

INTRODUCTION

Thanks for picking up a copy of the 2018 Career Handbook. Our goal, with this booklet as well as all the career resources from *Science*, is to bring you useful, relevant information to help you navigate the job search process and manage your development in a way that leads you to a truly rewarding career.

To that end, we have teamed up with some great organizations to bring you information about the latest career opportunities in many different fields. The profiles shown here will give you a sense of the types of organizations that are recruiting and the kinds of positions they offer. We've also included some articles with some general tips and advice on job searching.

In addition to the companies featured in this booklet, you can search thousands of additional job postings on our website ScienceCareers.org—all for free.



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When I give talks at universities about industry hiring, I always start out with a few "shake 'em up" comments intended to show the audience that, in the job market, things are not always what they seem. One of my favorites is asking how they think companies fill jobs. Like the majority of audience members, you might raise your hand when I suggest "internet job applications" as the most frequent avenue.

But I go on to tell them—and you—that's not the case. Most hiring managers I know consider the material that comes in off the internet to be chaff. The real gold comes in with some preliminary vetting, for example via employee referrals, networking, and headhunters. You can submit all the online applications you want; if you don't also connect with people and cultivate relationships, your chances of landing that industry job are slim.

Understanding this and other "rules" of the job search game is key to success. Each sector has its own rulebook, and I can't cover it all here. But I can provide a framework for thinking about these rulebooks and cover a few industry basics to get you started.

THREE TYPES OF RULES

Years ago, I attended a lecture given by Michael Zigmond, a neuroscience professor at the University of Pittsburgh in Pennsylvania. Zigmond told us that he believes there are three categories of rules we come across in our work lives. The specifics of the rules differ depending on where you work, but Zigmond's categories hold true regardless.

"First off," he said, "there are rules that are true and which deserve that distinction." The example he gave for academia is that "research equals experiments plus publications." That's how it works, and it's how it should work, he said.

"Another type of rule," he continued, "is one which is true, but which shouldn't be." In academia, an example of this type of rule is that researchers should always have preliminary data when submitting proposals. It doesn't necessarily make sense—how can you get preliminary data if you don't have funding to do the research?—but it's the way things are, and successful academics figure out how to follow it.

"Lastly," Zigmond said, "some rules are not true but should be." The academic example that Zigmond offered for this category is that good teaching is essential for getting promoted. I certainly agree with Zigmond—that one should be true. But, in many cases, particularly at large research institutions, it simply isn't. So, what do you do if you're a good teacher who wants to move up the academic ladder? You need to acknowledge that your teaching prowess may not be enough to get you where you want to be—but, with some creativity and persistence, it's possible that you could work the system to make the rule true in your case. It's all about knowing the rules and figuring out what you can—and can't—do to make them work for you.

Understanding this and other "rules" of the job search game is key to success.

You're probably pretty familiar with the rules of academia and could add your own examples for each of Zigmond's category. In fact, if you're interested in an academic career I encourage you to do just that to help provide some perspective and clarity about what the job entails and how it gets done. Those of you thinking about industry careers, on the other hand, will need to learn a whole new rulebook.

THE RULES OF INDUSTRY

Remember Zigmond's first example for academia, "research equals experiments plus publications"? In a company, that rule has a small but crucial difference: "Research equals experiments plus products." If you work at a well-run research organization, you will probably be able to publish your work at some point. But the much more important piece is developing research applications, usually in the form of products.

As an industry job seeker, it's crucial that you're aware of this difference. At a company, there is no job offer for the scientist who shows up with a primary focus on publications! To land the job, you must understand the industry rulebook—not the academic one. These industry career rules, indexed into Zigmond's three categories, will help you on your way.

"Good communication skills are essential for success in any job."

RULES THAT ARE TRUE AND SHOULD BE

"Good communication skills are essential for success in any job."

As I recently found myself sorting through hundreds of CVs submitted in response to a client's job ad, I quickly came to the conclusion that the best way to sort through them was to prioritize those who could write and present themselves well. Then, after a phone screening meant to sort them out based on their science, my cut ended up once again based on how well they communicated. It's not that technical skills don't matter, but they pack a lot less punch when they're not explained well. Good communication skills are mentioned in more than half of job ads, and insiders know that this is more than just standard language from human resources.

"Industry job success requires experience with teamwork."

While independence rules in academia, in industry it is interdependence that is the name of the game. For example, the biologists and chemists who develop a new drug work closely with the engineers who scale it up and turn it into a product, and both those groups rely on regulatory and clinical professionals to get it to patients. "Teamwork" is more than a buzzword in industry; it's a way of life. So, whether you are working on a job application or networking at a scientific meeting, always keep in mind that you need to present your major accomplishments from both a "We do this" and an "I do this" perspective. Talking about your accomplishments in this way will show that you function well as part of a team and give credit to others while also highlighting your personal contributions and (appropriately) tooting your own horn.

RULES THAT ARE TRUE EVEN THOUGH THEY SHOULD NOT BE

"The best interviewers are the ones who get the job offer."

No matter how good your science is, you need interviewing skills to win the job offer. Certain people play that game very well and others, well, just don't "get" the concepts at work on interview day. If you're a bit squeamish about interviewing, focus on preparing a really good job talk and practice it until you can give it in your sleep. These typically come first thing in the day, and there's no better confidence booster than knowing that you impressed them with your presentation.

"It takes a 50-plus hour work week to be a success in science."

In science (both academia and industry), the "normal" 40-hour week was replaced long ago by early morning meetings, evening work, and weekends in the office or lab. I don't encourage anyone to overwork themselves, which can lead to burnout and ultimately hurt productivity. Still, it's important to recognize that many employers will expect you to work 50 or more hours per week. Where does that leave you? When you're applying for jobs, find out as much as you can about employees' work-life balance and take that into account when deciding whether a potential job is right for you. A big part of your fit with an employer depends on what the company expects out of your work week and how much it values the rest of your life. Going in with your eyes open about that is a good first step.

RULES THAT ARE NOT TRUE BUT SHOULD BE

"Good science sells itself."

I've heard this has been passed along by many well-intentioned academics: "Don't worry about a job. It will come. Just focus on doing good science." Sure, maybe that should be true—but in industry, you must be able to communicate your strengths and talk about what you are good at. Good science alone isn't going to get you the job.

This is by no means an exhaustive list, but hopefully it will help set you on the right course. By learning all three types of rules—and how they differ from one sector to the other—you can manage the move from the academic lab to an industry job.

"Don't worry about a job. It will come. Just focus on doing good science."





The *Science* Careers Top Employers Survey celebrates 15 years with more respondents from the biotechnology and pharmaceutical industry than ever. Some things haven't changed, though. Employees prioritize innovation, a positive work culture, and social responsibility. Executives emphasize a long-term commitment to developing products that employees can be proud of. Other features in the 2017 survey include a widespread support for science education, a low percentage of respondents seeking a job, and the dominance of a pharmaceutical company recognized for volunteerism. **By Chris Tachibana**

rom small beginnings come great things, according to an old saying. The first Top Employers Survey, in 2002, had 685 respondents. This year, almost 7,000 answered the web-based questionnaire; 94% were employed in a biotech, biopharmaceutical, or pharmaceutical company. Most (83%) were over 30 years old and had a Master's or Doctorate degree (64%).

The survey's reach is growing. In 2002, about 82% of respondents were from North America and the rest from Western Europe. The 2017 distribution included 65% from North America, 25% from Europe, and 7% from the Asia/Pacific Rim. As in previous surveys, respondents named companies they considered the best employers and rated them in categories such as leadership and direction, work culture/environment, and intellectual challenge.

A consistent winner: Innovation

The 2017 top company is 30-year-old **Regeneron Pharmaceuticals**, headquartered north of New York City, with six medications approved by the U.S. Food and Drug Administration (FDA). Regeneron was the No. 1 workplace for the fifth time in six years after first appearing at No. 2 in

2011. Being an innovative leader in the industry has consistently driven selection as the best employer. George Yancopoulos, president and chief scientific officer, believes this is why only Regeneron and Genentech have led the survey more than once. "Few other companies can demonstrate that their innovation comes from their own labs," he says. "Our success stories are homegrown."

Of the 23 novel drugs approved by the FDA through June 2017, Yan-copoulos notes that Regeneron invented two, which were developed and commercialized with Sanofi. Many employees are connected to each new medicine. "They either had the initial idea or contributed to a key step along the way," Yancopoulos says. "They may have been part of a new approach or technology that made a difference in development."

Namita Gandhi, director of clinical sciences, joined Regeneron in 2007, when the drug that became the immune modulator dupilumab was in early development. Gandhi says her career at Regeneron tracked dupilumab's trajectory. As it moved from translation to clinical development, her work did too. After making a case that dupilumab might work against nasal polyps, she is now overseeing research on it for this and other indications. "That shows that science drives our business," she says.

Gandhi says Regeneron's emphasis on science was obvious from the moment she started there. "I learned to analyze data even more critically than when I was in graduate school," she says. "Even when I was a junior scientist, I sat at the table with senior leadership and talked about my data, and they listened."

Senior Vice President of Human Resources Sally Paull notes that Regeneron's leaders are scientists who get more excited about research results than financial reports. "They're committed to science, take the long view, and don't compromise. It's the corporate version of strength of character." Yancopoulos confirms this long-term strategy. "We don't judge ourselves by the market," he says. "We judge ourselves cont.>

annual top employers survey

Top twenty employers

The 20 companies with the best reputations as employers and the top three driving characteristics for each company, according to respondents in the 2017 survey undertaken for the *Science/AAAS* Custom Publishing Office. The companies without a 2016 rank did not receive enough mentions to qualify or did not receive a high enough ranking during the 2016 survey.

2017 Rank	2016 Rank	Employer (global headquarters)	Innovative leader in the industry	Work culture values aligned	Treats employees with respect	Is socially responsible	Has loyal employees	Has clear vision
1	1	Regeneron (Tarrytown, NY)	✓			1		1
2	6	Novozymes (Bagsvaerd, Denmark)	√	1			√	
3	5	Vertex Pharmaceuticals (Boston, MA)	✓			1		✓
4	11	Merck KGaA (Darmstadt, Germany)				1	√	✓
5	2	Novo Nordisk (Bagsvaerd, Denmark)		✓		1	√	
6	3	Moderna Therapeutics (Cambridge, MA)	√			1		✓
7	7	Genentech (South San Francisco, CA)	√		✓			✓
8	4	Eli Lilly and Company (Indianapolis, IN)			/	1	/	
9	9	Biocon (Bangalore, India)	/			/		/
10	12	AbbVie (North Chicago, IL)				/	/	1
11	-	AstraZeneca/MedImmune (Cambridge, UK)		/		1	_= 81	1
12	14	Syngenta (Basel, Switzerland)			1	1	1	
13	10	Roche—excluding Genentech (Basel, Switzerland)			1		/	/
14	19	Novartis (Basel, Switzerland)	/		/	1		1
15	15	Abbott (Abbott Park, IL)			A PA	1	/	1
16	16	Boehringer Ingelheim (Ingelheim, Germany)		1			1	
17		Merck & Company (Kenilworth, NJ)		8,20 hW		1		1
18	13	Monsanto Company (Creve Coeur, MO)			F VON	ΔM	/	/
19	17	Celgene Corporation (Summit, NJ)			1		/	1
20	74	Lundbeck (Copenhagen, Denmark)		5,4-	1		/	1

by how we are setting up to make a difference in peoples' lives. We look 10 to 20 years in the future. That's what keeps us enthusiastic and attracts the best employees."

Regeneron stays committed to its approach of using genetics to find drug opportunities and fill the pipeline, Yancopoulos says. In 2014, the company officially launched the Regeneron Genetics Center, which forms diverse private–public collaborations to gain disease insights and find targets by pairing human DNA sequences with electronic health records.

Culture and values

Top employers have a work culture that encourages employee loyalty and aligns corporate with personal values. **Novozymes**, based in Denmark but with 6,500 employees worldwide, scored well in these categories. After debuting in the survey in 2015, it has consistently been in the top 10, this year at No. 2. The company specializes in enzymes and microorganisms for industries ranging from household products to agriculture to bioenergy.

The Novozymes culture is strongly science-based, supporting the company's high rating as an innovative leader. Company-supplied statistics indicate more than 30% of employees in R&D have a Ph.D. "At Novozymes,"

says President and CEO Peder Holk Nielsen, "13% to 14% of our revenue goes into R&D." About 20% of employees are doing hands-on science, he says, "so our whole culture is one of development and innovation."

Currently, most Novozymes executives have a science background, although Nielsen says that isn't required. More important, he says, is that leaders understand how research works. "They must understand that technology moves so fast that we do things now we couldn't dream of yesterday," he says. "They must appreciate the value of the science we do so they understand what it can do for our customers."

Nielsen adds that "work-life balance is high on the agenda" at Novozymes, with generous maternity and paternity leave, for example. "Whether employees are in the United States, China, or Denmark," he says, "I hope they feel that Novozymes is a good place to work." Employees stay with Novozymes, Nielsen says, because of other valued characteristics of employers: social responsibility and sustainable products with a positive impact in the world.

At No. 3 in the survey, **Vertex Pharmaceuticals**, based in Boston, also takes social impact seriously. For Chief Scientific Officer David Altshuler, Vertex's recognition for innovation and social responsibility are linked. With two-thirds of its 2,000 employees working in R&D, cont.>

annual top employers survey

W. J. X. I. R.

Demographics

Gender:

52% Male, 43% Female, 5% No response

Experience:

69% have 10 or more years work experience

Highest degree earned:

34% Doctorate, 30% Master's, 29% Bachelor's, 7% Other

Company type:

35% Pharma, 23% Biotech, 36% Biopharma, 1% University, 5% Other; More than 9 out of 10 work in private industry

Nature of work:

28% Development, 19% Applied Research, 14% Basic Research, 8% Administration/Executive, 11% QA/QC/Regulatory Affairs, 7% Production, 13% Other (respondents were able to choose more than one response)

Geography:

65% from North America, 25% from Europe, 7% from Asia/Pacific, 3% from rest of world



the company is committed to applying its resources to game-changing treatments for serious diseases. "We only work on what we believe will be transformative medicines for life-threatening illnesses," he says. "That means treating underlying causes, not just symptoms, and taking risks." When conventional wisdom said only gene therapy could correct the root cause of cystic fibrosis, Vertex developed pill-based treatments that address the underlying disease mechanism, says Altshuler. This kind of success reinforces to employees that their work is pioneering and having an impact on society.

To concretely connect employees' work to the community, CEO Jeff Leiden says that Vertex maintains connections to patients helped by their medications. "Every launch celebration, we have a patient who is taking the medication come talk to us," he says. "It's inspiring-there isn't a dry eye in the house."Leiden says Vertex's success is grounded in Boston's innovative science "ecosystem." "It's our responsibility to support it so the next generation can thrive," he says. He especially backs people who are underrepresented in science. Vertex university scholarships, for example, include ongoing help for first-generation college students and others who might need extra mentoring. Vertex has a summer internship program for underprivileged high school students that is amplified by Leiden's work on the Massachusetts governor's science, technology, engineering, and mathematics (STEM) advisory council. He is recruiting and assisting other companies in applying the Vertex internship model. "We're extending what we've learned from our initiatives across the state," he says, "so everyone can benefit from what started in Boston."

Long-term vision

"Vision" is a broad term, but leaders of companies that scored well on corporate vision easily defined it: a long-term commitment to science, communicated strongly and regularly from leadership, backed by action such as allocation of resources and recognition of successes.

Vision and employee loyalty are strengths of fourth-position **Merck KGaA** (legally independent from U.S.-based **Merck & Co.**), headquartered in Darmstadt, Germany. It has 50,000 employees worldwide in three sectors: health care, life science, and performance materials. The company's core is a balance of stability and flexibility that developed over generations, says Executive Board Member and CEO for Performance Materials Kai Beckmann.

"We have our 350-year anniversary next year," says Beckmann, "with the same family owners, so we have a clear sense of purpose and long-term thinking about advancing science. We have a degree of predictability in how we treat our employees." At the same time, Merck KGaA offers flexibility, for example, in work hours and location. It emphasizes diversity and the voicing of different perspectives. Beckmann says the company encourages employees to be curious and "tackle new things every day." Respect for employees shows, for instance, in the company's long history of supporting health care and child care. These benefits were new concepts when introduced at Merck KGaA decades ago.

Today, Beckmann says, the company perceives itself as a vibrant science and technology leader and is increasing in visibility, especially to the scientific community. Before, he says, "the company was a place you fell in love with on second sight. It was not highly visible from the outside, but once you were here and knew what the company did, you became very loyal."

One way the company will mark its 350th year in business and clarify its mission of progress for people everywhere is "Curious2018—Future InSight," a special international conference for those in science, business, entrepreneurship, and technology, intended to inspire game-changing applications and breakthroughs. Immediately following Curious2018 will be a special edition of the company's long-running Innovation Cup, a one-week course and contest in which STEM Ph.D.s and MBAs work with Merck KGaA employees to develop novel ideas into business plans for a chance to win a €20,000 (US\$24,000) first prize.

Another firm prioritizing external visibility is the pharmaceutical company **AstraZeneca** and its global biologics R&D arm, **MedImmune.** The company returns to the top 20 at No. 11 after an absence since 2011. Mene Pangalos, executive vice president of AstraZeneca's Innovative Medicines and Early Development (IMED) Biotech Unit, believes the achievement reflects changes in company culture in recent years. "We're more transparent, collaborative, and visible," he says. Peer-reviewed publications, academic and industry partnerships, and sharing of data, molecules, and access to preclinical assays are all encouraged. Highlighting the company's research through publications and conference presentations helps recruit top scientists, Pangalos says.

To convey the company's commitment to scientific progress, IMED holds retreats for scientists across its four global biohubs in Sweden, the United Kingdom, the United States, and China, to present their latest work and hear speakers. Scientific successes are rewarded, Pangalos says, with events like MED's annual black-tie awards ceremony, for example. "It's energizing, fun, and a celebration of great science," he says. "It's like a science Oscars."

MedImmune, acquired by AstraZeneca in 2007, is led by Bahija Jallal. "My job," she says, "is providing an environment where people are encouraged to dream big, come up with new ideas, and take smart risks." For example, Jallal says, the MedImmune physical space is open, with places for talking and collaborating. As a scientist herself, Jallal encourages employees to always ask why, saying, "We minimize predefined ways of doing things. We invite people to bring ideas and challenge what we do."

As an executive vice president of AstraZeneca, Jallal must also ensure consistency across global sites. The company allows for local cultural differences, she says, and realizes everyone will succeed in their own way, but also works to be sure everyone is moving in the same direction. "It's important for us to have one vision as a company," she explains, "allowing a little bit of freedom but with guiding principles." Jallal works to give researchers the big picture and emphasizes their involvement in researching, developing, and manufacturing a drug. "To employees," Jallal says, "MedImmune has the best of both worlds: an entrepreneurial, nimble culture that allows us to do great science and move fast, with the footprint, maturity, and resources of a big company." cont.>

Driving characteristics of top employers

2017

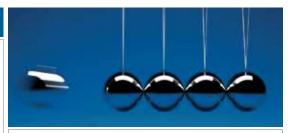
1. Innovative leader in the industry

- 2. Work culture values aligned
- 3. Treats employees with respect
- 4. Is socially responsible
- 5. Has loyal employees
- 6. Has clear vision

2016

1. Innovative leader in the industry

- 2. Treats employees with respect
- 3. Has loyal employees
- 4. Work culture values aligned
- 5. Is socially responsible
- 6. Has clear vision



Driving characteristics are listed in descending order of impact on overall employer rankings. Colored text indicates the characteristics in common for the two years.

Once companies have a clear vision, how is it conveyed across diverse sites and divisions? At Merck & Co. (at No. 17), Celeste Warren says, "I consider it a best corporate practice to communicate to all employees in a timely fashion what is happening in the company." Warren is vice president, Human Resources and Global Diversity and Inclusion Center of Excellence at the global health care company that is based in Kenilworth, New Jersey, and known as MSD outside the United States and Canada. Warren says that quarterly employee business briefings from the CEO and CFO are critical. In addition, she says, "Our ongoing leader and manager training stresses communicating our vision and explaining what it means to people in your division, department, or group."

Rich Tillyer, Merck & Co. senior vice president, Global Chemistry, says that even with about 69,000 employees, everyone supports the goal of having a positive impact on health. People apply it in their daily work by following the example that comes from the top. "Our CEO and the leadership team work at aligning the vision with company decisions and it pays off," Tillyer says. "People see that our investments and decisions line up with our vision as an organization."

For example, he says, "We spend a good deal of time discussing how to push more deliberately and urgently toward the outcomes we're looking for and how we can contribute. It's a concerted effort to go in the right direction and take suggestions from employees both on what we do and how we do it." Positive reinforcement is a must in drug discovery, Tillyer says, because the process requires extraordinary persistence. He points to recent company successes with an Ebola vaccine and a biomarker-targeting cancer treatment. "When we announce and celebrate bringing products to patients," Tillyer says, "we acknowledge all the people involved. We give credit to all the programs across the organization."

At Merck & Co. R&D, Jennifer O'Neil, principal scientist in Biology-Oncology Discovery, translates that corporate vision into employees' workdays. "When I meet with my direct reports," she says, "we talk about what key questions their experiments will answer and how that will drive us forward to new medicines. If the science is interesting but not getting medicines to patients, it's a lower priority." The quarterly business reports are meaningful for employees, including in research, O'Neil says. "Everybody who works here would like to say they contributed to something that was featured across the company and is having an impact on patients with a particular disease."

Support for STEM education

Social responsibility consistently appears on the list of top employer features. The reason? "Employees want to know their company stands for something," Warren says. Beckmann notes the importance of this factor to recruitment. "Acting responsibly resonates with the younger generation of employees," he says. "They want to know: Beyond how we treat our own teams, what is our contribution to our communities?"

This year, Regeneron was included in the Civic 50, a list of community-minded U.S. companies assembled by the Points of Light organization, which is dedicated to mobilizing volunteers. An example is a skills-based pilot program that Gandhi participates in. Employees volunteer at community organizations on a short-term project that uses their specialized skills, such as finance or in Gandhi's case, data analysis. She is working with a nonprofit that provides resources to families who are struggling socially or economically and have children with a life-threatening illness. Gandhi is helping the organization analyze data showing its impact on families.

The top companies in the 2017 survey proudly support STEM education as their contribution to the communities where their employees live and work. Regeneron has pledged more than \$100 million to the long-running U.S. competition that is now called the Regeneron Science Talent Search. "It's near and dear to our hearts," Yancopoulos says. Both he and CEO Leonard Schleifer were participants in high school. "I like to point out that Len was a semifinalist and I was a winner," he laughs. "But that is our major cause. There's nothing more important than engaging the brightest young minds in science to cure disease, work on climate change, and find new energy sources."

Novozymes supports science education as an investment in the future of the industry. "In the Western world," Nielsen says, "we're going to have a deficit of people educated in natural science, even in the next 10 years. The remedy is not quick. That's why we are investing in educating young teachers and kids in biology."

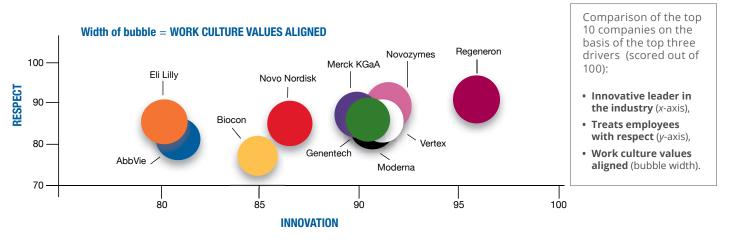
The Novozymes Educate initiative, adopted in 2015, pledges to reach 1 million learners by 2020, enhancing their understanding of biology, biotechnology, and sustainability. At sites in India, China, the United States, and Brazil, Novozymes employees work with local educators to determine the best programs for their community, says Arlan Peters, head of sustainability, Novozymes North America.

For example, in North Carolina, where Peters is based, Novozymes partners with the University of North Carolina at Chapel Hill's Morehead Planetarium and Science Center to hold science nights at elementary schools. The events offer families entertaining, informative, handson activities about topics including enzymes, evolution, and electronics. Novozymes also holds a biotech contest for Franklin County Early College High School, with equipment and mentoring for experiments to perform at school, culminating with presentations and prizes.

The Novozymes Educate initiative contributes to workplace satisfaction, Peters says, because it is directly related to employees' work and their lives in their communities. "Even before we had the Educate goal," he says, "employees visited classrooms and talked about their work and careers, and related classroom learning to the real world. People get personal satisfaction from these activities."

In Brazil, Pedro Luiz Fernandes, vice president of Corporate Affairs and Sustainability for Novozymes Latin America, led teams of scientists

Comparison of top ten's top characteristics



in a project to develop smartphone apps for students about United Nations sustainable development goals (SDGs). The teams decided on a digital approach because the audience consists of teenagers. The apps show how biology can help with three SDGs: poverty eradication, hunger eradication, and clean water and sanitation. Each app offers a classic short story related to the SDGs, for example, "Frritt-Flacc" by Jules Verne. Activities include an experiment and social actions students can take.

Because the apps are about "literature, SDGs, and the power of biology," Fernandes says, they have multidisciplinary appeal. "We found that schools that are using the Novozymes apps for science also use them in classes for English, geography, and chemistry." The apps are downloadable for free, in English, Portuguese, and Spanish, for use by teachers and students anywhere in the world.

Melodie Knowlton is head of the Thomas M. Menino Vertex Learning Lab, a dedicated space created when the company moved into a new building in 2014. She explains how Vertex supports STEM education in multiple ways. In addition to scholarships and internships, at the Boston site, classes from local public schools make recurring visits to the Learning Lab. Students—more than 1,000 in the 2016–2017 academic year—learn about biotechnology through hands-on experiments. The program will be replicated at Vertex's new building in San Diego.

In Boston, about 30 Vertex employees annually mentor students one-on-one on a science fair project. Other employees visit schools to talk about the variety of jobs in biotech. "We show we're more than just scientists," Knowlton says. "We have employees in communications, accounting, and legal departments. It gives students a more sophisticated view of biotechnology, which is important in a biotech-rich area like Boston." The Boston Vertex site alone employs more than 1,400 people.

Knowlton understands why social responsibility is a priority for biotech and pharma employees. "I want to work where the values align for me personally," she says. "If I'm spending a lot of time at work, I want to be making a difference in society." Science education resonates because people see how critical this issue is today, she says. "Our society is becoming [more] technological, and people are making more of their own health decisions. If we can equip students to know more about science and have a better educated city in general, that's important."

Fewer job seekers

An unusual feature of the 2017 survey was that only 16% of respondents said they are likely to look for a different position in the

next year. This is notably low, given that for several years after the survey began, more than one-third of participants indicated a likelihood to seek new employment, as high as 48% in 2005.

In general, statistics on job seeking by people who are already employed are scarce, so the reasons that biotech and biopharma employees feel like staying put are unknown. Yancopoulos suggests general industry trends as one answer. "When the industry is perceived as growing, people feel like they can make moves that will benefit their careers," he says. "If fewer companies are being formed—and even fewer are focused on truly innovative science—people are happy enough with the job they have."

Of survey respondents who were likely to seek a new job, 37% said it was for career advancement and professional growth. A company providing those benefits may be able to successfully retain employees. At Regeneron, Gandhi feels the company regularly supports her professional development. "People acknowledge your work here," she says. "We recognize peoples' potential and give them growth opportunities."

Another possible reason for the low job-seeking rate, suggested by several interviewees, is that recent advances such as CRISPR technology have increased the R&D pace, giving employees the feeling that goals they have worked toward for years are within reach. Tillyer feels a general sense of optimism about the capability of the industry, with progress on problems that people once saw as intractable. He names Merck & Co.'s hepatitis C treatment as an example. "We're delivering therapy that cures the vast majority of patients," he says. "It's so rare to find cures." The breakthroughs and pace are unprecedented, he says, so "maybe people are saying, 'Let's hang in there and see what we can do.'" O'Neil supports this suggestion: "I've been working in oncology for more than 15 years," she says, "I feel like we've been making progress in the last few years, especially with immunotherapy."

A lack of opportunities, pending scientific breakthroughs, or a combination of factors could be the reason that few 2017 survey respondents say they are seeking a new job. Or respondents could be feeling particularly loyal to their workplace this year, as leaders stress the value of employee contributions to their jobs and society. As Nielsen says, "Our core purpose is to do great things in the world through our products, like saving energy and water and increasing sustainability." Internal surveys at Novozymes show that this way of making an impact excites people, he says. "That is important to loyal and motivated employees."

Chris Tachibana is a science writer based in Seattle, USA, and Copenhagen, Denmark.

Job Search Essentials

Questions

Questions to Ask Yourself

- What do you like to do? What energizes you?
- Do you want to do lab work/research?
- Where do you want to work?
- · What do you want to wear to work?
- · How often do you want to change projects?
- What sorts of hours do you want to work?
- Are you willing to travel?
- · What sort of funding situation do you want to be in?
- What nonscience interests or skills do you want to use?
- How important is your income level? Job security?
- What sort of stress levels do you want to deal with?
- · Would you like to work independently or as part of a team?

Ouestions to Ask in an Informational Interview

- What attracted you to this field?
- What do you like most or least about this position or field?
- Describe a typical day or week.
- What steps did you take to break into this field?
- What skills are most helpful in your job? How can I develop them?
- · To what professional associations do you belong?
- What advice would you give somebody interested in your line of work?

Questions You Might Be Asked at an Interview

- Tell me about yourself.
- What are your strengths?
- What are your weaknesses?
- Why this organization? Why this job?
- What can you do for us?
- Why are you leaving research? (if applicable)

Questions to Ask at an Interview

- What does the job entail?
- · What are the opportunities for advancement?
- How will you help with my professional development?
- What are the future goals for the organization?
- · What are the roles of different team members?
- Tell me about the culture of the organization.



Check out the job listings at ScienceCareers.org



AAAS Mass Media Science and Engineering Fellowship

www.aaas.org/mmfellowship

The AAAS Mass Media Science & Engineering Fellowship seeks to increase communication skills in students and scientists. From grant writing to interacting with their community, these skills will benefit a fellow's career path and increase public understanding of science and technology.

The Fellowship places advanced undergraduate, graduate, and postgraduate scientists, engineers, and mathematicians at media sites nationwide to work as science reporters for 10 weeks. Past sites have included the *Los Angeles Times*, *WIRED*, *National Geographic*, and NPR. Fellows use their academic training in the sciences as they research, write, and report today's headlines, sharpening their abilities to communicate complex scientific and technical issues to the public.

Write for the **Los Angeles Times**

Publish in **WIRED**

Work with teams at **NPR**

Join the science desk at **National Geographic**

Spanish Language Fellow(s) Initiative

AAAS initiated the Spanish Language Fellowship in 2014 to focus on serving the growing Latino populations of the U.S. by supporting science communication and education in the language of those communities and by addressing issues of importance to them. Once again, we are recruiting Spanish language Fellow(s) who will be able to expand the work with mainstream Spanish news outlets to bring science news to Spanish-speaking communities.











aaas.org/mmfellowship

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WWW.AAAS.ORG/MMFELLOWSHIP

LOCATION

Various cities across the United States

PRIMARY CONTACT DETAILS:

AAAS Mass Media Science & Engineering Fellows Program 1200 New York Ave, NW | Washington, DC 20005

Email: MMFellowship@aaas.org

ABOUT US

This highly competitive program strengthens the connections between scientists and journalists by placing advanced undergraduate, graduate, and postgraduate level scientists, engineers and mathematicians at media organizations nationwide for 10 weeks during the summer. Fellows have worked as reporters, editors, researchers, and production assistants at such media outlets as the Los Angeles Times, WIRED, National Public Radio, National Geographic and Scientific American. The AAAS Mass Media Fellows use their academic training in the sciences as they research, write and report today's headlines, sharpening their abilities to communicate complex scientific issues to nonspecialists. Participants come in knowing the importance of translating their work for the public, but they leave with the tools and the know-how to accomplish this important goal. Over its 44 year history, the program has supported over 700 Fellows.

Criteria:

- 1. Applicants must be enrolled as students (upper-level undergraduate or graduate) or postdoctoral trainees at a university—or be within one year of a completed degree—in the life, physical, health, engineering, computer, social sciences or mathematics and related fields. If you have questions about your eligibility, email rcorlew@aaas.org.
- 2. Students enrolled in English, journalism, science journalism, or other nontechnical fields are not eligible for the AAAS Mass Media Fellowship, BUT these students may be eligible for the Minority Science Writers Internship.
- 3. Applicants must be U.S. citizens or already hold visas that allow them to receive payment for work during the summer. AAAS cannot assist in obtaining/retaining visas.
- 4. Successful applicants are required to attend an orientation at AAAS headquarters at the beginning of the summer (early June) and a wrap-up session at the end of the summer (late August). They will prepare reports on the progress of their fellowships throughout their placement.

KEY RECRUITING AREAS

Agriculture

Animal Studies

Anthropology

Applied Mathematics

Astronomy and Planetary Sciences

Atmospheric Science

Biochemistry

Biology (Cell, Molecular, Developmental)

Chemistry

Climate Science

Computer Sciences

Ecology

Engineering

Environmental Sciences

Genetics

Geosciences/Earth Sciences

Material Sciences

Mathematics

Medical Studies

Microbiology/Immunology/Virology

Nanoscience

Neuroscience

Oceanography/Marine Sciences

Pharmacology/Toxicology

Physical Chemistry

Physics

Physiology

Plant Biology/Physiology

Statistics

Any Scientific Field



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LOCATION

Washington, DC

PRIMARY CONTACT DETAILS:

AAAS Science & Technology Fellowships 1200 New York Ave, NW | Washington, DC 20005

Email: fellowships@aaas.org | Phone: 202.326.6700

ABOUT US

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Application Deadline: November 1

Fellowship Year: September 1 – August 31

KEY RECRUITING AREAS

Doctoral-level degree (Ph.D., M.D., D.V.M., D.Sc., etc.) in any of the following:

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Medical and Health Sciences

Biological, Physical and Earth Sciences

Computational Sciences and Mathematics

Engineering disciplines (applicants with a Master's in engineering with three years of engineering-related professional experience are also eligible to apply)

U.S. citizenship is required to apply.







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LOCATION

Headquarters in Germany, with presence in more than 130 countries around the world

PRIMARY CONTACT DETAILS:

Binger Strasse

173 D-55216 Ingelheim am Rhein

Email: rs@boehringer-ingelheim.com

ABOUT US

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Our vision: Value Through Innovation

KEY RECRUITING AREAS

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Biotechnology

Biopharmacy

Computer Science

Economics

Engineering

Medicine

Natural Science

Pharmacy



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The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.



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LOCATION

EMD has over 50 locations. Please visit our website for further details.

PRIMARY CONTACT DETAILS:

One Technology Place Rockland, MA 02370

Shelby.briggs@emdserono.com

Phone: 781-681-2471

ABOUT US

We are a leading science and technology company in healthcare, life science and performance materials. We've been around for 350 years – 1668! Since then, we have become a truly global company, with 50,000 employees in 66 countries working on breakthrough solutions and technologies. Merck KGaA, Darmstadt, Germany, holds the rights to the name and the trademark "MERCK" internationally except for the United States and Canada, where we operate in the biopharma market as EMD Serono, in life science as MilliporeSigma, and in the specialty chemicals and high-tech materials business area as EMD Performance Materials.

KEY RECRUITING AREAS

We recruit across all areas of Healthcare, Life Science and specialty chemicals, including but not limited to the following functions: Research & Development, Operations, Commercial, Quality & Regulatory, Market Access, Government Affairs & Policy, Medical Affairs, Business Technology, Data Science, Process Solutions, Applied Solutions, Manufacturing, HR, Legal, Finance, and other core functions.

POSTDOC AND YOUNG INVESTIGATOR

OPPORTUNITIES

SÃO PAULO Brazil



The São Paulo Research Foundation (FAPESP), one of the leading Brazilian agencies dedicated to the support of research, has ongoing programs and support mechanisms to bring researchers from abroad to excellence centers in São Paulo.



MORE INFORMATION

YOUNG INVESTIGATOR AWARDS www.fapesp.br/yia

POSTDOC www.fapesp.br/en/postdoc





WWW.FAPESP.BR/EN



WWW.FAPESP.BR/EN

LOCATION

São Paulo, SP, Brazil

PRIMARY CONTACT DETAILS:

Rua Pio XI, 1500 | Alto da Lapa CEP 05468-901 | São Paulo, SP – Brazil

Phone: +55-11-3838-4000

KEY RECRUITING AREAS

Earth Sciences

Engineerings

Exact Sciences

Life Sciences

Physical Sciences

Social Sciences

ABOUT US

The São Paulo Research Foundation (FAPESP) is a public taxpayer-funded foundation that has the mission of supporting research in all fields of knowledge within the State of São Paulo, Brazil.

The State of São Paulo has a population of 44 million and generates 32% of Brazil's GDP. Under the state constitution, 1% of all state taxes are appropriated to fund FAPESP. The stability of the funding and the autonomy of the foundation allow for an efficient management of resources, which has had a sizable impact.

The effectiveness of research carried out in São Paulo is the combined result of several factors that include the quality of the state's universities and institutes, the extraordinary productivity of its researchers, high rates of participation by private, São Paulo-based companies that function within the state's R&D outlays, São Paulo's outstanding infrastructure, and the existence of FAPESP, a well-designed state research-sponsoring agency governed, maintained by its directors with excellence and with autonomy over the 55 years.

Within this context, in 2016 FAPESP applied \$ PPP 533.9 million in scholarships and grants.

In accordance with the Foundation's funding objectives, 39% of expenditure was earmarked for advancing knowledge, 8% was dedicated to supporting research infrastructure and 53% was allocated to supporting application-driven research.

FAPESP works in close contact with the scientific community: all proposals are peer reviewed with the help of panels composed of active researchers from the specific area. Many times scientists in São Paulo submit proposals which are carefully analyzed and, if deemed strong in academic terms, are shaped by the foundation into research programs that will constitute a set of related research projects in a given area.

Since FAPESP's mandate is to foster research and scientific and technological development in the state, ideas for programs that couple world class research with contributions that will impact social problems are welcome.

FAPESP encourages researchers from throughout world to take advantage of the opportunities for young investigators awards (www.fapesp.br/en/yia) and for postdoctoral fellowship (www.fapesp.br/oportunidades and www.fapesp.br/en/postdoc).



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Lilly



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LOCATION

Indianapolis, IN

PRIMARY CONTACT DETAILS:

893 S. Delaware St. Indianapolis, IN 46225

ABOUT US

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LOCATIONS

Kenilworth, NJ Boston, MA South San Francisco, CA Palo Alto, CA Rahway, NJ Upper Gwynedd, PA West Point, PA

PRIMARY CONTACT DETAILS:

Kenilworth Office 2000 Galloping Hill Road Kenwilworth, NJ 07033 908-740-4000

ABOUT US

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KEY RECRUITING AREAS

Biostatistics

Business Development & Licensing

Chemistry

Clinical Development

Discovery Biology

Outcomes Research & Epidemiology

Pharmacology

Preclinical Development

Regulatory Affairs

Translational Medicine



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LOCATIONS

Basel/Kaiseraugst (Headquarters), Rotkreuz, Schlieren, and Reinach in Switzerland, affiliates in more than 100 countries.

PRIMARY CONTACT DETAILS:

F. Hoffmann-La Roche Ltd.

Grenzacherstrasse 124 | CH-4070 Basel | Switzerland

ABOUT US

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The Roche Group, headquartered in Basel, Switzerland, is active in over 100 countries and in 2017 employed about 94,000 people worldwide. In 2017, Roche invested CHF 10.4 billion in R&D and posted sales of CHF 53.3 billion. Genentech, in the United States, is a wholly owned member of the Roche Group. Roche is the majority shareholder in Chugai Pharmaceutical, Japan. For more information, please visit www.roche.com.

KEY RECRUITING AREAS

Biochemistry

Bioinformatics

Biology

Biostatistics

Biotechnology

Data Sciences

Digital Sciences

Chemical Engineering

Chemistry

Life Sciences

Medicine

Molecular Information

Personalized Healthcare (PHC)

Pharmacy

Pharmacology

Physics

Regulatory Affairs

Stem Cell Research

Toxicology

Translational Medicine

DISEASE AREAS

Immunology

Infectious Disease

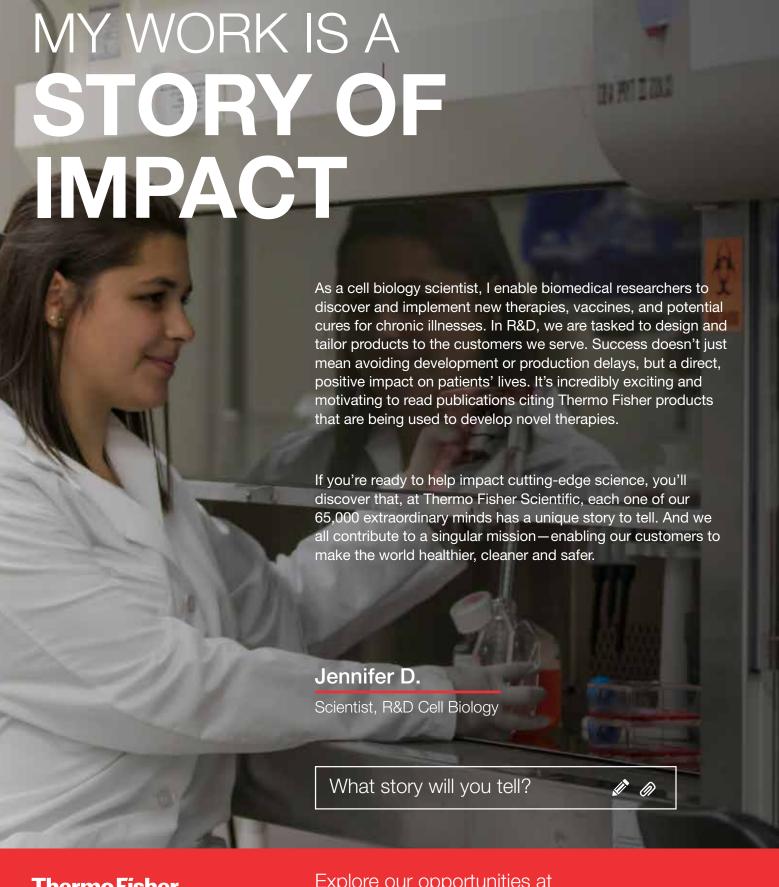
Inflammation

Neuroscience

Oncology

Ophthalmology

Rare Diseases



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LOCATION

Waltham, MA

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KEY RECRUITING AREAS

R&D

Digital Science

IT

Scientists

Sales

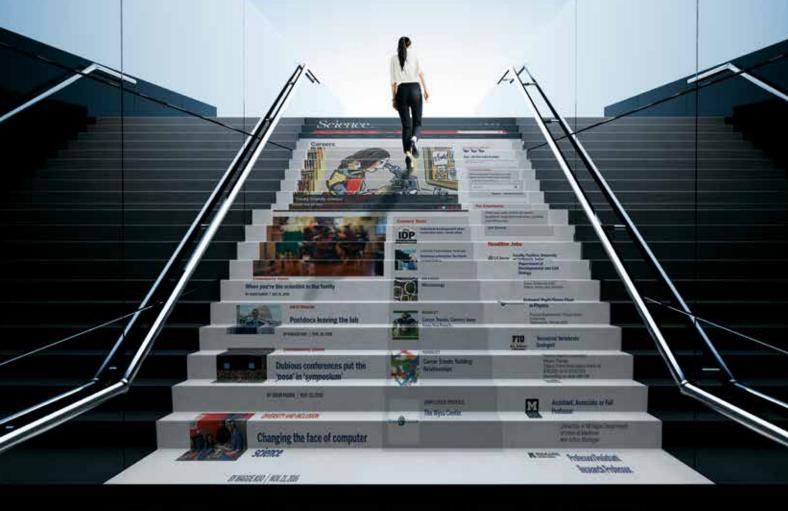
Engineering

NOTES

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