

CANADA: AN OUTSTANDING ENVIRONMENT FOR ACADEMIC TECHNOLOGY ENTREPRENEURS

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It seems to me that if Canadians have an illness it's the perpetual feeling that we are in second place in North America. While in terms of population, science funding and other variables this is clearly true, this doesn't have to be the case for, among other things, entrepreneurship.

While I've spent most of my life in Vancouver, Canada, I spent my graduate and post-doc years in Silicon Valley (1989-1998) – one of the most vibrant technology entrepreneurial hubs in the world. These days, I split my time between UBC and my biotech start-up, Boreal Genomics, a company that commercializes DNA enrichment solutions for early cancer diagnostics. I live in Vancouver but am frequently on business in the SF bay area, and have been immersed in its entrepreneurial culture now for several decades. Drop into any coffee shop in Palo Alto and you'll over hear a conversation among founders of some tech start-up that's just getting off the ground, or just been funded, or, for that matter, that is running out money. Regardless of the outcome, the fact is that in the Silicon Valley environment, starting a tech company is about as natural and routine as going for your first job interview. In the lab where I worked after my PhD (the Stanford DNA Sequencing and Technology Center) almost everyone working at the PhD or postdoc level was starting, or thinking of starting, a company to commercialize their work.

Upon returning to Vancouver in 1998, I instantly felt a massive difference in optimism about entrepreneurship. Starting a company here, I was told, is hard. There's no venture funding, it's hard to recruit management, etc. The reasons were many, and there was the occasional horror story attached to some of these statements. That's certainly not because Vancouver or UBC was new to tech entrepreneurship. The Physics department at UBC was already well known for some of the earliest spinoff companies from UBC, and Vancouver had numerous success stories. The

SUMMARY

Opinions on the unique strengths and advantages of biotechnology entrepreneurship in Vancouver are presented, including government and academic support, availability of highly skilled persons, and general climate and culture.

problem, as far as I can tell, was, and maybe still is, simply one of critical mass and culture. I'm glad to see that it's finally changing, and thought it worthwhile fueling this change with some observations from my own experiences as to why Canada, Vancouver in my case, is a fantastic place for academics to start a technology company.

First of all, my experience with entrepreneurship at UBC highlighted an exemplary level of support for my endeavours from both the University and from my home department of Physics and Astronomy. It seems that Canadian academics at most institutions are allowed to work in their start-ups part time without endangering their academic positions. Unlike the US where some very strict limitations are put on this, in Canada, most universities accept the inevitable conflict of interest and are willing to put measures in place to manage it rather than outright disallowing it. This creates an environment where the technology inventors and pioneers can lead or play a strong role in the companies commercializing their own work, without taking a giant career risk. Any start-up has only small odds of being successful, and is sometimes fueled more by passion than anything else. Take away the one person that is most passionate about the technology and replace that person with a hired leader, and you've just decreased the odds of success. In Canada, we allow our technology inventors to play the critical role of champion in their ventures, which I suspect in many cases improves their odds.

Another excellent reason to start a technology venture in Canada is the impressive levels of government support. The National Research Council's Industrial Research Assistance Program (IRAP) provides excellent assistance for young companies that are bridging that gap between government sponsored academic research and venture capital. IRAP was absolutely critical during the early days of our start-up, helping us with anything from market research, to funding new hires and major projects. IRAP's support is relatively small compared to venture funding (typically up to a few \$100,000s of funding) and typically requires matching expenditure by the company, but in the early stages of a company's life this is a critical boost. Boreal benefitted tremendously from the IRAP programs, which helped us grow the company to where we were ready to make a convincing pitch to investors. Mitacs and



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other organizations also offer student, or new hire, support programs that are worth taking advantage of.

Perhaps the most significant government support for our start-up though came from SR&ED (Scientific Research and Experimental Development Tax Incentive Program). Details of the program are available on their website, but in brief, SR&ED allows a fraction of research expenditures by Canadian controlled companies to be returned to the company as refundable tax credits. This is a fantastic program for early stage companies funded through substantial research contracts or venture funding, as it provides a significant amount of cash as long as enough money is flowing through the company. In our case, SR&ED support resulted in several million Canadian dollars flowing to Boreal in cash during the period our company was Canadian controlled, and additional amounts in non-refundable tax credits now that we are controlled by various non-Canadian investors. While these are impactful amounts of cash for a growing company, the SR&ED support seems to be a uniquely Canadian benefit (at least in North America), that can serve as a significant incentive for foreign investors.

This brings me to my next point: venture capital. It is certainly true that Vancouver has relatively little venture capital compared to other tech centers. Some other major Canadian cities are likely in better shape, but still presumably fall far short of what can be found on Sand Hill Rd. in Palo Alto. This shortage seems to be often cited as the fundamental reason why it is hard to start companies in Vancouver. I'm not sure how detrimental this really is though. When it came time for our young start-up to raise funds from venture investors, we started the search in the US, not Canada. While it is true that some US investors don't like to invest across the border, many do, making the geographical location of the capital relatively unimportant. We ended up raising substantial amounts of money from US and international investors, who also turned out to be outstanding mentors and directors of our company. Talking to other companies, this experience seems to be a bit of an outlier perhaps, but I don't think it's that hard to replicate if one focuses on a broad search for talented investors. We did also raise some money in Vancouver, which certainly helped us keep our Canadian controlled status as long as possible, but had the well been completely dry in Vancouver, we would have still been able to fill our fundraising rounds. The current reality is that a number of US investors are becoming aware of programs like SR&ED which in a sense provide instant return on their investment, and are therefore starting to take a closer look at investments in Canada. The bottom line is there is money available; it is largely a question of finding the right connections and having a compelling business opportunity.

Another significant incentive for US investors to fund Canadian companies is our efficiency with capital. Salaries in Canada are in Canadian dollars, and on a different scale from the over-

inflated salaries of tech centers like Silicon Valley. There is also, in my opinion, a substantial difference in culture between start-ups in Canada (or perhaps anywhere) and those in Silicon Valley. Silicon Valley start-ups seem to love to spend money as a matter of culture. The approach seems to be to spend fast, grow fast, and hope for rapid success. This works very well sometimes, but can also lead to incredibly high rate of capital burn at inappropriate times. When our company had roughly equally sized groups in Vancouver and the SF bay area the burn rate of the bay area group was much higher than the Vancouver group due in part to salary discrepancies but also due to a difference in spending and hiring culture. When it came time to control our burn rate as we found we were too early in our target market, it was the bay area group our US investors chose to shut down, re-grouping the company in Vancouver where it continues to operate very effectively on a small fraction of our former US group burn rate.

Finally, any tech start-up lives or dies by the quality of the team it can assemble, and hiring talented people in the US tech centers is a major challenge. It's not that there's any lack of outstanding talent in the bay area for example; it's simply that competition from massive employers like Google and Facebook make it very hard for young start-ups to compete for talent. I have heard this pain expressed by sizable (and public) US biotech companies, complaining that R&D hiring in their area is extraordinarily difficult, to the point that they are considering establishing R&D sites elsewhere.

In Canada on the other hand, or at least in Vancouver in my experience, there is a broad talent pool of very young but very smart individuals with the kind of drive and enthusiasm that make start-ups successful. Most of our company was built on this talent – nearly all our employees came directly out of BC universities, or returned to BC after graduate work in foreign universities. The fact is Canada is a very nice place to live, and I believe we will increasingly see a trend of our young people retuning to live and work in Canada even after studying abroad. While salary differences remain to the US, many will see this offset by our fantastic environment, particularly for young people starting families.

In summary, I've tried to provide a bit of our story as encouragement to Canadian academics considering commercialization of their work. It is possible, it can be done at low personal risk, and it can be exceptionally rewarding. It's not for everyone, but Canadian scientists should know they're in an environment that is actually very well suited for company formation, and that can benefit from the best combination of Canadian culture and international funding. Our Engineering Physics program at UBC is now spinning off several companies a year founded largely by young graduates in their early twenties. The culture is definitely shifting toward entrepreneurship, and it's starting to feel realistic that in the not too distant future Canadian technology hubs like Vancouver could outcompete Silicon Valley.