

# MOVING ON

## MANAGING CAREER TRANSITIONS



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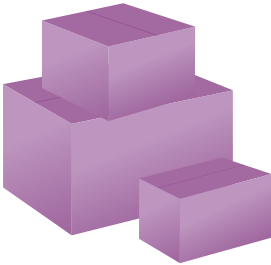
INTRODUCTION **2** // SETTING A GOOD FOUNDATION FOR MOVING ON **6** //  
FORMULATING A RESEARCH STATEMENT **20** // FORMULATING  
A TEACHING STATEMENT **26** // NETWORKING **32** // SECURING INDEPENDENT  
FUNDING **36** // AVOIDING COMMON PITFALLS **40** //

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## INTRODUCTION MOVING ON

Moving on is never easy and neither is recognizing that it's time to do so. Sometimes it is blatantly obvious and it hits you all at once, but sometimes it nags at you for months before **you realize that your work here is done or this is not the place for you and it's time to move on.**



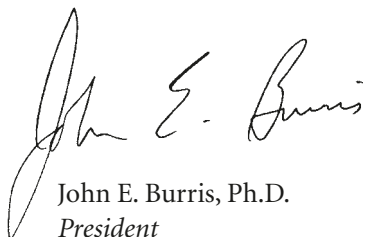
**Professional scientists are produced** through a series of apprenticeships. Conventional wisdom says that you become an independent scientist by learning from your graduate advisor and your postdoctoral mentor, and from observing how others navigate the academic career path. The trouble with this model is that each person’s journey is unique—there are so many variables, pitfalls, and twists in the path that it is impossible to generalize to your own situation. If you aspire to a career in academic science, there are no “how-to” manuals to ease your particular way.

Most scientists rely on the advice of their peers, their graduate and postdoctoral advisors, and the experience of those who are farther along in their training to help them navigate the transition from graduate student to independent scientist.


For most biological scientists, these transitions will include a postdoctoral training period in one, or sometimes more than one, lab. The rules that govern how and when to move on to the next stage are most often not spelled out and vary with each individual situation. Such uncertainty can create stress and feelings of self-doubt.

This book is meant to help scientists gain some control over a process that can seem subjective and prone to idiosyncrasies. It focuses on this issue of “moving on” specifically because the subject is often difficult to broach with one’s graduate or postdoctoral advisor.

We consulted with experienced scientists and those who recently made the transition to assistant professor and asked them to reflect on the career choices and what had helped them succeed. We asked successful scientists to reveal the benchmarks that they use to evaluate when an individual is ready to move into the role of principal investigator. Through these discussions and our own experience supporting the careers of aspiring academic scientists, we have put together this resource which explores the elements that define academic scientists who have transitioned well, helped others transition well, and continued forward doing good science. The topic here is not the job search process itself, but rather how to know if you are ready to enter it.



John E. Burris, Ph.D.  
*President*



Victoria McGovern, Ph.D.  
*Senior Program Officer*

“The topic here is not the job search process itself, but rather how to know if you are ready to enter it.”



# SETTING A GOOD FOUNDATION FOR MOVING ON


After four or five years of graduate training and a couple of years as a postdoc, many scientists eagerly anticipate moving into an independent position. But it can be difficult to gauge when the time is right to move on.





**Most postdocs initially consult** with their faculty advisors to plan their next career move. After all, you need the support of the person you will be asking to write recommendation letters to faculty search committees. Because your faculty mentor is a key factor in your job search, it is important to cultivate that relationship. Frequent and open communication throughout your postdoctoral period about goals and expectations can help ease your transition out of the lab.

Scientists can be idiosyncratic in their management styles, with some seeming to have no formal evaluation process for lab members' training and others conducting regular progress reporting. For graduate students and postdocs, establishing a habit of formally talking with your mentor about your progress every six months, or at least once a year is essential, even if the process seems frightening or painful. Regular review of your progress and feedback from your advisor can head off miscommunication and ease stress. There is even evidence that postdocs who develop a written plan and share it with their advisors have a more productive postdoc experience.



In 2005, Sigma Xi, the scientific honorary society, surveyed nearly 5,000 postdocs and found that those who plan with their advisors their training experience at the outset of their appointments fare substantially better than those who do not. The survey found that postdocs with a written plan submit papers to peer-reviewed journals at a 23 percent higher rate, first-authored papers at a 30 percent higher rate, and submitted grant proposals at a 25 percent higher rate than those without a written plan.

Many institutions and professional organizations are now actively encouraging the use of individual development plans (IDPs). According to the Federation of American Societies for Experimental Biology (FASEB), an IDP can provide a planning process that identifies both professional development needs and career objectives and can serve as a communication tool between individuals and their advisors. Similar planning and performance reviews are part of the evaluation processes in many businesses and organizations, but their use in management of scientific career development has lagged. FASEB considers an IDP one component of a broader mentoring program that should be instituted by all research institutions.

According to FASEB, IDPs can help identify long-term career options and the necessary tools to meet those goals, as well as point out immediate needs that will, if addressed, allow the trainee to improve current performance. An IDP can also help define milestones along the way to achieving specific objectives. Most importantly, an IDP provides a structured, impartial tool to enhance communication between the postdoc and a faculty advisor.

## What if my advisor does not cooperate?

Writing an IDP is a useful exercise even if your advisor wants no part in the process. You can use it as your own roadmap, especially if you ask friends, colleagues, and other faculty members to give your goals, assessment of strengths and weaknesses, and timeline a reality check now and then.

### Sample IDP Process for Postdoctoral Fellows

#### Step 1. Conduct a Self-Assessment

1. **Assess your skills, strengths, and areas that need development.**  
Formal assessment tools can be helpful.
2. **Take a realistic look at your current abilities.** This is a critical part of career planning. Ask your peers, mentors, family, and friends what they see as your strengths and your development needs.
3. **Outline your long-term career objectives.**  
Ask yourself:
  - What type of work would I like to be doing?
  - Where would I like to be in an organization?
  - What is important to me in a career?

#### Step 2. Survey Opportunities with Advisor

1. **Identify career opportunities** and select from those that interest you.
2. **Identify developmental needs** by comparing your current skills and strengths with those needed for your career choice.
3. **Prioritize your developmental areas and discuss** with your advisor and other mentors you have developed during your training how these should be addressed.

### Step 3. Write an IDP

The IDP maps out the general path you want to take and helps match your skills and strengths to your career choices. It is a changing document, since your needs and goals will almost certainly evolve over time as a postdoctoral fellow. The aim is to build on your current strengths and skills by identifying areas for development and providing a way to address them.

The specific objectives of a typical IDP are:



1. **To establish effective dates** for the duration of your postdoctoral appointment.
2. **To identify specific skills and strengths that you need to develop**, based on discussions with your advisor and others who know your strengths and weaknesses well.
3. **To define the approaches** to obtain the specific skills and strengths (e.g., courses, technical skills, teaching, supervision) together with anticipated time frames.

You should plan to discuss your draft IDP with your advisor and revise it as appropriate based on those conversations.

#### **Step 4. Implement Your Plan**

The plan is just the beginning of the career development process and serves as the road map. Now it's time to take action.

- 1. Begin working toward your goals.**
- 2. Revise and modify the plan as necessary.** The plan is not cast in concrete; it will need to be modified as circumstances and goals change. The challenge of implementation is to remain flexible and open to change.
- 3. Review the plan with your advisor regularly, setting aside time specifically for this once or twice a year.** Revise the plan on the basis of these discussions.

Even if your advisor doesn't typically conduct such detailed written evaluations, you should think through your immediate plans and long-term goals, commit your conclusions to writing, and then share that document with your advisor and ask for feedback.

## Preparing to Make Your Move

Scientific research is by its very nature a never-ending quest. There are always more questions to answer and more gaps in knowledge to fill. When you are in the midst of your research, it can be difficult to step back and realize when you've finished a project. But in order to move on with your career, you've got to be able to assess your research and feel comfortable that you have a compelling story to tell.

A Ph.D. project and postdoctoral appointment both should end when you've told a complete story. You've "hit a home run" when you can tell a story that's both complete and significant. Competition for faculty positions is intense. To stand out from the crowd you've got to present a story that demonstrates creativity and impact on your field. You need to be able to make a case that your research will change the way people think about the problem you're interested in, will represent a totally new element of an emerging field, will overturn an existing model, or will establish a whole new line of thought. But perhaps most importantly, your story must immediately suggest a sequel. Search committees are looking for faculty who they feel are ready to hit the ground running and prepared to be highly productive.

To get started telling your story, ask yourself, "why is this interesting?" If you can't answer that question fairly quickly and easily, it's possible that you don't have a compelling story to tell, at least not yet.

“Among all the good people, what really stands out are the people who have done science that is innovative, that is creative, that is different.”

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Dr. Kaveh Ashrafi  
University of California-San Francisco

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Neuroscientist Justin Gardner recently completed a job search and obtained a position at a research institute in Japan, his desired destination.

“I knew I was ready to go on the job market when I had a story to tell,” he says. “When you get to a certain point with a project when you are presenting it at conferences, if that story grabs people at the places you are interested in applying for jobs, they will remember that story and they will remember you. When they are looking at applications, that story can bring you up to the top of the stack.”

Kaveh Ashrafi, assistant professor of systems physiology at the University of California-San Francisco, adds “If you have a story where the next step is perfectly obvious and the search committee feels it’s going to be a dead end, that’s a problem.

“Among all the good people, what really stands out are the people who have done science that is innovative, that is creative, that is different. There are so many variables that come into play when an organization is making a hiring decision and those variables are really out of the control of the candidate,” he says. “It can be very stress-inducing to try to guess what a search committee is looking for, but the one thing that you can be pretty sure about is that if you are doing really good science and publishing that science, you have a leg up on the competition.”

## How Do You Know When You've Done Enough?

One of the most difficult judgment calls in any nascent scientist's career is when to transition from graduate school or a postdoctoral appointment to independence. Part of that difficulty arises from uncertainty as to what constitutes a substantial body of work. Passing the state bar exam provides the newly-minted attorney with a universally accepted right of entry to practice law. Without such an explicit stamp of approval, scientists must rely on generally accepted surrogates of success, such as papers published in influential journals and invitations to speak at prestigious conferences.

In addition, there are always more experiments to be done and papers to be written. After two or three years of toil, the question naturally arises: have I done enough to move on?

Because publications are the currency of academic science, some people fall into the trap of using the number of published papers as a surrogate for productivity. Successful scientists warn not to place too much emphasis on counting papers.

"Quality definitely trumps quantity," says Charles Schroeder, assistant professor of chemical and biomolecular engineering at the University of Illinois-Urbana-Champaign. "I've seen people secure faculty positions with as little as one or two major publications."

Dr. Schroeder says that the postdoctoral period should be about stretching yourself as a scientist, exploring new directions and research techniques, and, if you are planning a career in academia, devoting this protected research time to establishing an independent research program. It is far too easy to fall into the trap of trying to get more and more work done.



“If you have a good story to tell, get out there and tell it at meetings. Make a name for yourself.”

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Dr. Kaveh Ashrafi  
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At this point, he says, you have to rely on your advisor and other mentors to provide the proper perspective.

“Mentorship is crucial at this stage,” says Dr. Schroeder. “A true mentor will provide a reality check and even test the waters with colleagues about your marketability, versus an advisor who is just telling you which experiment to do next.”

Part of the allure of counting papers is that, as is natural, past performance is taken as the best indicator of future prospects.

“Paper counting is just a proxy for what you have accomplished,” says John Boothroyd, professor of microbiology and immunology and associate vice-provost for graduate education at Stanford University. “I’ve seen people get a very good job with zero papers from their time as a postdoc actually published. Sometimes just talking at meetings generates excitement about your work, although there needs to be clear evidence that a couple of really great papers are imminent.”

Dr. Ashrafi says that search committees are looking for people whose work opens up new areas in which there are many more questions that can be asked. He agrees that the quantity of papers is not important, but having a track record of first author publications is critical.

Dr. Ashrafi suggests starting out your postdoc with a mixture of projects that are far-reaching in their scope. That way if one project doesn’t pan out, you will have a backup plan.

He says you should not be discouraged by competition. It’s important to trust your instincts, he adds, and if you feel you are ready, there’s no harm in testing the waters.

“There is always room for good creative science,” he says. “If you have a good story to tell, get out there and tell it at meetings. Make a name for yourself.”

## Negotiating with Your Advisor: How To Talk About What You Can Take With You

Once you are convinced you've got an appropriate amount of work done, it's time to talk to your advisor about going out on the job market. At this point you must have a concrete conversation about what you will take with you when you leave. The conversation will go smoothly if you have prepared for this moment. Having a written career development plan will make the conversation easier, since the two of you will literally be on the same page about your career plans. [See page 10 for more detail].

“For me, three years of work in my postdoc culminated into one major story,” says Leah Cowen, Canada Research Chair in Microbial Genomics and Infectious Disease at the University of Toronto. “When that happens you are thinking about all the exciting directions you could go. That's a very good time to discuss your career plans with your advisor. Do you envision another couple years in the lab, do you envision another couple papers before you leave, or are you in a position to start looking for jobs? As you have those conversations, you can talk about whether you expect to do the next experiments in their lab or on your own.”

Dr. Cowen advises to be strategic from the beginning of your postdoc by choosing a project that is distinct from your advisor's main research focus.

“If you are working on a project that's been going on in the lab for 20 years you aren't going to be able to walk out the door with it,” says Dr. Cowen. “But if you, from the beginning, create something that is distinct from the main focus of the lab, but yet fits into the lab, that often is a good launch pad from which you can go in a new direction.”

Courtney Griffin, who recently made the transition to running her own laboratory at the Oklahoma Medical Research Foundation in Oklahoma City, says it took her awhile to build a research story that was distinct enough to be worthy of discussing the issue of taking it with her.

“It’s going to be a rare postdoc who from the get-go is already synthesizing a broad research plan that can get an independent lab going,” she says. “I think it takes awhile to build that kind of perspective and to build that breadth to your research so that you have a skeleton plan to even think about going out on the market.”

Dr. Griffin says that by the time she was beginning to think about a job search, it was pretty clear that her project was her own, and then the negotiations about taking it with her went smoothly. She advises putting everything in writing so that you and your advisor are not relying on memory about what you are taking when the time comes to leave.

“In terms of negotiating that sticky ground of what is yours and what is your advisor’s, that was very smooth with my advisor largely because of a grant that I wrote,” she says. “That forced us in writing to delineate what I would be taking with me and to spell out what was his intellectual property. That process was very helpful. I would encourage any postdoc to go through that process even if it’s not in the context of a grant—to have it written out.”

From the advisor’s perspective, giving up a chunk of research is never going to be a perfectly comfortable process, so you should broach the subject ready to engage in meaningful dialogue and to give up some things if necessary in order to come to an equitable agreement.

John Boothroyd describes the process as “challenging, but not uncomfortable.” He says it only gets uncomfortable for him when the postdoc has so much ambition that the person wants to take more than he considers the person’s “fair share,” and more than is reasonable to bite off as an assistant professor. He adds that it is useful to have these conversations as early as possible and to put things in writing as a memory aid for both parties.

### **What If Your Advisor Thinks You Are Not Ready?**

Sometimes disagreements revolve around whether the time is right for you to initiate a job search. What if you think you’ve done enough work, but your advisor indicates you’re not ready to move on?

It’s in your best interests to listen carefully and do a reality check.

Ask yourself whether it’s just possible the boss is right. Have you convinced yourself your story is better than it really is? Sometimes the best advice is to get an independent evaluation. To get more feedback on your readiness, talk with other senior scientists in your department, your doctoral advisor, and colleagues who have recently been on the market.

If you have some kind of professional development plan, or at least an annual evaluation of research progress in place, that document can help defuse the situation. Then you can begin the conversation with something along the lines of, “We agreed when I started that this was a three-year project in which I was aiming to achieve a, b, and c; now here it is 2.5 years and I’m writing up the paper that pulls all three of those things together. As a result, I think soon it’ll be time for me to move on.”



If you believe you are ready and the boss insists you're not, several things may be going on. Remember, the laboratory PI has been working as a professional longer than you and may have a broader view of the job market. Consider the possibility that the boss honestly thinks you'll be a stronger candidate if you stay in the lab another year or two.

"My mentor was really instrumental in encouraging me to put an extra year in before going on to the market, and he was dead right about that," says Dr. Griffin. "If I had jumped in a year before I did, I would not have been as successful as I was."

Dr. Boothroyd says some people are just impatient, especially when a job comes along that is a fit on paper but not a good match in other respects. He says he tries to counsel his trainees to slow down, not to leap too early, and that sometimes waiting a little longer will lead to a better job and a more perfect fit all around.

If your mentor disagrees with your decision to give the job market a shot and other trusted advisors agree with you that you are ready, you can say "I hear you, but I still want to give the market a try" without destroying a good relationship. Or you may have to negotiate a compromise in which you agree to stay another 12 months and work hard on getting "d" and "e" done, and then ask your advisor to agree that you are going on the market next year.

"But if it's more important to them to move now, and they're willing to take that risk and are aware of the consequences, I'd leave it to them to make that call," Dr. Boothroyd says.

# FORMULATING A RESEARCH STATEMENT

If you're about to go on the job market, you should be ready to formulate a research statement. **The research statement is quite simply the most important element of the application package.**

**An effective research statement** summarizes your accomplishments and presents a vision for your immediate and long-term plans. It must show a pragmatic plan for short-term results and a bold vision for the future and it must do so without appearing unrealistic and overreaching. Striking the right balance may seem difficult, but the process of writing a research statement can actually improve your science and help you clarify your career goals.

“Writing a research statement makes you think about what is important, what is exciting, what is the most broad appeal of your work, and then what have you really accomplished?” says Leah Cowen. “You have to think about where you are and where this could take you in something that is distinct from any of the places in which you’ve trained.”

Going through that process helps clarify whether your research is enough to build a lab on.

“You don’t want to start a lab before you have some preliminary data in some new area, because once you start, your tenure clock is ticking and you have so many more pressures on your time,” says Dr. Cowen.

She advises against rushing into the job market too early.

“You want to strike while the iron is hot,” she says. “You want to have completed enough work that you think you are competitive. In a way your postdoc is this golden time where all you have to worry about is your own research. You want to make sure you exploit that time to position yourself to efficiently launch a new lab.”

Once you are confident that the time is right, it’s time to sit down and prepare your research statement.

When you start to write your research statement, you should be asking yourself the following questions, according to John Boothroyd:

- Why is this interesting?
- Why is my research important?
- How am I uniquely able to do this research?
- Why would you [the faculty search committee] want to commit to me as a colleague, potentially for life?!

And perhaps most importantly:

Put yourself in the place of the search committee, says Dr. Boothroyd. In the long run, the success of the person they hire should enhance the prestige of their department and university. The aim of your research plan is to convince them that you have a plan for success and that you are prepared to carry out that plan.



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Dr. Leah Cowen  
University of Toronto

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Dr. Boothroyd, who offers a seminar at Stanford for postdocs on obtaining a faculty position, says that as you trace your career, your job is to convince the search committee that you have been grooming for this day. He recommends tailoring the research statement for each job application and keeping an open mind about how and where your research could “fit” within an institution.

Start with a clear summary of your research accomplishments. Including some data is fine, but it must be critical to your future aims. Images or models can enhance your argument, but they should be clean and pretty, he says. Search committees want to hear details, but only enough to get a taste of what you’ve already done. Your research statement should make them want to hear more—enough to invite you for a job interview.

The bulk of your statement should consist of future aims. This section of the research statement should ideally read like a compelling, well-written story of what your lab will look like five to ten years down the road. Here’s where you convince the committee that you have thought hard about your research agenda and have a vision for where you are going. The danger here is over-reaching. Finding a cure for cancer is not a reasonable research goal, but exploring a new research avenue that shows promise in inhibiting angiogenesis across a broad range of solid tumors is exciting.



Show your resourcefulness. The search committee wants to feel comfortable that you have several approaches planned and back-up plans if your initial strategy doesn't work out. You are outlining a complete research program, not an individual project. Demonstrating breadth will increase your chances of success.

Make sure you are on the same page as your postdoctoral advisor. Now is the time to have a conversation about what you will take with you from the lab in terms of intellectual property and even things like bacterial strains or equipment. (see "Negotiating with your Advisor," p.16)

Make a good visual impression. Resist the temptation to cram too much information into your allotted pages. A cramped statement is a turn-off for the reader. Remember, the search committee members may be reading 100 or more applications. Make your statement easy on the eye. "Make it airy, use a big font, and incorporate nice images," says Dr. Boothroyd.

Finally, avoid obvious mistakes. You want your science to speak for itself and not get lost behind easily avoidable blunders. Check references and don't misquote the literature. Enlist at least one careful proofreader. You don't want to make a bad impression with sloppy grammar and spelling mistakes.

“Show your resourcefulness. The search committee wants to feel comfortable that you have several approaches planned and back-up plans if your initial strategy doesn’t work out.”



# FORMULATING A TEACHING STATEMENT

**Even the most accomplished and competent scientist can become flummoxed when confronted with that ubiquitous element of the application package: the teaching statement.**

**Many postdoctoral scientists** have had relatively little teaching experience and even those who have taught entire courses haven't given much thought to the philosophy behind their teaching methods. To be confronted with articulating a philosophy of teaching can seem like a daunting task. What's more, the importance of the teaching statement can vary by institution and type of position. For some jobs, the teaching statement is nearly a formality, but even in these cases, a poorly thought-out effort can cast your entire application in a bad light.

You may need to write several variations on the teaching statement depending on the size of the institution and the teaching expectations associated with each. Investigate the institution's website and see if faculty members have posted their own teaching statements. Understanding the campus culture and teaching tradition will help you get a handle on what's expected.

Don't make the mistake of duplicating your CV in your teaching statement. Institutions are looking for how you teach, not what you teach.

"Rehashing the CV does nothing," says Deborah Roach, associate professor of biology and recipient of the 2006 Cavalier Distinguished Teaching Award at the University of Virginia. "I have sat on a number of faculty search committees and I can tell you that we will dismiss a teaching statement that is purely descriptive, when a candidate just says 'I taught this and this and this.'"

Dr. Roach says that a good way to approach writing your teaching statement is to think about your own experiences as a student and about the qualities that define the best teachers.

“So much of what makes a good teaching statement is getting through to the search committee that you’ve had enough teaching experience that you know what works,” she says.

If you are thinking of applying for a job that will entail a lot of teaching, particularly if you apply at a primarily undergraduate teaching institution, the teaching statement becomes a critical part of the application package. The time to decide you are committed to undergraduate science education is not the week or even the months before you apply. For these positions, search committees are looking for evidence of a commitment to teaching and engaging undergraduates in research.

A job announcement for a position at a place that expects a heavy emphasis on teaching undergraduates may read something like this:

- Candidates must have a Ph.D., postdoctoral experience, and a record of scholarly and teaching accomplishments commensurate with experience.
- Areas of interest include, but are not limited to, microbial physiology and biochemistry.
- Candidates with some experience with scanning electron and/or confocal microscopy are encouraged to apply.
- The successful candidate will be expected to establish an externally funded undergraduate research program.
- Preference will be given to candidates whose research complements existing faculty research interests.

“So much of what makes a good teaching statement is getting through to the search committee that you’ve had enough teaching experience that you know what works.”

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Dr. Deborah Roach  
University of Virginia

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- Commitment to excellence in undergraduate teaching required. Teaching duties include an introductory general biology course, a physiology course, and an upper division research-oriented course.


Putting together an attractive package that will get you a job interview means understanding what the search committee is looking for in a candidate.

According to Bonnie Baxter, professor of biology at Westminster College, in Salt Lake City, there are a few things that will help a candidate rise to the top of the pile.

The search committee is trying to fill a niche, she says. Tailor your application to show that you will complement the areas of existing faculty expertise and also match the content area requested in the position description.

**Stay away from clichés and generalities.** The teaching statement should show evidence of having “done your homework,” says Dr. Baxter.

“One of the things that makes a good teaching statement is reference to the science education literature,” says Dr. Baxter. “Scientists are good at referencing and knowing the literature in their field. However, some people apply for a job that will entail primarily undergraduate teaching and they haven’t ever read a study on undergraduate science education. There is a whole body of peer-reviewed literature out there on the most effective methods for teaching science. Making a statement like ‘using a hands-on approach is the most effective way to teach science’ without reference to studies is a dead giveaway that a candidate hasn’t done their homework.”



**Use your own voice and personalize.** Dr. Baxter, who has sat on a dozen search committees over the years, says that the teaching statements that stand out are those in which it is clear that the candidate has thought about his or her own teaching, and has learned some lessons about what works and what doesn't in the classroom. She points to one memorable application in which the candidate talked about the difficulty of getting Native American students to ask questions in class because their culture discouraged questioning an authority figure. "Even if your experience teaching was negative, it's worth mentioning," says Dr. Baxter. "Talk about what you learned from the experience."

**Explain your plan for engaging students in research.** Most liberal arts institutions today expect faculty to have an active research program that includes student research, says Dr. Baxter. Talk about how your research program will lend itself to undergraduate research projects and explain your plan for engaging students.





**Request feedback.** It's a good idea to have a trusted colleague or two with teaching experience look at your statement and provide feedback. There may also be additional resources at your own institution to help you. If your institution has a school of education or a teaching resource center, you can approach someone there to provide a critique.

At the University of Virginia's teaching resource center, students can be taped giving a lecture and receive feedback from an experienced teaching professional. In addition, Dr. Roach suggests seeking out professional development opportunities such as seminars or teaching workshops that provide exposure to teaching techniques and theories. Showing that you've made an effort to become an effective instructor goes a long way to impress faculty search committees, she says.

# NETWORKING

**Networking—no, it's not a dirty word. For many research scientists, the word networking conjures an image of doing something less than seemly or, at a minimum, uncomfortable.**

**Perhaps it's the term itself** that puts some people off.

But whatever you call it, learning how to communicate to your scientific colleagues who you are and why your science is interesting is a critical part of your development as an independent researcher. If your next paper is going to tell an exciting story and open up a new area of research, you should be thinking about how to make sure the research community associates that story with you. To some extent, the paper itself will help. But, think about your own research community: are you “known” apart from your lab PI? If you are thinking of using that paper to launch an independent career, putting yourself out there publicly will help cement you in people’s minds as an independent thinker and someone they may want to hire.

Even if people don’t know you personally, hearing your name and your research area should make people in your field recall, “Oh, yes, it’s \_\_\_\_\_, that person who did the great series of papers in \_\_\_\_\_’s lab.”

“You read papers. You know about your field and the scientists that you respect,” says Justin Gardner, a former postdoctoral research scientist in the Center for Neural Science at New York University who recently began a faculty appointment at RIKEN Brain Science Institute in Saitama, Japan. “You need to figure out how to get those scientists you respect to pay attention to you. While that can be done in a lot of different ways, the easiest way is to present good work. They will pay attention to you if you have a good story and you’ve done good quality work.”

Enlist your friends and colleagues. If you have friends who have gone on to other labs, get them to invite you to give a talk at a lab meeting or invited seminar.

If you are not in that position yet, enlist your lab PI to get you invited to a couple of key meetings and give a couple of great talks. Larger meetings are not always the best choices, says John Boothroyd. Sometimes a smaller, more focused meeting will expose your research to more of the people in your research field.

Presenting one time is probably not enough, says Dr. Gardner. “You know that you don’t see everything at a meeting,” he says. “Don’t expect that everyone saw your talk. Get out there at a few meetings and practice telling your story.”

Dr. Gardner says presenting helps you hone the story and prepares you for telling your story to a faculty search committee.

In addition, take advantage of every meeting you attend by actively sitting down at tables with people you don’t know. “The goal of going to a meeting is trying to meet new people,” says Dr. Boothroyd. He admonishes his graduate students and postdocs to avoid the very natural tendency to hang out with people from your own lab. “Plunk yourself down at a table where you know nobody and see who you meet in the process. I’ve had fun doing that. The field I’m in right now is a result of doing just that—of meeting someone and finding out about a parasite system I was largely ignorant of before a lunch and was very excited about by the end of the lunch.”

“Plunk yourself down at a table where you know nobody and see who you meet in the process.”

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Dr. John Boothroyd  
Stanford University

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# SECURING INDEPENDENT FUNDING

In the Burroughs Wellcome Fund's experience of looking at proposals and reviewing proposals from some other top postdoctoral award programs, **the scientists who are most competitive for faculty positions have done two things: hit a home run as a grad student and begun to have another interesting story that promises to be fruitful as a postdoc.**

**One way to demonstrate independence** as a postdoc is to secure independent funding for your research. It is not essential to have received independent funding to be competitive for faculty positions, but having independent funding demonstrates your ability to write a successful grant proposal and places you in a stronger negotiating position.

Support for new investigators at the NIH is stronger than ever, with a new commitment to assisting new investigators to obtain their first grant. The new Pathway to Independence program, which made its first awards in 2006, is structured after the Burroughs Wellcome Fund's successful Career Awards in the Biomedical Sciences. The Pathway program provides up to 2 years of K99-level funding for postdoctoral trainees, followed by 3 years of R00 funding for continuing research as a faculty member. NIH intends to award between 150 and 200 Pathway grants each year. Pathway awards are contingent on your ability to demonstrate that you have a workable research plan and that the award will allow you to obtain the training you need to carry out the plan. Postdocs who have gone through the application process say it forces them to think deeply about how to structure their own laboratory and about where their research is headed.

“I think having independent money is attractive to any hiring institution, but perhaps even more important was the fact that the science had been vetted in a rigorous way,” says Courtney Griffin, who received one of the first Pathway awards in 2006. “The award required writing a substantial five-year plan, and I think that’s something any postdoc going on the job market would benefit from doing.”

Kaveh Ashrafi, a BWF Career Award recipient, says that postdocs should strive for independent funding, not so much to get a job, but as practice for what you will have to do on a routine basis once you obtain a faculty position.

Another benefit of the application process is that it forces a discussion about division of intellectual property, a dialogue that rarely happens as early in the postdoctoral appointment as it should. [See “Negotiating with your Advisor,” page 16]



“The award required writing a substantial five-year plan, and I think that’s something any postdoc going on the job market would benefit from doing.”

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Dr. Courtney Griffin  
Oklahoma Medical Research Foundation

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“Applying for a Pathway award was something I really wanted to do for myself,” says Charles Schroeder, another 2006 Pathway awardee who now has a faculty position at the University of Illinois Urbana-Champaign. “My postdoctoral advisor didn’t require us to apply for fellowships, but I felt that if I could try for them then I should. There is money there, so you should always try for it if possible. It just gives you more freedom in what you can do.”

In addition to the Pathway awards, the NIH and other federal funding agencies have several other award programs geared toward postdoctoral training and career advancement.

# AVOIDING COMMON PITFALLS

There are a lot of variables when considering one's career path. Timing, luck, preparation, and skill are just a few elements to consider. **Here are some things to look out for:**

## Not Thinking Through Your Choice of Postdoc Carefully

The end of your postdoc is not the ideal time to start thinking about your next step. The choices you make in selecting a postdoc can have a huge impact on the direction your career takes. It can be tempting to choose a postdoc solely based on the science being done in the lab or the fame of the principal investigator, but it is also crucial to investigate the track record of the lab PI in assisting postdocs to find permanent employment. The scientific reputation of a particular PI is not synonymous with mentoring skills. Some PIs with stellar scientific reputations nonetheless treat the trainees in their labs like a “pair of hands.” They are so focused on producing papers and advancing their own agenda that they neglect the career aspirations of their students and postdocs. Needless to say, if you aspire to an independent academic position, but don’t have already exquisitely-tuned skills at self-promotion and funding opportunities, labs like that can be deadly to your career.

Fortunately, many of the best scientists are both excellent advisors and caring mentors, people who carefully cultivate the professional skills of their students to give them the best shot at success.

## Not Doing Your Homework

The management style of the lab's principal investigator most often sets the tone and expectations for the students and postdocs. Faculty advisors differ in their management philosophy, so it behooves you to talk to as many lab members as possible when you are choosing a postdoc. You should also investigate where former lab members are now. Even if you are enamored with the science being done in the lab, if former postdocs and students seem to be set adrift, you might be setting yourself up for a difficult road ahead. Conversely, if your prospective boss is fairly inaccessible, but has a great track record of placing former students in good positions, and you are comfortable working fairly independently, the lab could be a good fit.

"I targeted a lab for my postdoc based on some amazing work that was being pursued in the group," says Charles Schroeder. "I applied for a position and was invited to interview where I met the PI, talked with all of the group members. I was thrilled to receive a formal offer letter the same day—before even leaving the building. In joining a lab doing pioneering research, I learned a tremendous amount of new skills and had a great opportunity, though not all postdocs are as fortunate. For my own students, I will encourage them to look around and consider many options when thinking about postdoc opportunities, including traditional research-oriented environments and nontraditional options as well."

“Even before you start a postdoc, you should ask yourself the question: what is the best thing that can come out of this project?”

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Dr. Kaveh Ashrafi  
University of California-San Francisco

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### Choosing a “Safe” Postdoctoral Project

Kaveh Ashrafi advises people who are looking for a postdoc to be discerning about the types of projects they tackle. It can be tempting to accept a “safe” project, one that seems likely to lead to publishable papers in a short period of time. But this way of thinking can be a trap, because projects that seem “too obvious” are not going to be attractive to academic search committees. You want a project that has the potential to stand out from the crowd. “Even before you start a postdoc, you should ask yourself the question: what is the best thing that can come out of this project?” he says. “If you can envision that it will actually open up many more areas and that you can ask many more questions, that is a great project.”

### Not Having a Backup Plan

According to a 2008 AAAS survey of 3,850 current and former post-doctoral scientists across North America, four out of five expected to get a job in academia. More than half (56 percent) of former postdocs wanted tenure-track academic positions after completing their postdocs, but only 30 percent out of 56 percent had obtained such a position. In addition, only 16 percent of former postdocs had expected to seek non-tenure-track research scientist positions, but 25 percent were currently in just such a job. Looking at these numbers should jolt any job seeker into realizing that formulating a backup plan is an essential part of managing one’s career.



Go for your dream job in academic science, but consider other options as well. Take advantage of career fairs at your academic institution and at meetings you attend. Talk to former postdocs who are now in industry, teaching or other fields, to get an idea of what such jobs are like. Invest some time in learning about your existing strengths and weaknesses and broaden your skill set through selected additional coursework and/or small side projects during your postdoctoral years. Investing this small amount of time now could pay off later, and, at the very least, will help you feel more prepared if that dream faculty position doesn't materialize.

### Trying to Do Too Much

One temptation that befalls some postdocs is to take on too much, and to end up working on too many ancillary projects that don't really contribute to putting together a coherent body of research. Justin Gardner says that when he started his postdoc it was an exciting time of learning new things, meeting new people, and getting involved in a lot of collaborations, but he eventually realized that he was being pulled in a lot of directions. "There is a danger in taking on too much," he says. "It's important to stay focused on getting your story together."

“There is a danger in taking on too much. It’s important to stay focused on getting your story together.”

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Dr. Justin Gardner  
RIKEN Brain Science Institute


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### Choosing an Area that is Too Crowded

It’s important to pay attention to who is publishing in your field and how many labs are competing for results in the same scientific niche. Hot fields attract talent, but as a newcomer, you don’t want to find yourself competing with too many established labs for personnel, grants, and publications. “If you know that there are 15 other labs in the world working in your immediate area, that immediately translates to 30 to 60 individual scientists perhaps working on very similar things,” says Dr. Ashrafi. “There’s nothing wrong with that in principle, but if that’s the case you have to immediately ask yourself how you are going to distinguish yourself from among this larger group of people.”

### Sticking with a Dead End Project or Lab Too Long

If you are in a position where things are not working out—you are not getting along with your advisor, or you don’t like the environment in the lab, or you don’t have a good feeling about the project you are working on—you should listen to your instincts and move on to a better project or even a different lab. In graduate school, my advisors taught me how to balance a research portfolio, in terms of both project choice and level of risk,” says Dr. Schroeder. “I had the opportunity to work on several high risk, high return projects—in the end, one of these projects was wildly successful,



but not all of the projects worked out. Going through this process, I learned a valuable lesson about how to balance projects and knowing when to focus on a particular research direction while not pursuing others. My advisor used to say that any successful student or postdoc can balance 1.5 projects in the lab—the trick is striking a balance between the ‘1’ and the ‘0.5’ project at any time. The risky projects are often fascinating, but you may not want to put all of your eggs in one basket. That’s a lesson you have to learn in becoming independent—you have to learn discretion and when a project may not be working out for you.” Dr. Schroeder points out that once you are in your own lab the entire course of the lab is dependent on you and that sometimes, you have to make a tough decision and move on to something else.

Courtney Griffin agrees. She worked on a project in her postdoc for several years before realizing that it was not something she could use to build her own research program. Beyond the feeling of it being a dead end for her, it was not an area that she felt passionate about, so after consultation with her mentor she switched gears. “The skills I picked up in those years working on that other project were helpful so it wasn’t wasted time, but it certainly did lengthen the postdoc,” she says. “It’s a long road and you have to love what you are doing. Every once in a while, do a gut-check and make sure you are on the right path for the right reason.”

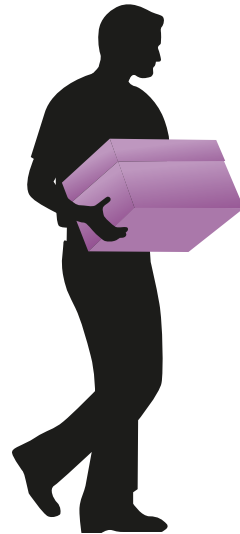


“It’s a long road and you have to love what you are doing. Every once in a while, do a gut-check and make sure you are on the right path for the right reason.”

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Dr. Courtney Griffin  
Oklahoma Medical Research Foundation

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## Further Resources

*Academic Job Search Handbook, The*  
by Julia Miller Vick and Jennifer S. Furlong,  
University of Pennsylvania Press, Philadelphia, PA., 2001

*Advice for New Faculty Members: Nihil Nimus*  
by Robert Boice,  
Allyn & Bacon, Needham Heights, MA., 2000

Burroughs Wellcome Fund Career Resources site:  
[www.bwfund.org/pages/55/Career-Development/](http://www.bwfund.org/pages/55/Career-Development/)

*Chicago Guide to Landing a Job in Academic Biology, The*  
(Series: *Chicago Guides to Academic Life*)  
by C. Ray Chandler, Lorne M. Wolfe, and Daniel E. L. Promislow,  
University of Chicago Press, 2007

*Chicago Guide to Your Career in Science: A Toolkit for Students  
and Postdocs, The* (Series: *Chicago Guides to Academic Life*)  
by Victor A. Bloomfield and Esam E. El-Fakahany,  
University of Chicago Press, 2008

*Making the Right Moves: A practical guide to scientific management for postdocs and new faculty*

Burroughs Wellcome Fund and Howard Hughes Medical Institute:  
Second edition, 2006.

[www.hhmi.org/labmanagement](http://www.hhmi.org/labmanagement)

National Postdoctoral Association

[www.nationalpostdoc.org](http://www.nationalpostdoc.org)

Nature Magazine Careers

[www.nature.com/naturejobs/magazine](http://www.nature.com/naturejobs/magazine)

Science Magazine Careers

[Sciencecareers.sciencemag.org/career\\_development](http://Sciencecareers.sciencemag.org/career_development)

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