ANDRE PENNER/AP/SHUTTERSTOCK

A technician checks genetically engineered mosquitoes developed by the biotechnology firm Oxitec in Abingdon, UK.

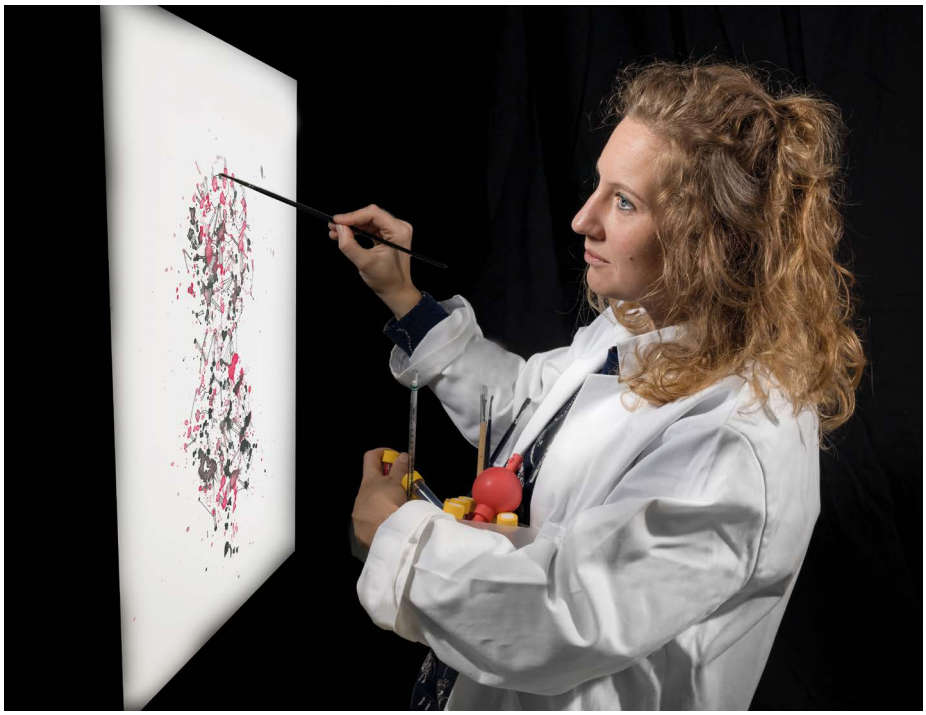
Top tips for cell biologists eyeing a move to industry

Five industry professionals offer advice on how to make job applications stand out from the crowd. **By Nikki Forrester**

Cell biologists have a variety of skills that make them well suited for careers in biotechnology, biomedical and pharmaceutical companies, but it can be challenging to make the leap from academia to industry. Five cell biologists who achieved that goal offer tips on how to craft applications, prepare for interviews and navigate new research environments. Their advice is varied, but one thing they all make clear is that the academic world prepares scientists for industry more than they realize.

INVEST IN YOUR APPLICATION LETTER
LIEKE VAN GIJTENBEEK

During my PhD at the University of Groningen in the Netherlands, I studied bacteria that are commonly used in the production of cheese and milk. Even though I wasn't doing research directly for industry, it was of interest to people working in commercial dairies. I got in touch with several Danish companies in the dairy industry through conferences and department meetings. Many of my colleagues had established industrial collaborations, so I had a chance to sit in on some of their meetings and get to know the industrial partners involved. I was impressed by how those companies are structured and organized. I stayed in touch with them throughout my postdoc at the University of Michigan in Ann Arbor and followed them on the professional-networking site LinkedIn to keep an eye out for relevant job advertisements.



Researcher Lieke van Gijtenbeek included recommendation letters in her job application.

ANNE DE JONG

A short time into my postdoc, Chr. Hansen, a global biosciences company in Hørsholm, Denmark, posted an opening for a research scientist in its bacterial physiology department that I felt qualified for and that overlapped with my academic interests.

Before applying for the job at Chr. Hansen, which is focused on the food, pharma and agricultural industries, I reached out to a friend who works for the US chemical company DuPont. He had an 80–90% invitation rate for industry jobs he had applied for, so I asked him to share his application letter with me. I followed its structure by addressing each requested qualification in the job description, explaining what skills I could provide and giving an example of how I met that qualification. I avoided elaborating on my scientific achievements too much, because the letter shouldn't repeat information listed in my CV.

As well as explaining why I was qualified, I discussed other talents I could bring to the company apart from my research experience, such as my creativity, perseverance and problem-solving skills. It's important to demonstrate how you and your interests align with the company. I included names of people I knew at Chr. Hansen in my letter to show I was already connected to the company, which also helped.

Along with my application letter and CV, I provided a document that included the first pages of my scientific publications, a list of awards I had received and a collection of recommendation letters. This supplement gave the hiring committee an opportunity to briefly see what I had accomplished during my academic career. I spent at least a full day drafting my letter and putting my application together. I approached it in the same way I write scientific papers — it had to be perfect.

Lieke van Gijtenbeek is a research scientist at Chr. Hansen in Hørsholm, Denmark.

DON'T BE AFRAID TO TAKE THE PLUNGE
MATTIA POLETTO

Three years into my postdoc on DNA repair at the University of Oxford, UK, I found out my supervisor, Grigory Dianov, was going to retire, and I had to decide whether to keep pursuing an academic career or move to industry. That was a really difficult decision, because I had always wanted to become a principal investigator and I didn't know whether moving into industry was going to affect that dream. After considering multiple factors, such as the financial stability an industrial career offers, I decided to start applying to private-sector positions.

In 2017, I was hired as a senior scientist at Oxitec, a UK-based company developing techniques to control insects that transmit diseases and destroy crops. We do this by inserting genes or pieces of DNA into the insects, to modulate their ability to survive in the environment. Now, as a group leader, I give directions to a team that works on mosquitoes that transmit malaria, instead of working on my own single project in the lab.

When you are a PhD or a postdoc, you often work on your own and perceive your project as one of the most important things in your life. In industry, you work as part of a team, so it's helpful to look at the bigger picture and focus on what it will take for the company to succeed. Be prepared to deal with uncertainty and change: it's possible that the project you're working on will end because funding runs out or the company switches priorities. A good group leader will explain why the change is happening and how it fits into the company's overall direction.

It also helps to be ready to run literature reviews efficiently. You will probably be required to quickly learn new things that might fall outside your immediate area of expertise.

Daily record-keeping is paramount. Tidy lab books and thorough study reports are an essential part of lab life in industry. Your peers will have to read your lab notes and reports and pick up your work seamlessly, often at short notice. I also recommend keeping lab protocols from your master's or PhD studies, because you never know what will come in handy in the future.

It also helps not to think of industry as a bottomless pit of money — resources can be limited and, if they are, you have to learn how to make do with what is available. It always pays to know more than one solution to a given problem. This is something I look

MARK LORD PHOTOGRAPHY

Group leader Mattia Poletto at Oxitec, UK.

DANIELLE TWUM

Scientist Danielle Twum used specific keywords on her LinkedIn profile to attract recruiters.

for when evaluating candidates for jobs. For example, if a DNA-amplification reaction does not work, a candidate who knows 20 ways to fix it is amazing. But even better is a candidate who is able to work through half of those potential solutions and test only the one or two that are most likely to fix the problem in the shortest time.

Mattia Poletto is an R&D Group Lead at Oxitec in Abingdon, UK.

SHOW COMPANIES YOU CAN TALK LIKE THEM

DANIELLE TWUM

While I was a PhD student at Roswell Park Comprehensive Cancer Center, a hospital for cancer research and treatment in Buffalo, New York, I searched online for what I could do after earning a PhD if I didn't want to be a postdoc. One of the results that popped up was a field applications scientist: working for a company by reaching out to potential customers and providing support for existing ones who are using equipment, reagents or supplies. Towards the end of my studies, I decided that I wanted a break from cancer research and a job that would excite me about cell biology again. A field applications scientist sounded like it might be a good fit.

I updated my profile on LinkedIn to make myself more attractive for industry positions by adding my bench work and science-communication skills. I also updated the short description under my name with words related to the cell-biology work I do, such as precision medicine and cancer immunology. Recruiters use LinkedIn by looking at keywords, research experience and what you've done outside the lab — so I knew that was a good place to start.

My first job after graduate school was as a field applications scientist at Levitas Bio, a biotech company in San Francisco, California. I liked talking to customers about how to design and troubleshoot their experiments, but I didn't enjoy the sales component of the job, which involved reaching out to potential customers and trying to convince them to test our system. I felt that sales wasn't my strength. I stayed there for a little over a year before two recruiters contacted me about potential jobs. One position was for a field applications scientist at a different company, and the other was for a molecular science liaison at Caris Life Sciences headquartered in Irving, Texas.

As a molecular science liaison, I would be independent from the sales side of the company and would provide support for doctors about the scientific literature and methodology of the tests and diagnostics the company conducted: essentially providing information to medical professionals about the company's molecular-testing services. In my case, the recruiter explained what the role would involve and sent me the job requirements. To figure out what various industry roles involve, you can also find someone on LinkedIn who does the role you are interested in, message them professionally and ask for an informational interview. Most people I know will gladly talk to you about their work. I ended up applying and going through the interview process with both companies at the same time.

For the Caris Life Sciences role, I had to give a presentation and answer questions about the biomarkers Caris targeted, which are characteristics of a person's DNA, RNA or proteins that can provide information about which cancer therapies might be most appropriate for treating someone. I also had to discuss how these biomarkers were used in the testing services offered by the company, as if I were already a molecular science liaison. The other company asked me to give a presentation on my career trajectory up to this point and present on one of its products. To prepare, I dug up previous company presentations on the product online and formatted my slides in a similar way, which really impressed one of the senior recruiting managers.

"Start gaining communication experience away from the bench."

If you're prepping for an interview, read up on the company as much as possible. If the company has any posters on its website from previous scientific conferences, review them. If it includes seminars, watch them. Look at how their employees deliver talks. When you are interviewing, use the same catchphrases. Show them you can talk like them, because

each company has its own vocabulary.

I'd suggest that people in academia who are considering this career path start gaining communication experience away from the bench. As well as giving talks at conferences, try participating in the Three Minute Thesis competition, for example, in which you communicate your research to a non-specialist audience in three minutes without using jargon. Or apply for a TEDx talk and have fun with it.

Most companies are looking for well-rounded applicants, and most of those will have strong backgrounds in research. So gaining science communication and outreach experiences outside the lab helps you to stand out.

Danielle Twum is a molecular science liaison at Caris Life Sciences in Dallas, Texas.

RAFAEL FONTANA PINTO

Researcher Estela Cruvinel is honing her project-management skills through online courses.

BUILD COLLABORATIONS EARLY
RANDALL RIBAUDO

Since 2009, I've used my experience working in academia and industry to build a career helping researchers to get into industry positions. Before that, I worked as a principal investigator at the US National Cancer Institute from 1993 to 1997, then was recruited by a small biotech company called Molecular Applications Group in Palo Alto, California, that sold a molecular modelling software I used in my research. As an application specialist who has knowledge and expertise on the company's software, I accompanied a salesperson on visits to biotech and pharma companies to provide information and answer questions about the software product.

While working with scientists who had jobs in industry, I started to recognize that they differ from academic scientists in terms of their business and social behaviours. Scientists in industry understand the strategic vision of the company they work for and how their work contributes to that vision. They also understand the social dynamics of how to effectively work in a team, manage projects, negotiate and network.

I suggest that scientists looking to move into industry get involved in a collaboration or find other ways to develop their corporate skills. Ask your principal investigator if you can be responsible for negotiating contracts with vendors for the consumables you use in the lab. This also gives you an opportunity to build your network: vendors can connect you to people in industry. And even if you don't want to work for those companies, it's helpful to hear from employees about their experiences. Another way to build your network is through informational interviews, where you're not applying for a job, but informally asking about what it's like to work at a particular company. You can learn about someone's work–life balance, how much money they make, what excites them about their job and what pressures they face.

When you're ready to apply for jobs, carefully research the specific field of cell biology that is being done at the company where you are applying. Know the literature and understand how your deep knowledge of a particular field will directly apply and benefit the company. By doing this, you demonstrate not only your scientific identity, but also your business identity by showing that you understand the strategic vision of the company.

Randall Ribaudo is co-founder and chief executive of Human Workflows and SciPhD.com in Rockville, Maryland.

MAINTAIN A PASSION FOR LEARNING
ESTELA CRUVINEL

I used stem cells to study Angelman and Prader–Willi syndromes, which are rare neurodevelopment conditions caused by a deletion in chromosome 15, during my master's and PhD at the University of São Paulo in Brazil. In 2008, while I was a master's student, I met stem-cell biologist Marcos Valadares, who worked in the lab next door. We shared cell cultures and I would offer to help with his projects. I also kept the cell-culture room clean, stayed organized and treated other researchers well. Although I didn't realize it at the time, I must have made a good impression during these daily activities.

In 2013, Valadares co-founded PluriCell Biotech, which now develops cell-based therapies for cardiovascular diseases. In 2015, I was hired as a researcher for PluriCell in São Paulo. Because I'm a relatively shy person, networking isn't easy for me. But this experience helped me to realize that networking isn't just about meeting renowned scientists, it's also about connecting with your co-workers and lab mates.

In academia, cell biologists usually become experts in a few cellular types, but they also develop knowledge that is useful for cell culture and analysis in an industry setting, such as how to scale up experiments.

Because there were only three of us at the company when I started, I was able to gain a lot of knowledge about industry in a short time because I had to do a lot of work outside my core research responsibilities. For instance, I learnt how to work with budgets and hire technicians and junior researchers. As a project manager, I am learning how to work with people more effectively by seeking out training on the topic: I'm taking online courses and am dedicating time to reading material on managing projects effectively.

Thankfully, when I'm facing a challenge, I'm usually not the first person to have experienced it: there's plenty of information out there to find through online universities and libraries.

Estela Cruvinel is an investigator and manager at PluriCell Biotech in São Paulo, Brazil.

Interviews by Nikki Forrester
These interviews have been edited for length and clarity.