Cadwell

Describe your Sackler experience.

My experience has been extremely enjoyable. Sackler is such a friendly community and everyone is so supportive and collaborative, which makes it a uniquely comfortable work environment. This was one of the many reasons I first chose Sackler – and I’m glad I did.

What advice would you pass onto your (former) fellow classmates?

Relax! Go get a hobby. It’s okay to make mistakes. We put too much pressure on ourselves. In my experience, it’s best to not overthink and worry about the tiniest details, because eventually everything works out.

Where are you off to now, after your PhD?

I have accepted a postdoc position in the lab of Diane Mathis, Ph.D., at Harvard Medical School. It was really hard to decide which lab to join. Immediately after every interview, I made an extensive list of pros and cons, which helped me a lot. Ultimately, there were two equally best-suited choices for me and I just went with my gut feeling.

How did you get your next position?

I made a long list of potential principal investigators (PI) of whom I was interested in working. My PI and some of my committee reviewed my list and we narrowed it down to a few candidates. Make sure to plan ahead. I started interviewing for a postdoc position a year before I could potentially join any labs and I’m glad I did. Every single lab I interviewed at couldn’t take in a person for up to a year. During the interview, make sure to speak to the lab members without their PI. This was eye-opening for me – I learned so much more about the lab environment and the PI’s work-style than what could be gathered from the outside. This really helped me make my decision.

What is your favorite memory of your time at Sackler?

I have so many great memories with my lab, my friends and the Sackler community. But my favorite has to be the time I met [my boyfriend] Carlos.

"It's okay to make mistakes! We put too much pressure on ourselves. In my experience, it's best to not overthink and worry about the tiniest details, because everything eventually works out."

Deepshika Ramanan (left) and Carlos Sanchez, both recent Sackler graduates, met during their first year of graduate school.
FROM WAYWARD TO WISE

Tips on securing the right graduate mentor for you

By Lydia Grmai

Scene: You’re in lab at 10 PM on a Sunday night, woefully finishing a Western blot to repeat an experiment for the third time in a week. You’re dreading your 8 AM Monday morning meeting (because your boss has to know every result immediately and has back-to-back meetings all day). You’re wondering why your PI couldn’t just wait another day for the result. And the worst part: this isn’t an anomalous weekend for you. Each week, Dr. PI wants to see the outcome of every single experiment, and fewer than two productive weekly meetings is an obvious sign of laziness. You drag yourself through 12-hour day after 12-hour day in lab, wondering why you can’t just analyze your data over the weekend instead of making a figure that your PI expects in his/her inbox by Friday night’s end. Sounds miserable, right?

This is (I hope) a gross exaggeration of a “micro-managing” PI. But save for hyperbolic atrocities, such a PI is not uncommon in academia. And such a lab environment may, in fact, sound truly awful to you. The grad student depicted above is probably chatting with first years during orientation, warning them to steer clear of this lab at all costs. But is this really the correct advice to give to newly minted grad students? As Dr. Indira Raman from Northwestern University puts it, “one person’s neglect can be another person’s freedom [and] one person’s micromanagement can be another’s nurturing.”

Dr. Ben Barres, a neurobiologist at Stanford University School of Medicine, underscores the importance of choosing the right thesis advisor for ensuring a graduate student’s long-term success. This is to say that the chances of a grad student “making it” aren’t a direct reflection of rote intelligence or scientific capabilities (we are all brilliant and capable, that’s why we are here), but rather of proper guidance through the academic journey. In his article (published in Neuron in 2013), he suggests a two-part screening process for first-year grad students looking to select a thesis advisor.

So what are these two parts? According to Dr. Barres, the only two things that should be sought in a thesis advisor are: 1) a good scientist, and 2) a good mentor.

Notice that he didn’t say “sought in a thesis lab.” Dr. Barres cautions against putting too much emphasis on the research topic when selecting a lab. To echo advice given to me as a first-year student that resonated with this article: “Find a good mentor. You’re a scientist – you’ll fall in love with the science.” An interesting field is critical, yes – but science is all about solving puzzles. And the thrill of solving those puzzles is the root from which our love for science often stems. The more important thing, he says, is to find a professor who is a good scientist that can and will turn you into one as well.

To visit an excerpt from the article:

“So how can you, a mere first year graduate student, possibly decide which advisors are good scientists? After all, the whole point of earning a PhD is to learn the difference between good and bad science and you haven’t learned how to do that yet!”

Excellent point, Dr. Barres – but wait, he’s not finished…

“What the hallmark of a good scientist is generally that he or she asks important questions and makes mechanistic or conceptual steps forward in answering them.”

What questions, you ask? Well, the scientist he refers to, my friend, is you! And according to Barres, you should be inquiring about the PI’s rate of publication (a quick PubMed search should do the trick) and whether or not their work sounds interesting to you. Other factors of varying relevance included their

One person's neglect can be another person's freedom [and] one person's micromanagement can be another's nurturing.
their work sounds interesting to you. Other factors of varying relevance included their level of grant support, H-index (a measure of citation frequency), and CV. And of course, it goes without saying that advice from senior faculty, deans, and graduate advisors is invaluable. We grad students think we have it all figured out, but if we aren’t careful, that stubbornness can come back to haunt us. Be proactive in seeking such advice, and be open to receiving it.

The second part of this process, as Dr. Barres lays out, is ensuring you are selecting a good mentor. You want a mentor who will design experiments with you, discuss science with you frequently, give you advice and/or experience in grant writing, peer review, and presentation skills. Some of this will be difficult to extract from a cursory meeting with the PI, and so this is where that “advice” thing comes in handy. Talk to current members of the lab and/or postdocs and faculty who can comment on the PI’s mentoring style. See how happy his/her grad students are as a general gauge of how well you’ll fare if you decide to join. Look at that PI’s track record of mentoring success (pro tip: most lab websites have a list of “former members” to aid in this search).

Ideally, some of their former trainees have gone on to a career in science (whether academia or industry). You’ll be working for this person for at least four years, and you want to be sure this person is equipped to lead you to a successful scientific career.

While this synopsis will do little justice to the mounds of useful advice Dr. Barres supplies in his article (I urge you to read the entire article and see for yourself), I hope what you’ve read here sheds a little light on the advisor selection process. If you can take a few things away from this article, I ask that you choose from these: look for a PI who loves and excels at their science, value a PI who will invest in your long-term success, and heed advice from older grad students, postdocs, and (most importantly) faculty. They’ve been in the game longer than us, and if they are taking the time to offer advice, it’s certainly worth listening to.

And lastly, don’t be surprised if you find yourself in lab late on a Sunday night anyway. Don’t always blame it on your boss – you’re a scientist. You’ll fall in love with the science!

BRIDGING THE GAP

An enlightening interview with a Sackler alum discusses ways that scientists can engage with the community through their research and training

By Russell Ledet

This article centers on the notion that a more community-involved scientist, specifically in the field of biomedicine, is a more holistic scientist. The bothersome truth is that many leaders in the field discourage researchers from work outside of science. I am fortunate to have principal investigators who support my desire to participate in outreach; while in graduate school, I founded Clear Direction Mentoring, which gives high school students of color an opportunity to engage with various areas of STEM. Unfortunately, my colleagues do not all work under such mentorship, and it is important for scientists to remember that a great deal of the work we do is supported by the public. One challenge that has left a divide between scientists and the general public is our ability to engage in meaningful dialogue about how these two communities impact each other.

Considering the aforementioned, I reached out to NYU Sackler Alum and dear friend, W. Marcus Lambert, PhD.

Dr. Lambert completed his thesis work in Dr. Michael Garabedian’s laboratory in 2012 and is currently the Director of Diversity and Student Services at Weill Cornell Medicine Graduate School of Medical Sciences here in New York City.

He has a deep interest in identifying ways to integrate the complicated science we are doing in the lab with the community we aim to serve. Here, we gain insight from Dr. Lambert’s perspective on this vital issue.

HOW DO YOU PERSONALLY ENSURE THAT THERE IS INTEGRATION BETWEEN YOUR SCIENTIFIC TRAINING AND THE COMMUNITY YOU ENGAGE WITH?

First, thanks for allowing me to share my thoughts on this topic. I grew up in inner-city communities and schools, which played a large influence on my desire to engage with and give back to the under-served and disad-
vantaged communities. When I decided to pursue training in basic science, I saw an opportunity to fuse two seemingly separate worlds. However, this sort of science outreach was not valued by everyone; at least not valued enough to take action. This lackluster approach from basic scientists to engage with the community actually perpetuates an “ivy tower” narrative. But for many students, science outreach was the medium for how they were turned on to science. This includes interventions such as federally funded research programs, but also the scientist that comes to the classroom for Brain Awareness Week. What is the purpose of our research if not to see it benefit society? What we have too often glossed over is the benefit that it has on us as well.

AS A SCIENTIST YOURSELF, HOW DO YOU VIEW COMMUNITY INVOLVEMENT AND MENTORSHIP IN THE CONTEXT OF SCIENTIFIC TRAINING?

I have been particularly interested in the motivation for students who pursue science. While, I believe at some point, every graduate student has a scientific appetite that drives his or her curiosity, many students are highly motivated in altruistic ways as well, i.e. they want to see their efforts directly benefit others. I think many students leave academia because of this perceived disconnect. Others, I think, decide early on to pursue both the MD and PhD to better fulfill these desires. As a good friend and colleague Kenny Gibbs noted, “Academic science could attract and keep more scientists by making room for their need to have broader impacts on society than basic research positions currently allow.”

We should also pay a closer look at the benefit that community engagement has on making a better scientist. There is a growing body of literature that suggests that science outreach facilitates career choice and formulating a science identity (seeing yourself as a scientist). Furthermore, community engagement in general helps to develop scientific communication skills and it is my hope that community-engaged trainees remain invested in the underserved community throughout their career—a huge win for a growing demographic.

ARE THERE INSTITUTIONAL MECHANISMS THAT FACILITATE FORMAL INTERACTION BETWEEN SCIENTISTS AND THE COMMUNITY?

Some institutions have been awarded grants to fund postdoctoral fellowships that divide time between research and science education/teaching at a partnership institution that is usually minority-serving. Not only does this program (known as IRACDA) benefit the trainee with a more well-rounded postdoctoral experience, it allows the institution to foster relationships with partner institutions that can lead to further collaborations in research and teaching. This model can be replicated in many spheres.

Programs like Clear Direction are doing an amazing job with interfacing with the broader community, and the impact is clearly felt. I think underrepresented minority (URM) basic scientists should also be more creative in partnering with health practitioners to eliminate health disparities. These sort of interactions, for URM scientists, may bring new inspiration to the laboratory.

WHAT ADVICE WOULD YOU GIVE TO MENTORS AND GRADUATE STUDENTS ON HOW TO BALANCE THEIR LABWORK WITH COMMUNITY ENGAGEMENT?

The data shows that participation in science outreach does not negatively affect scientific productivity or prestige. There is of course balance with everything. The more that academia creates opportunity for meaningful engagement, the less that these activities will seem conflicting. A good mentor will always keep their mentee on target for career success.

ANY FINAL THOUGHTS?

For socially motivated scientists, there are many ways to engage with the community. Ultimately, do what makes you happy; it may be the key to your success.
RESEARCH AT WORK

From parasites to song birds to fruit flies: In this installment of "Research at Work", we highlight the impactful work of three (!) recent Sackler graduates

By Evelyn Litwinoff

What do Crohn’s disease, song learning, and stem cells have in common? They are all research topics in which stellar Sackler graduate students published high impact papers in the past year! In this issue of Research at Work, we’re taking you on a tour of these three amazing publications. All three of these graduate students are now officially Doctors of Philosophy as they all successfully passed their theses defenses this past spring.

First up, Dr. Deepshika (Shika) Ramanan and the world of parasites and Crohn’s disease. Crohn’s disease is a type of Inflammatory Bowl Disease where the gastrointestinal tract is highly inflamed. Shika, who did her thesis work in Dr. Kenneth Cadwell’s lab, previously published that in their mouse model of Crohn’s disease, a specific pro-inflammatory bacteria, Bacteriodes, colonizes the areas with defective goblet cells in the small intestines. This past April, Shika expanded upon this knowledge in a Science publication. She showed that infecting these diseased mice with parasitic worms returned the intestine to normal morphology, effectively curing their Crohn’s disease! The parasites accomplished this by increasing a part of the body’s immune response (the Th2 cytokine response) that inhibited the Bacteriodes colonization. They also saw an increase in another type of bacteria, Clostridiales, which replaced the Bacteriodes in the gut. In addition, Shika’s collaborators in Malaysia showed similar results in a human population already infected with parasites. The collaborators administered anti-worm medication to this human population, and observed a decrease in Clostridiales accompanied by an increase in Bacteriodes. These very exciting results suggest that the mechanism Shika uncovered in mice is actually the same in humans!

“We did that first experiment just for fun...it was completely unexpected that it would work so well. My side project ended up being a seminal paper!”

Deepshika Ramanan completed her thesis work studying how parasitic worms impact the gut microbiome in mice and humans.
"By using a technique to record synaptic inhibition, which had previously never been used in the bird, we were able to find something new"

Georg Kosche recently published in *Science*, using a novel technique to study memory formation in young zebra finches.

This project is an excellent example of what having fun in the lab can turn into. When asked about her thoughts on this paper, Shika responded, “We did that first experiment (where we infected the mice with worms) just for fun...it was completely unexpected that it would work so well. It was my side (fun) project and it ended up being a seminal paper.” Shika is now a post-doc in the world-renowned T cell immunologist, Diane Mathis’, lab at Harvard Medical School.

Another exciting 2016 *Science* publication by Dr. Georg Kosche, a former Sackler student in Dr. Michael Long’s lab, explored the neural mechanism behind learning by imitation using a zebra finch (song bird) model. Zebra finches learn their courtship song by listening to and imitating their tutor. Georg and his lab showed that adult zebra finches have less neuronal activity in response to their tutor song than young zebra finches, and this decrease in activity is due to strong inhibitory signals. However, when their song is played after a period of silence, there is no difference in overall activity between young and old songbirds, but the charge, frequency, and amplitude of the inhibition signal significantly correlates with accurate song production. This led Georg and his lab to hypothesize that the inhibitory signals target already learned parts of songs, so that the birds can focus on learning the parts they don’t know. Georg and lab proved this by teaching the birds a new song in two parts. After the first song part was learned, they introduced the second part of the song (while still playing the first part) and showed that the inhibitory signals were present only when the first song part was played. In musing on his paper, Georg said, “What surprised me most about my paper was ... the process of discovering that synaptic inhibition was able to shape the neural activity and probably the song learning process of the bird. I was surprised that by using a technique to record inhibition, which had previously never been used in the bird, we were able to find something new.” Georg is finishing up a few things in lab until January when he will head to Basel, Switzerland to do a post-doc with Botond Roska at the Friedrich Miescher Institute for Biomedical Research.

Our last story comes from Dr. Carlos Sanchez, who did his graduate work in Dr. Ruth Lehmann’s laboratory on stem cells in flies (*Drosophila*). In Carlos’s own words, “The stem cell field is very large and people are always focusing on finding factors or master regulators that control the process of stem cell maintenance and differentiation. What we have shown is that while these master regulators are very important, the stem cell also relies on other processes, such as ribosome biogenesis, cytokinesis, rRNA transcription and translation, to be functioning at ideal levels. If any of these cellular processes are disrupted the whole process of differentiation is affected and the stem cell can not transform into the differentiated cell.”

“I think the most surprising thing was that we were able to really study the processes that are required for a stem cell to differentiate... We are very lucky to be able to study such a complex process in a system like the *Drosophila* ovary (germline stem cell), where previous stem cell advancements, such as the discovery of the stem cell niche [the microenvironment where self-renewable stem cells reside], have happened. I believe in a few years mammalian stem cell systems will be finding the same things we have found in our system and will look back to our paper and use it as a reference for their own system.”

Carlos’s work was published in *Cell Stem Cell* back in February of this year. He is applying his science training in the pharmaceutical industry as a postdoctoral fellow at Novartis in Boston, MA.

“We are very lucky to be able to study the complex processes that are required for a stem cell to differentiate in a system like the *Drosophila* ovary”
STUDENT PUBLICATIONS


*authors contributed to work equally


THE SACKLER MESSENGER 15
AWARDS & HONORS

David Cantor  
NIH NRSA

Jessica Douthit  
NIH NRSA

Julia King  
NIH NRSA

Russell Ledet  
HHMI Gilliam Fellowship for Advanced Graduate Study

Patty Martin  
NIH NRSA

Karishma Rahman  
NIH NRSA

Akshay Sekhar  
NIH NRSA

Phillip Thomas  
Ford Foundation Fellowship

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Preliminary Thesis due:  
August 5, 2016

Final Thesis due:  
September 16, 2016

January 2017 Deadlines

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Preliminary Thesis due:  
December 2, 2016

Final Thesis due:  
January 13, 2017

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