

INNOVATION MORE CRITICAL THAN EVER

The year 2009 has been a time of change for the biotechnology and pharmaceutical industry. With a weakened global economy and dwindling drug pipelines, many of the companies that made the list of *Science*'s 2009 top employers are finding that maintaining innovation through collaborations and partnerships is critical to success. **By Laura Bonetta**

The global economic meltdown severely damaged many industries. Although the pharmaceutical industry is normally relatively immune to economic downturns, most biotechnology and pharmaceutical companies have had to find ways to tighten their belts. In addition, for many of them the pipeline of promising drug candidates has dried up at around the same time that existing drugs are set to lose their patent protection. To feed pipelines and cut costs some companies have merged, while many others have formed partnerships.

The shifting political landscape has also brought change. In the United States, the ongoing push for health care reform may mean that drugs will soon be marketed differently. And heightened public concern about drug safety has resulted in new legislation that will lead to more stringent safety regulations by the US Food and Drug Administration (FDA).

But not everything is changing. For one thing Genentech, now a wholly owned member of the Roche group, has not budged from its No. 1 position in this year's *Science* survey of top employers in the industry. "We are delighted to once again be named top employer by *Science* magazine," says **Marc Tessier-Lavigne**, Genentech's executive vice president for research and chief scientific officer. "The honor is a real testament to Genentech's unique culture and to the dedication of our employees." The company held on to the No. 1 spot despite the fact that at about the same time the web-based survey was being completed in March 2009, Genentech was acquired by the Swiss company Roche.

The over 2,000 people who responded to the top employer survey selected companies, including their own, that they regarded as best, average, and worst employers. And although they shuffled places somewhat, most of the companies who made it to the top 20 list (see figure on p. 162) were on that list last year and the year before that. One exception is Syngenta. A company providing seeds and crop protection products, Syngenta made the list for the first time this year at No. 20.

Between Genentech and Syngenta, the top 20 employers include Boehringer Ingelheim at No. 2, followed by Genzyme and then Monsanto. Millennium: The Takeda Oncology Company, which took its new name after Millennium was acquired by Takeda Pharmaceuticals in May 2008, came in at No. 5, followed by Merck KGaA, Schering-Plough, Amgen, Gilead Sciences, and Johnson & Johnson at No. 10. Next came Eli Lilly and Company, Novartis, GlaxoSmithKline, AstraZeneca, Biogen Idec, Merck, Roche, Wyeth, and sanofi aventis. Among these top 20 companies, 12 are headquartered in the United States and eight are in Europe.

As in previous years, all survey takers rated the companies they had chosen on 23 driving characteristics. *Being an innovative leader in the industry* remains the most powerful driving characteristic of top employers. In addition, *doing important, quality research, being socially responsible with loyal employees, having leaders who keep the organization moving in the right direction, having values that are aligned with employees' personal values, and treating employees with respect* are the other important drivers selecting the best company.

All companies on the top 20 list received high marks for these drivers, with some companies doing better on some drivers than others (see figure on p. 168).

Innovation Is Key

Being a leader in new discoveries and innovation is what many of the companies on the top 20 list strive to achieve. For three consecutive years, this driver was the top criterion among survey takers in selecting the best company to work for. **continued »**



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UPCOMING FEATURES

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TOP TWENTY EMPLOYERS



| 2009 Rank | 2008 Rank | Employer (Global Headquarters) |
|-----------|-----------|---|
| 1 | 1 | Genentech, Inc. (South San Francisco, CA) |
| 2 | 4 | Boehringer Ingelheim (Ingelheim, Germany) |
| 3 | 3 | Genzyme Corp. (Cambridge, MA) |
| 4 | 2 | Monsanto (Creve Coeur, MO) |
| 5 | 8 | Millennium: The Takeda Oncology Co. (Cambridge, MA) |
| 6 | -- | Merck KGaA (Darmstadt, Germany) |
| 7 | 5 | Schering-Plough Corporation (Kenilworth, NJ) |
| 8 | 20 | Amgen (Thousand Oaks, CA) |
| 9 | 9 | Gilead Sciences (Foster City, CA) |
| 10 | 15 | Johnson & Johnson (New Brunswick, NJ) |
| 11 | 10 | Eli Lilly and Company (Indianapolis, IN) |
| 12 | 11 | Novartis (Basel, Switzerland) |
| 13 | 19 | GlaxoSmithKline (London, UK) |
| 14 | 12 | AstraZeneca PLC (London, UK) |
| 15 | 18 | Biogen Idec (Cambridge, MA) |
| 16 | 14 | Merck & Co., Inc. (Whitehouse Station, NJ) |
| 17 | 6 | Roche (Basel, Switzerland) |
| 18 | 13 | Wyeth (Madison, NJ) |
| 19 | 16 | sanofi-aventis (Paris, France) |
| 20 | -- | Syngenta (Basel, Switzerland) |

Innovative leader in the industry
Treats employees with respect
Has loyal employees
Is socially responsible
Does important, quality research
Leadership moves company in right direction
Work and personal values are aligned

Survey Methodology

E-mail invitations to take a web-based survey were sent to roughly 75,000 individuals worldwide, who were AAAS members, *Science* Careers registrants, *Science* website visitors, and past survey takers. E-mails were also sent to approximately one thousand human resources contacts at industry firms. A total of 2,334 people responded by taking the survey between March 3 and 28, 2009; 73 percent from North America, 15 percent from Europe, 8 percent in the Asia/Pacific Rim. Survey participants were asked to write in the names of the companies that they regarded as best, average, and worst employers. In total 575 companies were cited. Survey takers then rated the companies they had chosen on 23 driving characteristics. The top 20 companies were selected using a statistical process that calculates a unique ranking score for each company. Only companies that were rated by 30 or more respondents were eligible to become part of the top 20 employers. Fifty-eight percent of respondents chose as best employer the company they were currently employed by, whereas 18 percent chose companies that they knew through colleagues or friends and 14 percent selected a company to which they had no relationship.

The 20 companies with the best reputations as employers and the top three driving characteristics for each company, according to respondents in the 2009 survey undertaken for the *Science*/AAAS Business Office. The companies without a 2008 rank did not receive enough mentions to qualify during the 2008 survey.

At Amgen “we look for approaches to disease that have never been pursued,” says **Roger Perlmutter**, executive vice president for research and development. “We avoid me-too research.” A recent example of innovative science is the development of an antibody that targets a protein secreted by bone cells and that inhibits bone formation. That research, according to Perlmutter, has revealed fundamental insights into bone biology, as well as being developed as a possible treatment for bone diseases.

“We don’t do work where someone has already pursued a target and we can make another version of that drug,” says Perlmutter. “That is not to say that kind of work is unimportant. Changing a drug so that it can be taken once a day rather than twice a day makes a big difference in a patient’s life. But it’s not what we do.”

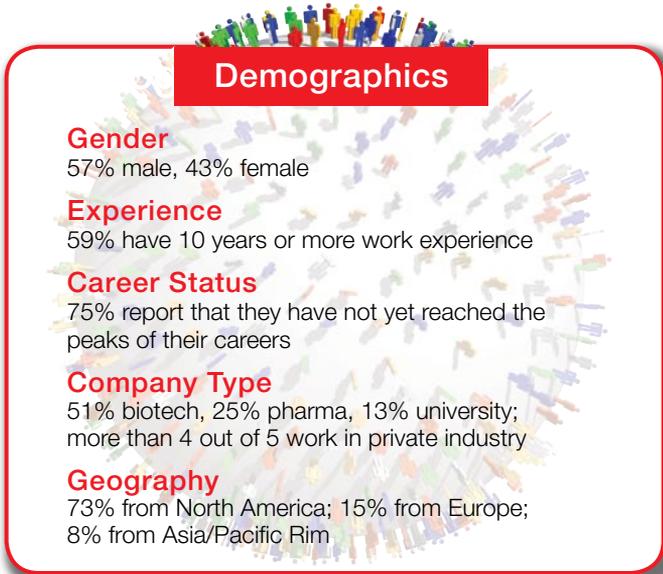
The focus on innovation is just as important for other types of biotechnology companies, even ones that are not in the business of making drugs. “Over the course of time we have proven that we are leaders in innovation,” says **Roger Kemble**, head of crop genetics research and interim president of Syngenta.

(Last year, for the first time ever, a company outside the biopharmaceutical business reached the first tier of top employers—2008

survey respondents voted Monsanto into second place after Genentech. This year Monsanto dropped to fourth place, but Syngenta, another company that applies biotechnology and traditional chemistry to the development of agricultural products, made the list of top employers for the first time.)

“We pursue innovative ideas that did not exist before. We are not improving something that existed. We are starting with a clean slate, using sophisticated tools and talented people to bring plant potential to life,” says Kemble. “Innovation comes from realizing that research can only advance if we have innovative people to advance it and if we give them time and space to innovate.”

One way in which the company rewards innovation is through an internal awards program. “It’s a bit like the Oscars for us,” says Kemble. Syngenta employees who had innovative ideas that were later put into practice submit written descriptions of their projects. A special committee then selects the best projects. In 2008, the program had record participation, with around a thousand projects submitted, representing 9,400 employees around the world, about two-thirds of the total work force. **continued »**



Demographics

Gender

57% male, 43% female

Experience

59% have 10 years or more work experience

Career Status

75% report that they have not yet reached the peaks of their careers

Company Type

51% biotech, 25% pharma, 13% university; more than 4 out of 5 work in private industry

Geography

73% from North America; 15% from Europe; 8% from Asia/Pacific Rim

Maintaining the Edge

Given the recent economic turmoil and the fact that patent protection on many successful drugs is set to expire in a few years, maintaining innovation is more essential than ever to a company's survival. And each company has gone about increasing and maintaining innovation through different approaches.

"We have a new CEO, Andrew Witty, who has been incredibly dynamic in helping the company understand that the old pharma model has to change," says **Nigel Broom** director of UK R&D recruitment at GlaxoSmithKline (GSK), the largest pharmaceutical company in the UK. "And that we will be leaders and not followers in that change."

To increase its early pipeline, GSK has shifted focus to scientific areas that are most likely to lead to new medicines. Together with vaccines, GSK's R&D is now focused on biopharmaceuticals, immunoinflammation, infectious diseases, metabolic pathways, neuroscience, oncology, ophthalmology, and respiratory conditions. "We have been making the change for a while, certainly in R&D," says Broom.

In addition, the company has expanded collaborations with external partners as well as with academia. Recent alliances include organizations such as Cellzome and the Harvard Stem Cell Institute, as well as the acquisition of small biotech companies like Sirtris and Genelabs.

The year 2008 saw the creation of discovery performance units (DPUs) within GSK. Each DPU is a compact, fully empowered, focused, and integrated team which has responsibility for a small part of the pipeline. "Each DPU has guaranteed funding for three years and then the funding is reassessed," says Broom. "They are run as mini businesses and people are very engaged. They have to regularly justify why they need continued funding." These units, which had been running for about six to nine months by the time this article went to press, are "reflective of the changes that are going on at GSK," says Broom.

GSK monitors the level of satisfaction among its employees on a regular basis through a survey aptly called PULSE. "We have done a fair bit of changing. At first people were uncertain about it, but the approval numbers have now bounced back and gotten higher," says Broom. "There is enthusiasm for the work and a commitment to it. There is a lot of commitment to Witty and the path he is taking us."

The Importance of Research

One of the key ingredients of innovation is cutting-edge research. This year's survey respondents identified research quality as one of the top six drivers of the best employers—a characteristic that was not on the list last year (see figure on p. 166).

Over 90 percent of survey takers who selected the top four employers (Genentech, Boehringer Ingelheim, Genzyme, and Monsanto) agreed that these companies engage in important, high-quality research. In addition, doing high quality research was among the top three drivers for 18 employers out of the top 20 (see figure on p. 162).

"Genentech was founded on doing great science, with a focus on translational research," says Genentech's Tessier-Lavigne. Genentech's co-founder, Robert Swanson, who died in 1999, often referred to the importance of Genentech's employees by saying, "our most valuable assets go home every evening in tennis shoes," recalls Tessier-Lavigne.

Tessier-Lavigne is one of several established scientists who were brought to Genentech's top management from academia. Because of its focus on high-quality research and informal atmosphere, Genentech has long been viewed as a cross between academia and industry. Vishva Dixit, vice president of physiological chemistry, joined Genentech in 1997 from the University of Michigan. "When people ask him 'What is it like working in industry?' he answers 'I don't know, I went to Genentech,'" says Tessier-Lavigne.

Genentech's employees value "being part of a science-driven culture and one with very little hierarchy," he adds. "But what inspires them is being focused on improving patients' lives. That's what motivates us here."

Flat Hierarchies

It comes as no surprise that scientists don't like hierarchy and most companies that made the top 20 list understand that. Representatives from these companies typically describe their company's environment as being open and with little top-to-bottom decision making.

"Scientists live for initiatives, they live for motivation. They need to be taken seriously and not micromanaged," says **Gerd Schnorrenberg**, senior vice president for research for Boehringer Ingelheim, based at the company's largest research site in Biberach, Germany. "We have very flat hierarchy in research. Our scientists report their project results in management meetings directly to board members."

With 41,300 employees worldwide, Boehringer Ingelheim has 1,700 researchers (out of a total of 6,700 employees in the whole research and development area). A relatively small research group helps maintain informal and open communication. "Among us researchers, we all know each other quite well," says Schnorrenberg.

The company has performed several so-called "landmark" studies. The results of one study, known as UPLIFT, for example, one of four large-scale studies conducted in 2008, demonstrated the effectiveness and safety of a drug called Spiriva in about 6,000 patients with respiratory disease.

Because the company is privately owned, "we are able to invest in mega trials without any concerns about how Wall Street will react," says **David Nurnberger**, senior vice president, human resources at Boehringer Ingelheim Pharmaceuticals, the company's US affiliate. "We have no public stock, so we can maintain a long-term view. We can invest in large, sometimes long, trials to get the data we need." **continued »**



Driving Characteristics of Top Employers

2009

1. Innovative leader in the industry
2. Treats employees with respect
3. Loyal employees
4. Socially responsible
5. Does important, quality research
6. Leadership moves company in right direction
7. Work and personal values are aligned

2008

1. Innovative leader in the industry
2. Leadership moves company in right direction
3. Treats employees with respect
4. Loyal employees
5. Socially responsible
6. Work and personal values are aligned

Black type indicates the characteristics in common for the two years.

Valuing Employees

In addition to a commitment to research and little hierarchy, other characteristics common to companies in the list of top 20 employers include *respecting employees* and *having loyal employees*.

“We have roundtable discussions where executives, including our CEO, meet with a random group of 10 employees at a time and openly respond to whatever the employees want to talk about,” says **Craig Schneier**, executive vice president of human resources at Biogen Idec. “They are very candid exchanges.”

A company of about 4,700 employees, Biogen Idec has been conducting these roundtable discussions for several years, tapping about a thousand employees every year. “Our employees express a lot of confidence and support for leadership and part of the reason is that we actively communicate with them,” says Schneier.

Another important criterion for employers is working for a company with values that are aligned to the employee’s own. At Johnson & Johnson the values that guide decision making are spelled out in the company’s Credo, according to **Anuk Das**, assistant director of immunobiology at Centocor R&D, a Philadelphia-based subsidiary of Johnson & Johnson.

Robert Wood Johnson, former chairman from 1932 to 1963 and a member of the company’s founding family, crafted the Credo in 1943, just before Johnson & Johnson became a publicly traded company. “What is impressive is that the Credo is still carried out today,” says Das.

Johnson & Johnson’s Credo lists the company’s four priorities in order of importance: patients and their families, employees, communities, and stockholders. “For me my loyalty for Johnson & Johnson comes from the Credo and the demonstration that our leaders use it as a guide to make decisions,” says Das.

Mergers and Acquisitions

It may be challenging for a company to do right by its employees at the time of a merger or acquisition. Such steps are often accompanied by layoffs, in some cases leading to the loss of thousands of jobs. On the upside, survey respondents pointed out that mergers can provide a company with access to a pipeline of new products and the chance to cut costs, ultimately benefiting employees.

This year has seen many high-profile mergers and acquisitions. In January 2009 New York-based Pfizer, maker of the blockbuster drug Lipitor, which loses patent protection in November 2011, announced

plans to buy Wyeth. In March, Merck & Co. bought Schering-Plough Corporation (both companies made the list of top employers at positions 16 and 7, respectively).

In March 2009 Genentech became a wholly owned member of the Roche group, headquartered in Basel, Switzerland. Under the new organizational structure, Genentech Research and Early Development program, dubbed gRED, which essentially comprises basic research up

to Phase 2 clinical trials, will maintain its autonomy. “The leadership at Roche knew the strength of our research program and wanted to maintain what we had developed here,” says Tessier-Lavigne. “They have left us independent, so we have been able to maintain our research culture without missing a beat.”

The merger did of course cause some changes. Arthur Levinson, Genentech’s former chair and CEO, and Susan Desmond-Hellmann, former president of product development, both left the company. (In May 2009, Desmond-Hellmann was named chancellor of the University of California, San Francisco.) But as far as Genentech’s research focus and unique culture—which includes a vibrant postdoctoral program as well as free cappuccinos and Friday evening parties—are concerned, those will not change, says Tessier-Lavigne. “We have maintained our momentum throughout the merger and now we are moving on the next exciting chapter in our company,” he says.

Is a smooth takeover really possible? Apparently yes, according to **Joe Bolen**, chief scientific officer at Millennium. Established in 1993 as a genomics company, Millennium has since grown into a fully integrated biopharmaceutical company. In May 2008 the company was acquired by Takeda Pharmaceutical Company Limited, the largest pharmaceutical company in Japan. Millennium, now renamed Millennium: The Takeda Oncology Company, operates as an independent subsidiary serving as Takeda’s global center of excellence in oncology.

Under Takeda, Millennium has been involved in a larger number of clinical trials and has been testing new compounds obtained from its parent company. “But the philosophy of the earlier research and development has not changed,” says Bolen. “We worked hard when Millennium was first set up to figure out the best things to do. We worked out procedures to make early-phase research as seamless as could be. Under Takeda, we were able to continue the same processes and maintain our culture and focus.”

The strategy appears to be paying off. In April 2009 the company published an article describing a new molecule that modulates the levels of proteins critical to the regulation of cancer cell growth and survival. The compound has now moved forward to Phase 1 studies. **continued »**

You can find an expanded version of this feature by going to:
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“We were reassured we would maintain our identity and independence and I am happy to say that the president of Takeda, Yasuchika Hasegawa, kept his word and allowed us to flourish,” says Bolen. “Most takeovers are not happy, but this is an acquisition that will be a success story.” Perhaps that is why, after the acquisition, Millennium has moved to fifth place in the top employers survey, up from No. 8 in 2008 and 13 in 2007.

Innovation Through Collaboration

Some companies have made it part of their mission to keep away from mergers and acquisitions. “We are a very independent company and always plan to be that way,” says **Rich Gregory**, Genzyme’s senior vice president and head of research. “The acquisitions within the pharma industry are symptomatic of many companies with relatively weak pipelines that are acquiring innovation by consolidating with larger companies to reduce expenses.” But Genzyme has taken the approach to invest in research internally, as well as establishing numerous collaborations with other companies and academic researchers, explains Gregory.

For example a collaboration between Genzyme and PTC Therapeutics led to experimental new drugs with potential to address many devastating genetic diseases, including Duchenne muscular dystrophy and cystic fibrosis. “Those drugs are based on an entirely novel technology that we acquired through collaboration,” says Gregory.

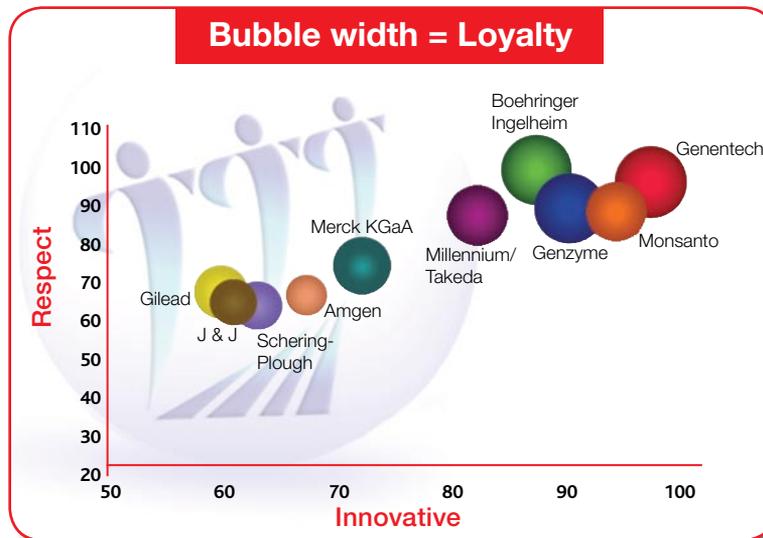
Being able to acquire new technologies, as well as becoming more innovative internally by venturing into new research areas, such as stem cell and gene therapy research, have allowed Genzyme to maintain its edge. “We evolve constantly. We are not a static company, but will change as the business changes,” says Gregory. “At the same time, our employees value working for a stable company.”

Indeed a common theme for employees at top-tier biotechnology or pharmaceutical companies is the opportunity to collaborate with a wide range of researchers from different backgrounds and get exposed to different technologies and fields of research. “We are constantly innovating. It is probably a lot more fun for employees,” says Gregory.

Stable Environments

Boehringer Ingelheim, a privately held company, is among the ones committed to independence. “You have to find the right balance between continuity and change. We see the necessity to change and to adapt to future challenges,” says Schnorrenberg. “One way to cope is not to merge, but to collaborate with academic labs and startups.”

The strategy has helped the company be financially successful, according to Schnorrenberg. “We increased our R&D budget by 22 percent in 2008. Not too many companies have been able to do that,” he says. “Part of the reason is that we have not been saddled with all the costs that go with mergers and acquisitions.”



Comparison of the top 10 companies on the basis of the top 3 drivers (scored out of 100): Loyalty (bubble width), Innovative (x-axis), and Treats employees with respect (y-axis).

The strategy is also reassuring to employees. “Our employees are not worried about the company being acquired; that is a really important facet of working for Boehringer Ingelheim,” says Nurnberger. “We receive many applications from people from other companies who complain about constant changes in direction and management. We are attractive to talented individuals looking for a stimulating work environment in a privately owned company.”

This year’s survey identified that there were slightly more job seekers in the market (30 percent compared to 27 percent in 2008). Fewer people this year were looking for a new job for career advancement than last year, but more are moving because of “company direction” and for reasons related to mergers and acquisitions or expected layoffs that were taking place at the survey taker’s company.

Working for the Greater Good

Job insecurity due to mergers and acquisitions, as well as some re-prioritization and downsizing due to the global economic meltdown, was identified as one of the two disadvantages of working in the biotech and pharmaceutical industry by survey takers. The other disadvantage is the negative public image perception due to withdrawn products and safety issues.

“Any time you are dealing with powerful medicines, you have the potential issue of safety. As a company we make sure we do everything above board and carefully,” says Biogen Idec’s Schneier. “Employees want to know that the company they work for is ethical and transparent and has done all the right things.”

But survey participants identified many advantages of working for the biotech and pharmaceutical industry. They include engaging work and being part of cutting-edge research and development; innovative, creative, and fast-paced work; and stability in difficult economic times, including generous salaries, benefits, and job security.

And despite all the challenges, one of the main advantages of working in this industry is its mission: advancing the health of people and working for the greater good. “What I focus on is the reason why I chose to be a scientist,” says Johnson & Johnson’s Das. “I wanted to develop medicines to treat diseases. That is my focus. There are still many diseases with no cure.”

And for those interested in doing this kind of research, there may not be a better time than the present. “I wish I was 20–30 years younger and getting into this business now,” says Millennium’s Bolen. “I look at the contributions that scientists in industry are making. The quality of science in biotech and pharma is world class and much is done in collaboration with academic labs. There is a high level of excitement in the scientific world.”

Laura Bonetta is a scientist turned freelance writer based in the Washington, D.C., area.

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