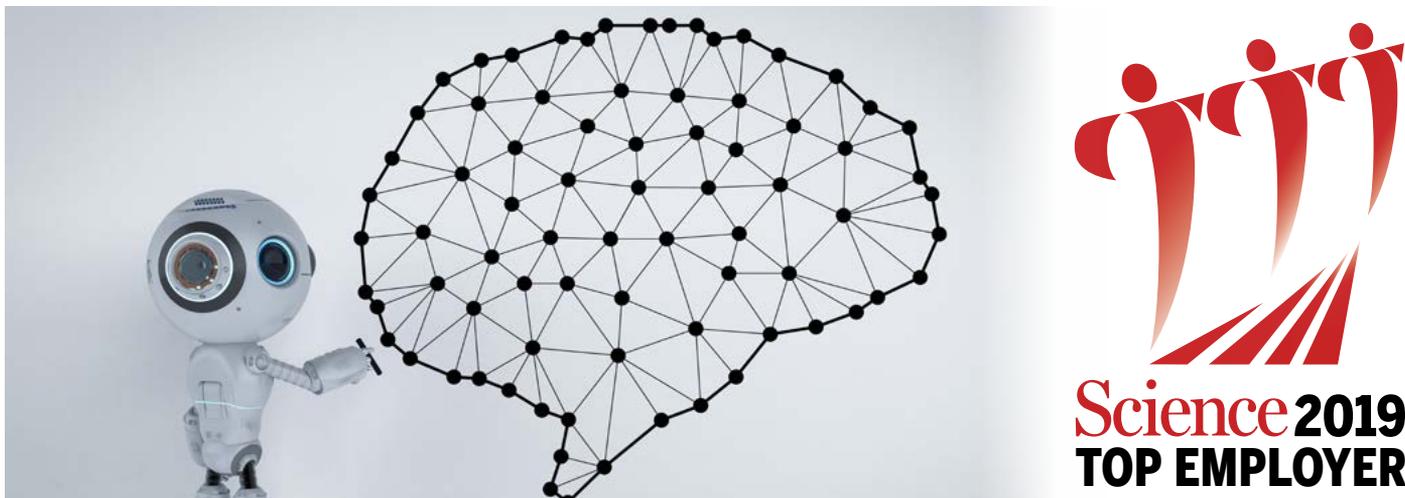


top employers



Top employers: Breakthroughs, impact, and purpose

The 17th annual Top Employers Survey features a surprise: Alnylam Pharmaceuticals, an RNA-interference therapeutics company headquartered in Cambridge, Massachusetts, earned the No. 1 spot in its first appearance in the survey rankings. Some responses from the biotechnology and pharmaceutical industry are similar to those in previous surveys, however. Respondents valued innovation above all, while noting industry changes around drug pricing, regulations, and policies as well as an increasing emphasis on artificial intelligence and machine learning. **By Chris Tachibana**

Followers of the annual Top Employers Survey from Science Careers will notice something new this year. The highest ratings in 2019 went to newcomer **Alnylam Pharmaceuticals**. The U.S.-based company of more than 1,200 employees develops RNA-interference (RNAi) therapies. In the three previous years, the top employer was **Regeneron Pharmaceuticals** in New York, which is No. 2 this year, followed by the Delaware-based pharmaceutical company **Incyte**. “We’re very excited,” says Alnylam CEO John Maraganore regarding the company’s Top Employer status. “We’ve grown a lot lately and our success depends on having a highly engaged team.”

Many other features of the survey remain unchanged, however. As happened in recent years, more than 7,500 people responded. About 95% reported working in the biotech and pharma industry, and 80% were age 30 years or older. This year, the proportion of survey respondents from North America increased to 72% from 63% in 2018. The proportion from Europe dropped from 24% to 19%, and the fraction from the Asia/Pacific Rim fell from 9% to 7%.

Innovation has been a leading driver of top employer status since the survey began in 2002, and this year was no exception. Other reasons for recognition as a top employer were treating employees with respect and having company values that align with theirs. Being socially responsible and having leadership that can make needed changes were also important characteristics of top companies.

Upcoming features

Diversity/Inclusion—January 24 ■ Postdocs—August 21 ■ Faculty—September 18

The most noteworthy current and expected changes in the industry, based on open-ended comments from survey respondents, focused on cost-cutting, pressures around drug pricing, and the political environment, including drug regulation policies and changes at the U.S. Food and Drug Administration (FDA). Mergers and acquisitions, outsourcing, and the impact of artificial intelligence (AI) were noted, along with the rising pace of industry research.

Representatives of some top companies gave their perspectives on these and other issues. They discussed how their organization maintains an innovative edge and excels as a workplace, and how the increasing use of AI affects work and work culture.

The top five innovators: Breakthroughs in products and pricing

Alnylam joined the Top Employers list with a splash, reaching the top spot in its first year of inclusion in the survey. It’s been a year of breakthroughs for the company. In August 2018, Alnylam received the FDA’s first-ever approval for an RNAi therapy. Alnylam’s Onpattro treats neurological symptoms, such as numbness in patients with hereditary transthyretin-mediated amyloidosis. This rare, potentially fatal disease affects about 50,000 people worldwide.

Maraganore says that having the first RNAi therapy on the market is a clear sign that Alnylam is an innovative leader, which is what survey respondents valued most in a biotech or pharma company. “We are pioneers in bringing a whole new class of medicines to market,” he says. “And before that, we pioneered bringing this technology to clinical trials.”

Alnylam regularly conducts internal work culture surveys and develops improvement plans based on the results, Maraganore says: “We view feedback from employees as a big gift, and we harness that to continuously make our company better.” Employees notice innovations in benefits, Maraganore says, for example, an in-house diversity and inclusion team that works on issues such as equity in race, gender identity, and sexual orientation. This initiative aligns with the **cont. >**

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employee value of social responsibility, consistently rated in the survey as a characteristic of the best companies. Diversity is also a trending issue in the industry. Maraganore just stepped down after two years chairing the Biotechnology Innovation Organization (BIO) Board of Directors. At the last BIO International meeting, BIO launched the Right Mix Matters campaign to provide companies with resources to increase diversity in leadership positions.

Maraganore also notes employee work-life benefits, such as programs for working at home and for spending time on an exploratory project not directly related to Alnylam R&D. This opportunity can pay off for the company in a big way. "We recently figured out how to deliver our drugs to the central nervous system, which opens up our pipeline to a range of neurodegenerative diseases," he says. "That opportunity happened because we gave a small group of employees the freedom to take 20% of their time to explore a new idea."

Drug pricing is at the nexus of a number of topics—including access to medicines, cost-cutting, and politics—that survey takers raised when asked to name notable industry changes. Many companies with groundbreaking but high-cost drugs are developing novel pricing schemes. Maraganore mentions Onpattro pricing related to both innovation and social responsibility, saying that company representatives proactively met with health care payers (insurance companies and other health plan sponsors) to negotiate value-based reimbursement. In these plans, payments made by payers to the company are linked to patient response to drug therapy. "With other drugs," he says, "you pay even if they don't work. We believe in our product so we're willing to put skin in the game with value-based reimbursement."

At No. 4, **Merck KGaA** is a contrast to the newer companies in the top five: Merck KGaA celebrated its 350-year anniversary in 2018. (The company is legally independent from U.S.-based Merck & Company and has headquarters in Darmstadt, Germany.) Nonetheless, in common with other top employers, Merck KGaA prioritizes thinking ahead, adapting, and communicating. This strategy is how the company takes advantage of opportunities and innovations, said member of the Executive Board and CEO of Healthcare Belén Garijo. In an email, she said Merck KGaA's long-term success centers around maintaining connections to all stakeholders, including employees, business leaders, and customers.

Top Twenty Employers							
2019 Rank	2018 Rank	Employer (global headquarters)	Innovative leader in the industry	Treats employees with respect	Is socially responsible	Work culture values aligned	Leadership makes changes needed
1	–	Alnylam Pharmaceuticals (Cambridge, MA)	•	•		•	
2	1	Regeneron (Tarrytown, NY)	•		•	•	
3	2	Incyte (Wilmington, DE)		•	•	•	
4	5	Merck KGaA (Darmstadt, Germany)		•	•	•	
5	–	Spark Therapeutics (Philadelphia, PA)	•	•		•	
6	7	Biocon Limited (Bangalore, India)	•		•		•
7	3	Novozymes (Copenhagen, Denmark)	•	•	•		
8	9	Genentech (South San Francisco, CA)	•	•		•	
9	16	Eli Lilly and Company (Indianapolis, IN)		•	•	•	
10	14	Syngenta (Basel, Switzerland)	•	•	•		
11	4	Moderna (Cambridge, MA)	•	•	•		
12	6	Vertex Pharmaceuticals (Boston, MA)	•		•		•
13	10	AbbVie (North Chicago, IL)			•	•	•
14	12	Roche – excluding Genentech (Basel, Switzerland)	•		•		•
15	11	AstraZeneca (Cambridge, UK)		•	•	•	
16	–	GlaxoSmithKline (GSK) (London, United Kingdom)		•	•	•	
17	18	Abbott (Abbott Park, IL)		•	•		•
18	–	Pfizer (New York, NY)			•	•	•
19	13	Novartis (Basel, Switzerland)	•	•		•	
20	8	Novo Nordisk (Bagsvaerd, Denmark)		•	•	•	

The 20 companies with the best reputations as employers and the top three driving characteristics for each company, according to respondents in the 2019 survey undertaken for the Science/AAAS Custom Publishing Office. The companies without a 2018 rank did not receive enough mentions to qualify or did not receive a high enough ranking from the 2018 survey. The fifth attribute in the above table is "Has top leadership that successfully makes changes needed to keep the organization moving in the right direction."

IMAGE: © SPANITER_VFX/SHUTTERSTOCK.COM

Spark Therapeutics, like Alnylam, celebrates its first year of survey inclusion by entering the survey at No. 5. Like Alnylam, Spark brought a groundbreaking therapy to market in 2018 with the first U.S. commercial sales for a gene therapy product. Luxturna treats vision loss from a rare, inherited retinal dystrophy disease.

Founded in 2013, Spark is headquartered in Philadelphia, Pennsylvania, and has more than 400 employees. Katherine High, president and head of R&D, says the company's innovation is demonstrated by Luxturna and four other gene therapies in clinical trials, with more in the pipeline. High recently talked to an employee with a background in more traditional pharmaceutical work who noted the transformative effect of gene therapy. "A lot of drug programs are just trying to have a narrow margin of superiority over others," High says. "With gene therapy, as long as the program is well thought out, we see very clear therapeutic effects."

Spark was highly rated by survey participants for having a work culture that aligns with employee values. To describe the company's culture, High uses the adjective "dynamic." One employee, she says, noted that "there's high speed, there's warp speed, and there's 'Spark speed.'" Employees see their programs progressing, High explains, and watch their hard work move products from preclinical to clinical stages—and in Luxturna's case, to commercial success. "All that is exciting," she says.

On the topic of drug pricing, High lists factors that her company considers when setting prices. The diseases for which Spark is developing gene therapies, such as retinal dystrophy, have no available treatments or have high unmet needs. An example of the latter is hemophilia, which requires frequent infusions of clotting factor. A one-time gene therapy intervention could save money over treatments that **cont.>**

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must be administered over a lifetime and may treat only symptoms, not causes. Pricing also needs to reflect the investments of developing a one-time therapy and should allow a company to be sustainable, High notes.

To provide patients access to needed therapies, Spark is pursuing several strategies in the United States focused on health care payers, High says. The strategies include installment plans for payments as well as outcome-based rebates derived from the same

principles as Alnylam’s value-based reimbursements. For example, if patients don’t achieve expected outcomes based on Phase III clinical trial results, payers are eligible for a rebate from Spark. Because gene therapy is administered at only a few medical centers in the country that have specially trained personnel, agreements with payers ensure that no matter where patients are treated, they pay in-network rates, as though they received care in their home area.

In another novel approach called “buy and bill,” payers rather than medical centers purchase the therapy. This plan reduces the financial risks to medical centers—for example, from buying therapies that patients don’t end up using—and eliminates markup costs that payers might otherwise incur. Spark is also looking into installment plans for payments tied to therapy effectiveness, but because of U.S. health care complexities, this requires state-by-state arrangements.

With regard to survey participants’ comments about mergers and acquisitions, High has direct experience with employee concerns about this situation. Roche is in the process of buying Spark after the boards of both companies unanimously agreed to the acquisition. Employees are positive about the merger, High says. “We’ll have to see how it unfolds over time, but we see this as an opportunity to access additional financial resources to push our work forward. I personally think it’s exciting,” she adds. “Roche is a world-class drug developer.”

Emphasizing persistence and purpose

The acquisition would add Spark to the Roche group, which includes **Genentech**, this year at No. 8 in the survey. Founded in 1976, with headquarters in South San Francisco, the well-established Genentech is a contrast to Spark. While this is Spark’s first year in the survey, Genentech is the only company to have been one of the top employers since the survey started in 2002, setting the standard for the entire field.

While the term “speed” (along with “well thought out”) comes up in High’s description of the Spark culture, Mike Varney, Genentech’s executive vice president of research and early development, uses the word “patience” to describe his company’s scientific approach. The Roche group has room for both Spark and Genentech, however, because of a common overall culture. “We all value rigorous science,” Varney says, “but Genentech and others in the Roche group maintain their own subculture. We build the organization the way we want and create the kind of work culture that will facilitate our innovation.”

DRIVING CHARACTERISTICS OF TOP EMPLOYERS

2019

1. Innovative leader in the industry
2. Treats employees with respect
3. Is socially responsible
4. Has work culture values that are aligned with personal values
5. Has top leadership that successfully makes changes needed to keep the organization moving in the right direction

2018

1. Innovative leader in the industry
2. Treats employees with respect
3. Is socially responsible
4. Has work culture values that are aligned with personal values
5. Has top leadership that successfully makes changes needed to keep the organization moving in the right direction
6. Has a clear vision of where it is headed

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

Genentech maintains its status as an innovative leader by harnessing technology to deeply understand the biology of disease, Varney says. Initially, the company’s founders used this principle to translate the technology of gene cloning into medicines such as hormones. Later, company researchers focused on converting the specificity and binding affinity of antibodies into immuno-oncology therapies.

“This business requires understanding complex biology,” Varney says, “so patience is a virtue and persistence is a huge component of success. We’re willing to put the time and resources into solving problems.” He notes that distinguishing features of the company are its high ratio of discovery biologists to other employees and the commitment of its researchers to use data to guide their projects.

Varney agrees with survey participants about the increasing pace required to move products through pipelines. “There’s no question that time matters,” he says, but emphasizes that the company’s approach is efficient and strategic in the end. Researchers don’t waste time pursuing medicines that their data do not support, but when their findings show promise, they continue. This is one reason so many of Genentech’s products are first-in-class therapies, Varney observes. “We believe in our biology so strongly that we stay in the game when others drop out.” An example, he says, is that company persistence resulted in their AKT (protein kinase B) inhibitor, now in clinical trials for cancer therapy.

One of Genentech’s strengths in the survey was quality research with talented employees. An experiment-focused company attracts action-oriented people interested in exploring the unknown, Varney says. “There’s no innovation without experimentation. In an innovative environment, you take action,” he says. “In a noninnovative environment, you analyze.” Genentech has long had programs that encourage researchers to explore avenues not always directly related to their company work. Currently, research leaders can apply for internal innovation funds or for a postdoc to work on an industry or academic project.

In the midst of a general emphasis on multidisciplinary teams and flat structures, Genentech also holds to a single decision-maker model for its research teams. “You can have a freewheeling team with freedom to explore,” Varney says, “but someone has to make the decisions and point the team members in the same direction.” The decision-maker’s goal is to choose based on data and input from the team. This model, Varney says, “provides organizational clarity.”

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At No. 9 this year was **Eli Lilly**, moving up from No. 16 in 2018. The company is headquartered in Indianapolis, Indiana, but has a presence around the world. In an email, Terri Grant, vice president for human resources at Lilly Research Laboratories and Lilly Oncology, noted several factors that are attractive to employees. These include a focus on transformational medicines and a collaborative approach involving scientists, physicians, academic researchers, and contributors from health care organizations. Like Alnylam, Lilly is also responding to employee feedback by working to increase diversity, including in management and leadership positions.

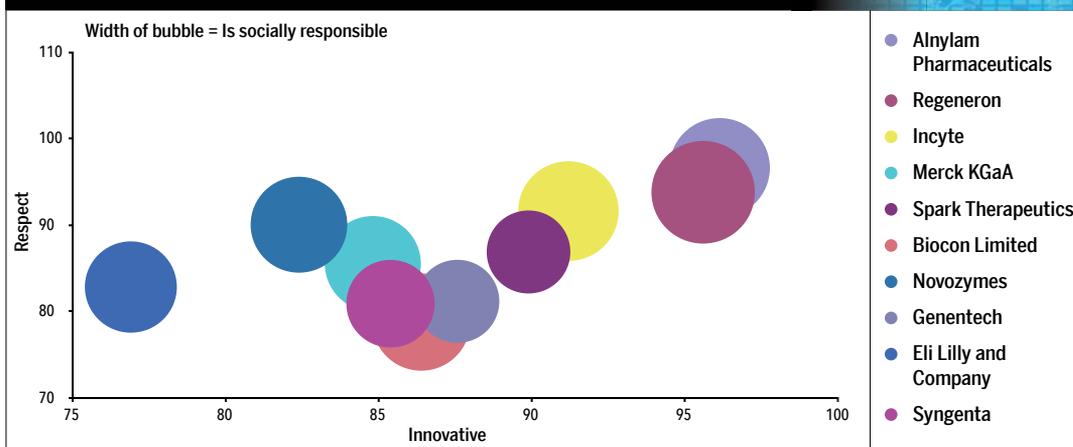
A strength of Lilly compared to companies with similar rankings in the survey is social responsibility. Grant points to two programs that make the company stand out in this area. On Lilly's annual Global Day of Service, employees volunteer in their communities. Also, the company's Connecting Hearts Abroad program sends about 100 employees a year on a two-week volunteer service assignment, for example to South Africa or Mexico. Participants help with health-related issues ranging from diabetes care to mobile community health screenings, gaining inspiration and experience that enhance their sense of purpose as employees.

Syngenta, an agriculture company headquartered in Basel, Switzerland, was No. 10 this year, moving up from No. 14 in 2018. Gusui Wu, head of seeds research, has been with the company for only a year, but says a reason for the rise in employer standing might be that after a period of change (including acquisition by ChemChina in 2017), Syngenta now has a clearer vision for the future. Both leadership and employees see a more definable role for Syngenta in the industry and in how it contributes to society. "Our industry is historically not seen as sustainable, but we have a vital role in food security," Wu says, "so there's now more emphasis on agricultural sustainability and meeting the challenge of climate change."

In fact, a strength of Syngenta relative to companies with similar rankings is corporate responsibility. Wu observes that company goals of helping feed the world while protecting the planet through sustainable agriculture align with employees' personal values. By working on products that help farmers address issues such as drought, changes in crop pests, and diseases that arise from the climate crisis, he says, "our scientists feel they're doing good by coming to work every day."

According to Wu, Syngenta is in a unique position to help developing economies by lifting their agricultural productivity—for example, with products for insect and disease control. Syngenta research sites, corporate offices, and production plants are held to sustainability and environmental health standards with periodic audits, which may be another

COMPARISON OF TOP TEN COMPANIES BY TOP THREE CHARACTERISTICS



Comparison of the top 10 companies on the basis of 3 of the top drivers (scored out of 100): Is an innovative leader in the industry (x-axis), Treats employees with respect (y-axis), and Is socially responsible (bubble width).

responsible action noticed by employees.

Syngenta has made recent outreach efforts to the public and especially customers. "We believe people have misperceptions about what we do," Wu says. To be clearer about the benefits of agricultural technology, this year Syngenta conducted a 90-day initiative consisting of listening sessions with, for example, consumers and farmer groups. One result was a long-term partnership with The Nature Conservancy, which got positive feedback from employees. Another initiative, focusing on soil health, aims to develop technologies that reduce nutrient loss in soil.

Earlier this year, Syngenta began a project to facilitate R&D collaborations with farms, which has connected more than 100 Syngenta scientists with large agricultural operations, Wu says. The project's goals are sharing data, demonstrating technology, and collecting information on product performance. "Farmers get to see the technology we're working on," he explains, "and scientists get direct input and feedback from farmers who will be using our products." Also, like Alnylam, Genentech, and other companies, Syngenta has a competitive internal funding program for researchers to explore high-risk, high-return, creative projects separate from their product-development work.

Since agrobusiness is going through a period of consolidation, Wu has insights about employee management during mergers and acquisitions. The 2017 acquisition of Syngenta by ChemChina was for the purpose of expansion and growth, and to help China increase agricultural productivity, he says, not for cost-cutting and reductions. Still, when two companies come together, regardless of the reason, processes, procedures, and cultures will change. Recognizing the inevitable disruption that Syngenta faced, the company instituted change management programs so employees understood the business rationale for the acquisition and what it meant to them. "The worst situation is leaving employees and the organization in uncertainty," Wu says. "The ambiguity can be unsettling."

Communication is critical; it's especially important to ensure that employees hear frequently from corporate leaders and their own supervisors, Wu says. "Even if we don't

cont. >

Featured participants

Alnylam Pharmaceuticals

www.alnylam.com

Eli Lilly

www.lilly.com

Genentech

www.gene.com

GSK

www.gsk.com

Incyte

www.incyte.com

Merck KGaA

www.merckgroup.com/en

Regeneron

www.regeneron.com

Spark Therapeutics

sparktx.com

Syngenta

www.syngenta.com

have answers, we explain that we're trying to get clarity on questions. We report progress and keep employees as informed as possible."

Bringing in AI and ML

In addition to pressures related to drug pricing and mergers and acquisitions, survey participants consistently note industry changes, including the rising use of automation, AI, and machine learning (ML) in research. At Alnylam, for example, Maraganore says AI and ML are enhancing effectiveness in multiple ways, from identifying sequences for designing RNAi drugs to locating patients who might benefit from Onpattro.

At Merck KGaA, Garijo says AI tools are expected to increase efficiency and effectiveness. The company has several AI-related agreements, including with AI drug-design company Iktos and proteome-screening company Cyclica. Merck KGaA also received a U.S. patent for a system that uses AI to protect supply-chain integrity. The system links physical objects, such as equipment parts or pills, with digital signatures that are securely stored with blockchain technology. This process ensures the authenticity of medicines but could also be used for products such as food and electronic devices, Garijo explains.

AI tools fit the Genentech commitment to understanding the biology behind diseases, says Varney. He sees drug discovery as a sorting exercise, narrowing targets and candidates from a large pool down to the most promising. The company integrates data scientists within research teams to apply AI where it can make sorting more efficient. One example is an application that rejects small-molecule drug candidates when data indicate they are likely to be quickly metabolized. Another applies data to identify tumor-associated proteins that will be antigenic and easily displayed to the immune system for personalized cancer vaccines. By making sorting more efficient, "AI frees up scientists' time so they can think and be creative and do other work that machines can't do," Varney says.

GSK (GlaxoSmithKline), headquartered in Brentford, United Kingdom and at No. 16 this year, has long been a leader in AI and ML. GSK has used AI for traditional R&D, such as small-molecule drug discovery. Recently, the global pharmaceutical company stepped up its AI-ML game.

In 2018, Hal Barron became GSK's chief scientific officer and president of R&D. He is directing new investments in R&D, particularly in immunology, human genetics, and advanced technologies. GSK is focusing its technology development on the intersection of human genetics data, functional genomics, and AI and ML to help understand human disease on a cellular level. Barron explains two points driving GSK R&D: (1) Less than 10% of drugs that enter clinical testing go to market, and

DEMOGRAPHICS

GENDER:

50% Male, 44% Female, 6% No response

EXPERIENCE:

71% have 10 or more years work experience

HIGHEST DEGREE EARNED:

33% Doctorate, 31% Master's, 30% Bachelor's, 6% Other

COMPANY TYPE:

21% Biotech, 40% Biopharma, 34% Pharma, 2% University, 3% Other
More than 9 out of 10 work in private industry.

NATURE OF WORK:

13% Basic Research, 17% Applied Research, 26% Development, 8% Production, 11% QA/QC or Regulatory Affairs, 9% Executive, 16% Other

GEOGRAPHY:

72% North America, 19% Europe, 7% Asia/Pacific Rim, 2% rest of world

(2) genetic validation increases the likelihood a medicine will succeed. This is why GSK developed partnerships with human genetics organizations such as 23andMe and Open Targets to use data to help identify new drug targets.

To validate targets, GSK plans to incorporate CRISPR gene-editing technology for functional genomics through a partnership with the University of California. Researchers will use CRISPR to test how altering candidate genes or their expression affects human cells in vitro. Functional genomics generates "trillions of datapoints," Barron says, so ML is essential for the next step—integrating the data and helping to understand relationships between genes and how mutations relate to disease. To support this work, GSK is building infrastructure, including an in-house data science group, a platform for integrating large datasets, and automated tools for data analysis. Barron expects these innovations to increase R&D speed from discovery to clinical trials to market.

The bottom line: Having an impact

The addition of AI and ML to drug development and marketing is speeding breakthroughs across the industry. More mergers, acquisitions, and consolidations are expected by survey participants, who also noted Brexit and upcoming U.S. elections as changes expected to affect the industry.

The bottom line for pharma and biotech companies, however, is that employees need to feel that their company supports them in doing high-quality, rigorous, impactful work, Maraganore notes. "I believe our employees are invigorated to work for a company that is bringing innovative medicine to patients," he says. "They're generating something brand-new and transformative, which creates a sense of pride and a sense of purpose."

2019 Top Employer Podcasts & Profiles Explore the podcasts and profiles of some of 2019's top employers to learn more about career opportunities at these organizations.

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