Nora Hussain Interview Transcript

Great well this is Nora. She was my bio 391 TA last semester and is also the TA for the course this semester.

Tell us a bit about your PhD Nora.

Perfect! So hi, Payten gave me a great introduction but I'm Nora and I'm currently doing my PhD in Dr James Stafford's lab.We use cells to screen for pro-inflammatory activity of oil sands process affected water from the Albertan oil sands industry. We collect these samples that these companies give to us and essentially we throw them on our cells and we see how our cells respond and look for any cell based responses based on any activity that we see.

Tell us a bit about how you got to do what you're doing.

I think one of my turning points on doing research was looking at designing my own experiment in Micro265. I took all of my undergraduate and my Graduate Studies at the U of A so I'm kind of a long-hauler but for the most part in 265 there was an experiment where we were able to design our own bacterial test. So one of the things that I tested was whether or not Dollar Store cleaners basically could perform the same as Brand Store disinfectants and long story short save your money elsewhere because the Dollar Store cleaners do not work at all. At least that's what I found for myself which is great and it really sparked that interest of whether or not I wanted to do research and the answer was definitely yes. After that, I ended up taking all of the micro courses I could. At that time one of them was a micro ecology course led by Dr. Rebecca Cates who is not here anymore but I thought it was really interesting because bacteria is everywhere. I mean that's obvious but one of the things I really remember taking away from that lecture was that bacteria actually are also responsible for things like rust you know like the chemical reaction of rust. Things you don't expect and I thought that was interesting enough to see if I could ask for a position as an undergraduate student in her lab and at the time she wasn't able to host me but she told me to check in with Dr. Yan Boucher who is another microbiologist that had since last the U of A unfortunately. When I had asked him he had said yes, he did have a graduate student that was able to supervise me and essentially that kind of sparked my interest in doing undergraduate research projects. We got to do a lot of antimicrobial competition based on little microscopic spears that some bacteria have and they're able to just stab other bacteria beside them and inject complex toxins into them and kill them. I loved that so much that at the end of my third and final undergraduate research project, I got the nerve to ask Yan if he was able to take me on as a Master's student and he told me to apply and we'll see where you go. I got in! Yan will be able to tell you thins but I went into the lab when I got accepted and I was screaming, I was so excited. He can say it was the happiest he's ever seen me. Then I did my Masters on looking at microbial competition and then at the end of the day after I finished my Master's I ended up going into Dr. James Stafford's lab for my PhD and did a complete 180. I ended up going from bacterial cells to eukaryotic cells in macrophages and immunology adjacent things that I have never thought about until now.

Tell us about your greatest professional accomplishment.

I have had many smaller accomplishments that at the end of the day build up to a lot of larger ones. I remember going to a conference during my Masters and it was right before the pandemic so it was November 2019. I remember presenting the final thesis work that I had done for my Masters where it was just this really elaborate network of all these different strains of bacteria that were able to either kill others or survive against others based on their toxin combinations. I remember talking through it like a really stressed graduate student wondering if I even had enough time. I finished that and then I ended up walking off after I had answered questions because I was really aware of the 12 minute deadline and it was okay. Sitting in the audience was the professor who had actually discovered that system. He used to actually work at the University of Alberta but we had never formally met. I remember him turning around after I

had presented and he was like ‘where have you been, I've never even introduced myself to you and and now we can like have this conversation’. He had asked me to come to his lab to give a guest lecture presentation and that he would fly me out and he asked me to join his lab and all of these things and I thought ‘you got all of this from my 12 minute rush talk?’ It was just such a nice feeling of seeing people that appreciated your work as much as you know the effort and perseverance that go in it.

The last thing I want to talk about is your personal journey being a woman in STEM
There is definitely more of an awareness to accommodating not only women but minorities of all different orientations or beliefs. I think that that is really important because growing up as a female, I am the first of my immediate family to have gone into university. My brother has followed me since but he is six years younger than me. It was one of those things where I don't think that if I did not have such an accommodating and welcoming environment from the first place where I was allowed to fail and ask questions that you might roll your eyes at and ask ‘why don’t you know that already?’ I would not have felt as welcome either as a female or just as a student with that power dynamic and so I really tried to bring that type of environment that I felt in terms of the mentorship into my own teaching and I hope that you saw that. No question is ever thought as dumb because everyone starts from somewhere and I think that encouraging women to go into these environments and these fields that are normally seen as male dominated and encouraging them in a way that makes them feel confident and empowered and able to ask questions and able to ask questions should be the future of research in the first place. My mentorship has never looked at your age or race or any bias, in any way and I think that should be the gold standard or at least that is what I hope to show in my own work. At the same time, I think there is a seat and a place for women in science and I think it needs to be more accountable and more open.

Thank you for meeting with us, I really appreciate it