SPOTLIGHT ON CAREERS

Interview by Stephanie Tien

Dr. Shelley Deeke

DR. SHELLEY DEEKE is a scientist at Cyclica Inc. Cyclica is a biotechnology company that uses artificial intelligence (AI) combined with biophysics for drug discovery. The overarching goal of the company is to personalize medicine and accelerate drug discovery through creating technologies and tools for scientists to utilize in their research. Cyclica has developed a platform called the Ligand Express that produces polypharmacology profiles of small molecules to predict the protein interactors of the molecule. Ultimately Cyclica aims to make drug discovery faster, safer, and cheaper, by enabling scientists in pharma to achieve these goals through new technologies.

Prior to joining Cyclica, Dr. Deeke completed her Honours Bachelor of Science, Master of Science, and doctoral studies in biochemistry at the University of Ottawa. Her thesis titled "Biomarker Discovery and Extracellular Vesicle Proteomic Signatures in Pediatric Inflammatory Bowel Disease", used a clinical proteomic approach to enable faster diagnosis of IBD through the use of biomarkers, and to avoid patients having to undergo colonoscopies.

1. How did your graduate education prepare you for your career?

A lot of the skills I acquired through my graduate studies, such as evaluating scientific literature, data analysis, statistics, and critical thinking, are directly related to my current role. But I also consider the opportunities outside of the lab that graduate students are encouraged to partake in, but are not necessarily mandatory, to be very valuable. I was the VP Academic on the Biochemistry, Microbiology, and Immunology Student Council which gave me the opportunity to gain leadership skills. I also participated in the 3-minute thesis competition, and won second place in 2018, so that was very useful in developing the skill of being able to transfer very complex scientific concepts into simple terms. So there are always opportunities to develop these transferrable skills, which are equally, if not more important, but it is up to the students to seize them.

2. What steps did you take to find or acquire your position?

As much as you hear it, it was really networking that got me into my current role. My former supervisor was attending an event hosted by the Canadian Institute for Advanced Research (CIFAR), and he asked if I would be interested in attending as a student reporter. And this is where I first became aware of Cyclica. It was through a workshop on the challenges in drug discovery where I met the VP of research and development at Cyclica. After this meeting I started researching the company and I was really blown away; I thought their research was groundbreaking, and could really have an impact on healthcare. They had a posting on the careers section of their website. I applied online and I started with the company in August 2018.

3. Do you have any advice for grad students interested in pursuing a similar career path?

My advice would be to complete a career IDP (Individual Development Plan) using the CIHR online tools. It's very important to take the time to reflect on this, because it's worth it. Also, start looking for jobs and monitoring the job landscape early; start looking 6 months before you plan to graduate. Writing a CV and a good cover letter takes time, and the first one will probably not be the best, so this in itself is a skill. The earlier you start the better; you can never start too early. Also, I think being open to different types of jobs is important. Just being isolated to your research will really narrow your opportunities. Having a good mentor is also very valuable. I was lucky that my supervisor was very supportive and recognized the value of networking and encouraged me to network.

4. What did you find most challenging about transitioning from academia to industry? What was your biggest learning curve?

For me specifically, since I decided to work for a company centered on machine learning and AI, I had very little exposure to that so I have been learning some basics of programming through online courses in order to expand on those skills. I think they are very useful and will continue to become more useful as time goes on. So for me, programming itself has been the steepest learning curve. Though this was one of the aspects that actually drew me in to Cyclica, because I was eager to learn and I want to continue to learn; so this allows me to grow and continue to gain more skills.

5. Can you describe your position and a typical workday?

I would say most of my work is done independently; and most of my day involves a lot of data analysis. In my role, I compare the performance of our technologies to other technologies in terms of polypharmacology profiling; I am usually analyzing data sets, sometimes I'm curating data sets, and in general evaluating our technology's performance on specific biological metrics and comparing them to other technologies available.

6. What is it like to work at a start-up company? What has your experience been like working in such an interdisciplinary team of people?

I really enjoy learning about other disciplines and fields that I had no prior exposure to like AI and machine learning. It is such a new world to discover. So this is a major positive aspect for me. I also really like the culture that Cyclica has established. There is a sense of community and it is very supportive. Also, working in an interdisciplinary team really helps me to de-complex things and make explanations into simple and relatable forms that are understandable for people in a breadth of disciplines. Sometimes you definitely need to take a moment to think about how you will convey something, but I think it is great because getting down to the fundamentals helps shed light and bring insight to realize certain things, so I think it is very helpful. Also the willingness to learn fields outside of your own is a great behaviour to exhibit. Everyone at Cyclica is very supportive of it, and so is the company as well.

7. What are your favourite and least favourite parts of your position?

What I really enjoy about my position now is that I am working with so many talented individuals and I am literally learning new things every single day on a large scale. And, that we are all working towards a goal that really resonates with my own personal career objectives. I truly believe that Cyclica has the capability of implementing a profound impact in the healthcare industry, and so being part of that journey is very fulfilling. I have been very lucky to find a company whose culture and core values really resonate with my own personal values. I am very happy with my role, because there is still a lot of research involved, and I am always learning, which is what drives me.

8. How do you envision the future of healthcare research? How do you see Cyclica and the industry growing in the future?

Since I am starting to gain a better understanding of the AI capabilities in healthcare, I think it has potential value across the entire healthcare industry as it is going to enable us to gain deeper insight into our data. There are already examples where AI is excelling in healthcare, such as in the diagnosis of skin cancer where AI can outperform specialists in this task. I think what it will allow us to do is to move forward and transition to more personalized medicine, and overall better diagnosis, prognosis, patient treatment, and drug discovery. I think AI alone won't be all-encompassing and be able to solve all of the current problems we face, but it will help us to develop solutions. Cyclica is one of the many companies that use AI, and since it is such a hot topic, it will only gain more traction and lead to leaps and bounds in the progress AI can make in healthcare.