Women in Science at Columbia

2022 Graduate Research Symposium

April 9th
Virtually on Zoom and Gather.town

WISC Annual Graduate Research Symposium

We celebrate the guiding principles of Women in Science at Columbia (WISC), as we bring together interdisciplinary researchers in STEM for a day of learning, communication, and professional connection.The GRS is an annual graduate student run event that aims to help STEM graduate students broadcast their research, and provide them with career-building opportunities.

On our 2022 theme "Breaking Down Barriers"

Women are much more likely to change jobs or drop out of STEM than men, and these changes can be triggered by the existence of new and ongoing barriers. We seek to promote discussions on what these barriers are and how we might break them down so that the symposium audience, especially graduate student attendees, can explore a STEM future free of barriers.
We aim to bring together women, underrepresented minorities, and their advocates in multiple fields.

Symposium Schedule

All times in EST

9:00 - 9:10	Introduction and welcome
9:10 - 9:50	Keynote talk and Q&A
9:50 - 10:00	Break
10:00 - 12:00	Student oral presentations
12:00 - 12:30	Lunch break
12:30 - 2:30	Student poster presentations
2:30 - 2:45	Break
2:45 - 3:45	Panel discussion: *Breaking Down Barriers*
3:45 - 4:15	Awards and closing remarks
7:00 - 8:30	GRS Mixer at Amity Hall

Virtual Platform Links

Instructions on how to use these platforms are at the end of the program!

Events on Zoom

Introduction and welcome
Keynote introduction and talk
Student oral presentations
Panel discussion: Breaking Down Barriers
Awards and closing remarks

Join Zoom Meeting

https://us02web.zoom.us/j/83730553901?pwd=Q1VzZ2o1VVhnbjFYb-Wk2NVpjZnJSQT09

Meeting ID: 837 3055 3901
Passcode: STEM

Events on Gather.town

Student poster presentations

Join Gather.town

https://app.gather.town/invite?token=sP685xXap9oPaBB1q2D4HkRIIru2Vu9z
Password: wiscgrs2022

Keynote Speaker

Dr. Elham Azizi

Herbert and Florence Irving Assistant Professor of Cancer Data Research in the Irving Institute for Cancer Dynamics and an Assistant Professor of Biomedical Engineering

Elham joined Columbia in 2020 as the Herbert and Florence Irving Assistant Professor of Cancer Data Research in the Irving Institute for Cancer Dynamics and an Assistant Professor of Biomedical Engineering. She is also affiliated with the Department of Computer Science, Data Science Institute, and the Herbert Irving Comprehensive Cancer Center. Elham holds a BSc in Electrical Engineering from Sharif University of Technology, and an MSc in Electrical Engineering and a PhD in Bioinformatics from Boston University. She was a postdoctoral fellow in the Dana Pe'er Lab at Columbia University and Memorial Sloan Kettering Cancer Center. Her multidisciplinary research utilizes novel machine learning techniques and single-cell genomic and imaging technologies to study the dynamics and circuitry of interacting cells in the tumor microenvironment. She is a recipient of the NSF CAREER Award, Tri-Institutional Breakout Prize for Junior Investigators, NIH NCI Pathway to Independence Award, an American Cancer Society Postdoctoral Fellowship, and an IBM Best Paper Award at the New England Statistics Symposium.

Panel Discussion: *Breaking Down Barriers*

The panel theme is Breaking Down Barriers, and seeks to facilitate a discussion on what barriers exist for female and underrepresented minorities to enter and stay in STEM careers, and what we can do to remove them.

Lesley-Ann Giddings

Assistant Professor of Chemistry at Smith College

Lesley-Ann Giddings received her PhD from the Massachusetts Institute of Technology. She is a natural products biochemist interested in: 1) bioprospecting extreme environments (e.g., acid rock drainage) for new bioactive agents produced by microbes; as well as 2) understanding the enzymology behind the assembly of these novel pharmacophores. Her lab approaches these problems by using culture-dependent and culture independent methods (i.e., next-generation sequencing) to identify secondary metabolites. She also uses basic biochemical techniques, including protein purification and enzyme kinetics, to characterize enzymes involved in secondary metabolic pathways. Dr. Giddings is currently an assistant professor of chemistry at Smith College

Daniela De Silva

Professor of Mathematics at Barnard College

Daniela De Silva, professor of mathematics, joined the faculty of Barnard in 2007. Formerly, she was a member of the Mathematical Sciences Research Institute in Berkeley. Professor De Silva has also taught at John Hopkins, MIT, and the University of Naples "Federico II". Professor De Silva's primary research area is partial differential equations. She is particularly interested in the regularity theory for free boundary/phase transition problems.

Robyn Sanderson

Assistant Professor of Physics and Astronomy

Robyn Sanderson is an assistant professor in the Physics & Astronomy department and an Associate Research Scientist in the Center for Computational Astrophysics at the Flatiron Institute in Manhattan. Her research focuses on ways to infer the dark matter distribution in galaxies by studying the orbits of their stars. Dr. Sanderson completed her Ph.D. in Physics at MIT in 2011, spent three years as a postdoc at the Kapteyn Institute in the Netherlands, and held an NSF Astronomy and Astrophysics Postdoctoral Fellowship at Columbia, NYU, and then Caltech before joining UPenn and Flatiron.

Jenna Lawrence

Adjunct Associate Professor of Environmental Science

Jenna Lawrence is a behavioral ecologist and conservation biologist. Her research has primarily involved chasing monkeys around a Peruvian rainforest, and as a member of the Columbia University faculty she has taught in New York, Jordan, and the Dominican Republic. Her other appointments include the Department of Ecology, Evolution and Environmental Biology; Department of Earth and Environmental Sciences; and M.S. Program in Sustainability Management.

2022 Symposium Organizers

Contact us if you have any questions!

Eavan Donovan

WISC Co-President

ejd2163@columbia.edu

Eavan is a Ph.D. student in Biological Sciences. Before Columbia, Eavan received her B.A. in Chemistry at Carleton with previous research on structural biology of protein complexes. At Columbia, she works on studying mitochondrial motility in the Drosophila visual system in the Barnhart Lab. As she explores research at Columbia she is excited to encourage other graduate students to get involved in science advocacy, and mentorship, especially getting more involved in our surrounding community.

Eliza Jaeger

WISC Co-President

ej2371@columbia.edu

Eliza is a Biological Sciences Ph.D. student in the Tosches Lab. She is studying the evolution of neural circuits and complex behaviors using the salamander Pleurodeles waltl as a model organism. Before starting her Ph.D., Eliza graduated from Middlebury College with a B.A. in neuroscience and then worked as a research technician for Bianca Jones Marlin in the Axel Lab at the Columbia Zuckerman Mind, Brain and Behavior Institute. Eliza is committed to helping to create opportunities for women and URM in science, which should be made available as early as possible.

Sarah Giles

WISC GRS Chair

smg2258@columbia.edu

Sarah is a geoscience Ph.D. student in the Department of Earth and Environmental Sciences. She earned her Bachelor's degree in Geology from Texas A&M University. She is a field geologist interested in understanding the co-evolution of climate, tectonics, the ocean, and life during the Neoproterozoic (1,000-541 Ma). Sarah is passionate about improving resources for geoscience/science education for K-12 and undergraduates, particularly in making virtual field trips and research projects for students. Sarah seeks to contribute to science education by creating platforms for graduate students to share their research to a variety of knowledge bases.

2022 Symposium Organizers

Contact us if you have any questions!

Qiulin Zhu

WISC GRS Social Event Coordinator

qz2451@columbia.edu

Qiulin is a PhD candidate in Biological Sciences. She received a B.A. in Molecular and Cell Biology with an emphasis in Genetics, Genomics & Developmental from UC Berkeley. She is passionate about building a system of female mentorship and empowering children and teenagers from underrepresented groups through science education. She hopes to see more minorities and women enter the STEM fields and she joined

Suwan Ding

WISC GRS Keynote Coordinator

suwan.ding@columbia.edu

Suwan is a PhD student in Biomedical Engineering advised by Dr. Kam Leong. Her research is focused on using nanomaterials to achieve oral delivery of anti-cancer immunotherapy, in particular for colorectal cancers. She received her B.S. degree in Chemistry from Fudan University (Shanghai, China) in 2020. During college, she spent one quarter at UC San Diego as an exchange student and got inspired by researches on nanotherapeutics for better healthcare. Through the platform WISC provides, Suwan intends to advocate inclusiveness and equity for underrepresented members in STEM community.

Mar Martinez Mas

WISC GRS Student Presentation Coordinator

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Mar is a Master's student in Biomedical Engineering with special interest in cardiovascular biomechanics, medical devices and life support machines. Prior to coming to Columbia, Mar received her Bachelor of Science in Biomedical Engineering from Pompeu Fabra University, in Barcelona (Spain) in 2021. She also spent a year and a half of her bachelor's degree at the Politecnico di Milano, in Milan (Italy) where she completed an Erasmus+ exchange and the development of her Bachelor's Thesis. She is currently researching heart valve bioprostheses and their degradation methods once implanted in the Ferrari Lab, Surgery Department, at Columbia University Irving Medical Center. She believes that WISC's role is very important to inspire young students in STEM and make this community larger.

Student Oral Presentations

10:00 - 10:10	Robust and Interpretable Deep Learning Systems for Detection of Ophthalmic Diseases *Kaveri Thakoor, Biomedical Engineering*
10:10 - 10:20	Macroscale recording of external inputs using engineered bacterial swarming *Anjali Doshi, Biomedical Engineering*
10:20 - 10:30	Unique Challenges & Treatment for PMADS in U.S. Military Females *Merrielle Markham-Davis, Clinical Psychology*
10:30 - 10:40	Dependent Stopping Times and an Application to Credit Risk Theory *Alejandra Quintos, Statistics*
10:40 - 10:50	United States Immigrants' Perceptions and Utilizations of Mental Health Services and Social Media Platforms for Personally Distressing Topics *Sanjana Manjunath, Psychology in Education*
10:50 - 11:00	The Effective Components for Online Science Classroom that Supports English Language *Melody Isabela, Counseling and Clinical Psychology*
11:00 - 11:10	Elucidation of CSF-1/CSF-1R signaling mediated by mutant p53 in esophageal carcinoma *Gizem Efe, Genetics and Development*
11:10 - 11:20	Recombination patterns in corn snakes suggest a tug of war between PRDM9 and promoter-like features *Carla Hoge, Biological Sciences*
11:20 - 11:30	Transposon-encoded CRISPR-Cas Systems Direct RNA-guided DNA integration *Sanne Klompe, Biochemistry and Molecular Biophysics*
11:30 - 11:40	Mentoring Latinas in STEM: A Meta-Analysis on Culturally Appropriate Mentorship within the Academy *Tatiana Vera, Counseling and Clinical Psychology*
11:40 - 11:50	The Role of Fibroblast Growth Factor Signaling in Muller Glial-Derived Retinal Regeneration *Shiv Patel, Ophthalmology*
11:50 - 12:00	Break

Student Poster Presentations

1. The Impact of Social Determinants of Health on COVID-related Substance Use and Abuse Outcomes in Minority Youth- *Samantha Fagan*

2. A deep learning segmentation pipeline for novel, detailed, and scalable analysis of *Proteus mirabilis* colony patterns- *Marian Shaw*

3. Mesocarnivores on the Move: Assessing Spatiotemporal Patterns Along an Urban-Rural Gradient - *Anna Soccorsi*

4. Restructuring the Mammalian Microbiome Using Fecal Microbiota Transplant (FMT) - *Opeyemi Lekan*

5. The influence of social support on the association between child abuse, military sexual trauma, and homelessness in a nationally represented sample of veterans - *Nicole Bulanchuk*

6. The Effect of Exposure to the COVID-19 Pandemic on Infant Development and Maternal Mental Health - *Jessica Sperber*

7. Deep Learning Image Segmentation and Long Short-term Memory Pretrained Model for Ocean Partial Pressure Carbon Dioxide Prediction - *Shaun (Siyeon) Kim*

8. Bacterial cytotoxin therapy limits tumor growth for pancreatic ductal adenocarcinoma - *Amanda Decker*

9. Therapeutic targeting of NOTCH1 and Neddylation Pathway in T cell Acute Lymphoblastic Leukemia - *Carla Bertulfo*

Symposium Mixer at Amity Hall

After the symposium at 7-8:30 pm ET WISC will host an in-person social event at Amity Hall. Food and drinks will be provided to 40 attendees. Please RSVP here: *https://www.eventbrite.com/e/2022-graduate-research-symposium-tickets-262249333817*



JOIN US AFTER THE SYMPOSIUM!

Please email wisc.symposium@gmail.com if you have any questions.

Location of Amity Hall and more information: https://amityhalluptown.com/

2021-2022 Symposium Sponsors

We would like to thank our symposium sponsors whose financial donations made this symposium possible. Our 2021-2022 sponsors are shown below. Refeyn has continued their sponsorship into 2022.

Thank you!

Enzo

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D E Shaw Research

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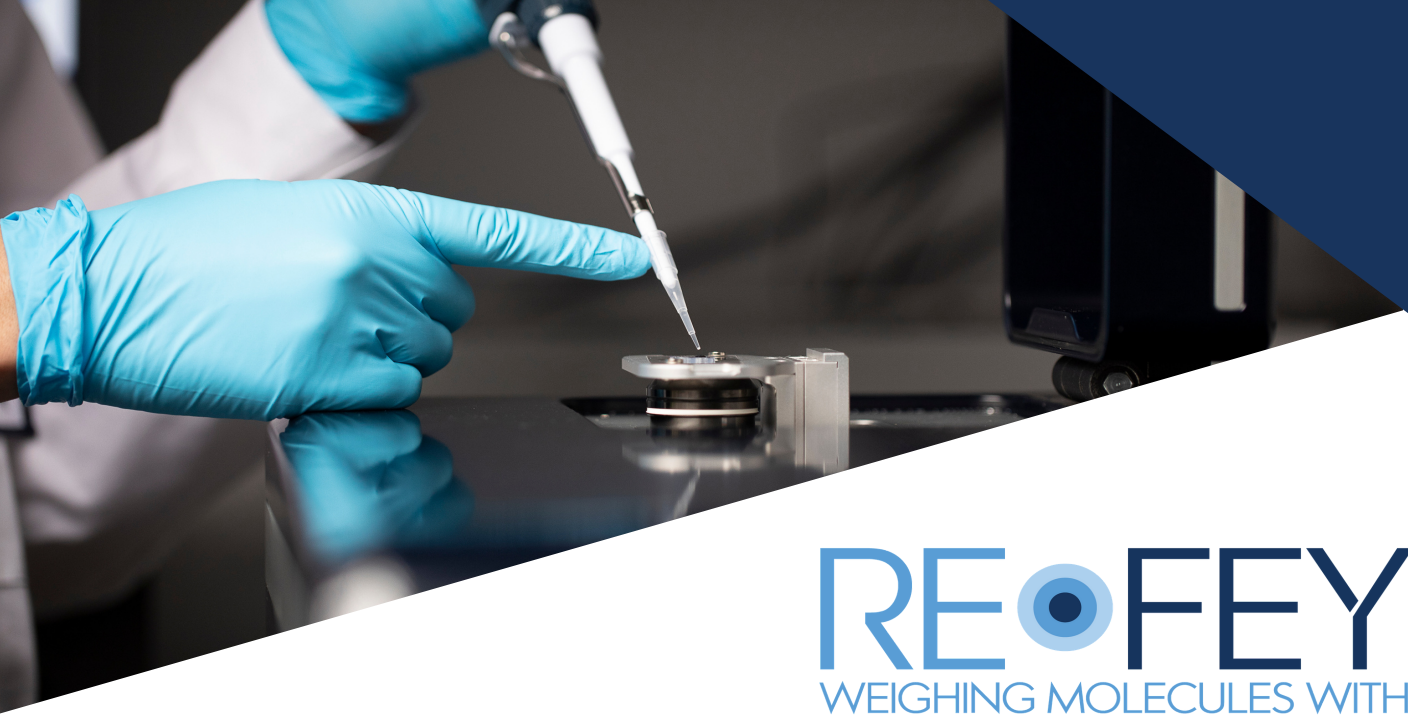


REFEYN

WEIGHING MOLECULES WITH LIGHT

Mass photometry enables accurate mass measurement of single molecules in solution, in their native state and without the need for labels, opening up new possibilities for bioanalytics and research into biomolecular functions.

KEY BENEFITS:

Accurate measurement of true native behaviour

- In solution, in a variety of buffers and compatible with membrane proteins
- Label free, without the need to modify samples

Information on all sub-populations in samples

- Single molecule counting
- Wide mass range and high dynamic range

One assay format delivering multiple results

- Homogeneity, structural integrity and activity
- Quick and simple to use
- Minimal sample required

Zoom Platform Instructions

The Zoom website has a list of useful orientation videos! Watch a short video on how to join a Zoom meeting here: https://support.zoom.us/hc/en-us/articles/201362193

If you experience trouble on Zoom, please email wisc.symposium@gmail.com and a WISC GRS Team member will respond to you ASAP.

Gather.town Platform Instructions

Gather is a wonderful new tool for getting to both explore and chat with other people. It is also a very new tool and has a few quirks. This document is to help you with the basics so you can discover and play on your own.

What you need:

- A desktop/laptop with a mic and camera.
- A web browser (Chrome or Firefox recommended).
- We strongly recommend using headphones to help prevent feedback.
- That's it! There's nothing to install, no software to download.

How it works:

- Gather is a video chat platform that has avatars move around a map. As you get close to other avatars, your videos will pop up and you will be able to chat.
- Move around the space using the arrow keys.
- By moving your avatar around you can have spontaneous conversations with those around you. These can be either one-on-one or small groups depending on how many people are around your avatar.
- There are many private spaces within the map, including at posters and networking booths. When you are in a private space, only those within that space can see and hear you. As you move into the private area, it will become highlighted so you can see it!
- When your avatar moves closer to an interactable object, it will glow yellow and there will be a notification that shows up saying 'Press x to interact with -object-'. This is how you can see full-size posters during the poster session!

Not-So-Obvious Features:

Here are some things you might find useful but aren't immediately obvious.

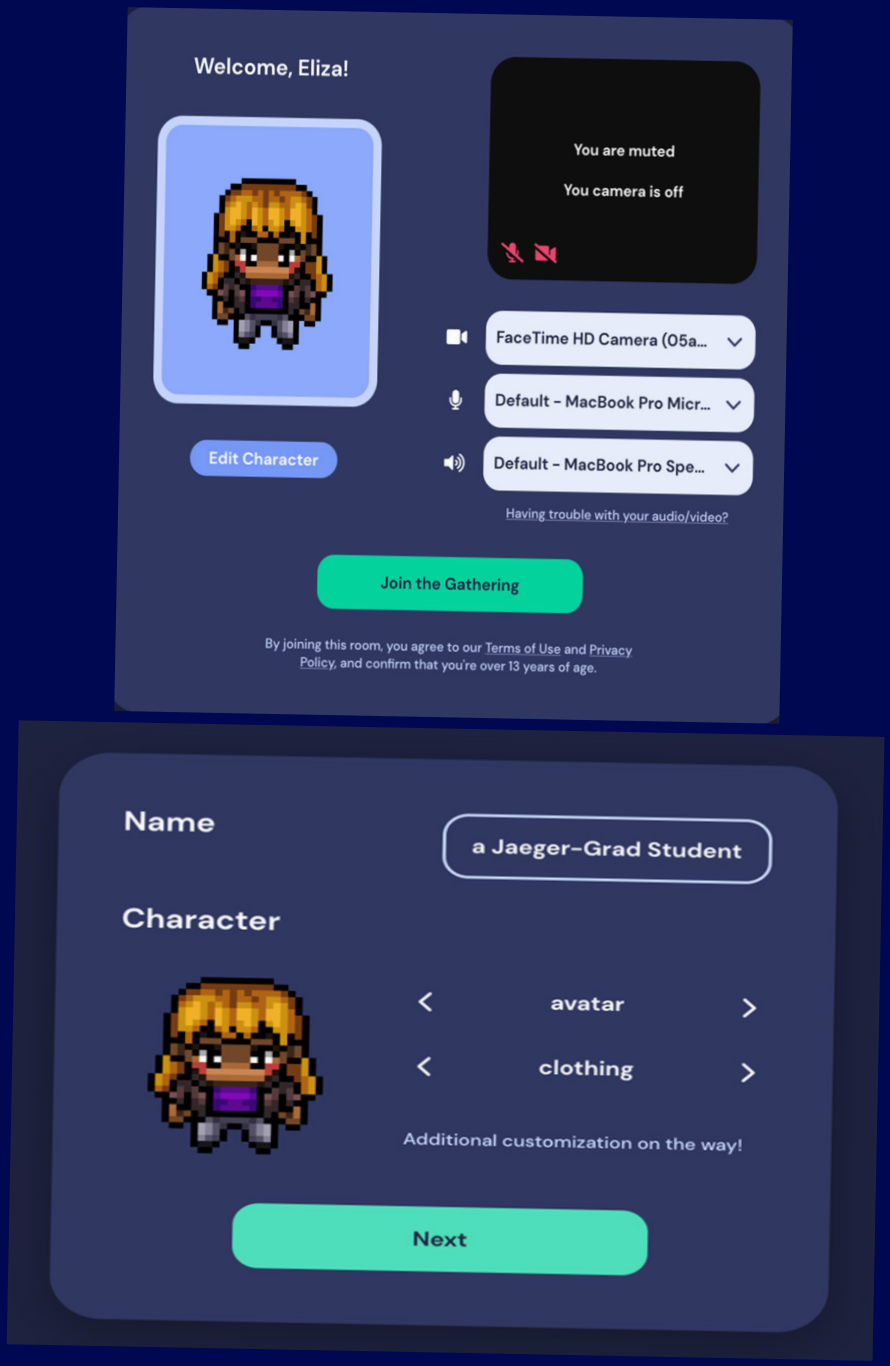
- There is a messaging feature that allows you to message people in four ways:

1. individually by clicking on their name in the participant panel,
2. locally to the people you are video chatting with,
3. room chat (must be requested) with all the people in the current room you are in,
4. globally to all the people in your map.

- There is a locate feature to find others by clicking their name in the participant panel. The participant panel is the bottom-mot option in your toolbar on the left.
- Want to full screen someone else's video? Just click on their video.
- Talking to a group of people? Click the down arrows centered below the videos to shift into grid view.

Getting Started for WISC GRS 2022:

Step 1. Turn on your audio and video so that you can be seen and heard! You are still private, so you can take a moment to check your video and audio.
Step 2. Click “Edit Character” to add your name and your position (for example, if you are a grad student, post-doc, company rep, admin, PI, etc.)
Step 3. Edit your avatar to your liking. Changing the clothing can edit your hair and skin color as desired.
Step 4. Join the Gathering!



Poster Session Instructions:

- Above you see what the virtual poster session space will look like
- Each poster will be labeled with the number listed in the Symposium Booklet, so you can find any posters you're interested in quickly and easily!
- When you approach a poster, click 'x' so that the whole poster fills your screen
- The dark space in front of each poster indicates where the private space for that poster is—once you're in it, you can only see and hear the poster presenter and any other audience members.
- Come and go as you like, as you would with a "real" poster session, and have fun!

Networking Session:

- Above you see what the virtual networking session will look like
- Each sponsor will have a virtual booth labeled with their logo

o Each company/organization representative should sit in the seat behind their booth, which is a private space

o As attendees walk up to the booth, their video and audio will appear and you will be able to chat!

- If sponsors or attendees would like to screenshare, there is a screensharing logo at the bottom of the screen