

# Jobs Wanted: Cancer Research

*An uncertain economic climate points young scientists toward flexible career paths and cross-disciplinary skills*

Courtney Crane, PhD, has landed the kind of job that many postdoctoral researchers dream about. In April, she will begin building a multidisciplinary program in immunologic approaches to pediatric brain cancer at the Seattle Children's Research Institute as an assistant professor at the University of Washington.

But research positions like these have become increasingly rare for people with MDs or PhDs in biologic sciences. Crane and her colleagues are emerging from years of rigorous graduate and postgraduate training into a tight job market—whose demands may take unexpected twists.

While Crane fielded 3 job offers, those hiring didn't emphasize what she would have predicted. "Most people mentioned the translational aspect," she says. Her postdoctoral fellowship at the University of California, San Francisco examined how to improve patients' immune response to an experimental immunotherapy for brain cancer.

## HIGH HOPES, LOW HIRES

Overall, the employment picture is "pretty dismal," says economist Paula Stephan, PhD, author of *How Economics Shapes Science* (Harvard University Press; 2012). Only about 12% of people with PhDs in the biologic sciences hold tenure-track jobs within 5 to 6 years of earning their doctoral degrees, whereas fewer than 30% of them work in industry, she says.

No national data track the careers of individuals with MDs, but the "general thought is that a paucity of physician-scientists inhibits the advancement of research into clinical applications," says Carrie Wolinetz, PhD, associate vice president for federal relations at the Association of American Universities.

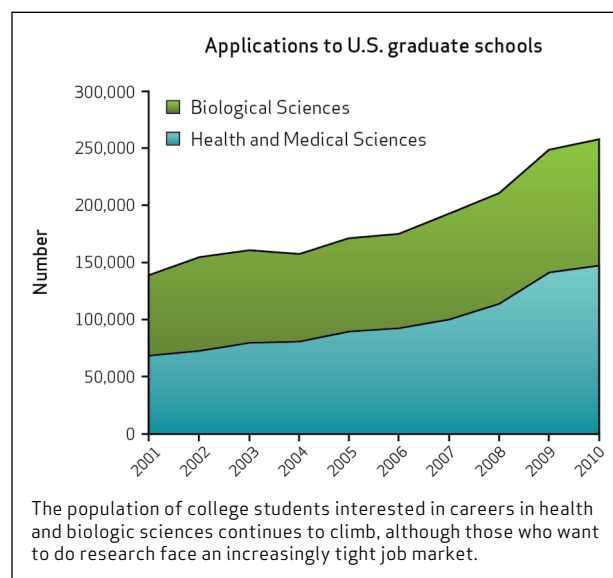
In spring 2011, NIH Director Francis Collins formed a working group to examine the future of the biomedical research workforce to address the positions and support needed for successful careers that will advance science and promote health.

"Openly talking about this is new," comments Cynthia Fuhrmann, PhD, program director for academic career development and assistant professor in biochemistry and biophysics at UCSF. "National policy makers at NIH might be able to create a more open dialogue about career choices and place a stronger emphasis on career development in the training of PhD-level scientists."

## STAYING FLEXIBLE FOR RESEARCH

Young scientists "need to be thinking about career tracks, not just research directions," advises Jonathan Wiest, PhD, director of the National Cancer Institute's Center for Cancer Training.

Given the hundreds of charitable organizations and institutions devoted to cancer research, scientists may have more opportunities in cancer than other fields, observes Bert Vogelstein, MD, Ludwig Professor of Oncology at Johns Hopkins University and a Howard Hughes Medical Institute (HHMI) investigator. Even so, postdocs these days may spend an extra year or 2 trying to find the right job.



Vogelstein advises graduate students aiming for a research career to choose a postdoctoral fellowship in a different field, such as switching from biochemistry to genetics or from proteomics to microfabrication.

Scientific success depends in part upon creativity, "making connections between things that haven't been connected before," remarks Vogelstein. "In order to connect 2 ideas or experimental approaches, one has to know 2 things."

Marja Nevalainen, MD, PhD, extends that advice to multidisciplinary experience. "Typically, postdoctoral training is overseen by one mentor," says Nevalainen, an associate professor of cancer biology, medical oncology, and urology, who also oversees junior faculty and graduate education at Thomas Jefferson University's Kimmel Cancer Center in Philadelphia. Nevalainen suggests an advisory committee of 2 or 3 members for each postdoctoral trainee. "If you have a strong basic scientist as one mentor, input from a physician-scientist may facilitate thinking about research designs in the lab that have translational applications," she adds.

Experts emphasize that PhDs and MDs also must keep an eye out for growing areas of research. For instance, James Broach, PhD, professor of molecular biology at Princeton and president of the Cancer Biology Training Consortium, recommends proficiency in genomic tools and potential clinical applications, such as understanding the genetic dynamics of a particular tumor at the same time it is being treated. Craig Thompson, MD, president and CEO of Memorial Sloan-Kettering Cancer Center in New York, suggests delving into the strong computational approach of systems biology to understand networks within and between tumor cells.

"The system is changing," sums up Howard Garrison, PhD, public affairs director for the Federation of American Societies for Experimental Biology. "No one is sure where the funding will come from to do it all or how to prioritize the way it gets done, but there will be opportunities for very talented people who are excited about the science." — *Carol Cruzan Morton* ■

# CANCER DISCOVERY

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*Cancer Discov* 2012;2:7. Published OnlineFirst December 1, 2011.

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doi:[10.1158/2159-8290.CD-ND120111OL-09](https://doi.org/10.1158/2159-8290.CD-ND120111OL-09)

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