

SPOTLIGHT ON CAREERS

Making Innovation Meaningful: Dr. Paul Gratzer on Elevating Research for Clinical Translation through Academia & Entrepreneurship

Q&A with Dr. Paul Gratzer, Associate Professor at Dalhousie University

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BIOGRAPHY

Dr. Paul Gratzer is an Associate Professor at the School of Biomedical Engineering at Dalhousie University. During his academic tenure, an opportunity arose to elevate the technology being developed in his laboratory to clinical translation. Together with his former student and business partner, Shawn, they founded DeCell Technologies where Paul currently acts as the Chief Scientific Officer. DeCell Technologies is a Biomedical Technology company working to develop innovations in wound healing with applications towards surgical reconstructive materials, treatment of diabetic ulcers, and transplantation.



Dr. Paul Gratzer

“I have a theory that “what—” and “why—” are the two words that preclude great discoveries. Great discoveries are often made by happenstance, and more importantly, observing/recognizing when that happenstance is interesting.”

Given that you’ve had quite a diverse career journey of government, academia, and entrepreneurship, can you walk us through what led you to your current career as a Faculty member and Chief Scientific Officer?

Since I was 6 years old, I was always interested in science. I was always interested in why things happen and

how they work and frequently got into trouble for taking this apart. I studied Chemical Engineering at university because of its variety of specialties, but near the end of my degree, I wasn’t too keen on designing distillation columns and reactors. Instead, I took a course in Biomaterials and did a research stint in a lab developing biomaterials for dentistry. I had an offer to continue my studies with Dr. Mike Lee, which at the time, I had to turn down as my wife was finishing school, and so I went

on to spend a year working at the Ontario Ministry of Environment. Eventually, I came back and did my Master’s degree and PhD. It happened my former supervisor received a grant to start a new department at Dalhousie, and I applied and received one of the three faculty positions. In 2006, a former student whose committee I sat on, Sean Margueratt, who was now manager of the Queen Elizabeth Tissue Bank, approached me on applying the decellularization technology that my lab was developing into tissues to make transplants more tolerable. In 2007 we began product and business development and by 2012 we incorporated DeCell Technologies.

What are the major advantages of the DermGEN platform that DeCell has developed that you believe enabled its clinical translation?

One of the successes of DermGEN] was that we met advantages such as ready to implement in the body, long shelf life, and low or no preparation. This allowed our product to be useful in cases that are time sensitive and situations where time for planning is limited. One thing I want to emphasize to graduate students is that when you're doing research, you don't have to come up with something that is absolutely novel. A lot of existing solutions work fine, but they have a long way to go to be effective. Along with that, when you're developing technology make sure you're assessing and developing it in a way that you know aligns with the workflow of the end users and enables larger scale manufacturing. Ask questions such as: How are you going to store it? Is it going to need extreme temperatures? How are you going to transport it to get it to the end user? How are you going to do this in an economical way?

What are some tips you have for those interested in implementing their research clinically?

First, interface with end users to understand the problem at hand. Workflow for clinicians is very important so even if the science is great, if a surgeon has to stand on one leg in order to get something to work, they won't use it. Second, make sure you have a way to stand out from the competition and

show the value of your solution. Perhaps your product costs more, but the overall treatment saves time or money to get a better result.

What's the importance of collaborations in translational research?

When it comes to research, it's important to seek out beyond what we do locally to get solutions to the right places. From a business standpoint, it's a mandate to collaborate because it allows you to explore new markets. For example, the United Arab Emirates (UAE) has the highest number of diabetics and diabetic foot ulcers in the middle east. [When we developed our collaborations with the Middle East and North African regions] we learned to work with a new country's regulatory structure, private and public insurance agencies, understand who makes the decision to buy the products, deal with local distributors, work with international physicians to find out what are they doing and using now. More locally, we were introduced to working with indigenous populations in Northwestern Ontario through a partnership with RegenMed. Indigenous communities often have the highest rate of diabetes and diabetic amputations. We had a trusted nurse in the community, who was interested in setting up a wound healing clinic and was seeking the best technologies to help us meet with an indigenous leader and former chief. [In going through] a trusted advisor in the community, they believed our product would make a difference. One important factor [in establishing collab-

orations] is outreach and getting treatments to the places where they can make the most difference.

What are three pieces of advice you would give to graduate students and trainees?

First, trust your gut. One thing that's often difficult for students to do is to be confident in themselves, know what they know, and know what they don't know. If you're not sure about something, get a second opinion, ask to talk to someone else, and get extra information to help you. Second, try not be stressed out. At the worst of times, new opportunities can arise if you think about things as a learning experience. Lastly, take time for yourself. You wouldn't rent a car if it was not operating and run it to the maximum. Realize that your brain and body are a machine that requires time to recoup and downtime.

What has been the most rewarding part of your career?

In teaching and supervising: it's seeing students have the "aha" moment in their eyes and the moment when you're able to describe something in a way they understand. In entrepreneurship, I see [the company] as the only way I would have been able to see my research at work helping patients. Reading the letters from patients expressing how [our work] has changed their lives is my drug. In research, it's discovering and seeing new things that others haven't for the first time.