

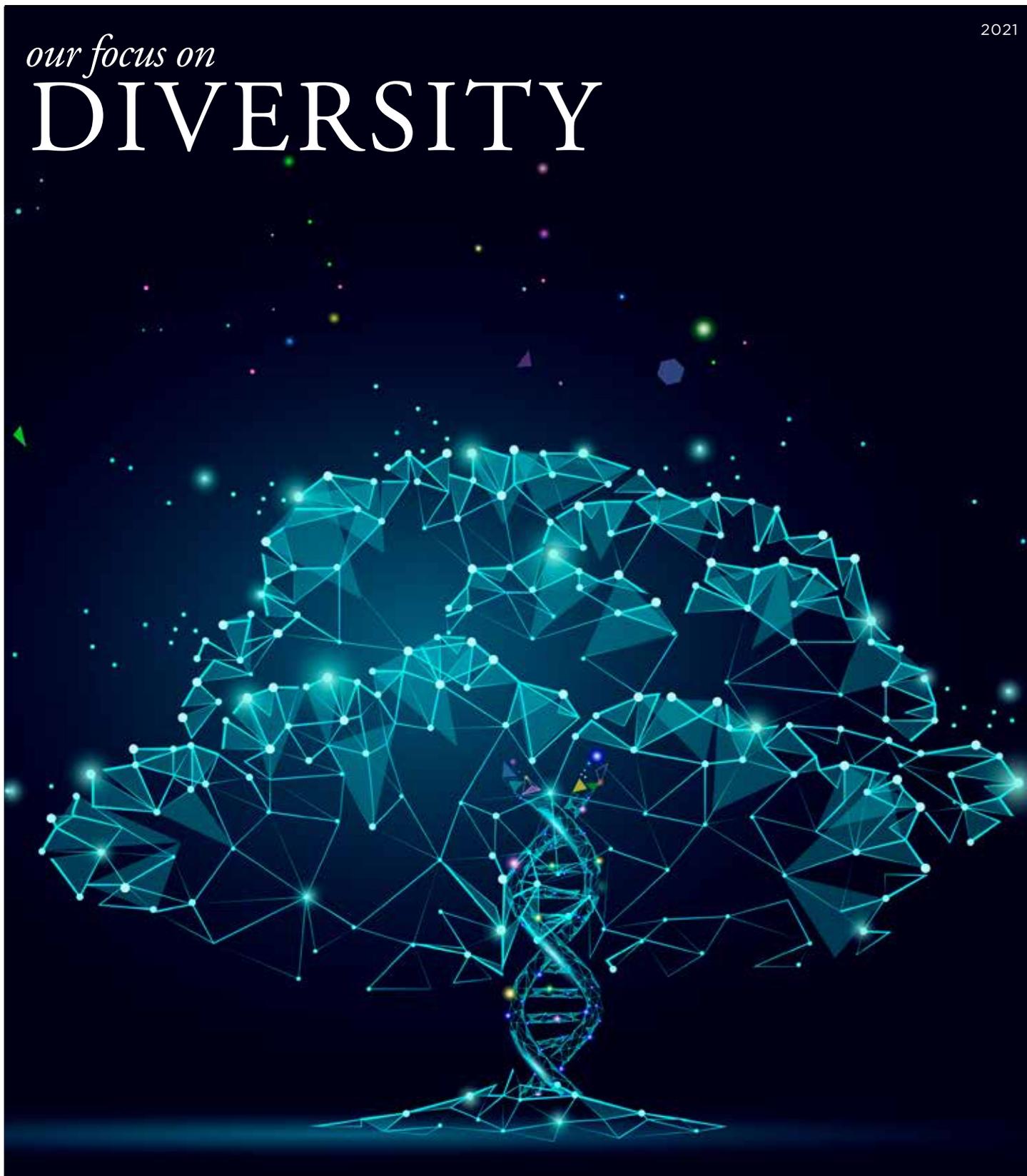
Hypothesis

SCHOOL OF GRADUATE AND POSTDOCTORAL STUDIES

2021

our focus on

DIVERSITY



ROSALIND FRANKLIN UNIVERSITY *of* MEDICINE AND SCIENCE

our focus on

DIVERSITY



IN THIS ISSUE OF *HYPOTHESIS*, WE CELEBRATE OUR DIVERSITY. Throughout this magazine, you'll meet some of the many extraordinary people who make SGPS a place where inclusivity and collaboration thrive. You'll read stories about the unique journeys that brought these talented individuals to our labs — some more than two decades ago, others in just the last few months. The common thread is the diversity in their personal and professional experiences that each one brings to SGPS. We hope you'll enjoy reading about their commitment to creating an environment where passion for research excellence is matched with dedication to social justice and equity for all.

Hypothesis

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This edition of Hypothesis celebrates our diversity.

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PLEASE NOTE, any group photo that does not feature physical distancing or mask-wearing was taken prior to the State of Illinois issuing such guidelines, or it reflects guidance in place at the time. RFU has utilized policies that require these and other safety measures.

our focus on
DIVERSITY





We have faced significant and unique challenges over the past couple of years. The COVID-19 pandemic has affected much of our personal and professional lives. Although we may feel the pandemic has been with us all too long, other events have reminded us that we also must confront truly longstanding, systemic challenges.

This issue of *Hypothesis* focuses on **diversity, equity and inclusion**; our school's response to recent racism events; and our commitment to fostering a professional, inclusive learning environment, cognizant of the need to address systemic racial inequality. First, to define and express who we are as scientists, educators and citizens, we engaged everyone in SGPS — students, postdocs, staff and faculty — in the formulation of a unified position statement on racial inequality and injustice. The process itself was educational, as it generated meaningful discussion. In part, it reflects the realization that science and scientists are part of the greater community, and that racism and all forms of inequality adversely affect science, which then reciprocally hinders us from the society we seek together. This statement is prominently located on the SGPS website, and I highly encourage you to see what SGPS collectively stands for.

Born from this effort and with the commitment to sustain meaningful change, SGPS formed the Diversity, Equity and Inclusion (DEI) Advisory Group. This group of graduate students provides counsel, contributes to ongoing diversity-related activities and assists in the development of new initiatives. One of the first outcomes of the advisory group's efforts was the creation of a resource library for the SGPS and RFU communities to educate themselves and become actively aware of current and historic racial inequality, particularly as it relates to the conduct of science and its effect on society. This library is rich in resources, including books, podcasts, TED Talks and other online resources.

To sustain meaningful change, SGPS students have continued to help the advancement of students underrepresented in the sciences. Our students have provided mentored laboratory experiences for local high school students through the university's INSPIRE and Science Saturdays programs, as well as for military veterans seeking to broaden their skills in basic research for re-entry into the workforce. The Dean's Office annually attends national recruiting conferences specifically for underrepresented students in biomedical sciences.

Looking to our own future, I am proud to inform you that SGPS is revising its required curriculum to reflect the need for education in diversity, equity and inclusion among our graduates as future science professionals. A course that focuses on the intersection of science and society, including its racial, ethnic and gender inequalities, will be a required course for all first-year graduate students. I thank the DEI Advisory Group and the SGPS Curriculum Committee for their carefully considered and timely development of this new element in our curriculum.

I hope you enjoy reading more about our students, postdocs, faculty and alumni in this issue of *Hypothesis*.

Kind regards,

Joseph X. DiMario, PhD
Dean, School of Graduate and Postdoctoral Studies

THE WORK CONTINUES: DIVERSITY *and* INCLUSION STUDENT TASK FORCE



Task force members (l-r): Valentina Olivera-Pasilio, SGPS '22; Wren Michaels, PhD '20; Viral Mistry, SGPS '24; Max Lob, PhD '21; and Matthew Stratton, SGPS '24.

MAX LOH, WREN MICHAELS, VIRAL MISTRY, VALENTINA OLIVERA-PASILIO and MATTHEW STRATTON

SGPS DIVERSITY AND INCLUSION STUDENT TASK FORCE

In the 2020 edition of *Hypothesis*, the School of Graduate and Postdoctoral Studies affirmed its commitment to diversity, equity and inclusion with a statement of support for Black Lives Matter, laying a foundation for the ongoing work to combat racism and systemic injustices within the scientific community. These national conversations had profound effects on the school as a whole, inspiring the creation of the Diversity and Inclusion Resource Library and the Diversity, Equity and Inclusion (DEI) Student Task Force.

Working directly with the SGPS Curriculum Committee, the students and faculty have toiled over the past year to bring our curriculum more in line with our stated mission: To provide outstanding graduate education and postdoctoral training to meet the need for highly qualified researchers and educators in the life science and healthcare fields, and to advance knowledge through biomedical research. To that end, the curriculum must evolve to address the role that graduates will play as scientists in society.

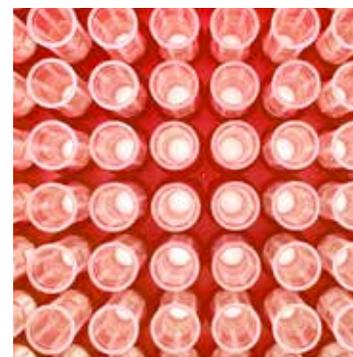
This is the mindset behind History and Philosophy of Science, the newest addition to SGPS' core curriculum. This mandatory first-year course engages with the historical and philosophical underpinnings of current scientific research. Examining both theory and practice, the course will provide a platform for discussion on the role of science in our society. The new course will weave discussions of diversity, equity and inclusion into the fabric of graduate student life from the beginning of the first year, a starting point for education about systemic injustice and the ways in which researchers and scientists can combat it.

According to course directors Dr. Neil Bradbury and Dr. Jeff Bulger, these ideas inevitably inform how research is practiced. Describing the course goals, Dr. Bradbury writes: "Philosophy may not seem an obvious component of bench research, but it shapes how we formulate and test our hypotheses and interpret data. Working with faculty and students, with diverse viewpoints, to design the History and Philosophy course has been exciting and challenging. We are looking forward to openly discussing a wide variety of topics that have an impact on how we do science."

History and Philosophy of Science received unanimous approval in SGPS' curricular process, and is now on its way to the Illinois Board of Higher Education for final state approval. The DEI Student Task Force was created to address this acute need in the evolution of the school's curriculum — but the work continues. In acknowledgment of the need for ongoing discussion, insight and improvement, Dean DiMario has asked to transition the task force to a standing SGPS DEI Advisory Group. Expanding their numbers, third-year student Viral Mistry and postdocs Max Loh, PhD '21, and Wren Michaels, PhD '20, have welcomed new representatives — fifth-year student Valentina Olivera-Pasilio and third-year student Matthew Stratton.

For Viral Mistry, one of the most important changes is the creation of the new student representative position on the curriculum committee, ensuring that students participate in all curricular discussions. "My main point of focus is making sure this is not seen as the end of the journey, but the start. My hope is these changes are the seeds for a beautiful garden of future possibilities within our research community," said Viral. 

"My main point of focus is making sure this is not seen as the end of the journey, but the start." — Viral Mistry



MOVING FORWARD TOGETHER

As a new advisory group member, Valen sees a chance to represent the community she loves and to grow in her own understanding. "I felt honored and proud that Viral, Max and Wren asked me to join. I appreciated that they — my friends and peers — thought that I could be a good member of the team. As a woman, Latina and immigrant, this is a great opportunity for me to share my thoughts and learn about other cultural backgrounds. I take this as an opportunity to deeply educate myself and respect different people's needs."

Matt, too, sees an opportunity to serve his peers and nourish his interest in curriculum development. "Prior to my time at RFU, I completed a master's degree in higher education at Geneva College. I am hopeful that experience will make me a valuable member of the committee. More than that, I'm hopeful that my membership on the committee will help me learn firsthand about how curricula are developed, evolved and implemented as educators continue to improve upon programs of study and maintain their relevance in training professionals to tackle society's most pressing issues."

CHASING QUESTIONS AROUND THE GLOBE



*Graduate student Babita Thadari in the lab of
Associate Professor Kaiwen Kam, PhD.*

BABITA THADARI

GRADUATE STUDENT, NEUROSCIENCE

“I was very intrigued by the idea of people doing research in the West, by the big and the small questions that the students in the U.S. were asking. I am so happy to be in a place where people love asking questions!”

Those questions drove Babita Thadari’s research as she traveled across the globe, from India to the United States, to join the research community at SGPS. As her training continued, she became fascinated by finding connections, working with her labmates and establishing links between her studies, her experiments and her reading. “With the passage of time, I got more interested in finding links; when I don’t have complete answers, but can read other papers and study the literature, connecting those inklings is the most exciting part: synthesizing that information to come up with something new.”

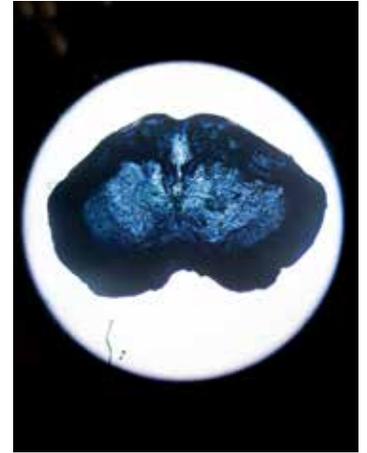
As Babita was settling into her new studies at SGPS, she was forced to adapt to the new paradigm of research during COVID-19. “Honestly, it was hard. I haven’t been able to go home because of all of the restrictions. What kept me grounded was the support from other students and the lab. Associate Professor Dr. Kaiwen Kam would have lab meetings every week and small lectures. So I had something to look forward to the next day. I took an online summer course on Computational Neuroscience, taking the opportunity as a positive, to learn something new.”

Babita continued to pursue opportunities for growth, serving on the board for the All School Research Consortium and navigating the first virtual presentation of the event in March 2021. “The main reason why I chose to be a part of it was to get out of my comfort zone; it develops leadership skills and an understanding of the larger process. I learned to feel confident in expressing my opinions and ideas, and was able to apply that to other parts of my life as well!”

Throughout it all, Babita felt supported and respected, particularly by her mentor. “When we had a rotating student, Dr. Kam asked me if I would be comfortable showing them my work. I felt so respected that he valued my space, time and thoughts on whether my work would be affected.” Babita appreciates her mentor’s example of inclusivity, learning from how he encourages a diverse research team. “He makes all of us feel valuable, and treats male and female graduate students equally. Other professors and people in the department do this as well; I have never felt discrimination based on my gender and my country of origin. For me, diversity and inclusion are about removing the barriers — appearances, accents, signs of difference — and treating and respecting people as individuals and human beings.”

As a final thank you, Babita is particularly grateful for the diligence and kindness of SGPS Administrative Director Caryn Wickersheim, who assisted Babita throughout the admissions process. “As an international student, there are so many documents, and without that documentation (the admissions process) can be delayed. She was so patient and thorough. She kept saying, ‘No, do not be sorry for asking questions.’ That was a huge reason why I was so happy to choose RFUMS and how Caryn won me over.” 

“Honestly, it was hard. I haven’t been able to go home because of all of the restrictions. What kept me grounded was the support from other students and the lab. Associate Professor Dr. Kaiwen Kam would have lab meetings every week and small lectures.”



FINDING A COMMUNITY OF EQUALS

Babita is deeply grateful for the support of her fellow students and the graduate student association. “In India, there is a hierarchy of students, with senior and junior students. We must show a level of respect, but it can create a communication gap; one cannot make good companionship with upperclassmen. In the U.S., it’s completely different. When I have problems, or need suggestions on a presentation or an upcoming exam, I can talk to any student, from final to first year.” Fellow students have helpfully shared their experience in both neuroscience and the American schooling system. “I’ve learned to value each and every student’s opinion and contributions. The most important thing is that as an international student, I feel accepted. No one has ever made me feel that I am different. When I take classes and have discussions, I am equally heard, and my opinions and answers are equally valued. That makes me feel so accepted here, more so than I ever imagined.”

PASSION, PATIENCE AND PERSEVERANCE



Carolina Caloba, a first-year graduate student, begins her PhD training at SGPS after a yearlong delay due to the COVID pandemic.

CAROLINA CALOBA

FIRST-YEAR GRADUATE STUDENT

Growing up in Brazil, Carolina Caloba knew from a young age that she didn't want a "normal" profession.

Even in high school, she was fascinated with science — the real difficulty was choosing between biology, physics or any of the other STEM fields! During her undergraduate years, she pursued biology; she began seeking out work in biology labs immediately, falling in love with the routine of the lab and the rewards of research.

"This was still in my first year of undergraduate, very early on. At first, I started with cancer biology, which is a fascinating topic; I think it's good that in research we can do what we like, but also help society in some way. The knowledge can always be applied somehow. I think this is rewarding. You can see the progress of your work firsthand."

Carolina sought to continue her studies in the United States, and received an offer of acceptance from SGPS in April 2020. But the timing of this transition fell directly at the beginning of the global pandemic of COVID-19, trapping Carolina in a spiderweb of interlocking regulations, closed borders and bureaucratic uncertainty.

"It was really difficult, because I had everything carefully prepared after graduating with my master's degree; suddenly, everything was up in the air, and we didn't know when things would get better. I was away from the lab in the beginning because of safety measures. Things were bad in Brazil." As these difficulties mounted with no clear end in sight, Carolina adapted accordingly: she found a role as a lab technician at her master's university, with an opportunity to work directly on the COVID-19 pathogen. This work helped to keep her grounded as international delays mounted; it soon became clear that she would have to wait a full year before joining the 2021 SGPS student cohort.

This year in stasis was full of difficult decisions and anxiety. Carolina had to choose between changing course and applying to a PhD program in Brazil, or holding on to hope for the end of this pandemic purgatory. During this time, she received virtual encouragement from SGPS students, hoping she would matriculate soon. She remained in close contact with the SGPS Dean's Office, and even petitioned the Brazilian government for action along with a cohort of fellow students seeking visas.

"One week later, we received permission to open appointments for visas. I was so happy! Now, at least, I had hope. I would be able to get the visa in time. As soon as it happened it was so fast, after a full year of waiting!"

Joining the SGPS Class of 2021, Carolina dove immediately into her studies with a full year of stored-up energy. Now that she can plan for her future again, she has already charted her first three lab rotations, and is confident that she has chosen well after the joy of her first experience. Her dreams of pursuing a life in academic research are back on track. The SGPS community is proud to have Carolina in our ranks, and it's all thanks to her passion, patience and perseverance. 

"I think it's good that in research we can do what we like, but also help society in some way. The knowledge can always be applied somehow. I think this is rewarding. You can see the progress of your work firsthand."



ALWAYS LEARNING, ALWAYS LISTENING

As she navigates her new paradigm, Carolina is encouraged by the diversity of backgrounds and experiences among the students at SGPS and the RFUMS community. She is particularly grateful for the community of international students in SGPS who have encouraged her throughout her arduous transition process. "At Rosalind Franklin, there's a lot of different people from different backgrounds. This is really great. Today I learned something new about traditions in Nepal — it's a holiday today! I would never have known this if I hadn't come here."

Carolina encourages her peers to always be open to learning from each other. "Always listen to what people have to say and consider it seriously. It's important. People come from different backgrounds and have different experiences; maybe they will see something in a way you haven't thought about. This is valuable. It can add a lot to a discussion, in a class or even just talking informally."

FIXING PROBLEMS TOGETHER



Kelly Wilson is completing the final year of her PhD program in the lab of Johnny He, PhD, director of the Center for Cancer Cell Biology, Immunology and Infection.

KELLY WILSON

GRADUATE STUDENT, MICROBIOLOGY AND IMMUNOLOGY

Kelly Wilson had her first volunteer lab experience in eighth grade, and she hasn't left the lab since.

She was critically engaged with procedures and lab protocols from the beginning, improving processes the moment she began working as a lab assistant in college and clinical technologist after graduation. "I love procedures and doing the work, but there were some loopholes I wanted to close, or things that could be improved. I wanted to make testing kits faster and more reliable, and to improve patient experiences. I wanted to bridge that gap, so that pushed me to go back to school to find a way to make those improvements myself."

With this goal in mind, Kelly joined the lab of Dr. Johnny He in the University of North Texas Health Science Center. In her PhD training, she was able to delve further into biological questions, critical thinking and lab protocols while also gaining rigorous training in a respected lab. When Dr. He transplanted up north to join RFU, Kelly joined him: "Dr. He's lab has a lot of classic techniques and diversity of research, so I'm very glad to be a part of his work. It was an exciting adventure to come up to Chicago."

They arrived during a time of transition when many labs were moving to the new Innovation and Research Park. Kelly and her labmates had a crucial window of a few months to set up before COVID-19 restrictions interrupted their research. At that time, the lab worked in four-hour shifts, which made planning experiments extremely difficult. But with the collaboration and support of her fellow labmates, she was able to continue her research and is on track to graduate within the next year. This encouraging community is part of how Kelly defines inclusion.

"As far as what inclusion means — to not feel separated, or like an outsider, or like you don't belong to the setting that you're in. For that, I think my lab and the universities that I'm a part of have really been at the forefront of prioritizing inclusion. Diversity is not just about ethnicity or race; it's also where you come from in life, nationality, different cultures coming together and sharing different ways of thinking for a common goal. It's a very beautiful thing that I'm a part of, right now."

Kelly's main advice to her fellow students on building an inclusive lab is to simply reach out to others with an open mind.

"Interact with everyone! Communicate, and don't ostracize. We're all here for the same reason, we were accepted into the program with the same end goal; whatever differences you think you might have, they will add a positive light to the situation. There are different ways of troubleshooting, and troubleshooting is about 80% of what we do! Different life experiences teach us different ways to fix problems. Learn from them!" 

"Diversity is not just about ethnicity or race; it's also where you come from in life, nationality, different cultures coming together and sharing different ways of thinking for a common goal."



PROTOCOLS AND PATHOGENS

As she nears graduation, Kelly is closing in on the goal she had from the start.

"My background is in clinical microbiology, and I want to incorporate that into my career, mixed with industry as far as protocol development goes. I'd like to be a liaison between the two. Compliance and standard operating procedures are something I'm strongly interested in — not necessarily as a safety officer, but something very similar. In the end, if I am able to contribute to an overall better patient experience by improving clinical lab diagnostics in any way, I will consider my career a success."

Kelly is exploring how HIV influences disease in the central nervous system. Her focus is on how the viral protein Negative regulatory factor (Nef) is modifying astrocyte, microglia and neuron function to contribute to pathogenesis, mainly utilizing a novel mouse model.



VANTAGE POINTS BEYOND MAGNIFICATION

The annual All School Research Consortium (ASRC) provides a showcase for RFU students, postdocs and residents from all five schools and colleges to share their research projects with the larger university community.

Photo top left: ASRC in 2019. Although ASRC 2021 was virtual, the spirit of advancing scientific discovery through knowledge sharing remained.

Organized by a dedicated committee of student volunteers — with support from RFU's Graduate Student Association (GSA) and administrators and departments throughout the university — ASRC is truly an interprofessional endeavor. Typically presented in the format of a scientific conference, the consortium needed to be moved online in 2021 due to the ongoing COVID-19 pandemic.

But how to connect poster presentations from 120-plus students with dozens of event judges and attendees while maintaining the interactive nature of the event? Developing proficiency in communicating about research is an essential part of professional development for students and postdocs.

"In the end, we individualized virtual personal breakout rooms for each poster at the conference — that way, any judge, colleague or interested party could go directly to the research that intrigued them and find the presenter ready and waiting to discuss their work," said Aubrey Penney, academic program coordinator for SGPS. "For the symposia, we kept a piece of the in-person event, organizing three breakout rooms based on discipline and subject matter with a programmed schedule of speakers."

In addition to coordinating the setup of so many virtual locations, student and staff volunteers acted as air traffic controllers of sorts, deftly navigating judges in and out of breakout rooms and helping participants get exactly where they needed to go. There may have been a few digital hiccups along the way, but that didn't deter those committed to making sure knowledge was shared and the participants

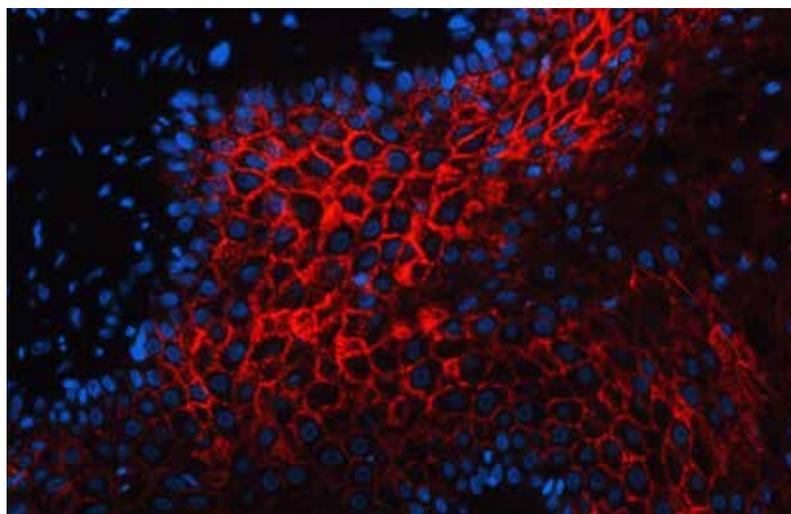
celebrated for their dedication to advancing scientific discovery.

"In an unprecedented year marked by adversity and division, it was nothing short of extraordinary to see the breadth and volume of original research produced by Rosalind Franklin University students, postdocs, residents and staff at ASRC 2021," said Nikki Barrington, an MD/PhD student and co-chair of the ASRC organizing committee. "Seeing so many people come together virtually to share their work, collaborate and network speaks to the resilience and character of the RFU community — traits we seem to have in common with our institution's namesake."

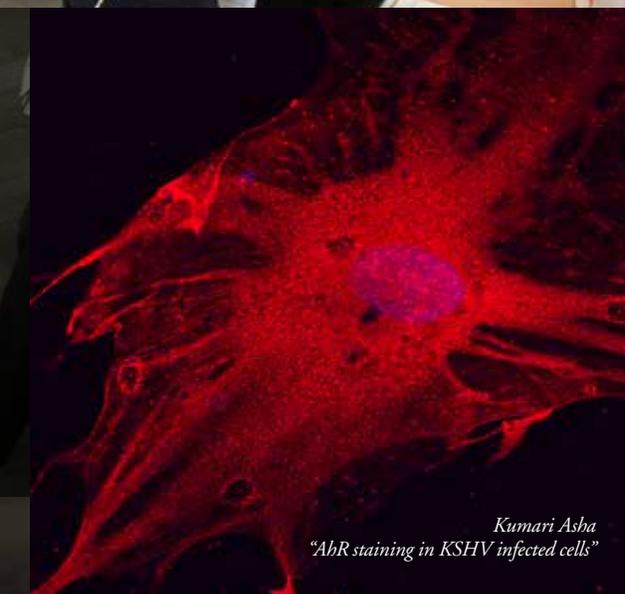
ASRC 2021 also marked the return of the Art from the Benchtop exhibit, featuring artistic interpretations of research from several SGPS students and postdocs.

"These distinctive works are interwoven with the students' reflections on the act of performing research, their personalities and viewpoints, and their vantage points beyond magnification," said Kelly Reiss, RFU's director of university archives and Feet First Exhibition, who curated the virtual art show. "The exhibit allows the creator and viewer to step back and take in beauty of the image, but also look forward at the knowledge its creation is moving to advance our understanding of mental health, Alzheimer's disease, cancer and genetics."

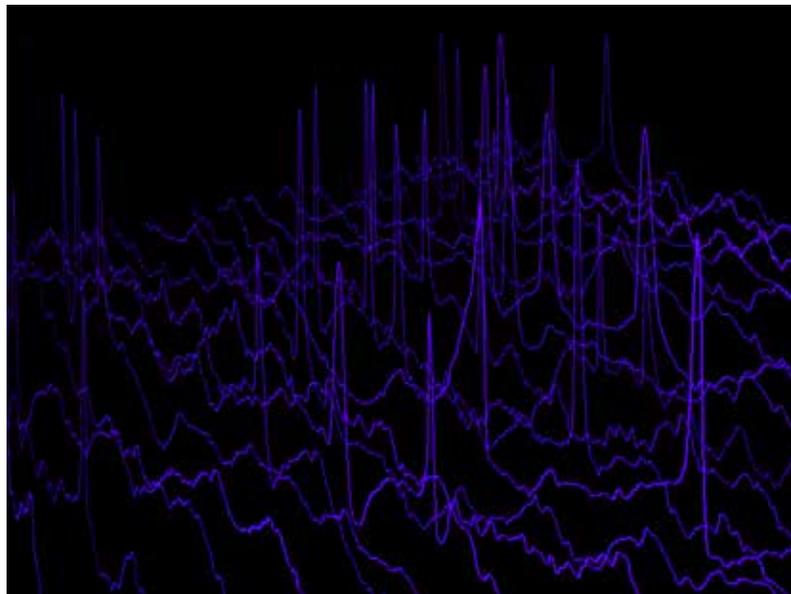
Adapted from "Student Organizers Make All School Research Consortium a Virtual Reality," originally published in the Summer 2021 issue of RFU's Helix magazine.



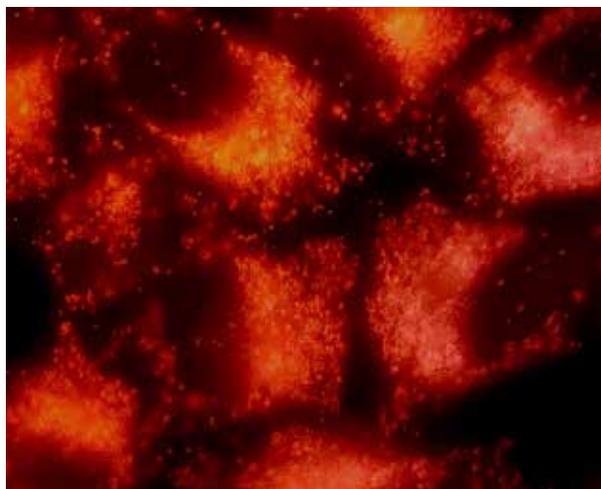
Olivia Powrozek, "The wolf within your skin"



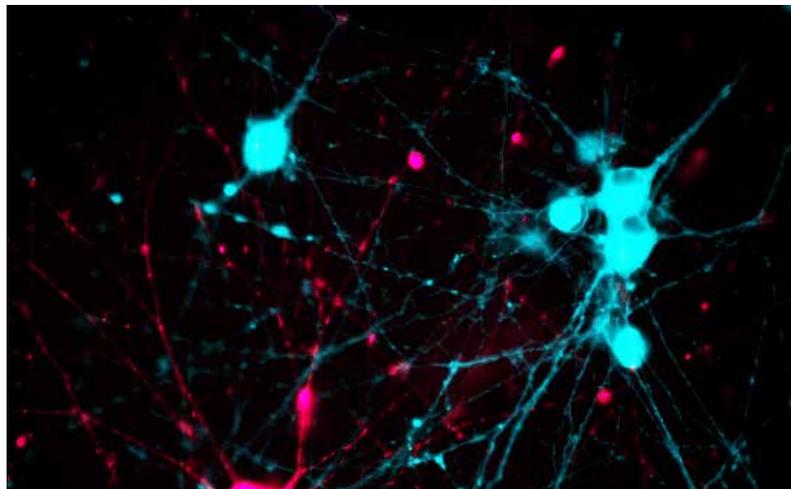
*Kumari Asha
"AbR staining in KSHV infected cells"*



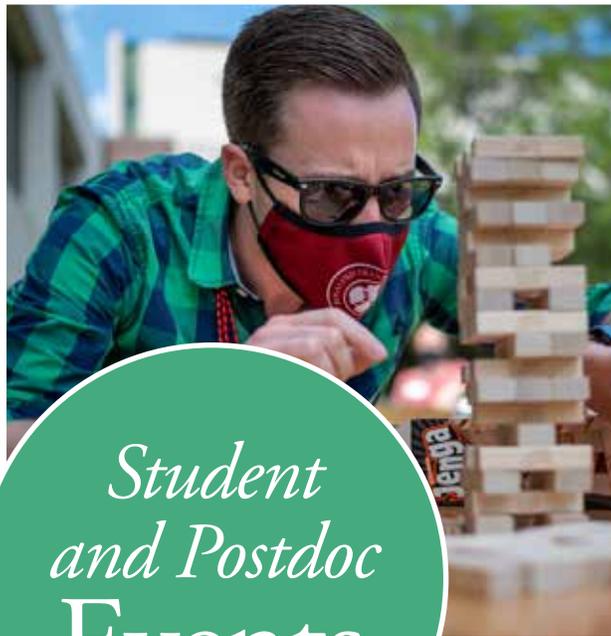
Alexandra Ritger, "Neurons in three dimensions"



Jessia Centa, "Fire up"



Sarah Mustaly, "Connect"



Student and Postdoc Events

Thanks to the availability of the COVID vaccine, as well as continued mask-wearing and social distancing, traditional SGPS events such as Commencement and the Welcome Lunch for new students could return as in-person gatherings.

Top row, l-r: SGPS graduates Jessica Centa, PhD; Wren Michaels, PhD; Max Lob, PhD; Mentor Thaqi, PhD; and Tianbao Xu, PhD, celebrate their achievements. SGPS Vice Dean Robert Intine, PhD, and Dean Joseph DiMario, PhD, address the graduates during Commencement 2021.





Clockwise from bottom left: SGPS students, faculty and staff enjoy a picnic and science-themed games during the annual Welcome Lunch held in August prior to the start of the academic year.

Bottom right: More than 600 lanterns, representing the graduates of RFU in 2021, surround the statue of Dr. Rosalind Franklin that stands in front of the university.



IMMUTABLE TRAITS, INCLUSIVE TEACHING

“I keep this very much in mind in my teaching to an enormous range of students across all sorts of ethnic and religious groups, sexual orientations and ideological backgrounds. I’m always very interested to get to know my students well enough to better understand how those attributes have shaped them, both personally and academically.”

Jeffrey Brown, PhD, is researching the neurophysiology of brain function optimization in the Stanson Toshok Center for Brain Function and Repair.

Jeffrey Brown, PhD

Postdoctoral Research Associate, Stanson Toshok Center
for Brain Function and Repair

Dr. Jeff Brown is intimately aware of the transformative power of teaching: one neuroscience elective changed the course of his entire life! As a physics undergrad at Harvard, Jeff took inspiration from Professor Steven Pinker, whose contagious love of neuroscience catapulted him on a new trajectory. He applied to graduate school for biophysics, a logical synthesis of his physics background and his new interest in biological sciences.

At the University of Illinois at Urbana-Champaign, Dr. Brown fell for both neuroscience and teaching, serving as a TA, mentor and course administrator. After defending his thesis, he spent four wonderful years at the U of I College of Medicine teaching the first-year neuroscience course. “Working with bright, passionate and socially conscious students remains the pinnacle of my rather young career, but I ultimately wanted to keep research in the picture.”

Increasingly drawn toward a career as a tenure track faculty at a liberal arts college, he began seeking postdoctoral opportunities that would combine excellent research and undergraduate teaching. Dr. William Frost’s lab was a perfect fit for these twin goals, paired with teaching opportunities at the neighboring Lake Forest College. “I was very lucky to start in his lab in 2019. Our mutual work on sea slugs made the transition much easier; I had done traditional electrophysiology, whereas he combines these approaches with optical electrophysiology. I would love to have a basic optical recording rig as a professor, monitoring activity in many neurons at the same time and examining questions about brain function with young students.”

In mentoring current labmates, Dr. Brown is preparing to engage his future students across the whole spectrum of their experience, from analysis of neurological research to the changing national landscape in which they perform their experiments. Dr. Brown knows the importance of providing a safe, open research environment, where all students and lab members can share their experiences.

“I’ve had a speech impediment from an early age. It took me well into my 20s to feel that I had every right to speak and to pursue whatever life goals I had despite this immutable characteristic. This provided me with a framework through which I understand the advantages and disadvantages that people go through life experiencing — in many cases, because of similarly immutable characteristics. I like to think that being a person who stutters makes me more empathetic and understanding; at the same time I recognize my extraordinary array of privileges in other areas.

“I keep this very much in mind in my teaching to an enormous range of students across all sorts of ethnic and religious groups, sexual orientations and ideological backgrounds. I’m always very interested to get to know my students well enough to better understand how those attributes have shaped them, both personally and academically.”

Dr. Brown is currently shadowing and guest lecturing at Lake Forest College in a first-year neuroscience course; next year, he will be teaching one or two courses himself! This work represents the culmination of everything he hoped to achieve when he first arrived at SGPS, and he is deeply grateful to Dr. Frost’s lab for the opportunity to pursue his research and teaching dreams in tandem. 



NETWORKS IN THE LAB AND THE BRAIN

Dr. Brown and colleagues have recently begun work on an NIH-funded neurophysiology project studying how brain networks optimize themselves. “From a 10,000-foot vantage point, it has relevance to the way in which our brains tune themselves to optimize responses to rapidly changing demands in the external environment. Work on the brains of these very simple sea slugs has the potential to shed light on the processes intrinsic to our own minds.”

Dr. Brown is finishing the data analysis on an animal behavior project pursued as part of a BRAIN Initiative, collaborating with four other laboratories around the country. He is equally excited by the science and the opportunity to collaborate with respected colleagues. “It allowed me to flex my muscles as both a mentor to CMS students, grad students and undergrads, and as a mentee benefitting from Dr. Frost’s insight. I’m in a catbird seat, receiving the best of Dr. Frost’s many years of experience while also imparting my experience to others early in their scientific training.”

THE COURAGE TO CARRY ON

Lu Li, PhD, studies the effects of substance abuse on infectious diseases in Dr. Johnny He's lab.

“Confidence is so important. Sometimes, someone will suggest that you quit an experiment, but confidence helps you stick it out...”

Lu Li, PhD

Postdoctoral Research Associate
Center for Cancer Cell Biology, Immunology and Infection

As a postdoc in the lab of Dr. Johnny He, Dr. Lu Li is continuing a lifelong interest in answering difficult questions; his work has particularly focused on the effects of substance abuse as a complicating factor for infectious disease. “What turned me on to earning the PhD was an interest in addiction and the neuroscience of addiction. It’s very complicated: brains, neurons and all of that — and that complication attracted me. It gave me some direction. So I focused on cocaine addiction, and then I got a postdoc position with Dr. He to follow that fascination.”

Dr. He is grateful to have Dr. Li’s determination and curiosity within the lab. Dr. He describes Dr. Li’s postdoc’s work with pride: “Dr. Lu Li has been working to understand epigenetic changes at the RNA level by HIV infection and substance abuse and their contributions to neurological dysfunction, and to develop novel therapeutic strategies to treat the neurological dysfunction.”

In particular, Dr. Li studies how cocaine can affect mRNA methylation and snRNA modification, saying that “snRNA is very important for alternative splicing, and we’ve found that cocaine can increase this process; this is a universal function, so it’s very interesting, and I’ve been fascinated to learn more about it.”

That passion has helped Dr. Li to pursue his research despite many challenges: moving his research from Texas to Chicago, transferring and restarting projects after the transition, and then adjusting to a new paradigm as COVID-19 restrictions took hold. Rather than stopping his work in its tracks, he used this time of confusion and social distancing to formulate ideas and plan new projects, including a project that uses a pathogen from the current pandemic!

Fortunately, developing the next question to pursue is Dr. Li’s favorite part of the scientific process. “The hypothesis is my favorite part; it’s the most important! If you have a very good hypothesis, you have that strong desire to build your work to confirm it. You may have failed many times in exploring the hypothesis, but it’s the most important foundational step.”

As part of a flourishing microbiology lab with many students, Dr. Li encourages them to believe in their hypotheses and pursue their projects with determination. “Confidence is so important. Sometimes, someone will suggest that you quit an experiment, but confidence helps you stick it out; having your own confidence to continue and keep going is deeply important. Some experiments are very challenging and go through multiple formats, or the method is very difficult. Most of the time, there is failure, and you must find a new or better way to confirm your hypothesis. No one knows whether you will succeed or fail, so you must focus on and believe in your own work.”

Dr. Li will continue encouraging this determination in his lab members and himself, building a lab where postdocs, students and faculty can confidently pursue their research together. 



CONFIDENT COLLABORATION

Dr. Li keeps moving forward in his research during the COVID-19 pandemic by drawing on his collaborative scientific community. He is particularly grateful for how his lab members improve each other’s ideas, sharpening each other like whetstones. “Sometimes, we cannot finish alone; we need to talk and share ideas. An experiment failing is very common. It’s always good to talk with others — lab managers, students, everyone. Their ideas can improve your experiment, your design, your hypothesis. Always welcome the influence of others.”

This is one of the clearest benefits of a diverse lab group that can challenge, inspire and support each other throughout challenges and setbacks.

“The idea of sharing is deeply important. This includes having regular meetings on progress and talking openly about struggles. Sometimes, the hypothesis will seem a little crazy, but people will share different ideas and perspectives. When these ideas crash together, we get excited about each other’s work and inspire each other.”

EXPLORING BEYOND YOUR COMFORT ZONE



“Self-change is the most important aspect here. If you can change yourself, that allows you to change others. ... Let other people feel respected and valued, give space for their voices to be heard. We all want to be happy. If you want to be happy, you must be willing to accept yourself and others. This is the heart of inclusivity. Try to be gentle to yourself, and then you can be gentle to others.”

Associate Professor Neelam Sharma-Walia, PhD (center), fosters professional and personal growth among the students and postdocs in her lab.

Neelam Sharma-Walia, PhD

Associate Professor, Microbiology and Immunology

Early in her life, Dr. Sharma-Walia knew that her talent for the STEM fields put her on a natural trajectory toward medical school. But personal family tragedy changed the course of her studies because of the sudden death of her mother. Contending with the financial burden and the distance medical school would take her from her home, she began a lifelong journey of balancing her scientific curiosity with the needs of a loving family. She got married around her final master's exams, and years later, when she defended her PhD, her daughter was present for the celebration afterward.

This balancing act eventually led Dr. Sharma-Walia and her family to the United States, where she became a PI and mentor at SGPS. "I have always listened to my heart, and been somewhat spontaneous for that reason," she explains. "I feel I have evolved immensely from my experiences, especially in this country." Well aware of the winding path she took to her current lab, Dr. Sharma-Walia approaches her students with an empathetic mindset. As a mentor to many at SGPS, she always encourages her mentees to seek out knowledge beyond their own experiences, so they may grow and change as well.

"As a PI, you might think that you should have people who look and think like you, to create a comfort zone; every time, you must make a conscious choice not to seek that comfort. You must actively choose diversity. You must create some direct challenges for your perspective; that is how you evolve. If you are not regularly challenged with different worlds, then when you are, you will find surprises and respond poorly." This empathy is one of the most important tools Dr. Sharma-Walia wants her students to develop, as this will nurture teamwork. "Our graduates will eventually form their own labs. When you recruit for your lab, who are you recruiting? Are you only going one way, or are you making sure that you have representation from many different groups? Try to give an equal chance to everyone, so that they all feel valued, their voices heard. They should not be scared to share their ideas."

Dr. Sharma-Walia has kept that attitude in her approach to life during the pandemic, seeking opportunities for growth and increased understanding. She found ways to connect with fellow researchers, colleagues and students, attending many events for diversity and inclusion and meeting with students in the after-hours. Learning and adapting during the pandemic, Dr. Sharma-Walia fosters a mindset of growth in her mentees.

"Self-change is the most important aspect here. If you can change yourself, that allows you to change others. ... Let other people feel respected and valued, give space for their voices to be heard. We all want to be happy. If you want to be happy, you must be willing to accept yourself and others. This is the heart of inclusivity. Try to be gentle to yourself, and then you can be gentle to others." 



SHARED JOY

When asked where she finds the most joy in her work, Dr. Sharma-Walia immediately thinks of her students. "I think I am what I am because of the students I had in my career. In life, you must empower others. When I feel I have empowered another student, I feel happy. My father was not a scientist, but he always had the attitude of finding joy in the success of others. Sometimes, people are not happy about the success of others, but he felt that infinite possibility. If that person can do it, then so can we."

Dr. Sharma-Walia carries that positive example as she mentors students from all walks of life. "My students in the lab, undergraduates from Lake Forest, CMS students whose curiosity makes them volunteer for research despite the demands on their time — each of them truly gives me joy!"

OPENING DOORS



“Initially, you must start with a hypothesis. You test that, then you inevitably realize that it’s not right. But it opens another door, and each subsequent confirmation opens new doors. I find that so exciting, and it drives me to where I am now! The initial hypothesis is never perfectly right, but then you get to find out why. Following the trail of new doors opening — that’s how science works.”

Associate Professor Hongkyun Kim, PhD, focuses his research on the identification and characterization of genes responsible for neuromuscular diseases.

Hongkyun Kim, PhD

Associate Professor, Cell Biology and Anatomy

As an associate professor of cell biology and anatomy, Dr. Hongkyun Kim is always excited to include students in his research, building a foundation for their lives as scientists with a firm grasp of the fundamentals. Though young researchers may be frustrated by challenges to their hypotheses, Dr. Kim teaches them the joy of opening each new door in science.

“Initially, you must start with a hypothesis. You test that, then you inevitably realize that it’s not right. But it opens another door, and each subsequent confirmation opens new doors. I find that so exciting, and it drives me to where I am now! The initial hypothesis is never perfectly right, but then you get to find out why. Following the trail of new doors opening — that’s how science works.”

Dr. Kim’s lab uses *C. elegans*, a microscopic organism, focusing on two main topics. The first is understanding how ion channels are localized into the right compartment of the cell. This is essential for their channel functions and communication with other cells. His other main area of study focuses on mitochondrial stress response: “Sometimes, we get a chemical or bacterial invasion that impairs mitochondrial function. So they don’t produce the right amount of energy because of damage, and then they have a stress response that alters a gene expression profile in the cell and sometimes the whole organism. We are interested in this damage response, how it attempts to recover, and how the process actually helps the cell and organism.”

Dr. Kim collaborates with colleagues across many disciplines to investigate his aims, and has trained several combined degree students in his lab. This is one of the most important skills that Dr. Kim encourages his students to practice: taking the initiative, reaching out and asking for help. “I think collaboration happens organically; you can’t force it to happen, but you must be ready and willing to reach out. For scientists, you can have all these techniques and all this knowledge, but you will always need outside expertise. You must contact others who know more about topics that interest you, and reach out for help exploring new ideas.” As his students reach out for collaboration, inspiration and assistance, Dr. Kim always leaves room for them to learn, fail and grow.

“I work with passionate students, and I empathize when I speak with them. In terms of mentoring, the majority of experiments will not be successful. Sometimes, a student’s technique is not yet refined, or there might be a scientific reason as well. I stay open-minded, and I focus on communicating. I help them consider what could be improved, and then I let them do the problem-solving from there. As a mentor, you must be open to their failures and expect them to learn from this. That is the goal. They should fail now, while it is safe, and learn how to move forward.”

With his patience, dedication and intentional mentorship, Dr. Kim’s lab is a place where both students and science can flourish, following the path through every new door that each experiment opens. 



SEEKING THE WHOLE PICTURE

Dr. Kim values how a diversity of perspectives in the lab revitalizes science, providing opportunities for collaboration and inspiration for entirely new projects.

“It’s a question of research philosophy. I think diversity is always helpful. You need new ideas from new perspectives. In research, too, as a neuroscientist who only attempts neuroscience-related ideas, you won’t get the whole picture. New ideas come from attending different meetings. Diversity works in the same way; you can learn from having different perspectives, interacting with many different people. You get new ideas about life, and society, and your own experiences.”

To support diversity in his lab and the local community, Dr. Kim is always looking to recruit underrepresented students. He works directly with programs promoting STEM fields to high school students as well, to allow new perspectives to flourish in science.

BRIDGING THE DIVIDE



“Diversity and inclusion mean everything to me. I got my foundation and my voice at RFUMS; that’s where I learned to develop my strength and my voice as a leader, and learned that diversity matters. It gave me a very strong foundation. My current field is still 80% male, and in my research niche of imaging in AI, it’s almost all male. I live in a world where diversity is a constant challenge, something that is really at the core of a lot of my leadership in organized medicine.”

Kristina Elizabeth Hawk, PhD '09, MS '08, MD

Neuroscience

“I didn’t want to learn the current state of medicine — I wanted to be part of its evolution. I wanted to understand medicine at its core and draw it forward to the next level.” To be at the forefront of medicine and research, Dr. Kristina Elizabeth Hawk joined the combined degree MD/PhD program at RFUMS, applying internally to the graduate school as a second-year medical student.

“The role of a physician-scientist is to learn to speak both languages and bridge the gap between the two. People oriented toward patient care speak a very elegant, directed and beautiful language; researchers speak a completely separate but equally elegant language, and much is lost in translation from bench to bedside. That’s the essential tool the combined degree program gives you — speaking both languages and bridging the divide.”

As the director for innovation and engagement at Radiology Partners, Dr. Hawk’s research now focuses on artificial intelligence and the adaptation of AI to improve patient outcomes. She is deeply aware of the massive and wide-ranging impact that emerging technologies have on the evolution of medicine and society as a whole.

“Technology, particularly disruptive technology, can either ameliorate or deepen healthcare disparities. When you develop algorithms around a homogeneous population and try to use them on a heterogeneous, beautifully diverse population, it doesn’t work! It repeats the patterns it was taught. The other important thing is looking at your own teams developing the tech: there isn’t a lot of diversity there either! Patients perceive health inequalities in many ways, including the diversity of their caretakers. We know diverse teams perform better and diverse voices better advocate for diverse populations; my work recently has focused on making sure the teams developing these tools are diverse at the outset.”

Dr. Hawk sits on the board of RAdequal, which focuses on diversity in imaging and informatics. They seek to improve diversity in new, still male-dominated fields, working to ensure that evolving technologies don’t contribute to deepening health disparities. She also reaches out to amplify the voices of minority groups within her field, serving on the ACR’s Commission for Women and Diversity, Stanford’s Radiology Diversity Committee and as a founding member of the RP Belonging Committee.

“Diversity and inclusion mean everything to me. I got my foundation and my voice at RFUMS; that’s where I learned to develop my strength and my voice as a leader, and learned that diversity matters. It gave me a very strong foundation. My current field is still 80% male, and in my research niche of imaging in AI, it’s almost all male. I live in a world where diversity is a constant challenge, something that is really at the core of a lot of my leadership in organized medicine.” 



FOUND IN TRANSLATION

When interacting with students and trainees, Dr. Hawk begins with an important question. “I first ask myself, ‘Does this person need a mentor or a sponsor?’ That difference is very important. Mentoring is about giving advice and perspective, allowing for reflection. Sponsorship is powerful. It involves taking someone who is talented, ready and able, and giving them a seat at the table, throwing their hat into the ring and offering them opportunities. It’s about stepping up for them. In diversity, sponsorship is often what’s needed. I think that’s my duty in diversity roles — taking someone’s hand and bringing them up the ladder with me.

“So, what can I do to leave someone in a more elevated space than where they started with me? I’ve had a lot of early opportunities, and now I’m at the point where I can provide those opportunities for others. I focus most of my interactions with trainees more on sponsorship, making sure they are getting seats at the table beside me.”

BUILDING A BETTER PARADIGM



“It’s always on my radar to increase diversity in clinical trials, because the way drugs work in one person does not necessarily transfer. Pharmacokinetically speaking, drugs are metabolized very differently between different groups. So, increasing inclusion across many boundaries — race, gender and many others — improves the value of a study. Our population is becoming more and more diverse, so exploring a diverse population makes the work more generalizable and makes for a better study.”

Theresa A. Peterson, PhD '03

Cell Biology and Anatomy

Though she deeply enjoyed her time researching at SGPS, working in the lab, running experiments and generating hypotheses, Dr. Theresa Peterson didn't relish the idea of climbing up the Ivory Tower. Looking into alternative career paths, she found a way to marry a multitude of interests in research, writing and science communications. "I initially looked at medical writing; I was always good at writing and could meld my love for science with that. That path took me to the pharmaceutical industry. I was at a medical communications agency initially as a baby step, before transitioning to Abbott, then Takeda, and now Arena."

Now the senior director for Arena Pharmaceuticals, Dr. Peterson leads a dermatology team in medical affairs that is focused on the clinical development of key compounds. A large part of delivering these transformative treatments hinges on clinical trials, where the diversity of participants and history of discrimination is always at the forefront of her mind. In 1977, the FDA released a recommendation on "General Considerations for the Clinical Evaluation of Drugs" that forbade the participation of women in Phases I and II clinical trials. While the intention was to protect, the result did far more harm than good, excluding data from half the populace in all clinical research. Dr. Peterson is deeply aware of this history, and as such, she has incorporated diversity, equity and inclusion as an underpinning theme to drive toward a better, more inclusive paradigm that improves patient outcomes.

"It's always on my radar to increase diversity in clinical trials, because the way drugs work in one person does not necessarily transfer. Pharmacokinetically speaking, drugs are metabolized very differently between different groups. So, increasing inclusion across many boundaries — race, gender and many others — improves the value of a study. Our population is becoming more and more diverse, so exploring a diverse population makes the work more generalizable and makes for a better study."

Dr. Peterson is particularly grateful for Arena Pharmaceuticals' new attitude in COVID-19 adjustments: "Work Together, Live Wherever." With this mindset, she has collaborated with colleagues across the nation and the globe. During the whirlwind of the past two years, she has encouraged her matrixed team and colleagues to maintain a careful work/life balance, avoiding Zoom fatigue, setting boundaries and finding ways to connect for virtual fun.

"Honestly, the biggest surprise is the fact that we're still doing this. That it's still very virtual. I thought it would be a boomerang — that everyone would be forced back in. But companies have remained flexible and learned what their employees really value. Arena is not unique in this — a lot of other companies have a hybrid approach now. I'm really shocked that we didn't go back to an in-office mandate. I'm very blessed to work in an adaptable environment."

Dr. Peterson is excited to be able to continue her work in this new environment. "I'm currently working on a pipeline compound at Arena for atopic dermatitis and alopecia areata; there's an unmet need for safe, oral medications in this space. In alopecia, there's currently no FDA-approved treatment, and a large psychosocial impact on those who lose their hair. Working on a drug that promises better treatment for these diseases is the most exciting thing to me." ®



AN EVOLVING PERSPECTIVE

"When I was in the lab, I mostly enjoyed the hands-on part: doing experiments, pipetting, running gels. I'll never forget accidentally hatching one or two dozen chicken embryos in Dr. DiMario's lab! Lab work was all about learning from mistakes, growing from them," said Dr. Peterson.

Now, working on the development of pipeline products that advance science and medicine to improve a patient's quality of life, Dr. Peterson gets to dive deep into the data, formulating hypotheses based on critical analysis and communicating these data in meaningful ways to the medical community. This new perspective allows for a big-picture view of science and how it helps society.

"While I was in school, I worked on a pathway that oversaw whether a muscle fiber became a fast- or slow-twitch fiber. And that was great — studying the base platform for biology and disease. But now, I'm specifically asking, 'How will this medicine help patients?' including patients like me! I work on atopic dermatitis, which both my son and I have. I get to meld my passion for science with working on a disease that directly affects my family, finding ways to help us and others."

SCIENCE WITHOUT BORDERS



“There is a period when the student first enters, where I take it as an onus on me to shore up and encourage their interests. It’s kind of an addictive response, yes? When they come in, they may not be thinking critically, but after a few months, they may be criticizing my thoughts! That’s when I know the addiction has set in, and that they will be hooked on science for life.”

Sayan Chakraborty, PhD '12

Microbiology and Immunology

Dr. Sayan Chakraborty's love of science first sparked during his seventh-grade educational trips visiting the villages outside Kolkata. There he witnessed the clouds of flickering fireflies at night, and curiosity about their unique biochemistry kindled a fascination with biology. "I was always interested in physiological processes, how they functioned and how they were controlled at the molecular level. My early footsteps in molecular biology drew me toward cancer research and cancer cell biology, so I am still sticking to my roots!"

He followed this inspiration to Chicago, joining SGPS in 2008. There he was particularly grateful for the IGPBS interdisciplinary program; the lab rotations allowed him to learn from a variety of disciplines and acquire new techniques. His interdisciplinary collaboration continued post-graduation when he joined the Agency for Science, Technology and Research (A*STAR) in Singapore. His lab recently discovered a carcinogenesis-promoting protein and began exploring mechanisms for how it attracts blood vessels and promotes tumorigenesis. In addition to cancer research, Dr. Chakraborty is also investigating his interest in proteins promoting wound healing. His lab found a translational application for their cancer research, formulating an ointment that aids in wound closure in tissue repair.

These discoveries were made possible by the adaptability and the accommodating nature of his research team; they went above and beyond to support each other despite COVID lockdowns and lab restrictions. Dr. Chakraborty is grateful for each researcher's individual contributions and welcomes their diversity of perspectives. Dr. Chakraborty is also very fortunate to have great mentors in his research field. First, he received his PhD training under excellent mentorship in the Department of Microbiology and Immunology. Moreover, he has received great scientific support and training from Dr. Wanjin Hong, executive director at IMCB (A*STAR), during his postdoctoral training.

"Science doesn't have any boundaries. Every person on this planet has equal rights to think about science. There should be no differentiations in color, where you are coming from, how you were raised; everyone has the equal right to contribute. That's my personal agenda in looking at diversity — that everyone is given equal opportunity. This includes reaching out to those who have been deprived of these opportunities; we should be going the extra mile to include them, and to help them become the leaders of the next generation of researchers."

Since joining A*STAR, Dr. Chakraborty has trained four students and research officers, two of whom went on to earn their PhDs. One student came to Singapore by way of South Africa. Singapore notoriously sets a very high bar for foreign students to study within its borders, but Dr. Chakraborty was determined to assist with this process. Without dedicated lab support, his student would not have been able to navigate scholarship in Singapore — but without the student's brilliance and determination, the lab and the world would be deprived of his science. Dr. Chakraborty is proud to report that his student received his PhD and is now a published first author with a position in a cell biology lab in Canada, continuing to take his science around the globe.

As a mentor, Dr. Chakraborty looks to nurture that spark of curiosity in every student who enters his lab. "There is a period when the student first enters, where I take it as an onus on me to shore up and encourage their interests. It's kind of an addictive response, yes? When they come in, they may not be thinking critically, but after a few months, they may be criticizing my thoughts! That's when I know the addiction has set in, and that they will be hooked on science for life." 



RESILIENCE IN RESEARCH

Dr. Chakraborty encourages students at SGPS to begin developing resilience early in their careers, finding ways to see the positive in any challenges or setbacks.

"The crucial thing in my experience is not to lose hope. I have gotten very bad reviews, but then I step back and think with a cool and clear mind. With a clear mind, I see — 'This person has a point, and the reviews are not so bad in consideration of this holistic approach. Why not find a way to address this point and make it better?' That resilience helps make my study, my grant, my line of research, much stronger.

"So each 'negative' review has a positive outcome: better research and productivity. No one knows everything in biology/science — everyone has some input. If you incorporate the input of others, you will make a better story and a great discovery. Never lose hope, and work on your defects. That is the mantra for success."

COMPASSION IN SCIENCE AND SOCIETY



“I’m able to present myself in the lab and clinic in a way that encourages others, and motivates them to move forward. I want everyone to be open enough to express their fears, setbacks, uncertainties and also their successes and victories. Having good communication and understanding have been crucial for me and my team.”

Darrion Mitchell, MD '11, PhD '09

Cell Biology and Anatomy

“I essentially started med school focused on the clinical side; it wasn’t until I realized that the research aspect helped me to be a better, more complete physician that I began pursuing research opportunities.” After two summers of dedicated research experiences, two of Dr. Darrion Mitchell’s mentors — Dr. Maria Ortiguera and Dr. Anthony West — told him he had the skills to excel at both research and medicine. He took their words to heart, grateful to them for seeing something in him that he didn’t see at the time. After prayer and contemplation, he chose to pursue the combined degree program at SGPS.

At that time, Dr. Mitchell lost a family member to breast cancer. That tragedy had a profound impact on him, driving him to research and develop better treatments so that fewer people would experience that same loss. Serving at the bedside and the bench during this unprecedented time of strain on our healthcare system, Dr. Mitchell and his team have gained real clarity about what is truly important. As research slowed due to the necessary precautions from the pandemic, Dr. Mitchell shifted his focus to relevant scientific literature, collecting new ideas to explore at the bench, planning potential collaborations and preparing for grant submissions and publications.

In the midst of the profound challenges of the ongoing COVID-19 pandemic, Dr. Mitchell has drawn on his faith, his family and his dedicated colleagues to carry on and serve his patients. “I don’t have all the answers. There’s all this uncertainty, and we’re constantly learning new things in this pandemic we’re traversing. But there’s a greater outcome we are moving toward that I can look forward to. I’m able to present myself in the lab and clinic in a way that encourages others, and motivates them to move forward. I want everyone to be open enough to express their fears, setbacks, uncertainties and also their successes and victories. Having good communication and understanding have been crucial for me and my team.”

Open communication has defined Dr. Mitchell’s approach as he engages in the lab, at the clinic or in the broader national conversations about diversity, equity and inclusion. “If we can constantly show compassion to one another, and listen to and respect our different experiences, then our disagreements will not limit our collaborations. As we work together, the work will improve, and we can truly bring all our points of views together. We’ll get a bigger picture of what this world is about and make a lasting contribution to the whole.

“The key is to understand that we are all unique. Embrace your own unique perspective, and understand that it’s a piece of the whole. It’s not the entire picture, but it’s an important piece. Then we can invite other perspectives in, and that makes the scientific problem a bit easier to tackle. We’re now seeing the NIH pushing for multi-PI projects, projects that include investigators from different fields of study. This is important to solving all problems — in the scientific world as well as in society.” 



HEALING THE WHOLE PERSON

Dr. Mitchell’s research focuses on a holistic approach to cancer treatment, with an eye for improving quality of life during treatment and after remission. “Head and neck cancer patients in particular deal with a significant amount of malnutrition — slightly before they start their curative treatment and continuing well after treatment ends. So the result of improper nutrition can cause various side effects after treatment. I’m working on specific diet deficits that occur as a result of curative treatment, that we as a team can replenish to prevent various long-term side effects. These side effects can continue up to two to three years after becoming cancer-free. A lot of times, medicine is focused on achieving the cure, which is great, but the next step for patients is to focus on their quality of life post-treatment.”

Dr. Mitchell’s presence at the bedside, joining his patients for each step of their journey, helps him craft his research to truly treat the patient, not just the disease.

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Alumni and
Student
News

William R. Hartman, MD '03, PhD '99, assistant professor of anesthesia at the University of Wisconsin School of Medicine and Public Health, is principal investigator for the UW COVID-19 Convalescent Plasma Program (adult and pediatric) and the UW-Regeneron Monoclonal Antibody (Antispike) clinical trials. Dr. Hartman discussed his research during a virtual presentation to the RFU community in March 2021 titled "Clinical trials in a pandemic: A systematic approach to neutralizing spike."

Theresa A. Peterson, PhD '03, was appointed senior director of global medical affairs - dermatology at Arena Pharmaceuticals.

Shivanand Lad, MD '04, PhD '02, was promoted to full professor of neurosurgery at Duke University Medical Center in Durham, North Carolina.

Sidharth Mahapatra, MD '09, PhD '07, was promoted to director for research, Division of Critical Care Medicine at the University of Nebraska Medical Center in Omaha, Nebraska. He also coauthored "A retrospective analysis of feeding practices and complications in patients with critical bronchiolitis on non-invasive respiratory support," published in the journal *Children* in May 2021.

Kristina Elizabeth Hawk, PhD '09, MS '08, MD, co-authored "One-stop local and whole-body staging of children with cancer," published in *Pediatric Radiology* in April 2021.

Dina Simkin, PhD '12, research assistant professor of neurology at Northwestern University's Feinberg School of Medicine, is first author on the research article "Dyshomeostatic modulation of Ca²⁺-activated K⁺ channels in a human neuronal model of KCNQ2 encephalopathy," published to *eLife* in February 2021.

Kalpit R. Shah, PhD '16, was promoted to senior biomarker scientist at Genentech in South San Francisco, California.

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PUBLICATIONS *and* PRESENTATIONS

PUBLICATIONS

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Marks KE, Flaherty S, Patterson KM, **Stratton M**, Martinez GJ, Reynolds JM. (2021). "Toll-like receptor 2 induces pathogenicity in Th17 cells and reveals a role for IPCEF in regulating Th17 cell migration." *Cell reports*, 35(13), 109303. <https://doi.org/10.1016/j.celrep.2021.109303>.

Trask S, **Ferrara NC**, Grisales K, Helmstetter FJ. (2021). "Optogenetic inhibition of either the anterior or posterior retrosplenial cortex disrupts retrieval of a trace, but not delay, fear memory." *Neurobiology of Learning and Memory*, 107530.

Trask S, **Ferrara NC**, Jasnow AM, Kwapis JL. (2021). "Contributions of the rodent cingulate-retrosplenial cortical axis to associative learning and memory: A proposed circuit for persistent memory maintenance." *Neuroscience & Biobehavioral Reviews*.

PRESENTATIONS

Afreen K. March 2021. "CD81 Is Involved in Vesicular Stomatitis Virus Infection." RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Centa J. July 2021. "Antisense therapy for CLN3 Batten disease." Batten Disease Support and Research Association (BDSRA) Family Conference. Online.

Centa J. October 2021. "Splice-switching antisense oligonucleotides for the treatment of CLN3 Batten disease." The 17th International Congress on Neuronal Ceroid Lipofuscinosis. St. Louis, Missouri.

Chudoba R. January 2021. "Role of corticotropin-releasing factor (CRF) neurons in the oval nucleus of the bed nucleus of the stria terminalis on anxiety-like behavior." Society for Neuroscience Global Connectome. Virtual.

Chudoba R. March 2021. "Role of corticotropin-releasing factor (CRF) neurons in the oval nucleus of the bed nucleus of the stria terminalis on anxiety-like behavior." RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Kandel S. March 2021. "Novel roles of HIV-1 Nef in proviral DNA integration." RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Loh MK. January 2021. "The medial orbitofrontal cortex modulates evoked spiking in nucleus accumbens in an age-dependent manner." Society for Neuroscience Global Connectome. Virtual.

Loh MK. March 2021. "Medial orbitofrontal cortex activity regulates reward-related neural circuits in a frequency-dependent manner." Midwest Student Biomedical Research Forum. Virtual.

Loh MK. March 2021. "Modulation of nucleus accumbens by medial orbitofrontal cortex in a corticostriatal risky decision-making circuit." Cognitive Neuroscience Society. Virtual.

Loh MK. March 2021. "Reward-related circuits are bidirectionally altered by medial orbitofrontal cortex stimulation." RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Loh MK. November 2021. “Medial orbitofrontal cortex outputs facilitate risk assessment and govern reward-related circuits in an age-dependent manner.” Society for Neuroscience. Virtual.

Mistry VK. March 2021. “Animating network activity with single neuron resolution in sea slug brains.” RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Mustaly S. March 2021. “Lysosome-autophagosome defects mediated proteinopathy in early stages of Alzheimer’s disease pathogenesis.” RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Olivera-Pasillo V, Dabrowska J. November 2021. “Cued fear conditioning inhibits neurons of the bed nucleus of the stria terminalis (BNST) projecting to the central amygdala.” Society for Neuroscience 30th Annual Meeting. Chicago, Illinois. Virtual.

Paduri S. March 2021. “Relative observer and technical error in the ultrasonic monitoring of thyroid nodular growth using nodular volume (Vol) vs. longest dimension (Ld) vs. the sum of the 3 nodular dimensions (Sum3D).” RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Rezaei S. March 2021. “Metformin increased HIV gene expression and replication through transcription.” RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Ritger A, Loh M, Ferrara N, Rosenkranz J. January 2021. “Effect of social defeat on the activity of medial amygdala subnuclei.” Society for Neuroscience Global Connectome. Virtual.

Ritger A, Loh M, Ferrara N, Rosenkranz J. April 2021. “Effect of social defeat on medial amygdala activity.” New England Science Symposium. Virtual.

Ritger A, Loh M, Ferrara N, Rosenkranz J. April 2021. “Effect of social defeat on medial amygdala subnuclei activity.” American Physician Scientist Association National Meeting. Virtual.

Ritger A, Ferrara N, Rosenkranz J. November 2021. “Effects of social defeat on medial amygdala activity during social behavior.” Society for Neuroscience Annual Meeting. Virtual.

Stratton M. October 2021. “Common protein interactions of CLN3 and CLN3 Δ 78 isoforms induced by antisense oligonucleotides.” The 17th International Congress on Neuronal Ceroid Lipofuscinosis. St. Louis, Missouri.

Wilson K. March 2021. “Roles of human immunodeficiency virus-negative regulatory factor (Nef) in neuroHIV pathogenesis.” RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

Xu T. March 2021. “KDM6B regulates the generation of effector CD8+ T cells by inducing chromatin accessibility in effector-associated genes.” RFUMS All School Research Consortium. North Chicago, Illinois. Virtual.

*Names in **bold** indicate current/former SGPS graduate students or postdocs.*

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EXPLANATION FOR
LIFE. IN SO FAR AS IT
GOES, IT IS BASED ON
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