

MOVING UP THE ACADEMIC LADDER

Academic research careers consist of a succession of ranks within a fairly predictable time frame. There are some steps researchers can take to make sure that this progression goes as planned. **By Laura Bonetta**

Most individuals who obtain Ph.D.s in the life sciences have set their sights on an academic research career. As this year's *Science Careers* postdoc survey indicated, 61 percent of former postdocs polled and 57 percent of current postdocs hoped to get tenure-track academic positions after completing their postdoctoral studies, and an additional 15 percent of former and 16 percent of current postdocs planned on seeking non-tenure-track research scientist positions.

In reality, only a minority of Ph.D.s actually end up in academic research careers. For those who do, getting that first faculty position is only the first rung up the ladder. In the United States, the academic research path consists of a series of promotions from assistant to associate professor to full professor, followed by subsequent promotions and honors.

While the names of the positions and the degree of job stability associated with each one may vary in different countries, in general, climbing from one step to the next is dependent upon research accomplishments as well as, to varying degrees, other activities including teaching and administrative tasks.

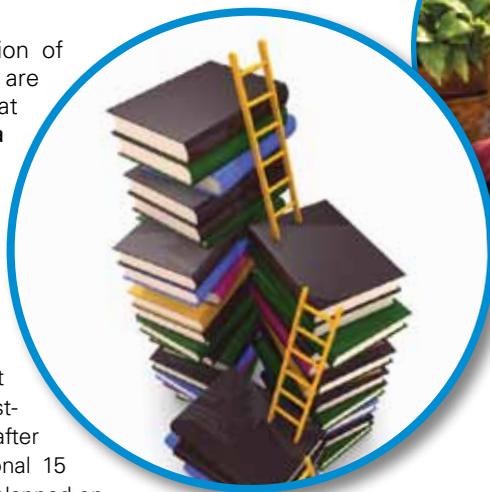
Each researcher finds his or her way of fulfilling the requirements for promotion, but when senior scientists are asked about their approach some common themes emerge.

IN THE DRIVER'S SEAT

While speaking to postdocs and junior faculty attending the Howard Hughes Medical Institute (HHMI) course on laboratory management in 2002, **Thomas Cech**, HHMI president at the time, likened obtaining a faculty position to getting a driver's license. "All of a sudden you have all of this freedom to turn when you want to turn or to go straight when you want to go straight," he said. "On the other hand, you have to pay for the gas, and you've got some responsibility."

That sense of responsibility took **Katerina Venderova** by surprise. During her last few months as a postdoc at the University of Ottawa in Canada, before she started a faculty position at the University of the Pacific in California, Venderova was gathering preliminary data, applying for grants, and interviewing prospective graduate students. "I was not prepared for how much responsibility I feel for these bright students' lives," she says. "I was mentoring students as a postdoc but now it's different. I realize that it is not just about me any more."

Hiring the right people is critical when first establishing a research program. To help make the right choices some beginning faculty ask more senior colleagues in their department to also interview prospective students, suggests **Giacomo Cavalli**, senior principal in-



Manju Hingorani



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vestigator at the Institute of Human Genetics in Montpellier, France, who will be assuming its directorship in January.

It's also important to get the lab off on the right track by choosing the right projects to work on. One piece of advice that many beginning faculty receive is to have a risky, but very exciting, project to work on and then something that is a "sure thing."

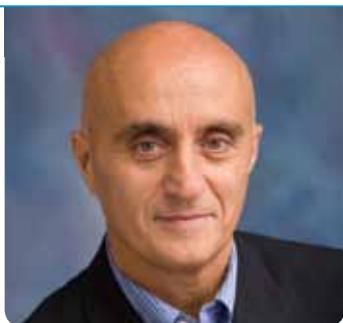
"I learned this early on from my first postdoc advisor to have some bread and butter, but also some juicy turkey cooking on the side," says **Giampietro Schiavo**, a cell biologist at Cancer Research UK in London. "I would say that it worked well for me although the difference between the bread and the turkey turned out not to be so huge."

Another piece of advice is to become an expert in a particular area of research. "Identify problem x and become known as one of the best people in the world at tackling it. I was lucky in that I could see a hole in my field of research that no one was doing research in and I chose to work on that," says **Robert Allison**, pro-vice-chancellor at the University of Sussex, United Kingdom.

"When other researchers are looking for a **continued** »

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"I believe in international relationships in science. You can do science much faster and in the modern world of big science, the only way to survive is through those relationships,"
 —Paolo Sassone-Corsi

collaborator or to do a sabbatical somewhere, you want them to come to you because you are the person that does x best."

TENURE PRESSURE

One of the major hurdles of academic tenure-track positions in the United States and Canada, and the cause of many sleepless nights, is obtaining tenure. A tenure-track spot is typically filled by an assistant professor who will work about five or six years before a formal decision is made on whether tenure will be granted. If tenure is not granted the investigator is asked to leave so that someone else can fill the tenure-track spot. If tenure is granted, the assistant professor is promoted to an associate professorship and, at many institutions, will have a guaranteed salary even if grant funds run out.

Institutions in other countries have adopted systems similar to the one in the United States, but that is not the case everywhere. In France, for example, tenure is awarded after a probation period of about a year almost as a matter of course (barring major problems). The main barrier in French academia is to get into the system and obtain the position of assistant professor. Applicants often have to try for several years to get such a position. But once in the system, the job is secure. "We have a tough evaluation every four years. They can close down the lab if you are not producing, but you would go away with your salary," says Cavalli.

RESEARCH FIRST

The criteria for obtaining tenure at institutions that follow a U.S.-type system typically form a three-legged stool: research, teaching, and service. In most research-intensive institutions the research leg of the stool is considerably more substantial than the other two legs. "Research is by far the biggest component," says **Linda Walling**, professor at the University of California (UC), Riverside and former divisional dean for life sciences. "If you don't have excellence in research you will not remain within the UC system."

To establish excellence, tenure committees will typically look for publications in peer-reviewed journals and letters from senior scientists who can testify to the value of the applicant's research. Having obtained at least one major research grant is also a requirement for tenure at some institutions. "Grants and papers are the standard currency," says **Matthew Redinbo**, professor and chair of the Department of Chemistry at the University of North Carolina at Chapel Hill.

A good rule of thumb, according to Redinbo, is to first publish a

good paper and then obtain a grant. "The grant study section will look more favorably at data that has already been vetted by reviewers and editors," he says. "This will increase your chances of getting the grant." Another piece of advice: "Don't hate the grant writing process," says Redinbo. "It's very clarifying and it makes you think about the important questions to ask to align your ideas and goals. This process sets you up for success."

One of the things a junior faculty member can do to obtain papers and grants—aside from doing stellar research—is to establish a community of colleagues through conferences and collaborations. "These people will be the ones who review your grants and papers," says Redinbo. "And when it comes time to put together your tenure dossier they will be the ones you ask to write letters commenting on your work and personal attributes."

And in today's research environment it is increasingly important to have colleagues and collaborators in different countries. "I believe in international relationships in science. You can do science much faster and in the modern world of big science, the only way to survive is through those relationships," says **Paolo Sassone-Corsi**, a professor at UC Irvine. To facilitate these types of interactions, Sassone-Corsi co-directs with Emiliana Borrelli an INSERM Unit that brings French students and postdocs to UC Irvine. "Basically it allows students exposure to the American system and American researchers get to learn more about France."

BECOMING A TEACHER

Although tenure decisions at primarily research institutions are based mostly on publications and grants, more and more universities want faculty members who are also good teachers. "When I first started you just had to be an okay teacher, but today excellence in teaching is more important," says UC Riverside's Walling.

Teaching ability is typically evaluated based on student evaluations as well as assessments from other faculty in the department. Therefore it pays for junior faculty to take any "how to teach" courses that may be offered on campus and or sit in on the lectures of colleagues who are known for teaching well. In addition, junior faculty

FEATURED PARTICIPANTS

Boston University
www.bu.edu

Cancer Research UK
www.cancerresearchuk.org

Howard Hughes Medical Institute
www.hhmi.org

Inserm
english.inserm.fr

Institute of Human Genetics
www.igh.cnrs.fr/EN/index.php

The University of British Columbia
www.ubc.ca

University of California, Irvine
www.uci.edu

University of California, Riverside
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University of Durham
www.dur.ac.uk

University of North Carolina at Chapel Hill
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University of Ottawa
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University of the Pacific
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University of Sussex
www.sussex.ac.uk

Wesleyan University
www.wesleyan.edu

should ask senior colleagues to sit in on their own lectures, not only to obtain feedback but also because “they will be able to write letters about your teaching abilities for your tenure dossier,” says **Brett Finlay**, a professor at the University of British Columbia in Canada.

At liberal arts institutions, such as Wesleyan University in Connecticut, teaching is valued as much as research. “You have to be effective at both, and one way to do that is to integrate your teaching and research activities such that they enrich each other,” says **Manju Hingorani**, an associate professor of molecular biology and biochemistry at Wesleyan.

DOING SERVICE

The third leg of the tenure stool is service, or evidence that a faculty member is willing to work for the betterment of the university, profession, and public at large. Service includes work in departmental and other campus committees, research ethics boards, editorial boards of journals, and grant study sections.

When choosing which committees to serve on, junior faculty should have clear ideas about the time commitment involved. “They should definitely talk to the chair of the department to see how much they should take on,” says Walling. It also helps to align ones interests and passions with potential committee work. “Some people are passionate about teaching; they should be on a committee responsible for curriculum development. Other committees are well suited for people who are analytical and detail oriented,” says Walling. “If you can leverage what your strengths are, administration is not as painful!”

And just as important as finding the right match is learning to say no. “Every young faculty member needs to be engaged, but not overly so,” she says. “At the beginning, doing research is the most important thing.”

THE GROWTH OF NON-TENURE

For the last 30 years, the share of tenured and tenure-track faculty positions in the United States has been declining, while the proportion of non-tenure-track appointments, both full and part time, has continued to grow. In 2007, the number of non-tenure-track, full-time appointments in the United States reached 18.5 percent, up from 13 percent in 1975. During the same time period tenure-track appointments decreased by half, from 20.3 percent in 1975 to 9.9 percent in 2007.

Non-tenure-track positions are often characterized by higher teaching loads and don’t provide guaranteed salary like most tenured positions. Instead faculty typically have renewable contracts. “It appealed to me because there is no tenure clock,” says **Julie Sandell**, a professor at Boston University School of Medicine and associate provost for faculty development. “I did not take any longer to rise through the ranks than I would have in a place with tenure, and did not have the added pressure.”

Non-tenure-track faculty at Boston University go through the same career path of assistant to full professor as tenure-track faculty. “For promotions the standards are no different. In the sciences, you have to have external recognition, a lot of teaching, and an independent lab, usually with external funding,” says Sandell.

However, non-tenure-track full-time faculty sometimes feel like second-class citizens in the academic world. To address this and other potential concerns Boston University recently put together a taskforce to examine career tracks of non-tenured faculty. “One of the reasons for the task force was that the non-tenure-track path



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has grown a bit haphazard and the titles and positions are not well defined across the entire university,” says **Tanya Zlateva**, taskforce chair and associate dean for academic programs at Boston University Metropolitan College.

STEPPING UP

Regardless of the career path or country of employment, continued success in science depends on ongoing research output and hard work. In addition, after obtaining tenure and being promoted to full professors, researchers typically find that responsibilities outside of research, such as writing papers and grants or serving on various committees and boards, increase.

Many faculty members also become chairs of their departments or deans for a particular time period (often three to five years). The positions, researchers say, often show another side of science that can be invigorating and reenergizing.

While many researchers return to the lab full time after stints as administrators, for others administration becomes a career path. After becoming dean at the University of Durham, Allison had to choose between going back to research or remaining in senior administration. “I could have done the job of dean for a three-year term and then gone back to the laboratory. When I was then offered an extension I knew that going back to a mainstream research career would be virtually impossible if I accepted,” he recalls. “For one thing, no matter how hard you try, your productivity as a researcher plummets when you take on the senior administrative duties of a dean. And secondly, though you are still teaching and publishing, colleagues increasingly see you first and foremost as a member of the senior management team and not an academic researcher.”

Academic careers are not for everyone, but for those researchers who decide to go this route, the key is hard work and focusing on the requirements for tenure and promotion at your particular institution. Though the exact path is often unpredictable, proper planning and keeping one’s options in mind can help make for a more successful journey.

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