

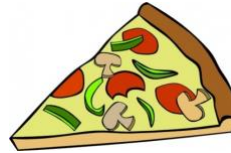
UNDERGRADUATE MATH SEMINAR

The next math seminar of the term is joint with the Biology and Computer Science departments. And, it will be in a different location: **OLIN 115**

DATE: **THURSDAY, October 5**

Time & **12:30** – Pizza in the **Olin Rotunda**

Location: **12:50 – 1:45** Seminar in **OLIN 115**



Professor Georgia Doing

In this seminar, **Dr. Georgia Doing**, a post-doc at Jackson Laboratory for Genomic Medicine, will present the following talk.

Title: Wrangling Microbial Data

Abstract: Of the trillions of microbial cells associated with a human body, only a handful have been studied in the laboratory. Understudied microbial genetic diversity, including that represented on the skin by *staphylococci*, is important for clinical outcomes of human hosts but too expansive to comprehensively study with molecular and biochemical techniques alone. Computational tools are a promising approach for investigating high dimensional microbiological data which are susceptible to machine learning. Novel gene annotations can be inferred by balancing the performance of black-box machine learning and the interpretability of linear correlations in algorithms with scalability to match that of microbial diversity. In this talk I will present how such an approach can help analyze novel genes from two skin microbes: pathogen *Staphylococcus aureus* and commensal *Staphylococcus epidermidis*.

Where Are They Now? Jason (formerly Turner) Torchinsky '18 Checks-in

During my second term at Union College in 2015, I was enrolled in Integrated Math/Physics (IMP 120) with **Professors Jeff Jauregui** and **Sam Amanuel**. Going into college, I didn't know what I wanted to do, but IMP 120 was fun enough, and Professors Jauregui and Amanuel were kind enough, that I decided to become a math-physics double major. I certainly had no idea that I would go on to get a Ph.D. in applied and computational mathematics!

I had the privilege of taking Introduction to Logic and Set Theory (MTH 199) **with Professor Bill Zwicker**, who signed off on me skipping the 200-level courses and diving right into Knot Theory (MTH 325) with **Professor Brenda Johnson**, who would go on to advise me during my first self-inspired research project. She was incredibly kind and patient with a math undergraduate student who was a little too into solving a problem that they had made up.

One of my favorite experiences completing the math major at Union was in Abstract Algebra 2 (MTH 432) with **Professor Ellen Gasparovic**. She is an incredible person and professor, and I adored the fact that she only made us complete a portion of the homework problems that she assigned. Of course, I was *that student* and would spend hours with different groups of peers so that I could solve all of them. I would type them up nicely in LaTeX and did well enough that she asked if she could use my solutions as the answer key, which I still brag about to the few people that would find such a story entertaining.

I participated in an REU during the summer of 2017, in large part thanks to Professor Gasparovic. During that summer, I had an undesirable and uncomfortable set of interactions with a professor at that university. I decided to take a chance and talk to another professor at that university that Professor

Gasparovic had mentioned. Thankfully, they were the exact person to turn to for support, and they ensured my comfort and safety for the remainder of the REU. I'm not sure if I ever told Professor Gasparovic how much her off-handed comment about her awesome colleague during one of our meetings helped me out, but I'm eternally grateful for that.

Professors Jauregui, Gasparovic, Johnson were instrumental in my solid performance on the Mathematics GRE and getting into graduate school. They were infinitely patient with all my questions and gave me advice that I took to heart and made my Ph.D. possible.

I decided to go to the University of Wisconsin-Madison to complete my Ph.D. in mathematics after having some wonderful conversations with Professor Samuel Stechmann. We talked about research, sure, but most of our conversations were about navigating life as a graduate student and as a fledgling adult. Most of my big academic decisions up to that point were based on surrounding myself with kind people, and the decision to pick up my life and move halfway across the country had the same basis.

I graduated from Union College in 2018, and I finished my Ph.D. in August of 2023, almost exactly five years after I arrived in Madison on the night of a once-in-a-decade storm. Despite everyone at Union's confidence in me, I did almost decide to leave the program in the winter of 2019. It was a brutally cold winter, and my seasonal depression was intense. It didn't help that I had been sleeping on an air mattress in a scantily equipped apartment with two other graduate students for the preceding nine months. What kept me going was I had lucked into getting the Department of Energy Computational Science Graduate Fellowship, which turned out to be a huge deal. Not only did it double my pay, but it also gave me unlimited access to amazing opportunities in the national labs system.

I did an internship at Sandia National Laboratories in New Mexico in 2022 and fell in love with Albuquerque and New Mexico. I bonded with all the other interns in my building, was introduced to West Coast Swing, and found a whole department of kind and enthusiastic scientists to work alongside. I joined that same department as a postdoctoral appointee on September 23rd, and I couldn't be happier to be back in Albuquerque.

There are uncountably many lessons I have learned in the nine years since I started at Union College, but the one that I come back to is this; surround yourself with kind people, the kind of people you strive to be more like.

If you have any questions about navigating graduate school in mathematics, the national laboratory system (the internships pay really well!), being queer in STEM, or navigating life stuff hit me up with an email at jltorchinsky@gmail.com. (And it's totally okay to ask very broad things like "What do you wish you knew before XYZ?". I always found it intimidating to cold email people!)

P.S., Use those undergraduate travel grants that mathematical societies give out to go to a bunch of conferences. It's a cool way to learn more about what's going on in mathematics, but you also get to travel to cool places!

P.P.S., If you ever find yourself at a West Coast Swing event and want to connect with a Union alumnus, reach out!

Calculus Help Center: free calculus tutoring!

The math department runs a Calculus Help Center (CHC) that offers **free, drop-in, tutoring** in calculus courses through Math 117. It is Sunday through Thursday, 7:30-10:00pm in the Sorum House seminar room.