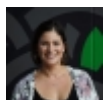


Conversations with Scientists: Careers in Industry ^[1]

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Careers in Industry

The biotechnology or pharmaceutical industry offers diverse opportunities for PhDs in the life sciences. You can pursue careers in research and development (R&D), management, business, operations and manufacturing, among many others. But, how do you enter a career in industry? How does a PhD prepare you? What skills are important?

For the third installment of Conversations with Scientists, fellows from the [Yale Ciencia Academy for Career Development](#) ^[3] (YCA) discussed these and many other questions with scientists in industry. Our panel featured [Dr. Carlos Bosques](#) ^[4], Director of Biologics Discovery at Momenta Pharmaceuticals, where he leads the discovery and early development of new therapeutics for

the treatment of autoimmune diseases; Dr. Ignacio Pino [5], Founder and President of CDI Laboratories, a biotechnology company focused on human protein research and discovery; and Dr. Deborah Soto Ortega [6], Senior Scientist at Amgen Puerto Rico, where she manages the Purification Sciences Process Development. The panel was moderated by Dr. Mónica I. Feliú-Mójer [7] (YCA Program Coordinator) and Dr. Giovanna Guerrero-Medina [8] (YCA Principal Investigator).

Below is the video and some of the highlights from the conversation.

Getting into industry

Our panelists took very different paths to their current positions in the biotechnology and pharmaceutical industry. Dr. Carlos Bosques was settled on an academic career but had the opportunity be a consultant with a startup called Momena to help them get set up. What the company was doing was aligned with his research and he thought it would be a one-year gig. He enjoyed working in industry, how science moved at a much faster pace and it was easier to get resources to do research. A decade later, he is still with Momena.

Dr. Ignacio Pino decided to create his own path. A veterinarian, Pino was involved in the He noticed how agriculture was disappearing and the biosciences industry was on the upswing. So he saw the opportunity to scratch his entrepreneurial itch and created his own company, CDI Laboratories Inc., the flagship of the Puerto Rico homegrown biotech industry.

When she went to graduate school, Dr. Deborah Soto-Ortega was not sure what she wanted to do. Right before attending the University of South Carolina, she did a co-op with Amgen Puerto Rico. She learned that she was attracted to teamwork, translational research, and managerial opportunities, so after completing her PhD she came back to Amgen, where she leads a process development team.

Making the transition

Our panelists emphasized the important role mentors played in their transition into industry. Mentors can teach you some of the things you don't learn in graduate school, like how to run a business.

It is also important that you know yourself, your strengths and what needs improvement. Pay attention to your career and professional development. What are some important skills for that industry job you are interested in? Identify them and start working on them. Besides finding mentors, you can look into taking workshops or courses, doing a fellowship or internship, and if you are interested in entrepreneurship, look into competitions, such as Grupo Guayacán's Enterprise [9] (which Dr. Ignacio Pino won in 2006 with CDI Laboratories).

Last but not least, you must remember that industry is a business. When you are looking to make the transition you need to understand the company's bottom line, how that guides their research and strategies and how you fit into the picture.

Transferrable skills

Besides knowing how to do science, which of the skills you learn in graduate school are useful in industry? The number one response from our panelists was effective communication (we could debate about how much effective communication we **actually** learn in graduate school, but I digress). Learn how to write and communicate your ideas well. In industry, like in many other contexts, you need to distill information, and communicate with people who don't have a scientific background. Additional critical skills are the ability to think critically about a problem and thinking outside the box.

Other valuable transferrable skills are perseverance, resilience (overcoming failures), knowing how to be strategic and how to manage resources (e.g. budget, time) and expectations.

We also discussed how to prepare for a managerial or leadership position in industry. Once again our panelists stressed the importance of finding mentors, people who are leaders that you admire: seek their advice, observe, listen and learn from them. But don't just find mentors; be a mentor. Another big takeaway is that you need to be proactive, assertive and take ownership of your career. Don't be shy.

Being competitive

Industry is an ever changing and competitive field. How do you stay ahead of the game? Our panel suggested developing a specific type of expertise. Find your niche. They also underscored the importance of keeping an open mind and paying attention to opportunities. If you are interested in industry you need to look at what companies are doing and stay current with upcoming technologies. Some emerging fields or things to keep an eye on are big data and bioinformatics and the use of interdisciplinary approaches to address research questions.

Do you need to do a postdoc to go into industry?

It depends. Some areas are very competitive and having a postdoc put you in a better position. If you are interested in doing R&D or more technical roles, postdoctoral experience is probably preferred or even required. Are you more interested in the managerial or business side? Then you probably don't need a postdoc.

Internships

An internship can be a great launching pad for a career in industry. It allows you to get relevant experience and learn relevant skills. An internship can open the door to being hired. All of our panelists agreed: internships are extremely valuable. Both big and small companies have internship opportunities available so seek them out. If you can't find an internship, don't panic. Find ways to network with people in industry.

Opportunities for non-life scientists

The biotechnology and pharmaceutical industry offers professional opportunities not just for life scientist. For example, many big companies have industrial psychologists on staff to be involved in organizational aspects. Industry is competitive and teams need to work at the highest level, which means it can be a stressful environment. Psychologists can support employees to reduce

stress levels, create a friendlier work environment, improve processes and build healthier teams.

There are many opportunities for engineers, especially in the manufacturing and operations side. Chemical and biomedical engineers also have multiple opportunities in different fields within industry.

Pursuing your research ideas

There is a perception that in industry you cannot pursue your own research ideas or be creative. Our panelists said: not true. The amount of flexibility you have depends on the stage of product development you are involved in within a company (R&D vs. quality control, for example). If you work at the early stages, you have more flexibility. If you work later in development there are more constraints. However, there are many opportunities to be creative and innovative. You can find ways in which your research ideas add value to the company's bottom line or to improve a process and make it more efficient. One thing is for certain: the reason why companies want scientists on their staff is because of their creativity and problem solving abilities.

Biggest challenge graduate school didn't prepare you for?

Interacting with customers. The customer is always right and sometimes you have to pull your tongue or choose your words wisely. Also, working in large teams. Academia can be lonely. When you are working on a project you are often on your own, or maybe working with one or two people. In industry you more often than not need to work in teams and that adjustment can be challenging.

Loose ends

A few share-worthy questions and comments:

- **Certifications:** Lean Six Sigma ^[10] and Project Management Professional ^[11] certifications are some common types of certifications that can be helpful in industry. Our panelists said that they are certainly a plus, but not necessary.
- Our panel agreed that it is important to ***find your passion***. While scientists in industry are often better remunerated, our three panelists said that what really drives them is the passion for their work and for the impact they can create.

Resources (shared by our panelists and fellows)

- Enterprize ^[9] is entrepreneurial competition by Grupo Guayacán that helps startups to strengthen and scale their business model by educating and mentoring on investment readiness and providing access to capital.
- Innovation Corps (I-Corps) is a set of activities and programs that prepares scientists and engineers to extend their focus beyond the laboratory and broadens the impact of select, NSF-funded, basic-research projects.
- I-Corps Puerto Rico ^[12]: A customer discovery boot camp for entrepreneurs looking to build and develop scalable business models. The program is a collaboration between Grupo Guayacán, the Puerto Rico Science, Technology and Research Trust ^[13] and Georgia Institute of Technology and is modeled after the NSF I-Corps.

- The [Puerto Rico Science, Technology and Research Trust](#) [13] has several opportunities for [entrepreneurs](#) [14] and [researchers](#) [15].
- [Parallel18](#) [16] is an economic development initiative that attracts early stage, high-impact startups that can scale from Puerto Rico to global communities, beyond the island, including mainland U.S., Latin America, and Europe.
- [Scientist Mentoring & Diversity Program for Biotech \(SMDP Biotech\)](#) [17] is a one year career mentoring program pairs diverse graduate students and post-doctoral researchers with industry mentors who work at biotech companies.
- The NIH-funded Broadening Experiences in Scientific Training (BEST) program has good resources about careers in industry research [18] (and other non academic careers).
- The [Focusing on Industrial Recruitment of Scientific Talent \(FIRST\) Conference](#) [19] offers participants the opportunity to see industrial careers in action, network with a group of successful minority scientists and other professionals whose leadership in science and technology is well established, and gain a deeper understanding of the realities of cultural and workforce diversities.
- The [BEST Symposium - Building Engineering & Science Talent](#) [20] is an industrial research career conference sponsored by The Dow Chemical Company and aimed at applicants from underrepresented minority groups (Hispanic, African American or Native American) in the United States.
- A few articles about careers in industry:
 - [Biotechnology Careers](#) [21]
 - [Biomedical Careers in Industry: A Few Tips for a Newcomer](#) [22]
 - [From Academic Solos to Industrial Symphonies](#) [23]
 - [Versatile PhD: Biotechnology](#) [24]
 - [Finding Your Place as an Industry Scientist](#) [25]
 - [Industrial Postdocs: The Road Less Traveled](#) [26]

Tags:

- [yale ciencia academy](#) [27]
- [careers in industry](#) [28]
- [Conversations with Scientists](#) [29]

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http://www.asbmb.org/uploadedFiles/ProfessionalDevelopment/Professional_Development/Biomedical%20Careers%20

[23] <http://www.nature.com/nbt/journal/v30/n7/full/nbt.2245.html> [24] <https://versatilephd.com/phd-career-finder/#view/stem/biotechnology> [25]

<http://www.genengnews.com/gen-articles/finding-your-place-as-an-industry-scientist/2294/> [26]

<https://www.sciencemag.org/careers/features/2008/06/industrial-postdocs-road-less-traveled> [27]

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