

An “Alternative” Science Career

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I was accepted into the cell biology program at Virginia Tech under conditional terms due to a mediocre undergraduate GPA. This was the deal: maintain good grades and I’d get to continue, or slip up and I was out. As an undergraduate, I spent a lot of time surfing and very little time cramming for tests – what can I say? I wasn’t exactly a traditional grad student applicant.

Despite my shortcomings on paper, I was ambitious. Before grad school, I contacted a researcher from Harvard who’d proposed through mathematical models that we could kill cancer cells with cancer cells ([Deisboeck and Wang, 2008](#)). I told him I wanted to test his proposal experimentally. When he wrote back and I brought the proposal to my potential PI, I quickly realized that incoming grad students don’t actually do this. You’re supposed to go through rotations first, and then select a lab, pick a project that falls within the scope of your PI’s research, and so on. This wasn’t exactly my style.

The deeper I got into my PhD, the more I realized the game you have to play in order to be successful: publish in certain journals, publish with the best coauthors you can manage, publish as much as you can. I played the game and published as much as possible within the scope of cell biology and cancer, but also papers within the scope of the scientific communication process itself – papers on funding, peer review in high-impact journals, and peer review at the NIH. I wrote about cancer but I also wrote about all the problems I was seeing around me in the process itself.

I never thought about actually doing anything about these systemic problems until I read *The Trouble with Medical Journals* ([Smith, 2006](#)). The key tenet – that peer review misses most major errors – is the idea that sent me down the path of building a publishing company to take the whole publishing process and flip it in favor of openness. Instead of filtering results and then publishing, I wanted scientists first to publish and then to filter – to publish and then winnow, so to speak. That’s why [the Winnower](#) was born.

From Scientist to Entrepreneur

I didn’t know anything about starting a business but I knew I needed some money to do it. I wrote up some ideas for a new publication, entered a business contest on campus, and lost. It was harder than I thought. But then I sent that proposal to some people I knew from undergrad and through a lot of luck managed to get 50k from a private investor.

The Winnower launched in May 2014 and over the course or two years we shifted away from publishing traditional papers to publishing so-called grey literature – informal documents that traditional publishers ignore. We published scholarly reddit AMAs, foldscope images, responses to NIH RFIs, journal clubs, and some of the coolest essays I’ve ever read. We formalized blogs and journal clubs so that they could act as reviewers themselves. People liked what we were doing, as judged by the growth of publications and readership. Why shouldn’t reddit AMA’s have DOIs and be given real scientific consideration? I gave talks around the world, raised more money, and met other academics doing similar things with their own

companies. I felt lucky and privileged to be doing what I loved, despite the fact I was making less now running a company than I was as a grad student. The End.

Okay, the story doesn't have an ending yet because the story is still ongoing. Very recently [The Winnower was acquired by Authorea](#), another early company working on the same problem but from a different direction. Authorea, which is also founded by former academics, is fixing how researchers write, collaborate, and share online. Together we're working to become the place where researchers can write and publish whatever they want collaboratively and online. It's an ambitious goal but so too was cancer research.

I can't say if we'll achieve our goals and I know the road ahead is still daunting but I think the problems we're working to solve are as hard as some of the most complex problems in science. What is certainly true is that we must work collaboratively to solve them. I hope this essay inspires more academics to follow their own "crazy" ideas and I hope you'll stand with our mission to build a more transparent system of research communication. Let's get it right.

References

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