

Dr. Ali Sadeghi-Khomami

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I was given the opportunity to interview Dr. Ali Sadeghi-Khomami, who is currently Director of Research and Development (R&D) at Precision BioLogic, Dartmouth, Nova Scotia, Canada. He was the first person that I interviewed since my entrance to the CREATE program in September 2019. We had an interesting conversation about his graduate school experience, a few postdoc transitions and his career path so far.

Q: How did you start your career and how did you find yourself in your current role?

A: I began as a student at Mashhad University of Medical Sciences (MUMS) in Iran. I graduated with a Pharm.D. degree in pharmaceutical sciences with a thesis on topical formulation of ibuprofen and I received the highest distinction award of the school of pharmacy in 1994. Then I was an assistant professor of medicinal chemistry at the same school for five years. Thereafter, I moved to England to pursue my PhD in medicinal chemistry at the school of chemistry, Nottingham University. My PhD research was focused on discovery of new anti-TB agents based on molecular modeling and synthesis of carbohydrate mimetics as inhibitors of the key enzymes involved in biosynthesis of *M. tuberculosis* cell-wall. For a couple of years, I was a post-doctoral research fellow at the University of Nottingham where I worked on solid phase protein synthesis and MRI probes for Alzheimer's plaques. Then I moved to Canada in 2006 for another post-doctoral research fellow position at Professor Jakeman's Lab at Dalhousie University's College of Pharmacy research protein expression and enzyme engineering. I was in my third year of postdoc when Precision BioLogic was hiring; this was one of the companies I had showed an interest in and I have been working there since 2009. I started as a Senior Research and Development (R&D) Scientist, then transitioned to a manager role and now I am in my current position as the Director of R&D.

Q: How do you feel about your workplace and environment?

A: At Precision BioLogic, we develop diagnostic kits and reagents used in the detection of coagulopathies and hemostasis disorders. In brief, blood hemostasis is the outcome of collaboration between several protease enzymes and cofactors that work together and regulate clot formation. My first project was about the role of phospholipids in the coagulation process, which expanded my previous experience in carbohydrate and protein chemistry. So, after all, I was quite fortunate to be exposed to such a diverse set of research fields in biochemistry. Obviously, every job has its perks and challenges, but overall, I like the work environment at Precision BioLogic, which is part of the reason that I have been working at this



company for over 10 years. We are contributing to the advancement of coagulation assays and healthcare and we are making considerable progress in terms of the research in which we engage. Our team is constantly identifying opportunities and making the necessary adjustments in order to improve ourselves and our organization's framework. I believe this approach is a good indicator of a vivid and vital business.

Q: Who are your team members and what role do they play in the team?

A: Our team consists of talented individuals with a variety of experiences and levels of education including PhD, MSc, and BSc degrees. With something as complex as the development of diagnostic products, each team member's contribution is essential in the delivery of our final products, which are medical devices. It is very similar to an orchestra; everyone should do their part accurately to achieve an excellent outcome. We have certain individuals dedicated to specific tasks because the quality of information and data generated heavily depends on each team member's unique skill set as well as how enthusiastic, professional and competent they are in the lab and how good they are in the documentation of their work. Our R&D team should conduct its work under quality control and regulated governance to ensure that it follows certain Standard Operating Procedures (SOPs). This is because we are subject to audits by regulatory agencies who overlook our design process, and the safety and efficacy of diagnostic products are extremely important. Therefore, our team should fulfill its duties by a very disciplined and controlled process such as rigorous good documentation practices.

Q: What is it like being in a work environment compared to a school environment?

A: Well, there are two different things with a few similarities. In undergraduate school, research was just a small fraction of the overall education but as students proceed to the graduate programs, the percentage of research work increases relative to the basic learning. Whereas, in the work environment, the majority of what you do is around doing your work as pre-planned and there is little time remaining to study topics of interest to you. Although, within our R&D department, we have weekly group meetings where we discuss our projects, brainstorm on problem solving matters and share our experiences. This allows us to seek advice and share our data, very similar to graduate research at schools. Currently, this information exchange is presented via a slideshow on weekly basis and as previously mentioned, we are in a continual process of learning and enhancing our performance.

Q: Is the work environment language different from the school environment language?

A: In some respects, yes, but this may not be the case for all companies. For instance, each business could have its own specific terminologies, jargon and abbreviations. One of the reasons that I initially liked this company was because of the emphasis made on continuous learning and preserving the scientific methodologies and approaches. These values are embedded within Precision BioLogic's culture as they are within schools.



Q: Which would you recommend MSc or PhD?

A: Your choice for MSc or PhD depends on a personal desire for your future goals. The extent of required science background can vary greatly depending on what you wish to do. Some individuals require simply the basic foundation to start their own business. Others have curious minds filled with questions that cannot be answered with the attainment of a master's degree and they wish to explore more in the realm of science. So, depending on where you fall in this category, the recommendation should be based on those individual's attributes. I do not strongly recommend that everyone should do a PhD or should stop at a masters. Personally, a PhD worked out very well for me and it was something that I wanted to pursue. In contrast, I know people who stopped at their masters and have also been successful in doing so. Additionally, I have had friends who struggled to find a job after their masters and thus chose to continue their education with a PhD but without any passion. One piece of advice I can provide is that you need to have a passion for what you do in order to motivate you and move you forward. If you enjoy what you do, your skills are more likely to shine through and the outcomes will be far more rewarding. So, follow your heart and choose something that harmonizes well with your internal skillset and capabilities.

Q: What are the challenges you think fresh graduates face in a work environment and how can that be checked?

A: Graduate students need to explore the job market and monitor it closely. Education at school will only empower students with a set of tools for problem solving and research execution but they have not been designed in a way to prepare graduates for the majority of available jobs. Unfortunately, finding a job itself may be challenging as graduates have limited work experience and many companies do not provide the opportunity for people without experience to be hired right away. Consequently, the majority of graduate students end up working in positions that they never anticipated. For instance, you may be a chemistry graduate and end up being employed in a financial institution; this may just be dictated by what is available. This issue of a lack of experience can be overcome by gaining relevant experience in your field of interest, mainly through volunteer work or internships.

Q: What advice will you give me now that I am starting my graduate study?

A: I would suggest that you try to engage more in courses, programs, seminars or events related to your dream job. Doing so will provide you with the skillset and networking that you will need for your desired job. Do not simply rely on the compulsory portion of your program because that won't properly equip you with things that you will need to know. Explore continuously what your real passions are and then proactively prepare yourself to pursue them with the proper training.