Postdoc Academic Chat #2

Managing Your Research Program and Budget

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1. Management for Beginners - So You're A Principal Investigator - Now What?

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By Elie Dolgin

In the summer of 2004, evolutionary biologist Aneil Agrawal packed up and moved from his postdoc at the University of British Columbia in Vancouver to start his own lab at the University of Toronto. Arriving to find a big, empty laboratory, he set to work buying equipment and installing incubators for his fruit flies. He didn't consider the other organisms he'd need in his lab: people. Concerned about his limited startup funds, he didn't hire a full-time technician. By October, when the university had its annual grad student recruitment, he was still setting up, so he discouraged potential students from applying to join his lab.

"That was stupid," Agrawal says, as those students wouldn't have started until the following academic year. Agrawal admits that his research suffered as a result. "One of the fallouts was I ended up doing a lot of busy work, trying to set up little experiments, and that wasn't a good use of my time," he says. In the end, he had to wait for the next round of applicants, and he employed his first student a full two years after he came to Toronto. "If I had to do it all over again, I'd definitely invest early, take on students, and use my money to get my lab up and going immediately."

As Agrawal has since learned, managing a research lab requires much more than just a

scientific plan. Principal investigators (PIs) need to be leaders as well as managers, but there's a difference between the two, says Joan Lakoski, a neuropharmacologist and associate vice chancellor for academic career development at the University of Pittsburgh. "A leader is someone with a vision, who really gets everyone excited by that vision," she says. "A manager is just as important, but a manager thinks 'what's the job that needs to be done, and how do I get it done effectively.'"

Being both at the same time isn't easy, but there's no reason to reinvent the wheel. The Scientist talked to many PIs to discover the secrets to their managerial successes. Here are three areas important for first-time PIs to master early , and tips and tricks for getting off on the right foot.

Staffing For Success

Find the finest "The most important thing is getting the right people," says Helge Grosshans, a molecular biologist at the Friedrich Miescher Institute in Basel, Switzerland. When Grosshans is unsure about potential new lab members, he asks for a short written project proposal to see if the candidate would fit with his lab's dynamic. Microbiologist Bettina Buttaro of Temple University in Philadelphia avoids staffing problems by involving her lab members. After interviewing potential candidates, "we all talk about them" as a group, she says.

Make the most of interviews Kathy Barker, a microbiologist who left the lab to write the practical laboratory guides, At the Helm and At the Bench, says that young PIs make a common mistake of wasting interviews by being nice. "People treat it like a first date," she says. The hardest thing, Barker argues, is matching different types of researchers to your personal style. If you're a micromanager, a lab with more students might be better than one full of more independently minded postdocs. Too often, young PIs look for technical expertise at the expense of intellectual talent. Over time, "you get better at knowing what you need," she says.

Moderate clashes In 1997, Richard Rest, a microbiologist at Drexel University, was on sabbatical at Oxford University when he learned that one of his postdocs in Philadelphia was verbally abusing other lab members. Things became so bad that he had to fire the postdoc by e-mail, alert campus security, and warn the rest of his lab not to come in the next day. To preempt similar incidents, Rest says he now talks openly with his lab. "I always feel uncomfortable speaking about personnel issues. No one feels comfortable speaking negatively about another human being," he says, "but I've learned to push aside those uncomfortable feelings, moderate them, and ask more direct questions."

Get a second opinion A professor in the biology department of a major research institution (who asked to remain anonymous) told The Scientist that "outbursts of rage and blame" by a few postdocs in her lab forced her to call in a university ombudsman and to eventually let the postdocs go. As a result, her lab shrunk from 10 people to four. Afterwards, she ran into a former supervisor of one of the problematic students; he had written a glowing recommendation, but he "rolled his eyes" at the mention of the

postdoc's name. Now, instead of relying on written recommendations, she always picks up the phone and asks referees explicit questions to bring out the truth. "I don't just make one phone call; I make at least two," she says.

Capitalizing on Collaborations

Talk about the real issues Ed O'Neil, director of the Center for the Health Professions at the University of California, San Francisco, has run scientific leadership programs since 2002. At one meeting he met a junior scientist who told O'Neil that he had a conflict with a senior colleague over authorship. The true source of the conflict, however, was something else altogether. "It was about someone feeling mistreated; it was about passive-aggressiveness," says O'Neil. Once the two colleagues sat down together and talked about what was bothering them, the dispute was easily settled and both scientists' names appeared as corresponding authors. "Your success as a scientist is not just based on your sheer brilliance," O'Neil says. "Your ability to play well with others is equally important."

Choose wisely Another assistant professor at a prominent US research institute who preferred anonymity told The Scientist that she had carved a niche for herself as the go-to lab if someone needed to crystallize proteins of a certain highly studied virus. "The word got out that I was working on the structure, and my phone started ringing off the hook," she says. The assistant professor says she had to dance a fine line to maintain confidentiality between different labs that were working on the same structure. She was upfront about her commitment to the first lab, she says, which meant turning down many potential collaborations until the structure was published. Now the original collaborator knows he can trust her, and other labs see her as dependable. (See the Opinion piece in the May issue for a perspective on competing collaborations.)

Learn to let go Many collaborations fall through when they are established by postdocs or students instead of PIs, says Barker. One reason is that younger scientists can be taken advantage of, with the senior collaborator running the project and the junior partner footing the bill. "Unfortunately, someone often gets screwed," she says. In researching her books, Barker has seen the repercussions of young PIs who dwell on feeling wronged. For peace of mind, her best advice in some of these cases is simply to turn the other cheek and learn from the experience. "Sometimes, you just have to shrug," rather than blame yourself or others for your decision, she says.

Know the criteria for collaboration When evolutionary geneticist Kelly Dyer joined the University of Georgia in November 2007, her tenure committee told her that it was important to establish herself as an independent researcher. This meant largely cutting ties with her past supervisors, she was told. "That's a tricky thing for me, because I enjoy collaborating with my PhD supervisor," she says. "So, it's hard to know what level of collaboration to maintain that will be looked upon favorably." For now, she's working on establishing new collaborations, but plans on keeping in touch with former supervisors for future projects.

A Matter of Time Management

Rank your tasks When developmental biologist Cassandra Extavour joined Harvard University last year, she was surprised by how little administrative support she received. So, she started making lists to keep track of all her managerial tasks. As her lists shifted from digital to physical, she turned to piles. "I try and keep my desk organized in piles of most important to least important," she says. This allows her to match her activities to her mood: When feeling productive, she reaches for the top of the pile; when she's "brain-dead," she goes for the bottom. Extavour always keeps a list of outstanding chores. That way, "before I leave for the day, I have an idea of what I need to get done the next day," she says.

Ensure respect for your time When an assistant professor (who asked to remain anonymous) joined the multilab imaging center of a large university, several senior scientists overloaded her with tasks. She swallowed her pride, worked on weekends, finished the jobs, but didn't receive appropriate recognition. "If you're going to stand on your head, at least get credit for it," she says. Recently, when a colleague approached her with a task he urgently needed that required one of her students to work overtime, she thought twice about it. She made sure the student was willing to take the job, and made it clear that this wasn't the usual routine. The extra work paid off. The colleague "now provides a collaborative contact I wouldn't have had access to [otherwise]," she says. Follow your students' lead. In 1997, cell biologist Sandra Schmid of the Scripps Research Institute noticed a drop in motivation in one of her PhD students, who started leaving the lab early and didn't repeat failed experiments. Schmid confronted the student, who explained she wasn't interested in staying at the bench. Over the next two years, Schmid tailored the student's thesis to her main interest: science policy. The student completed her research in partnership with a postdoc and then wrote a more scholarly thesis. Instead of going to cell biology meetings, the student attended AAAS policy forums. Schmid saved time and effort by helping the student change focus and reapportioning her experiments. Now, says Schmid, this former student is a scientific policy advisor for a US senator. "I'm asking for excellence, but I'm asking for it in areas relevant for [her] to succeed," Schmid says. "We've got to get away from students as a labor force and back to the fact that we're training people."

Recognize special needs Graduate stipends have improved over the years, but some graduate students need to make extra money. It's an issue that needs to be addressed if you want to get the most out of your students, says Rest. He recalls one student who arrived late, groggy and bleary-eyed, because he was working nightshifts at an express courier company. "He didn't think it was my responsibility that he needed money," Rest says. When Rest learned that the student was working all day in the lab and all night in the warehouse, he found a job for him as a dishwasher in another lab. The arrangement helped the student make ends meet while concentrating on his research.

2. Motivate Your Lab: How to Run an Efficient and Creative Lab Without Micromanaging

Even though he had just landed a grant for an exciting new project to study why and when people fail to monitor their progress towards a goal, University of Sheffield social psychologist Thomas Webb was a little stressed. \"It's only me and the two postdocs, and I knew it would come down to my management style,\" at least as far as getting the work done. So he set up weekly meetings, in which the group outlined the tasks that needed to be performed and set deadlines for each task.

As with most young investigators, Webb's success in academia relies in large part on the initiative, drive, and creativity of his research team. Webb is one of a number of social psychologists whose research grapples with the question of what motivates people, what makes them adopt new habits or break bad ones. It can be challenging to apply some of the findings to one's own research team, when faced with the same questions that challenge every new manager: how to get the most out of your team without micromanaging them.

Research teams comprise postdocs, graduate students, and research assistants, individuals who each have different career goals and are \"highly intelligent and want autonomy,\" says Vish Krishnan, a management scientist at the University of California, San Diego (UCSD) Rady School of Management. \"Managing such teams is like herding a bunch of cats,\" he says. The good news is that some recent research on keeping people motivated is providing new explanations for some old tenets of good management.
The Scientist spoke to a number of social psychologists and management researchers about how to apply their newest science to help run a lab.

Define their motivation

While a laboratory may have a single overarching goal or research focus, the daily work of science requires the completion of multiple subgoals, some of which may not seem as glorious or as relevant as some team members would like. One way to get everyone working as a team is to discern how best to motivate each of them. \"Some people are better at avoidance goals. Some are better at approach goals,\" says David Neal, a social psychologist who works on habit formation and is cofounder of Empirica Research, a market research firm. Most people will know which group they belong to: do you tend to study for an exam because you want the \"A,\" or do you study because you're afraid of failing? \"There are individual differences,\" says Neal. Find them out, and you can frame tasks as either gaining a positive goal or avoiding a negative one.

Get gritty

\"Grit\" is the word psychologist Angela Duckworth of the University of Pennsylvania came up with to describe the characteristics of top leaders who are passionate about a

goal over the long term. People who make it through military boot camp have it, and it's likely that successful scientists have it too. Grit is defined as a characteristic of someone who sustains interest in projects, does not give up despite encountering obstacles, and diligently finds ways to improve his or her work. \"Science is so long-term and so uncertain. You have to be in there for decades to see the impact of your work,\" says Duckworth. While some people seem to come by grit naturally, Duckworth believes that it is a trait that can be developed, and part of it comes from becoming more comfortable with frustration, she says. In a laboratory setting, regularly assessing obstacles that can lead to frustration and delay can help the team get into the habit of solving problems early.

Get uncomfortable

\"We prefer to do things correctly rather than incorrectly. We prefer to be praised,\" says Duckworth. This is in part what makes getting negative feedback so difficult. But when a person can focus at least a part of each day on the uncomfortable things that he or she is not good at, says Duckworth, it usually leads to tremendous improvement over time. But it isn't easy. During one-on-one meetings, managers can ask team members to make a list of areas they want to improve upon-whether it is expertise at a particular protocol or personal skills such as time management or writing-and to make a plan for improving those areas.

Encourage mistakes

\"Perfectionism can lead to myopia and to not searching widely\" for solutions, says Paul Schoemaker, a professor of marketing at the University of Pennsylvania's Wharton School. As a society, \"we emphasize perfection too much, at the expense of success,\" he says. Acquiring and cultivating grit requires making mistakes, Duckworth says. When experiments fail, a careful assessment of all the specific reasons for the failure can make the setback feel more like an opportunity to learn than a disappointment. At lab meetings, have your team members get in the habit of presenting each setback along with an assessment of why it occurred and a possible solution. \"Most entrepreneurs, and the venture capitalists who invest in them, live by a bold mantra: fail fast, often, and cheaply,\" writes Schoemaker in his book Brilliant Mistakes: Finding Opportunity in Failure.

Allow a bit of sloppiness

The discoverer of penicillin, Alexander Fleming, was as playful in his scientific habits as he was in his life. \"When he played golf, he wouldn't follow the rules,\" says Schoemaker, who writes about Fleming in his new book. Nor did he follow today's standards of laboratory hygiene, letting his bacterial cultures be overgrown by the Penicillin fungus that ended up killing them-a slip-up that has saved millions of lives. Lab PIs can challenge their team to come up with an experiment that they think is sure to fail, and then perform it to test their assumptions.

Diagnosing lack of motivation

At times managers will perceive a lack of motivation or progress from a particular team member. Here are a number of situations that could explain the apparent loss of interest.

- The goal is not valued. In order to motivate, a goal must be both challenging and specific. If the task is deemed too simple, the goal can lose its value to a team member, and thereby lose its ability to motivate.

- The goal is perceived as unattainable. The goal may still be valued highly, but a person's confidence that the goal is attainable falters. This can happen when a member of the lab feels as if progress is not being made despite his or her efforts.

- Overcorrection feels like underappreciation. Micromanagement-correcting the details of every task-can make people feel as if their work and effort is not valued, which can lead to a loss of motivation. Try limiting a critique to five things, in grading undergraduate dissertations, for example, says Webb. That helps the student focus on the most important problems.

Spur creativity

Although grit and perseverance are important traits, sometimes rigor needs to take a backseat to creativity. \"Physical and psychological distance from the workplace seem to affect creativity,\" says UCSD's Krishnan. While it might help to hold some meetings outside of the lab, Krishnan says the same idea can be implemented with a thought experiment. Have your team members imagine trying to solve a problem under new constraints, says Krishnan. What might a competitor's lab do; what would a lab with few or many resources do? Imagining the problem in a different context can help \"people relax their assumptions,\" he says.

Find the right granularity

Goals, such as getting grant funding, should not be put on your task list. \"If my task for today is to write this paper for Science,\" then it'll never get done, says Neal. \"Motivationally speaking, breaking a project up into the right steps for you\" can be a great help. \"Make explicit lists at the right level of granularity,\" suggests Neal. If it looks as though one of your team members is not performing up to par, have them show you how they've broken up the task into manageable chunks that can be assessed individually, and work with them to do so if they haven't.

Outsource the tough stuff

Keeping on task can require a lot of self-control, which some researchers think people have in limited quantity. One study showed that people who forced themselves to eat

radishes rather than chocolates quit faster on a puzzle task than those who did not have to exert self-control (J Pers Soc Psychol, 74:1252-65, 1998). A recent study by Gráinne Fitzsimons at Duke University's Fuqua School of Business showed that people may be more effective when they outsource their need for self-control. An example is getting a running partner: having a friend collect you for a run removes the necessity of motivating yourself in isolation. This idea can be applied to a laboratory setting by incorporating a social aspect into the pursuit of goals. Although working in teams does not apply to every task, creating situations where tasks are done in parallel could improve overall motivation.

Try a new kind of meeting

Meetings can trigger motivation by giving goals a social aspect. Here are two styles of meetings that might help bring creativity and focus into your workflow.

* The short and quick - One computer science laboratory described breaking up their hour-long weekly lab meeting, which had focused on presentations, into an abbreviated version consisting of two to three 15-minute lab meetings every week, providing a speed-update on each member's progress, PIs included. Each person would describe what she or he had done since the last meeting; list obstacles; and state the work to be completed before the next meeting. It helped team members feel they had to make progress every day, gave them insight into the lab manager's goals and work process, and created a focused community interaction in which everyone was motivated by each other's progress. It also gave the PI insight into problems as they arose, which allowed the scheduling of \"on-demand\" meetings to address the issues. (Read the full article or in abbreviated form at Communications of the ACM, 53:30-31, 2010.)
* Evaluation meetings - Working to improve your laboratory process and your research output can be time-consuming and feel unnecessary, especially when things are running smoothly. But it's also the best way to institute efficiency by focusing on the process rather than the person. Schoemaker came up with a method to identify the areas in his market research organization that might benefit from employing a new approach. He found that his team always assumed that client requests for a proposal and cost estimate would not pan out, because they indicated a lack of sincere interest. When Schoemaker tested the accuracy of these assumptions, he discovered that, with minimal additional expenditures, he could grow his business by asking younger associates to vet the requests. Here's how to find areas for improvement in your own lab:

1. Have your lab make a list of explicit and implicit assumptions relating to workflow, to lab management, or to a scientific question. For example, \"the equipment we need is too expensive\" or \"we don't have time for weekly meetings.\"
2. Then score all of the assumptions by how likely each is to be true? In other words, \"would you bet your house on it? Your life? Your spouse's life?\" says Schoemaker. Then score how big the impact would be if the assumptions were wrong. Plot the results and select those with lower \"truth\" scores and higher \"impact\" scores as most likely to be worth testing. Rank the selected

assumptions according to how difficult, time-consuming, or costly it would be to test each one by giving it a 1-7 score on each of the five statements listed below (1 = disagree, 7 = strongly agree). The highest-ranking assumption will be the one most ripe for testing.

a. The possible benefit of finding a better answer outweighs the cost of the test.
b. This assumption affects decisions we make repeatedly.
c. The problem is too complex to solve as a thought experiment, without empirical data, and would benefit from experimentation.
d. We haven't got empirical data because this assumption is not based on much experience.
e. The lab's experience with the assumption or problem is limited such that the need for innovation is high and promising enough to try.
(Read about the assessment on p. 72 of Brilliant Mistakes.)

3. Preparing and Managing Your First Lab Budget: Finance 101 for New Investigators for New Investigators

By Megan T Brown*

When it comes to practical matters such as managing money, scientific training seems woefully inadequate. Although you may be an ace at balancing your personal checkbook each month, this doesn't mean that you are automatically qualified to prepare a scientific budget. If your budget is not realistic or in line with other current grants, you could run into serious stumbling blocks during the grant review process.

The need for financial savvy doesn't stop once you get a grant. You must be able to manage your money by neither overspending nor underspending your allocation. We've all heard budget horror stories, such as the one about the assistant professor who spent 2 years' worth of supply money in his first 9 months and had to resort to reusing pipette tips. And then there's the tale of the new investigator who underspent her supply money and lost surplus funds because she didn't realize her funding agency wouldn't allow her to carry them over to the next year.

Fortunately, these situations seldom occur. With common sense, a bit of research, and the tips listed below, a new investigator can prepare a realistic budget and manage it successfully.

Preparing the Budget for Your First Big Grant

1. Tackle the Science or the Budget First?

Because science is the most important part of your grant proposal and will largely determine whether it is funded, many investigators write the scientific sections first. But writing the budget first can have advantages. Edward Giniger, an associate member of basic sciences at the Fred Hutchinson Cancer Research Center (FHCRC) in Seattle, prefers to put together a rough budget before he writes the proposal: "I determine my budget first. Then I propose a coherent set of experiments that fit the budget." The budget-first approach helps keep the proposed work in line with the available money.

2. Learn the All-Important Magic Numbers

Some granting agencies provide no guidelines for the amount of money you can request in your budget. But there *are* unofficial figures for key parts of the budget that are generally followed by grant reviewers. These unacknowledged figures are the "magic numbers" that will make your budget acceptable to the study section. Two especially important numbers are:

* the total amount per year that a first-time investigator can request, and

* the allowable supply budget per person per year.

It may be most practical to get these numbers from your colleagues instead of the actual granting agency, which may deny that such "magic numbers" even exist. If you get these figures, your budget will have a better chance of getting approved. Numbers significantly above or below the accepted ones will raise a red flag for the entire application. "Staying within these figures, my budgets were never questioned," says Giniger.

Overall, your budget must match your proposed work. If your budget is too low, the study section reviewing your grant proposal will penalize you for being unrealistic or overly ambitious. Proposing to do far more work than your requested funds can support is a frequent criticism of inexperienced investigators' grant applications. On the other hand, if your budget is too high, your proposal will not be competitive with other grants that propose similar types of experiments for less money. "The grant situation today is so competitive," says Jonathan Graves, a new assistant professor of immunology at the University of Washington in Seattle, who recently received funding for his first National Institutes of Health (NIH) R01 Individual Research Project Grant. "There is an element of feeling like you're bidding for a construction project with the lowest bid getting awarded the grant. You must strike a difficult balance between what is appropriate and what is competitive."

The magic numbers will be lower for first-time applications than for grant renewals. In addition, the numbers will vary according to the field of research. Some specialties require higher supply funds because they rely on more expensive research technologies. For example, the annual "magic numbers" for a mouse geneticist who works with knockout lines will be substantially higher than for a yeast geneticist.

3. You Can't Do It Without Help

"The first thing I did was ask people if I could look at their budget pages," says Graves. Be sure to request pages from colleagues in your field. Their budgets can serve as templates and be adapted to your particular needs. "Do not ask other beginning investigators for their budgets--they may be as clueless as you. Talk to intermediate-level investigators who have already obtained several grants and are actively participating in study sections," advises Giniger.

Also, do not overlook the seminars and workshops for new faculty members offered by your institution's grants office. At the very least, you'll meet administrators in the grants office and other new faculty members with similar concerns. These people may be good sources of information and advice in the future.

4. How to Calculate Salaries, Supplies, and Equipment

How many people does your budget need to support? Knowing the answer to this question will go a long way toward setting your budget, because salaries usually account for about 80% of requested funds. One difficulty new investigators have is that they usually haven't hired the personnel they need by the time they write their first couple of grant proposals. Nonetheless, they must calculate the amount of funds for the staff they intend to hire. To do this:

* Assign an actual dollar amount for each position (e.g., you, a technician, a postdoc).

* Calculate the percentage of salary support for each anticipated individual (e.g., 50% salary for you, 100% for the technician, and 100% for the postdoc).

* Add the numbers up. Then, multiply this sum by your institution's standard amount for fringe benefits (usually between 17% and 30%). The final total for salary (including fringes) should not exceed 80% of the annual magic number.

* Add the "supplies per bench scientist per year" amount to calculate the total supply budget. It is standard in most grants to also add a 4% annual inflationary increase in expenses for supplies and salaries.

Get quotes from vendors on any laboratory equipment that is not covered by your start-up package. Some agencies are more willing to fund equipment purchases in the first grant than in renewals, but this is not universally true. In the proposal's budget justification section, you must explain why you need each piece of equipment and must justify the overall supply budget. The NIH's new modular research grant system requires only a streamlined justification in the grant application, but most other agencies still require the full details.

Managing Your Budget

Once your proposal is funded, you may think your money concerns are over. Not true! Now, you need to control your actual spending rate so that it matches available funds. The fact that your estimated cost of laboratory supplies matched one of the magic numbers you learned from colleagues doesn't mean that it truly reflects the day-to-day costs of operating your lab.

1. Monitor Spending on a Monthly Basis

You will probably receive a monthly report from your grants office or department. This report may or may not be interpretable. Some institutions do offer classes in how to read these reports and may also provide training in using in-house grant-tracking software. But many investigators prefer to keep their own books, using simple spreadsheets in Excel or Quicken to track their expenditures. (Not only is Excel easier to use, but you'll have the advantage of having CURRENT information, not just a summary of LAST month's expenses.) There are also commercially available software programs designed for monitoring grant budgets, such as Grant Manager andGrant Tracker.

Many organizations use a budgeting trick called "calendarizations," which is very easy to adapt to a scientific budget. This allows you to budget basic necessities, such as reagents and salaries, on a regular monthly basis. (Annual supplies in all categories divided by 12 = monthly spending.) It also allows you to plan and budget, for example, an extra $10K for the month of September to buy a reconditioned microscope. Calendarizations can be a very effective way to track how much you are overspending or underspending during any given month and for the year to date.

2. Overspending? Look for a Second, Smaller Grant

If you are consistently overspending your monthly supply budget and cannot seem to reduce costs, then you may need a second grant. Smaller grants that cover supplies are available from a number of agencies, and some are specifically targeted at new investigators. A small grant can also be a springboard to a second larger grant in the future.

"Try to get at least one small grant," advises Nancy Hollingsworth, an assistant professor of biochemistry and cell biology at the State University of New York, Stony Brook. Hollingsworth's lab receives support from both an NIH R01 and a Basil O'Connor Starter Award from the March of Dimes. "It's very hard to grow on a single R01," she says. "Your second, smaller grant can include specific aims not addressed in your main grant. Later, you can try for a second R01 or large research grant from another agency that is based on these independent aims."

Another approach is being taken by Maureen Ryan, an FHCRC staff scientist and an acting assistant professor of dermatology at the University of Washington. Ryan received of a Career Development Award from the Dermatology Foundation and will apply for her first NIH R01 later this year. She advises learning "to make use of limited resources by establishing collaborations and planning carefully--figure out how to kill two birds with one stone whenever you do an experiment."

3. Know Your Grant

If you are underspending your budget each month, then you will have a pile of money left at the end of the year. Assuming that you can carry this money over to next year's budget can be a costly mistake. Some granting agencies allow carryover, but some do not; so check at least 4 or 5 months before your granting cycle is scheduled to end.

Another way to avoid underspending is to switch some of your supply money to equipment or travel. Whether this is permitted is, again, grant-dependent. Some grants, such as R01s, have so-called "undistributed budgets" that allow relatively free exchange between budget categories. However, grants of the "distributed" budget type are not as flexible.

Advice to Postdocs and Graduate Students

1. Learn Now, Not Later

Researchers who are planning to follow the academic research track should start thinking about grants and budgets before they secure faculty positions. "If you are already a new faculty member, it is too late to be learning these things," says Giniger. By helping write grant proposals for their labs and participating in budget discussions as students and postdocs, both Giniger and Graves gained valuable experience before becoming faculty members. "I would not have been able to get my R01 on the first attempt without this experience," says Graves.

Even if you are not invited to help write your lab's grant proposals, you can still pick up valuable information in other ways. "As a postdoc, you should listen and learn," advises Giniger. "Make a point of talking to people a few years ahead of you. Learn how much it costs to run a lab, how much to buy supplies."

2. Ask Your Mentor

Take advantage of your mentor's experience by initiating discussions about grants and budgets even if he or she doesn't. Most advisers are happy when their trainees follow in their footsteps by choosing a traditional academic career path, so they will probably be pleased to impart their wisdom.

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