

REUNION Genentech postdocs come together at recent event held at Beach Resort in Aptos



LANDING A POSTDOC IN INDUSTRY

Ambitious, accomplished Ph.D. chemists can find openings in programs designed to **SPARK INNOVATION** at bone-lean firms

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FOR QING CAO, securing a coveted two-year postdoctoral position at IBM's T. J. Watson Research Center in Yorktown Heights, N.Y., provided "the perfect start" for his career, he says.

Like many postdocs in industry, he was able "to conduct scientific research at the very frontier using state-of-the-art research facilities and to work within an extremely diversified team of experts," says Cao, who completed a Ph.D. in chemistry at the University of Illinois, Urbana-Champaign (UIUC) in 2009. In addition, he received a salary and benefits package that was much more generous than what he could expect to get in an academic postdoc position, he says. Moreover, after completing his fellowship in November 2011, he transitioned into a permanent position as a research staff member at the company.

However, finding postdoctoral positions in industry is not easy, as competition for these jobs is fierce. More Ph.D.s in the chemical sciences—even those who had aspired to move straight into permanent jobs—are vying for postdocs in industry, academia, or elsewhere as the U.S. unemployment rate for chemists remains high (C&EN, July 23, page 6).

Although supporting data are scarce, the

number of industrial postdocs available to chemists may be dwarfed by the number of postdoc positions available in academia or government labs. That's been the observation of Patricia Simpson, director of academic advising and career counseling and placement at UIUC's School of Chemical Sciences. Only a few companies, including Dow Chemical and Intel, have recently recruited postdocs from the school's pool of graduates, she says.

One bright spot, however, is that some companies in the pharmaceutical and other industries are now expanding their postdoc programs, thereby creating a precious sliver of opportunity for top-notch Ph.D. scientists, including chemists, biochemists, and chemical engineers, who are willing to work hard to find and excel in these roles.

Running with bone-lean staffs after layoffs precipitated by the Great Recession and other market pressures, companies are eager to recruit more postdocs with

fresh ideas needed to spark in-

"In the face of increasing pressures from generics and follow-on drugs, and more stringent drug approval criteria, many pharma firms are energizing their research base by bringing in a cadre of energetic, bright, young scientists through postdoc programs," notes Vishva M. D. president of physiological chemistry at Genentech, who manages the postdoc program. "To sustain growth, there has to be some investment in innovation, and building a program is one way to do that."

Still, some question the motivation of company efforts to recruit more postdocs, arguing that they are simply tapping into a labor source to help bulk up their ranks.

"Although some companies may be exploiting new Ph.D.s from larger companies generally hired to explore interesting, fundable projects that does not immediately align with their goals or within their pipeline," says the blogger known as ChemJobs, a synthetic chemist who tracks postdoc employment and was a postdoc at a pharmaceutical company until 2010.

That's been a major motivation for a new postdoctoral research fellowship program that Merck & Co. is now launching, according to Christopher M. Schaefer, a senior principal scientist at

"Our postdoc program allows us to explore our scientific capabilities in a way that meets the needs of our customers."

As postdocs come into the program, “they won’t be just turning the crank, doing routine work at a low price,” he says. Instead, they will be involved in “cutting-edge science with the goal of rapid publication of their findings in high-profile journals.”

“By focusing the scientific passion and new perspectives of these postdoctoral fellows onto some of our most pressing scientific challenges, under the guidance of seasoned Merck mentors, we will be well positioned to step up the pace of scientific innovation to continue to drive the development of future medicines and vaccines,” Welch says.

The new Merck program will add 15 to 20 scientists per year over the next three years, building to a “steady state” of about 50 fellows by 2014, according to Welch, who is cochair of the program. The postdocs will come from scientific disciplines from genomics to biology to statistics to all branches of chemistry and biochemistry, and will be spread across the company’s U.S. sites in one-year appointments that are renewable for up to three years, he says.

To kick off the program, Merck is inviting its scientists to submit proposals for research projects in which they could mentor a postdoc. The top projects and mentors will be chosen by a committee chaired by Welch and Robert A. Kastelein, scientific

techniques that will be critical to the pharmaceutical industry in the next few years, Welch says.

In addition to training a small number of scientists who may eventually be hired as permanent employees, he adds, the program will “enable us to seed the outside world with folks who will be valuable future collaborators for Merck as they go to work in academia or at another pharma company or a supplier or vendor firm.”

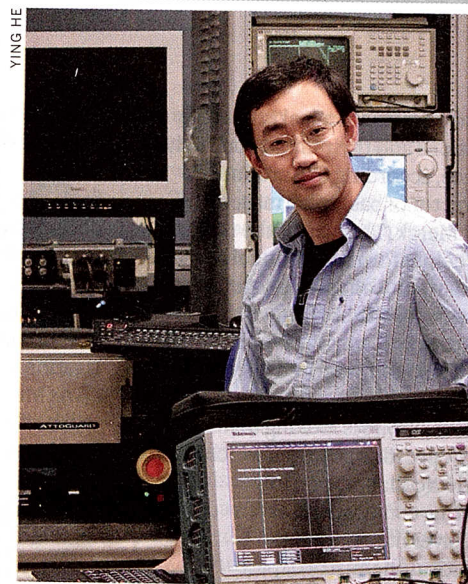
RECOGNIZING the many benefits of postdoc initiatives, Roche continues to expand the postdoctoral fellowship program it launched in 2008. The program aims to “reward our best scientists by providing them with a postdoctoral assistant who can support them in conducting novel research on the frontiers of science,” according to Klaus Müller, who cofounded the program and now manages it in retirement as a consultant to the firm.

At Roche, each postdoc also collaborates with an academic partner from a top university around the world on projects that run up to four years. Consequently, the program is also meant to strengthen international scientific exchange and nurture the development of innovative specialist knowledge, new ideas, and creative talent, Müller notes.

The company currently employs 110 postdocs around the world. Müller expects that number to grow to 125 by the end of 2012 and expand even further in 2013.

Placed either at top-ranked universities or at company sites, Roche postdoctoral fellows come from all disciplines of pharma discovery and early development, including informatics, physical chemistry, analytical chemistry, and synthetic chemistry. In projects aimed

at breaking new scientific ground, fellows might explore the chemistry behind novel pharmacology concepts or develop minia-



SMART MOVES During his postdoc at IBM, Cao conducted thin-film photovoltaics research, sometimes working in a “dry” electronics testing lab.

turized flow chemist integrates biology, M says.

The firm shares the progress of its postdoc projects through an e-symposium, during which fellows present their

and network with one another to identify potential synergies in their research.

Roche’s Genentech unit operates a postdoctoral program, which maintains a pool of 110 to 120 biochemists and chemists. The Genentech fellowships last three to four years and target basic research that is isolated from any particular projects, according to Dixit.

“Since the inception of the company, postdoctoral fellows have been an essential part of our culture, making major contributions to advances in biotechnology,” notes. Many of the fellows bring in new expertise or techniques that “substantially enrich our research environment and push the horizons of our knowledge base,” he says. In addition, Genentech benefits from the exposure to postdocs’ rigorous research, published in frontline journals, he notes.

POSTDOC PROGRAMS are also gaining favor within smaller firms in the pharmaceutical industry. Wolfe Laboratories, a contract research organization based in Watertown, Mass., continues to expand its program, according to Janet Wolfe, the firm’s chief executive officer. The company is now recruiting to fill a postdoc position that will involve a collaboration with Merck—in an arrangement that was conceived of prior to the inception of Merck’s new postdoctoral program. That position will focus on understanding the phar-



PROGRESS REPORT Roche postdoc Bill Bradley (right) discusses his oncology project with Roche colleagues at the company’s annual postdoc symposium, which was held in Nutley, N.J., last year.

associate vice president and cochair of the program. Beginning later this month, Merck will recruit postdocs through its website to fill the newly created positions.

While Merck scientists remain focused on proprietary research aimed at areas such as developing the next blockbuster drug, postdocs will be working in a precompetitive space, developing enabling tools and

ceutical and physicochemical properties of formulations and their impact on in vivo performance, according to Caroline McGregor, director of basic pharmaceutical sciences at Merck. The goal of the research will be to “help inform the rational design of new formulations,” adds McGregor, whose team will sponsor the project.

The postdoc will work at Wolfe’s facilities but will also be mentored by Merck scientists.

In addition, Wolfe is looking to fill another new postdoc position, which will extend its collaboration in antibody-drug conjugate research with the University of Kansas’ pharmaceutical chemistry department. The scientist hired for that role will work with department chair Christian Schöneich. Meanwhile, another postdoctoral fellow, Nicholas Boylan, who earned a Ph.D. in chemical and biomolecular engineering at Johns Hopkins University earlier this year, is continuing work with associate professor Jennifer S. Laurence.

“Our postdoc program allows us to extend our scientific capabilities in a way that meets the needs of our customers,” which are developing a broad range of compounds including small molecules, biologics, and targeted therapeutics, Wolfe says.

OUTSIDE OF THE pharmaceutical industry, some companies are also beefing up their postdoc programs. In North America, BASF is partnering more closely with its R&D community to expand the specific scientific areas in which it offers postdoctoral opportunities so they align with the growth sectors the firm is now targeting, says Bernadette B. Palumbo, BASF’s director of staffing and university relations.

Historically, BASF has used postdoc programs, mainly in Europe, to staff joint laboratories at Heidelberg University and Karlsruhe Institute of Technology, both in Germany, and the University of Strasbourg, in France. It will now work to build new partnerships with North American-based universities, Palumbo says.

“As a result of this program,” she says, “BASF will gain access to new ideas, techniques, and capabilities needed to maintain our position in the chemical sector.”

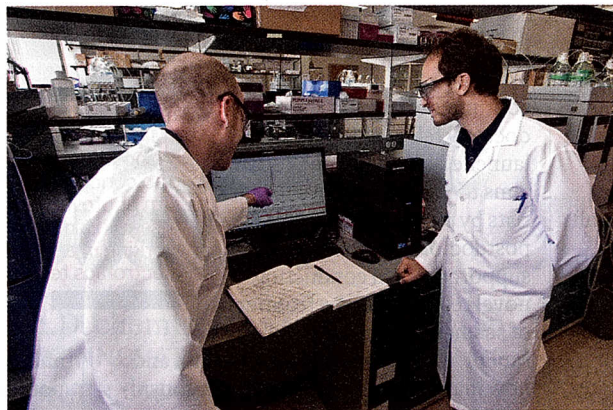
To meet the rigorous goals of their postdoc programs, companies are recruiting

only exceptional scientists—in an employment market where they can be choosy. Roche, for example, can sometimes select from 50 to 100 applicants for a single postdoc position, according to Müller. It screens for candidates who not only demonstrate excellent technological and scientific competence in their area of expertise, but also are “broad-minded, with a curiosity and motivation to explore related fields,” he says.

As Merck staffs its postdoc program, it will be “looking for people who are truly passionate about science and have a proven

ing an opening involves much surfing the Internet, notes IB advises postdoc seekers to “look for leading industrial research area of interest—either from or conference presentations—then directly for postdoc positions.” Also enlisted the help of his PI John A. Rogers, to find his IBM position with David B. Mitzi, an expert in the area of solution-processed inorganic semiconductors.

As is the case in any job search, networking is key to unearthing opportunities. That’s how Vincent Carroll, who earned a Ph.D. in organic chemistry at UIUC last month, started in a postdoc position at Molecular Neurobiology, a New Haven, Conn. company that provides services to pharmaceutical companies. Carroll found his job through a previous research group member at a conference, who forwarded his curriculum vitae to an acquaintance who



TACKLING PROBLEMS At Wolfe Labs, scientist Michael Kahn (right) and postdoc Boylan characterize antibody-drug conjugates using ion-exchange ultraperformance liquid chromatography.

track record of doing things aimed at changing the infrastructure of science,” Welch says. “From our experience, past performance is a good predictor of future success.”

Genentech’s Dixit makes the same point.

He scrutinizes candi-

dates’ graduate school records, gathering feedback from their mentors and checking whether they have published as a first author in top journals and how often their work has been cited.

Dixit also gauges candidates’ motivation and resolve. “Many people who apply for postdocs are under the impression that they will have bankers’ hours. They expect that they will drift in at nine in the morning, have a cappuccino, have a lunch break, and then maybe go for a swim or a run in the afternoon. So I spend a lot of time trying to disabuse them of that notion and stress that there are no set work hours. I tell them, ‘You have a project, and your mission is to make that project work regardless of what it takes.’”

For most would-be industrial postdocs, the hard work begins early—even before they get an interview for a position. Find-

ing research group at the company. Consequently, Molecular Neurobiology hired Carroll before it even advertised the position.

Making the effort to find a postdoc position can reap big rewards. Genentech’s Polenz, who is now working on a postdoc position with BASF at the University of Strasbourg, says he is gaining experience in advanced research, becoming more comfortable with industrial R&D, and building connections with Harvard scientists when he completes his postdoc transition into an R&D position. Polenz, who earned a Ph.D. in chemistry from Chemnitz University of Technology, in Germany, this

Genentech’s Dixit encourages candidates to do all they can to “maximize their experience—mainly by publishing and publishing outstanding research. A postdoctoral fellowship “is a most important part of your training, which has been long in the making—it’s most certainly a springboard to a career,” he says. “That experience will determine whether you want to stay in academia or whether you will be positioned to eventually run an organiza-

WOLFE LABORATORIES