CROSS TALK

Research inspires range of careers outside the lab

BY **CLAIRE CAMERON**

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In the traditional academic career path, a bachelor's degree leads to graduate school, a Ph.D., a postdoctoral fellowship, a junior faculty position and, finally, tenure. Yet increasing competition for lab positions and funding, among other motivations, has nudged many junior researchers onto roads that lead to alternative careers, from industry and nonprofit work to art and writing.

We asked several former life-sciences researchers why they left academia — and how science continues to inform their career.

Brett Abrahams

Director of preclinical biology,Ovid Therapeutics

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Industry offers chance to make an impact

In graduate school and my postdoctoral fellowship, which together spanned more than a decade, I never seriously considered leaving academia. I'd get frustrated when a paper got rejected or a project wasn't moving forward as I had hoped, but I always imagined that if I were lucky enough to get an academic appointment doing research, I'd be there for the duration of my career.
At the end of my postdoc at the University of California, Los Angeles, I accepted in 2010 a tenure-track position at Albert Einstein College of Medicine in New York. Research in the lab focused on a portion of chromosome 15 implicated in schizophrenia, **epilepsy** and autism. We studied how gene dosage influences schizophrenia risk, and the relationship between genetic variation and behavior. Students, postdocs and colleagues at Einstein were all terrific, and research in the lab was moving

along nicely. But in 2013, I began to explore possibilities outside of academia. Multiple factors contributed to this decision, but the most important one was a desire to be more closely involved in translating research insights into help for individuals and families in the near term.
Having never worked outside of an academic lab, I spent a lot of time investigating possibilities. Online research was valuable, but far more productive was talking to people with various professional backgrounds and experiences. I spoke with hundreds of people over a two- to three-year period.
In March 2016, I joined **Ovid Therapeutics** as director and head of preclinical biology. Ovid is a pharmaceutical company focused on developing medicines for rare neurological disorders. Much of the work I'm doing now — to develop treatment strategies for rare genetically defined forms of autism and epilepsy — is a natural extension of what I did previously. I continue to talk to many of the same people about lots of the same questions. But my interactions with colleagues who focus on intellectual property, design and execution of clinical trials, and interactions with the U.S. Food and Drug Administration put me in a better position to shepherd ideas from the lab to the clinic.
My take-home message is that there are a lot of interesting and rewarding roles outside of academia for scientists. Given that many talented scientists with Olympic-level dedication may struggle to secure an academic position due to competition, scarce resources and other variables, this is very good news.

Greg Dunn

Artist,Greg Dunn Design

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Transforming complex science into art

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I started to develop a career as a painter when I was in graduate school — I have always had an artistic bent, first as a musician and then as a visual artist. I was interested in both neuroscience and painting, and so I combined the two. My research training helped me to think about the brain in a more global way. It helped me to invent some of the techniques required to do this kind of art, and it gave me a perspective that other artists don't have.
It is hard to boil down incredibly complex subject matter into something that is simple and easily digestible. You have to show it as complex as it really is. My art serves to introduce people to how

truly complex the brain is.
Before leaving science, I had to think very hard about how to make a living from art before I took the plunge. You need to be practical about it.
The people I was training with in the lab helped me get my first commissions from other scientists who were interested in my artwork. In terms of how to run a business, though, I was completely on my own. By the time I finished my Ph.D., I had the art career mostly formed and ready to go. I had won some commissions by that point, so that when I finished my degree, I could hit the ground running.
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This isn't for everybody; there are some true geniuses working at the bench, and that is absolutely what they should be doing. But in my case, I felt I could contribute best by using art to show people things they didn't know about the brain.

Bethany Brookshire

Science journalist,Scicurious

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I wrote my way into a writing career

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As I moved through graduate school, I found writing incredibly rewarding. Explaining research to the world rekindled my own enthusiasm for science. But I still didn't consider it as a career. I had been telling myself all my life that I would be a college professor. I hoped I could eventually make it at a smaller, teaching-focused college, sharing my love of science in the classroom.
At the time, I was studying the effects of long-term drug misuse and antidepressants on brain function and behavior in mice. My professors, first at Wake Forest University and then at the University of Pennsylvania, were often amused and bemused by my writing. They expressed concern about writing taking up too much of my time. Of course, I wrote only in the evenings and on weekends. But in such competitive times, science is a 24-hour endeavor.

Did my drive to write hinder my academic ambitions? Only an alternate universe could give the answer, but it's certainly possible. In the third year of my postdoctoral fellowship, my funding ran out. All of my grant applications had been unsuccessful. I had gone on the job market, but the only offer I got was for a one-year, part-time placement. I could have taken another postdoctoral position. But I realized that my new career — writing — was sitting right in front of me.

My academic colleagues tried to be supportive, but they didn't know anyone who could help me in a career in journalism. I was more grateful than ever for my blog. My nights and evenings of writing may not have helped me get grants, but they had given me contacts in the science writing world.

Most of the challenges I faced in my transition to science writing were probably of my own making. There were opportunities, such as the **AAAS Mass Media Fellowship**, that I didn't learn about until I no longer qualified. And I fought — and still fight — the feeling that I failed out of research.

Now I use my scientific training every day to identify new research that the public should know about. I have realized that writing is the best reflection of my deep love for science. I get to tell the stories of scientists and their work, sharing their passions and findings with the world. My life is more bound up with science than it has ever been — and I am happier than ever.

James Cusack

Director of science,Autistica

Even more than answering specific research questions, I wanted to ensure that autism research has an impact on people.

New mission brings new challenges

I enjoyed my work as a graduate student and postdoctoral fellow, studying at the University of Aberdeen in Scotland, where my work focused on social perception in autism and other conditions. I particularly liked designing experiments and analyzing data. But over time, I realized that even more than answering specific research questions, I wanted to ensure that autism research has an impact on people.

So when the role of director of science at **Autistica**, an autism research charity in the United Kingdom, came up, I saw it as an exciting and rare opportunity.

I'm responsible for designing and implementing Autistica's science strategy. I spend a lot of time trying to understand the priorities of the people we serve and getting their feedback on potential research approaches. I work with academics to ensure that our thinking is at the cutting edge, and with my team at Autistica to ensure that our lobbying, fundraising and communications reflect what we want to achieve.

One thing I love at Autistica is working with a talented and heterogeneous team. Working outside of academia opens you up to a much more diverse group of people and skills.

My Ph.D. has helped me to write and think in a highly process-driven and analytical way and to think critically, making decisions based on evidence. My training has also given me knowledge of autism research, as well as a grounding in areas such as data science, research design and peer review. All of these skills are essential to my current role.

Compared with academia, a charity requires greater pragmatism, diplomacy, flexibility and compromise to achieve your objectives. In academia, there's a tendency to believe and know why what you are saying is important, but you rarely consider whether it's convincing to the wider public. Since coming to Autistica, I've learned a lot about how to make academic arguments compelling to the public. It's important to be able to communicate with impact.

The role also brings new challenges. I feel enormous pressure to ensure that we spend our funds in the most impactful way possible. I have to be adaptable, willing to take on a broad range of tasks and work long hours. I also have to accept that I will receive criticism, often from people who don't understand the context of my decisions.

For me, these challenges are easy to deal with because I am convinced by our new vision (to help people with autism and their families live long, healthy, happy lives), dedicated to our team and committed to the way we operate. Playing a role in Autistica's achievements and shaping our future is hugely rewarding. It's why making the switch from academia has been such a privilege.

Stacie Bloom

Assistant vice president for policy and administration,NYU Langone Health

Managing scientific institutions allows for both strategic thinking and a love of science.

Building institutions from the ground up

I've always loved science. When I was a kid, I had a fascination with nature and outer space. When I was a bit older, I always picked green when we played Trivial Pursuit. It was a no-brainer that I would pursue a Ph.D. at some point, and my love for neuroscience, which I was exposed to in college, was my pursuit. I then entered a lab doing pre-doctoral work on spinal cord injury at Georgetown University, before going on to be a postdoctoral fellow at Rockefeller University.

Turned out, despite success getting grants and publishing papers, my love of studying science did not translate into a love for being an actual bench scientist: The nature of the solitary hours and independent study didn't align with my personality. So, with no mentors and no acquaintance with any notion of an alternative career, I left the bench 15 years ago, feeling insecure and worried.

In the lab, I had most enjoyed communicating about my projects — writing, making posters, giving talks. I had written a bit for our university publication and had some experience freelancing for

industry. So I tried my hand at scientific publishing and applied for an internship at Nature Medicine. That experience took me from being an inch wide and a mile deep in a discreet scientific area (tiny **synapses**) to a mile wide and an inch deep across biomedicine. I was enamored with the big picture and the community of scientists I had the privilege to work with. With this network, professional opportunities started presenting themselves, and I saw my Ph.D. colleagues moving into impressive roles at foundations, in government and at universities. Finally, I could envision a path ahead.

I never imagined myself in industry or the for-profit sector, and staying true to myself, my next jobs were in the nonprofit space. I started as a manager at the New York Academy of Sciences, where I got intense experience with personnel management, finances, communications, program development and strategy. I was promoted three times in five years and eventually found myself as vice president and scientific director. During my stint there, I also had my three children.

The opportunity of a lifetime came in 2011 when NYU Langone Health got an extraordinary philanthropic gift to build a neuroscience institute. This was a chance to go back to my roots in neuroscience and build an institute. I was hired as executive director and spent two years creating the strategic, financial and operational plans to bring it to fruition and manage the day-to-day business. It was a dream job.

I am now an assistant vice president overseeing the business and administration side of all of our clinical departments, basic science departments and institutes. I also hold a faculty appointment in our neuroscience department. (I call this my ‘back door’ to a faculty appointment since I walked away from the lab a long time ago.) I love that I have always contributed to science and supported discovery and research, albeit from a different angle. I know that being a scientist gave me a critical skill set and credibility. My path has been twisty and unexpected, but I would not change a thing.

~ Expert Response 2 ~

RESPONSE TEASER (max 60 chars): Industry offers chance to make an impact

RESPONSE SUMMARY (40 words or less): Among the many things I considered in my decision to leave academia for industry was how I might maximally affect people’s lives.

EXPERT RESPONSE:

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RESPONSE TEASER (max 60 chars): I wrote my way into a writing career

RESPONSE SUMMARY (40 words or less): I use my scientific training every day, identifying new research the public should know about.

EXPERT RESPONSE:

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techniques, and it gave me perspective other artists don't have.

EXPERT RESPONSE: I studied epigenetic transmission of feeding behavior in generations of mice to earn my Ph.D. I always thought I would travel along the academic path. But then, when I was a couple of years into graduate school, I decided that research wasn't for me. I saw so many principal investigators burdened by the bureaucracy and the pressure of writing grants. I didn't want that.

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RESPONSE TEASER (max 60 chars): Nonprofits offer long-term focus, rewarding challenges

RESPONSE SUMMARY (40 words or less): In a nonprofit organization, the mission is clear, and it isn't going to change until we cure the condition.

EXPERT RESPONSE: I'm currently at a nonprofit focused on tuberous sclerosis complex, but I was in the pharmaceutical industry for 16 years beginning immediately after my postdoctoral fellowship. My bachelor's degree was in pharmacy — a practical, health-oriented degree. Even when I began research as a graduate student, I always envisioned going into industry. Working for a company looking to translate research into treatments was appealing, and the funding challenge in academia was a big negative. Seeing the real-world effects of research was important to me.

I felt productive in industry, although every few years my focus would have to shift to a new project. Our work could have had an impact if we had longer to do the research — but the company decided to reorganize in 2011, and they closed our unit. In 'big pharma,' at least in the company I worked

for, the decisions were not long term. That was the tipping point for me to leave and enter nonprofits. A nonprofit focused on a particular condition isn't going to focus on a different one in a couple of years unless we cure the condition. It's a longer-term payout than one guided by the immediate demands of industry.
I do miss generating data in the lab. I miss feeling like I am on the front lines of discovery; now I am a step or two removed. And the funding issue never really goes away. You have to convince people, whether they are donors or industry management, that what you are doing is meaningful and worth the money. It is just done in a different way. It is not easier.
I do think I am putting my research experience to better use now, however. I am able to influence drug discovery and development, and encourage collaboration among scientists on those front lines.

Steven Roberds

Chief science officer,Tuberous Sclerosis Alliance

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