



# Top firms prioritize transformative technologies, patients



The biotechnology and pharmaceutical sectors have emerged from the global recession to find technological breakthroughs driving renewed enthusiasm and risk-taking at companies. The firms landing at the top of the 2015 *Science* Careers Top Employers Survey have harnessed these innovative sparks and created workplaces that recruit the best and brightest scientific minds. Their researchers are largely given free rein to develop the next big thing in green agricultural biotechnology (agbiotech) or cancer treatment. Real-world results from such breakthrough innovations inspire the next generation of industry researchers as they ride the crest of a new wave of biological advances. These top employers ensure that their scientists surf that wave with agility, passion for what they do, and creativity to arrive at technologies that will transform lives. **By Kendall Powell**

It sounds like an old game show. The buzzword is “transformative technologies.” But it’s truly more than a buzzword. A palpable excitement travels through both boardrooms and scientific conferences following breakthroughs in immunotherapy, messenger RNA (mRNA) therapies, or microbiome mining. Many companies have made a strategic migration away from the tried-and-true (but also too long and costly) pathways of drug discovery toward novel approaches that promise unprecedented speed and precision.

That excitement is one reason that scores in this year’s *Science* Careers Top Employers Survey were higher in general—more so than in the last four years. A better economic outlook, with venture capital money flowing into the biotechnology and biopharmaceutical sectors more freely, doesn’t hurt either. The scores reflect a breath of fresh air from scientific advances that translate into not merely incremental advances, but rather transformative new medicines or solutions.

This year like all others, scientists want to work at companies that keep innovation front and center, and the top 20 employers in 2015 include those biotechnology and pharmaceutical firms on the leading edge of these advances. Three new players arrive on the top 10 leaderboard this year, focused on making the world a greener place, developing therapies for unique patient populations, or creating a revolutionary technology platform—all first-time survey participants. Each firm is relatively small, but with growing global reach: Novozymes (#1) has 6,000 employees, Alexion Pharmaceuticals (#5) has 2,800 employees, and Moderna Therapeutics (#7) has more than 250 employees.

“We’re a mid-sized company and that actually matters,” says **Peder Holk Nielsen**, chief executive officer of top-ranked

Novozymes. “It’s possible to maintain a family-like environment and still operate globally.” Novozymes boasts of an uber-friendly workplace (rooted in the company’s Danish heritage) and a culture that is science-centric. Twenty-one percent of the company’s employees are working in labs, and the company touts the fact that 14% of its total revenue is reinvested into R&D annually.

“Zymers,” as company employees are called, are also given high levels of responsibility from day one. “It means that young scientists will be charged with significant programs without a lot of managerial follow-up,” says Nielsen. “We trust people to do their best—it’s a flat organization where everyone can talk to everyone else—and you are expected to have an opinion and voice it.” Politely, of course.

All the top employers included here exhibit these notions of open communication, flat hierarchies, and environments that encourage scientists to challenge conventional wisdom. As the highest-revenue pharmaceutical company to make the top 10, Roche (#8) had 17,566 R&D employees and invested \$9 billion in R&D in 2014. Bristol-Myers Squibb (BMS), which returns to the survey at #20 after an eight-year absence, has a corporate stance of taking big risks while following solid science. Biocron (#13), based in Bengaluru, India, returns to the list this year as the only firm headquartered in Asia. And Celgene Corporation (moving up to #12 this year after placing #17 in 2013 and #15 in 2014) leapt ahead of other mid-sized biopharma peers, Biogen (#18) and Gilead (#19).

These successful workplaces keep creativity and innovation at the heart of operations—giving employees the responsibility and control over developing projects and their own careers. These firms are filled with motivated employees because real-life examples of their work’s impact on the world are woven into their cultures. And though recruiting and retaining a highly skilled work force is cited as a major challenge for the industry, these companies excel at attracting and keeping top talent. Benefits, both official and fun perks, keep employees’ eyes on the prize—developing bold ideas into the next transformative application.

“We are not looking for therapies that give incremental benefits,” says **Martin Mackay**, head of research and development for Cheshire, Connecticut-based Alexion. He explains that a focus on rare and ultrarare diseases grew organically out of the company’s mission to find transformative therapies for devastating diseases. One such condition, hypophosphatasia (HPP), can be fatal in severe cases in newborns who lack a properly formed ribcage needed for breathing. This year, Alexion anticipates U.S. approval for Strensiq, an enzyme replacement therapy for HPP. *continued*

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# 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 2015 survey undertaken for the Science/AAAS Custom Publishing Office. The companies without a 2014 rank did not receive enough mentions to qualify or did not receive a high enough ranking during the 2014 survey.

2015 Rank	2014 Rank	Employer (Global headquarters)	Innovative leader in the industry	Treats employees with respect	Has loyal employees	Is socially responsible	Work culture values aligned
1	–	<b>Novozymes</b> (Bagsvaerd, Denmark)	✓	✓		✓	
2	1	<b>Regeneron Pharmaceuticals, Inc.</b> (Tarrytown, NY)	✓	✓	✓		
3	2	<b>Novo Nordisk</b> (Bagsvaerd, Denmark)	✓		✓	✓	
4	4	<b>Vertex Pharmaceuticals</b> (Boston, MA)	✓			✓	✓
5	–	<b>Alexion Pharmaceuticals</b> (Cheshire, CT)	✓		✓	✓	
6	3	<b>Genentech</b> (South San Francisco, CA)	✓	✓			✓
7	–	<b>Moderna Therapeutics</b> (Cambridge, MA)	✓	✓	✓		
8	8	<b>Roche—excluding Genentech</b> (Basel, Switzerland)	✓		✓	✓	
9	6	<b>Monsanto Company</b> (Creve Coeur, MO)	✓	✓	✓		
10	7	<b>AbbVie</b> (North Chicago, IL)			✓	✓	✓
11	5	<b>Eli Lilly and Company</b> (Indianapolis, IN)		✓	✓	✓	
12	15	<b>Celgene Corporation</b> (Summit, NJ)	✓	✓	✓		
13	–	<b>Biocon</b> (Bangalore, India)	✓		✓	✓	
14	12	<b>Abbott</b> (Abbott Park, IL)			✓	✓	✓
15	13	<b>Boehringer Ingelheim</b> (Ingelheim, Germany)		✓	✓	✓	
16	16	<b>Bayer</b> (Leverkusen, Germany)		✓		✓	✓
17	20	<b>Merck KGaA</b> (Darmstadt, Germany)			✓	✓	✓
18	10	<b>Biogen</b> (Cambridge, MA)	✓			✓	✓
19	–	<b>Gilead</b> (Foster City, CA)	✓	✓	✓		
20	–	<b>Bristol-Myers Squibb</b> (New York, NY)	✓	✓	✓		

Mackay ticks off the impressive results that patients and their families have experienced: “Babies breathing on their own, children growing at normal rates, even playing sports—this is the daily drive we have at Alexion.”

### What makes top employers shine?

Each year, *Science Careers* commissions a survey to identify the top employers in the biotechnology and pharmaceutical industry and to determine the characteristics that best describe a top employer. This year, the results are based on 5,700 responses to a web-based survey deployed by e-mail (see Survey Methodology online at [www.sciencecareers.org/topemployers2015](http://www.sciencecareers.org/topemployers2015)).

The vast majority of respondents are scientists working in areas of basic or applied research and development (see Survey Demographics box, page 578). Of the one-fifth of respondents likely to seek a new job in the next year, more than half will do so to seek career advancement or new opportunities. Human resources officers at top firms are not surprised—they say employees place a higher emphasis on career development than total compensation.

In selecting the best companies, respondents yet again chose “innovative leader” as the top-driving characteristic. A top employer is also defined as an organization that “treats employees

with respect,” “has loyal employees,” “is socially responsible,” and has a “work culture aligned” with employees’ values (see Driving Characteristics table, 580).

The 2015 survey included a way for respondents to rank the biggest advantages to working in the biopharma industry. Workers voted “innovation” solidly as #1, followed by “working with smart colleagues” and “excellent compensation and benefits” as a close #2 and #3, respectively. Interestingly, workers ranked having the funding and resources for research projects as a more distant #4.

Companies meeting those challenges adeptly and fulfilling those advantages include Regeneron Pharmaceuticals, Incorporated (#2), Novo Nordisk (#3), Vertex Pharmaceuticals (#4), Genentech (a member of the Roche group) (#6), Monsanto Company (#9), and AbbVie (#10), which round out the top 10 employers (see chart above for full top 20 list).

### The comeback company

BMS’s comeback as a top employer after last appearing on the list in 2007 is no mere coincidence. That period aligns with a company-wide makeover, during which BMS made a series of decisions to turn around a firm that had become one of the least profitable in the industry. *continued*>

PHOTO (BACKGROUND): © SOMKKU/SHUTTERSTOCK.COM

## Demographics



### Gender:

54% Male, 42% Female, 4% No response

### Experience:

65% have 10 or more years work experience

### Highest degree earned:

37% Doctorate, 32% Master's, 24% Bachelor's, 7% Other

### Company type:

34% Pharma, 34% Biotech, 24% Biopharma, 2% University, 6% Other; More than 9 out of 10 work in private industry

### Nature of work:

36% Development, 28% Applied Research, 20% Basic Research, 10% Administration/Executive, 14% QA/QC/Regulatory Affairs, 8% Production, 11% Other (respondents were able to choose more than one response)

### Geography:

57% from North America, 27% from Europe, 11% from Asia/Pacific Rim, 5% from rest of world

The firm dropped discovery and development in the areas of diabetes, virology, and neuroscience in favor of a research focus on oncology, heart failure, genetically defined diseases, immunoscience, and fibrotic diseases. In 2009, BMS took a big risk jumping into the immunotherapy field by acquiring the company Medarex, which brought with it Yervoy, a member of a new class of cancer drugs. In 2011, Yervoy became a breakthrough treatment for metastatic melanoma, and BMS quickly followed that success with another immuno-oncology drug, Opdivo.

By June 2015, the transformation was largely complete, with BMS renewing its focus on the abovementioned areas and also on immuno-oncology, where it held a huge lead over the competition. The company that emerged on the other side was slimmer, shedding the weight of a large, too-diversified drug company to become a biopharmaceutical firm focused on specialty therapies for high medical needs.

"It completely changed the atmosphere. It's changing the outcomes for these terrifying diseases," says **Fouad Namouni**, head of development for Yervoy and Opdivo at BMS's headquarters in Princeton, New Jersey. "We are walking the talk, trying to help save lives." As such, he says the makeover was not only the right business decision, but was highly motivating for BMS researchers, too. BMS had 7,300 R&D employees, invested \$4.5 billion in R&D in 2014, and expects to open a new R&D campus in Cambridge, Massachusetts in 2018.

Namouni credits trailblazing and bold leadership for BMS's success in immuno-oncology. "No matter what the science was telling us, we followed it and applied it, even during times when people thought it was heresy."

### Riding the immunotherapy wave

And people did think so. Although the idea of immunotherapy—activating or boosting the body's natural defenses to fight diseases better—has been around for decades, the molecular keys to unleash the immune system without doing more damage than good have long remained mysterious. But in the last decade, the field has made a tsunami of progress. Now, pharmaceutical manufacturers are jostling

for position on the immunotherapy wave, with BMS holding the leader's position.

BMS's two monoclonal antibody products both act on T-cell checkpoints, mechanisms that normally act to shut down an immune response once the job is finished. Some cancers have also found ways to trigger these checkpoints to effectively shut off T cells and hide from the immune system. By masking checkpoint receptors, Yervoy and Opdivo expand the number of circulating, tumor-recognizing T cells.

"The consequence is that the T lymphocytes are back at work and our natural defense system does a very good job" attacking tumors, says Namouni. Both drugs are approved for treating metastatic melanoma, and Opdivo is also approved for squamous lung cancer. Namouni says the immuno-oncology field exploded after BMS showed that the immune-activating approach not only worked, but worked on notoriously stubborn cancers.

These amazing successes have made believers of investors and researchers alike, with a flood of companies adding cancer immunotherapy components to their portfolios. Both Celgene and Roche have firmly staked out territory on the immunotherapy stage already.

Roche has four biologic cancer immunotherapy molecules in clinical trials that could work in powerful combinations with each other or with current drugs, says **William Pao**, global head of oncology discovery in Basel. Those candidates include antibodies that would activate and arm more T cells and bispecific, engineered antibodies that physically bring T cells to the tumor cells they are armed to kill. Another engineered antibody would tag tumor cells with an immunocytokine that preferentially activates killer T cells.

Much like BMS, Celgene also made a big gamble about a decade ago when it developed a class of immune-modulating drugs that included the infamous teratogen thalidomide. These immunomodulatory drug (IMiD) compounds, including Revlimid, were successful at targeting multiple myeloma and lymphoma. They work by boosting the degradation of key factors for white blood cell production.

### Transformative biotechnologies

Other top employer innovations harbor the potential to change lives as well. Transformative biotechnologies at Moderna and Novozymes are changing the way scientists approach both medicine and agriculture.

Novozymes is a relative newcomer to the biopharmaceutical realm, having split from Novo Nordisk in 2000. Headquartered in Bagsvaerd, Denmark, the enzyme-based company makes industrial, biofuel, agricultural, and medical products. Some of Novozymes' latest technological pushes rely on mining the microbiome to find powerful new enzymes or activities.

Chief Scientific Officer **Per Falholt** says that the enzymes discovered to date are only the tip of the iceberg. "In the past, we were restricted to microbes we could grow in the lab, but metagenomics gets around that," he says.

Teaming up with fellow top employer Monsanto, Novozymes' scientists are developing microbial seed treatments that will yield more corn and soybeans, ideally with less chemical fertilizers, pesticides, or water. These microbes might increase crop yields by releasing more phosphate or nitrogen from the soil. **Nathan Cude** works in Novozymes' agbiotech division in Durham, North Carolina in the microbial discovery group, which isolates and identifies thousands of microbes collected from soil samples around the United States. After characterizing the bugs genetically and biochemically, and assessing safety risks, the group nominates promising candidates to Monsanto for testing in 500,000 annual field trials of every imaginable soil and weather scenario. *continued*

## Driving characteristics of top employers

2015:	2014:
1. Innovative leader in the industry	1. Innovative leader in the industry
2. Treats employees with respect	2. Treats employees with respect
3. Loyal employees	3. Loyal employees
4. Socially responsible	4. Socially responsible
5. Work culture values aligned	5. Work culture values aligned
	6. Makes changes needed

Driving characteristics are listed in descending order of impact on overall employer rankings.

The colored backgrounds indicate the characteristics in common for the two years.

Moderna's mRNA therapeutics also put the power of molecular genetics to work, but, in this case, as an entirely new drug modality. Formed in 2011 and based in Cambridge, Massachusetts, Moderna is the newest top employer on the block. The company's modified mRNA drugs incorporate naturally occurring nucleotide analogs that evade the body's efficient dispatch of foreign, introduced RNA.

**Matt Stanton**, Moderna's head of chemistry, says the company's innovation can use exogenous, synthesized mRNA to create any protein of interest in targeted cell types or tissues. "There are obvious no-brainer advantages to that approach" in cost, speed, and efficacy, he says.

Moderna Chief Executive Officer **Stéphane Bancel** adds: "mRNA drugs can do things for patients that small molecules and huge antibodies cannot do." Among other feats, the technology has the potential to serve up gene therapy without genetic tinkering, and it can deliver regenerative medicine without the messiness of cell-based therapies. Stanton says that the technology could also tackle "undruggable" targets, for example by replacing a missing intracellular protein or disrupting a protein-protein interaction.

Innovation has remained the survey's top driver for 12 years running. It's not surprising that scientists want employers who give them the space and freedom for the creativity needed to find to fresh solutions. Celgene scientist **Patrick Hagner** develops next-generation IMiD therapies, including drug candidate CC122. When asked what he likes best about working there, he replies, "The nerd in me says innovative science is what defines this company."

But he also mentions a particular 20-year-old lymphoma patient whose cancer had failed to respond to multiple chemotherapies. After enrolling in a clinical trial for CC122, the patient experienced a remission. "To have actually helped somebody live longer—that's one of the most enjoyable qualities of working here."

### Putting patients, planet first

Hagner is not alone in being motivated by making such a tangible difference. Most top employers scored highly for being responsible corporate citizens and for having corporate values that aligned with their employees' own beliefs. Many have sustainability initiatives like buildings powered by wind and recycled water (Celgene), partnering with local Habitat for Humanity projects (Moderna), or volunteering at patient events like the National Veterans Wheelchair Games (BMS). Last year, Celgene employees raised funds alongside the Multiple Myeloma Research Foundation in the Empire State Building Run-Up, racing up all 86 flights of stairs in less than 15 minutes.

Two firms, however, stand out in the crowd for placing patients' needs (Alexion) and sustainability (Novozymes) squarely at the center of their business model. "In this industry, everyone is trying

to come up with important, good medicines, but at Alexion, we are extremely and genuinely patient-centric," says Mackay.

That "patientricity" can be seen in town-hall meetings where patients share their disease and treatment experiences. After visits from Alexion's youngest patients, Mackay says he often sees employees "walking on air, going back to their lab benches or offices knowing that they could have a real impact on children."

The urgency to find treatments for life-threatening conditions translates into a company culture that is fast-paced, hardworking, and entrepreneurial in spirit, says **Clare Carmichael**, chief human resources officer for Alexion.

Similarly, Novozymes' Nielsen says that young employees are not driven by the size of their paychecks, but rather by personal development and making an impact. "People want to tell their kids when they pick them up from kindergarten, 'I did something today that makes this world a better place to live,'" he says.

The company's tagline "make more with less" plays out across its science, from detergent enzymes that save energy and water to technology for converting waste biomass into biofuels. It even trickles into travel planning, with employee reminders about carbon footprints.

That emphasis on sustainability appealed to scientist **Leah Blasiak** when she transitioned from academia to her current post in the agbiotech division at Novozymes. "What I do matters, and I am much closer to the direct application of my research," she says.

### Recruiting and retaining top talent

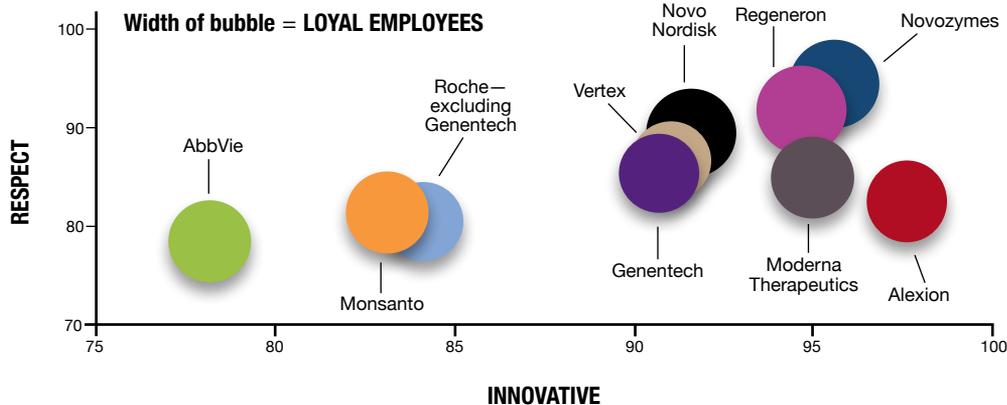
Recruiting talented young scientists like Blasiak and keeping them on board for the long haul was cited by this year's survey respondents as one of the industry's biggest challenges. Top firms say they have not-so-secret weapons for attracting the best scientists and keeping them stimulated.

"Novozymes' success is determined by the passion and energy that Zymers bring to work each morning," says Nielsen. He says his firm is often a first choice for scientists in Denmark, Sweden, and Germany who are familiar with it, but recruiting in the United States or Asia is more difficult.

Falholt says that Novozymes looks for scientists who "burn high," chewing on problems until a solution comes to them, whether during work hours or not. Likewise, every Moderna employee is given an iPhone and iPad connected to the company cloud, so if genius strikes while an employee reads her Sunday paper, it can be captured instantly.

Many top employers are growing rapidly, and so they look for employees who are "learning agile," who can wear multiple, shifting hats, and who excel at cross-functional or even cross-company collaboration. Job candidates must **continued**>

## Comparison of top ten's top characteristics



Comparison of the top 10 companies on the basis of the top three drivers (scored out of 100):

- **Innovative leader in the industry** (x-axis),
- **Treats employees with respect** (y-axis),
- **Has loyal employees** (bubble width).

show the capacity for managing uncertainty, change, and even ambiguity in a fast-moving company, says Moderna's **Steve Harbin**, senior vice president for human resources. "I look for it in every interviewee, because the one constant is that Moderna is changing," he says.

When hiring at Roche, Pao says that personality is equally as important as a deep understanding of disease biology and an appreciation of drug development. "We look for a team player who can fit into a matrix environment," he says, echoing other top employers as well. That means someone who can ferry his ideas and data between all the various layers of a drug development program—from target discovery to chemistry to preclinical tools and testing, clinical development, and beyond.

### Respect begets loyalty

It's an old maxim of business: People leave employers because of bad managers. This year, the second-most important driver of top employers was respecting employees, followed closely by having loyal employees. Workers at the best companies say that respect, which can take many forms, begets loyalty. At Novozymes, employee turnover is low—just 8.5% worldwide in 2014—reflecting a very low proportion of heavy-handed managers, says **Michael Almer**, vice president of human resources.

The company also puts a Scandinavian twist on trust—giving employees a hefty dose of responsibility upfront. Cude recalls being handed that mantle on day one, starting in an empty lab with 12 others at the new agbiotech facility. "We still had these goals and timelines dictated by the growing season to meet," he says. "I was put into the deep end, but it was a really great learning and networking experience."

Smaller tokens of employee appreciation don't hurt either. Companies have brought in "jeans every day" dress codes (Alexion), free ice cream trucks (Novozymes), and an electric car for zipping between campuses (Moderna).

More serious benefits make high-performance employees' lives a little less stressful. Alexion provides paid caregiver leave to spend time with a terminally ill loved one and coaches for families navigating college applications. Celgene places a hefty emphasis on employee wellness, employing a nurse practitioner to treat employees on-site and providing hot, healthy to-go dinners from its cafeteria and local, farm-fresh produce for employees to buy on their way home. Moderna operates on the cantina model, serving a free catered lunch so employees can discuss matters over the daily meal.

But Harbin pooh-poohs the idea that perks like foosball tables will reel in or retain employees. "So Moderna provides free lunch, who cares?" he dismisses. Providing an environment where employees can dream up new ideas and carry them out is more important. "It is the speed with which we move from ideation to execution that makes Moderna special."

### Unbridled enthusiasm

That buzz for getting things done permeates all top employer companies and shines through in this year's historically positive overall survey scores. Even though the global economic outlook has ticked upward, industry leaders attribute the survey's optimistic attitudes to scientific excitement rather than financial security.

"It's unique to be at a company sitting on top of discoveries that are actually changing the standard of care in cancer," says **Carl Decicco**, head of discovery at BMS. Four of the company's immuno-oncology drug trials had to be stopped due to the ethical need to offer the more effective experimental treatment to the other arm of patients receiving standard care. "BMS is willing to take risks that are backed by good scientific data," he says. "We're getting a lot of things right and people are finding it an exciting place to work."

Not resting on laurels inspires Celgene's employees to always strive for the next level of success, says Chief Financial Officer **Peter Kellogg**. "We try to keep the money focused on the science and innovation." He says employees appreciate long-range planning and vision that allows companies to ride out shifting financial trade winds. "There's something to be said for persistence and never feeling like we are a successful company."

Above all else, employees rank innovations that allow them to make a positive, real impact in the world—not compensation, retirement benefits, or career advancement—as the biggest reward of working in biotech and pharmaceuticals. Blasiak refers to an oft-repeated motto at Novozymes about having a "triple" bottom line.

"'People, planet, profit'—which is totally buzz-wordy—but it really does mean something here," she says. Because the company's leaders truly care that profitable products also do some good for people and the environment, Blasiak and her colleagues are inspired to put forward their best effort. "At the end of the day, everyone wants their work to be doing some good."

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