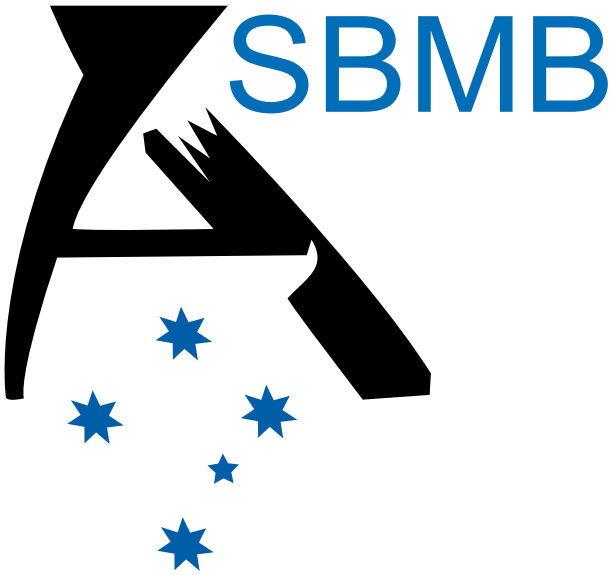

SOS PAGE SHORT DISCUSSIONS FOR STUDENTS PAGE

CHRONICLES OF A PHD GRAD

Mitchell O'Connell has just commenced his postdoctoral career at the University of California in Berkeley. Andrew Clarke is now a patent lawyer at Davies Collison Cave. Here they share their stories of challenging, career-making decisions for post-PhD life.

Mitchell O'Connell, Postdoctoral Research Fellow, University of California, Berkeley

I completed my PhD in Professor Joel Mackay's lab at the University of Sydney. My overall research objective was to design and assemble a particular class of zinc-finger proteins to recognise any single-stranded RNA sequence in a specific manner. This project encompassed protein and RNA biochemistry, structural biology and biophysics, and required a

whole lot of love (errr, I mean phage display)! During the course of my research project, I found myself enamored with all things RNA and wanted to continue working in the RNA biochemistry field. Thus, during the last year of my PhD, I began searching and contacting labs that were working on interesting aspects of RNA biology. I narrowed my search to the San Francisco Bay area in California, USA, because that is where my significant other lives. My approach was to 'cold email' a number of scientists in the area with personalised emails expressing an interest in their work, describing my research experience, and ultimately indicating how I thought I could contribute to their lab. After a little bit of persistence and hearing from a few professors who didn't have any funding, I was invited to visit Jennifer Doudna's Lab at UC Berkeley. I really enjoyed my interview visit, and I ended up joining the Doudna lab in mid-April 2013, after handing in my thesis just a few weeks prior! I was incredibly lucky as this lab was my top choice and they just happened to have space for another postdoc at the time. I'd chosen the Doudna lab specifically so I could gain more experience doing some good old mechanistic RNA biochemistry and crystallography. Broadly speaking, I've begun working on deciphering the role of both RNA-binding proteins and miRNA sequence elements in the differential regulation of microRNA processing. I'm slowly coming to grips with the rapid pace and competition of science here, where it's not uncommon to observe a manuscript completely complied from scratch and submitted for publication within a 24-hour period.

The best advice I can give to upcoming PhD graduates who are deciding to move abroad is to network with overseas scientists and scientists who have been abroad – don't be afraid to ask them about their experiences. I suggest setting a rough date for your move well in advance. That way, you can begin thinking about where and whom you would like to work with and how you're going to contact them. I'd also suggest attending at least one international conference in the area of your research and making an effort to talk with scientists (and their students!) you might be interested in working with. It's also worth noting that things like visas and employment contracts need to be organised well in advance, so it's best to start early so as to avoid any last minute stresses while you're trying to finish up in Australia.

Andrew Clarke, Patent Attorney, Davies Collison Cave

I completed my PhD in the structural immunology department at Monash University. My research looked into how a single natural killer T-cell antigen receptor can recognise a diverse array of structurally distinct antigens. This was an interesting phenomenon as it was known that natural killer T-cell dependent immune responses were elucidated by both foreign (eg, microbial) antigens and self-antigens (eg, from tumours). Overall, my research was a success, with a couple of high-impact factor journal publications. But something didn't sit right with me about being at the bench. I was inspired by the triumphs and tribulations of science research, and interested in the difference that these breakthroughs would make in the real world. I also found that harvesting *E. coli* in the early hours of the morning somewhat squandered all enthusiasm. During my final year of my PhD, I met with a few partners of intellectual property firms to discuss the type of work a patent attorney does, and from that moment on, I knew it was the job for me. I was fortunate enough to be offered a job the day after finishing up my PhD labwork, which led me to pack my bags and head north to join the Brisbane office of Davies Collison Cave, as a Trainee Patent Attorney.

I often hear people accusing me of 'leaving science', but in reality that could not be any further from the truth. Granted, I don't wear the white lab coat any more, but I have never been exposed to as much varied research as I have in the last year. I am constantly in contact with group leaders, postdocs and students, discussing their research, interpreting their data, and begging them for more data. As a patent attorney it is important to ensure that researchers not only have enough data to back up their 'invention', but more importantly, the right data. Because of the constant analytical mindset the job requires, I actually feel like a more rounded scientist now than I was during my PhD!

Most of my early days in the job involve a lot of prosecution work. That is, trying to overcome the various objections raised by Patent Examiners both in Australia and abroad. This normally involves immersing yourself in the science, similar to as you would when starting a new project in the lab, in order to fully understand what the researchers have discovered, and whether a suitable argument can be used to convince the Examiner that their objection does not apply. I have recently started drafting patents, which is a document carefully describing the invention. To me, this feels similar to writing a thesis, but is normally more focussed on the experiments that actually worked! During the drafting process, new ideas, or problems, often crop up that even the group leaders had not yet realised, and for me, working out these issues with the researchers is probably the most rewarding, and indeed my favourite, part of the job.

I would recommend this job to anyone who enjoys thinking hard on a daily basis in order to overcome the many problems that arise. You need to be a big picture person and be able to conceptualise basic research into commercially relevant embodiments. It's a long trek though, as eight further exams are required to qualify as a patent attorney, but what's a few more years after your PhD?!

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