Scripps Research

Science Changing Life

Supporting Growth for Women in Science

Inaugural Travel Awards Notification

Dear friends,

I wanted to express my sincere gratitude for your generous support of the work we're doing at Scripps Research. Your meaningful gifts toward *Supporting Growth for Women in Science* have been instrumental in endowing this fund for current and future generations of young female researchers.

As a scientist at Scripps Research, this cause is especially close to my heart. I originally established this fund in hopes of helping scientists early in their careers gain access to scientific conferences, where significant exchanges of ideas and resources take place. I'm excited to share with you that the first recipients of the *Supporting Growth for Women in Science* fund have been named. In the following pages, you'll have a chance to learn more about these four exceptional young scientists.

I know from firsthand experience how essential it is to be in the same room with other scientists, discussing new ideas, solving problems and gaining special connections and potential collaborators. Attending scientific conferences as a young scientist is so inspirational and empowers you to grow as a researcher and professional. I wanted to create this endowed fund to allow my colleagues to experience conferences without financial concerns.

Because of your generosity, this fund can continue to provide pivotal resources for young female scientists for generations to come. Thank you so very much for helping make this a reality.

With gratitude,

Donna G. Blackmond, PhD, NAE, NAS
The John C. Martin Endowed Chair in Chemistry
Professor and Department Chair of Chemistry
Scripps Research

Inaugural Award Recipient

Reilly Mach

Graduate Student, 2022-2023 Jack Satter / Skaggs Graduate Fellow

Reilly Mach

Current Lab

Miller Lab, Department of Chemistry

Education

BA in Neuroscience & Psychology from Concordia College, Moorhead, MN

Conference Details

Keystone Symposium on Precision Genome Engineering

January 22-25, 2024, Banff, Alberta, Canada

Conference Description:

The Keystone Symposium on Precision Genome Engineering will be held jointly with the symposium on Delivery of Nucleic Acid Therapeutics to generate discussion between these two important fields. This conference is well-known in the field for bringing together prominent leaders and experts in genetic engineering and biomolecule delivery. It serves as a platform for scientists, researchers and professionals working in various stages of genome editing to exchange knowledge, discuss the latest technological advancements, address emerging challenges and share progress in both preclinical and clinical applications.

The Precision Genome Engineering conference aims to stimulate engaging discussions, facilitate knowledge exchange, and promote networking among participants. Through a series of presentations, workshops, panel discussions, and poster sessions, I will have the opportunity to learn from experts, showcase my own research findings, and establish valuable connections with peers and mentors in the scientific community.

How will attending this conference add to your professional and scientific training?

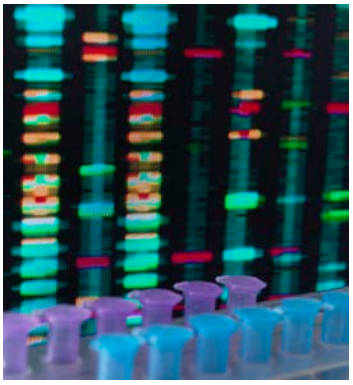
Attending this conference offers numerous benefits to young women scientists like me. It provides a platform to present my own work, receive constructive feedback and gain exposure within the scientific community. Moreover, the event offers a unique opportunity for inspiration, empowerment and networking, enabling connections with like-minded professionals and establishment of collaborations that can significantly contribute to my education, professional training and overall career advancement.

Especially coming from a primarily undergraduate liberal arts institution where research was not the main focus, I have previously had limited opportunities to attend conferences of the size and caliber of the Precision Genome Engineering conference. As a result, I have not yet had the chance to immerse myself in a large-scale scientific conference that brings together leading experts in the field.

When choosing a graduate school, one of my top priorities was attending an institution that could provide the opportunity to participate in these research conferences, which I know is available at Scripps Research. Attending the Precision Genome Engineering conference will be a transformative experience for me, providing exposure to cutting-edge research, innovative technologies and networking opportunities that are vital for my professional growth.

My research in the Miller Lab focuses on harnessing the potential of genome-editing techniques for CRISPR-mediated therapeutic applications, specifically working on using directed evolution of the Cas9 protein to accept fully chemically modified sgRNA. The Precision Genome Engineering conference will offer a comprehensive platform to expand my knowledge, explore new avenues of inquiry, and engage in discussions with leading experts in the field.

Overall, attending the Precision Genome Engineering conference will enrich my graduate training by providing a dynamic learning environment, fostering collaborations and exposing me to the forefront of scientific advancements in the field of genome editing. The knowledge, experiences, and connections I gain from this conference will not only contribute to my current research but also shape my future career trajectory as a young scientist dedicated to advancing precision genetic medicine.



"This conference will provide me with invaluable experiences, broaden my understanding of precision genome engineering, and inspire me to push the boundaries of scientific knowledge in the pursuit of developing innovative genetic medicines."

—Reilly Mach, Graduate Student, 2022-2023 Jack Satter / Skaggs Graduate Fellow

Inaugural Award Recipient

Abeera Mehmood

Graduate Student, 2020-2021 David C. Fairchild Endowed Fellow in the Skaggs Graduate School of Chemical and Biological Sciences

Abeera Mehmood

Current Lab

Hang & Mendoza Labs, Department of Immunology & Microbiology

Education

BA in Biology from Hiram College, Hiram, OH

Course Details

Advanced Sequencing Technologies & Bioinformatics Analysis course at Cold Spring Harbor Laboratories

November 6-19, 2023, Cold Spring Harbor, NY

Course Description:

The Advanced Sequencing Technologies & Bioinformatics Analysis course offered by the Cold Spring Harbor Laboratories (CSHL) begins in early November and runs for two weeks. A major focus of the training is exploring the use of massively parallel sequencing technologies and their associated bioinformatics and data-analysis approaches.

Importantly, in addition to the coursework, the CSHL course offers a roster of guest lecturers that have expertise in various sequencing platforms. The 2022 roster included Dr. Robert Martinsen, an expert in the field of epigenetics, and Michael Zody, an expert in designing bioinformatics software and analyzing genomic datasets. In brief, the CSHL Advanced Sequencing Technologies & Bioinformatics Analysis course offers hands-on experience in generating sequencing data and practical techniques for handling large-scale sequencing datasets.

How will attending this course add to your professional and scientific training?

Nine years ago, I left my home country of Pakistan to pursue studies in understanding and boosting host defense mechanisms against foreign threats. After completing my undergraduate training in biology at Hiram College, I worked as a research assistant at Ohio State University. During my post-baccalaureate training, I realized my passion for delving into the intricate interplay between immune cells and infectious/malignant cells. This realization led me to embark on my graduate education, with a primary focus on reinvigorating the immune system to effectively recognize and eliminate disease. I am currently a PhD candidate in Immunology at Scripps Research.

The immune system relies on a complex circuit of immune cells that are in constant crosstalk with non-immune cells and pathogens. Given this complexity, unbiased gene expression analysis technologies, like scRNAseq, are ideal and powerful tools for studying cellular heterogeneity across diverse tissue types, uncovering cell-cell interactions, and performing characterizations of the dynamic transcriptional landscape of immune cells. The CSHL Advanced Sequencing Technologies & Bioinformatics Analysis course will enable me to design and execute single cell RNA sequencing (scRNAseq) and other sequencing experiments during my graduate career.

Most importantly, I am eager to take a dedicated course in bioinformatics analysis to delve deeper into scRNAseq library preparation, quality control and data analysis. I am also captivated by last year's CSHL list of guest lecturers, in particular I am fascinated by Jon Preall's work which combines multiple omics approaches in pursuit of revolutionizing our understanding of the complex immune response. I am sure this year's course guest lecturers will be as impressive as the last. I believe that this course will equip me with technical expertise and a thorough understanding of sequencing technologies. I am eager to use these skills to unlock novel discoveries during my graduate education and beyond.

The intersection of immunology and bioinformatics is a rapidly evolving field and provides immense potential for the rapid discovery of immune based therapies. Looking ahead, I would like to pursue a career that combines immunology and bioinformatics as I am eager to contribute to the forefront of scientific discovery by bridging the gap between data-driven analysis and the intricate biology of the immune system.

"Participating in the CSHL Advanced Sequencing Technologies & Bioinformatics Analysis course will be a great steppingstone to the achievement of my goals."

—Abeera Mehmood, Graduate Student, 2020-2021 David C. Fairchild Endowed Fellow in the Skaggs Graduate School of Chemical and Biological Sciences

Inaugural Award Recipient

Anne Ravn, PhD

Postdoctoral Associate

Anne Ravn

Current Lab

Engle Lab, Department of Chemistry

Education

BSc in Medicinal Chemistry, MSc in Medicinal Chemistry & PhD in Chemistry (Nanoscience) from Aarhus University, Aarhus, Denmark

Conference Details

48th National Organic Chemistry Symposium (NOS)

July 9-13, 2023, University of Notre Dame, South Bend, IN

Conference Description:

The National Organic Chemistry Symposium highlights the most recent discoveries and important developments in organic chemistry. At this conference, the Roger Adams Award is given to an outstanding organic chemist. This year the awardee was Nobel laureate Carolyn Bertozzi, PhD, who also gave a lecture on her research and contributions in the development of biorthogonal chemistry.

The five-day symposium had lectures from academic institutes and industrial affiliates on diverse topics, including total synthesis, transition metal catalysis, biologically driven method development, organic synthesis methodologies, etc. The variety in lecture topics provided an opportunity to further expand in my own area of expertise as well as explore new areas of research. This year the Organic Process, Research & Development (OPRD) Outstanding Publication Award was presented to acknowledge a significant advancement in process chemistry. The team at Bristol Myers Squibb, with Jason Stevens presenting their efforts, were the awardee. Besides the lectures, each day also included either industry sessions, undergraduate sessions, faculty workshops, or a social outing event. I participated in the industry sessions and the social outing to the Indiana Dunes National Park.

The poster sessions were in the evening and presenters were a mix of undergraduates, graduate students, postdoctoral researchers and principal investigators at primarily undergraduate institutions. I had the opportunity to present a poster on research from my postdoctoral work as well as participate in all the poster sessions, which was informative and beneficial in research discussions as well as networking events.

How will attending this conference add to your professional and scientific training?

The 48th National Organic Chemistry Symposium (NOS) 2023 was highly beneficial for my professional and personal growth. I was encouraged to see the diversity in speakers as well as in participants. On a personal level, it was inspiring to see Professor Carolyn Bertozzi present her research as the first woman to receive the Roger Adams Award. For my professional development, the NOS provided me with the opportunity to meet with younger students,

other postdoctoral researchers, experienced scientists from industry, and academic faculty members to discuss research as well as learn about their career paths. This was informative to me at this point in my research career as I am still pursuing both avenues.

At the conference I presented a poster on research that I conducted recently as a postdoctoral fellow in the Engle Lab. The discussion with other researchers was fruitful and gave me a few ideas on how to proceed with the project in terms of expanding the substrate scope of the reaction and the mechanistic studies. The poster sessions were productive sessions for me personally as well because I strive to be more verbal and ask more questions. I was exposed to a variety of organic chemistry, and it was beneficial for my own understanding of chemistry to discuss the scientist's research findings. Furthermore, it provided a good forum to introduce myself to both researchers in industry to learn about their workflow as well as professors at academic institutions to hear about their research journeys and their experiences in mentoring students.

"Overall, participating in the NOS gave me an insightful view of all the opportunities available. Additionally, it brought new knowledge to reflect on for my own research at Scripps Research."

—Anne Ravn, PhD, Postdoctoral Associate

Abigail Reeves

Graduate Student, 2020-2021 The Schimmel Family Endowed Fellows in the Skaggs Graduate School of Chemical and Biological Sciences

Abigail Reeves

Current Lab

Huang Lab,
Department of
Chemistry

Education

BS in Biochemistry
& BA in Chemistry,
College of Charleston
Honors College,
Charleston, SC

Conference Details

The American
Chemical Society
(ACS) Fall 2023
National Meeting,

August 13-17, 2023,
San Francisco, CA

Conference Description:

I am attending the American Chemical Society (ACS) Fall Meeting hosted in San Francisco, California. These semiannual conferences are the largest hosted by ACS and are heavily attended by thousands of scientists. During the five days of the conference, I will attend poster sessions, talks and dinners to network and engage with scientists from across the country. I have also been selected for an oral presentation of my work titled "Capturing the dynamic placental cell surface proteome and Galectin-3 interactome during syncytialization via proximity labeling." This work will be presented in the Division of Carbohydrate Chemistry special session called *Advancing Women's Health Through Glycoscience*.

How will attending this conference add to your professional and scientific training?

The value of scientific conferences cannot be understated. When I was an undergraduate with just a few months of research experience, I was awarded a travel grant to attend the Southeastern Regional Meeting of the American Chemical Society. As I rode the bus from my small primarily undergraduate institute to this conference, still wavering in my decision to leave the pre-medical track to pursue chemistry, I was hesitant to commit to a research career. After my poster was heavily trafficked, I left my session with a renewed sense of excitement about my work and career choice. I also listened to talks from graduate students in chemical glycobiology labs, a research field I had not considered pursing before this conference but is now the focus of my PhD. The exposure and inspiration from this conference led to my complete commitment to research and my desire to pursue a PhD. Attending a conference was the catalyst for my scientific career, and I am certain that I can use the ACS Fall meeting to further secure my future as a research scientist.

My first two years of graduate school coincided with the peak of the COVID-19 pandemic, resulting in canceled conferences and the occasional virtual meeting. I am grateful to have presented posters at the Scripps Graduate Student Symposium and at the San Diego Glycoscience conference, engaging in meaningful discussions about my work and receiving valuable feedback in a local environment, but the opportunity to network on the national level has been stymied. Now, as the pandemic wanes, I can attend the ACS Fall

meeting and participate in an unprecedented and critical step in expanding my scientific footprint.

As a rising fourth year graduate student, I will soon be applying for post-doctoral positions in a competitive market. Networking with scientists I am inspired by and want to be mentored by is essential to distinguish myself as a candidate for their labs. In particular, I will be presenting in a session with rising and established figures in glycobiology, including Stacy Malaker, Carlito Labrilla, and Nobel laureate Carolyn Bertozzi. These individuals have extensive mass spectrometry and chemical biology expertise, which overlaps well with my interests and skills acquired throughout graduate school. I am certain that the opportunity to attend the ACS Fall meeting, in particular without financial burden, will be critical to network with these important figures. Discussing my work with those outside of Scripps will improve my capacity to present clearly, concisely, and convincingly to improve my performance during committee meetings, my thesis defense, and future presentations when job hunting. I also anticipate receiving feedback, questions, and advice from experts that can improve my technical approaches and consider avenues of research I have not yet explored.

Finally, my thesis is centered around the placenta, an understudied and niche organ, which can be challenging to discuss in a male-dominated field like chemical biology. However, I have the opportunity to present in a session specifically dedicated to women's health. This will bring together scientists with expertise in my field of study for invaluable, pertinent feedback and will connect me with individuals that see value in advancing health outcomes for women.

"I am hopeful that scientists that have not considered the importance of women's health will be inspired by my work and consider how their skills can be leveraged to propel an underappreciated area of research forward."

—Abigail Reeves, Graduate Student, 2020-2021 The Schimmel Family Endowed Fellows in the Skaggs Graduate School of Chemical and Biological Sciences