

ADVANCING CAREERS

ARTICLES FROM THE FOCUS NEWSLETTER



THE BURROUGHS WELLCOME FUND is an independent private foundation dedicated to advancing the biomedical sciences by supporting research and other scientific and educational activities. Within this broad mission, BWF seeks to accomplish two primary goals—to help scientists early in their careers develop as independent investigators, and to advance fields in the basic biomedical sciences that are undervalued or in need of particular encouragement.

BWF's financial support is channeled primarily through competitive peer-reviewed award programs to degree-granting institutions in the U.S. and Canada on behalf of individual researchers, who must be nominated by their institutions. To complement these competitive award programs, BWF also makes grants to nonprofit organizations conducting activities intended to improve the general environment for science.

Governed by a Board of Directors composed of distinguished scientists and business leaders, BWF was founded in 1955 as the corporate foundation of the pharmaceutical firm Burroughs Wellcome Co. In 1993, a generous gift from the Wellcome Trust, enabled BWF to become fully independent from the company, which was acquired by Glaxo in 1995.

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INTRODUCTION

The Burroughs Wellcome Fund is committed to being a leader in career development for biomedical scientists.



While our programs are highly competitive

and our grants are coveted, we also provide support to a broad area of biomedical science intended to provide training and guidance to a broader audience of early career scientists. Our career development activities include the creation of the career development guide series, of which this book is a part.

The career development guide series provides insight and expertise from established scientists and other experts in the topic area. The guides are written by highly regarded science writers familiar with the content area, and encapsulate advice from successful researchers across BWF programs and the broader scientific community.

In 2007, the Fund published *Communicating Science: Giving Talks*. The guide's reception was astounding. Since its publication, the guide has been downloaded more than 25,000 times and we have distributed nearly 10,000 hard copies of the book all over the world.

We are quite proud of our series and we hope that if you find the content useful, you will pass along your copy or provide others with a link to our webpage (<http://www.bwfund.org/career-tools>) that contains material covering a wide-range of career topics.

Issues for New Faculty

by Mweia Uqoezwa, Science Writer

How to manage what seems like insufficient time? How to spend available funds? Who to hire? Where to go for help? These are some of the most common questions that come up for new faculty at major research institutions. During its Awardee meetings, the staff of BWF assembles discussion panels around the questions facing new faculty researchers.

When thinking about money, many new faculty members tend to focus on how to acquire more of it. However, the panel members focused on how new faculty can effectively manage the money they receive. Most research scientists have no experience with running a small business—which is exactly what is required when a laboratory has employees and the faculty member must manage both them and the budget. To responsibly manage a lab, an investigator must be aware of his or her finances and keep track of them.

Even for those researchers who are lucky enough to have good administrators, it's still important to understand that not all money is equal. Understanding different pools of money and their different flexibilities, expiration dates, and reporting requirements becomes important when an investigator has the choice to use start-up money, grants from the National Institutes of Health, and awards. With regard to Burroughs Wellcome Fund money, there is much more leeway, so the panel's advice was to use this money last, make it count by using it for a special project or postdoc, and save some for a rainy day, because there will be some rain.

Taking time to think about where money goes is critical. Personnel salaries and their individual supplies represent major expenses. Then there are the less obvious expenses, such as radiation disposal and animals, which drain funds. Investigators have to be aware of their costs and plan ahead. The good news is that planning is easy to do if investigators take a little time to gather the necessary information, educate themselves about terminology, and maybe even use some planning software. With a little effort, the payoff will be worth it.

In the beginning, new investigators are the best pair of hands in the lab, so they should spend at least half of their time in the lab, setting the example.

As with money, investigators should give considerable thought to how they spend their time. They shouldn't be afraid to say "NO" to certain things, such as serving on another committee, meeting a department chair's numerous requests, or participating in a grant review. Running the laboratory should be top priority. In the beginning, new investigators are the best pair of hands in the lab, so they should spend at least half of their time in the lab, setting the example. This time is incredibly important for setting the tone and the expectations for the lab. Other major responsibilities that will demand time include mentoring, writing grants, correcting papers, and troubleshooting experiments and approaches.

The panel also highlighted the fact while new faculty often receive considerable advice about how to become good mentors, it also is important for new investigators to find their own mentors within their institutions. They will need a colleague with whom they can talk about anything—someone to talk science with, who can give critical feedback when it comes to such things as writing grants, personnel choices, financial forecasts, and direction. This can be one of the most important aspects of life in a new faculty position.

This chat book delves further into these issues and others that face new faculty members, from the issues that factor into accepting a faculty position to running a lab, communicating and funding your research, and balancing family and personal issues with dedication to your job.

CONSIDERATIONS IN ACCEPTING A FACULTY POSITION



Academic Tenure-Track Offer Letters for New Assistant Professors in the Biomedical Sciences

by Rolly S. Simpson Jr., Senior Program Officer

From 1995 to 2005, the Burroughs Wellcome Fund made 241 Career Awards in the Biomedical Sciences (CABS) to young postdoctoral fellows to help them make the transition to tenure-track faculty member and independent investigator. The award pays \$500,000 over five years. On average, awardees normally continued as postdocs for about 18 months after receiving the award, with the balance of the award period spent as an assistant professor.

BWF's policy requires institutions offering CABS awardees faculty appointments to make a significant commitment to their career development in the form of a tenure-track position and a laboratory start up package. Before a BWF awardee moves to a faculty position, BWF reviews and approves the institution's offer to ensure that it provides adequate support for the awardee's career.

Since the inception of the program, BWF has approved over 200 faculty appointments for CABS awardees. We require that institutions provide a detailed letter that outlines the terms of the appointment.

The scope and content of offer letters examined by BWF run the gamut. Even letters from the same institution vary dramatically. An analysis of these letters, including salary and start-up packages, follows. The hope



is that this information will provide young scientists seeking a position as an independent investigator at a university with some helpful insights into what to expect and what to ask for in the offer letter. Also, deans, department heads, and other hiring managers may find some useful information in this analysis.

Start-up and salary data presented here are from 42 offers approved by BWF and accepted by awardees that were received between January 1, 2005 and December 31, 2007. Physician-scientists received 38 percent of the offers. Almost one in four ($n=10$) of the accepted offers came from Harvard. Most awardees accepted positions at schools of medicine (64 percent), with 26 percent of awardees accepting positions at schools of arts and sciences, 7 percent at research institutes that are closely affiliated with degree-granting institutions, and 2 percent at schools of engineering.

The Offer Letter

Most offer letters should include the following most basic items:

Starting date. All offer letters should have a proposed starting date. In the BWF cohort, 17 percent of award letters did not have one, although half without start dates were offers for faculty positions at the same institution where the awardee was doing a postdoc.

For the letters that did have a start date, the time from the official offer to start date varied from 1 to 12 months, with the average being about 5 months. About half of the start dates were between June 1 and September 1. However, the start date is negotiable, and when negotiating the start date, the awardee should take into account any experiments and manuscripts that he or she needs to complete before moving to the faculty position, the time it would take to physically move to a new location, and any family concerns.

Remember that the tenure clock will begin when an awardee starts his or her appointment.

Remember that the tenure clock will begin when an awardee starts his or her appointment, and the awardee will have, depending on the institution, six to seven years before tenure review begins. If there is a significant amount of time between acceptance of the position and the start date, the awardee might want to consider ordering supplies and planning experiments for his or her lab in advance to be able to hit the ground running. Also, if an awardee encounters any delay in getting into his or her lab because of remodeling, construction, or other factors, the awardee might want to renegotiate the start of the tenure clock.

Salary. Even if some offer letters do not mention a start date, all mention salary. Recent beginning 12-month salaries for Ph.D.s ranged from \$78,000 to \$135,000 (average=\$102,153 and median=\$100,000). For physician-scientists with an M.D. or M.D./Ph.D., salaries ranged from \$92,304 to \$145,000 (average=\$121,058 and median=\$120,000). Salaries are normally for a nine- or 12-month year, and the letter should clearly make this distinction. Typically, salaries at schools of arts and sciences are for a nine-month academic year and salaries at medical schools are for 12 months. The salary is usually fully paid by the institution for the first three years or so of an appointment; however, in some cases the institution pays 100 percent the first year and successive lower percentages for succeeding years.

For many of the BWF awardees, salaries comprised not only a base salary, but also one or two additional components, such as a supplement or incentive component and/or a bonus. The base salary is normally the institution's base salary for an assistant professor. The supplement or incentive component can be an additional salary for summer work if the contract is for a nine-month academic year, a percentage of the amount of salary support raised from grants, a supplement from departmental funds, or income from clinical responsibilities if the new appointee is a physician-



scientist. The base salary is normally guaranteed, while supplements or bonuses are considered variable components and may differ from year to year. Variable components may comprise one-third or more of the annual compensation.

In those cases where salary or start-up funds are supported, partially or fully through gifts, grants, endowments, or other outside funds, the awardee may be asked to prepare annual reports or to present his or her work at meetings for the benefit of donors or granting agencies. BWF requires all of our awardees to submit annual progress and financial reports, participate in an annual survey evaluation, and attend one or two career development meetings during the tenure of the award.

Academic title and track. Since BWF requires CABS awardees to acquire a tenure-track appointment or equivalent, all of the most recent awardees received a tenure-track assistant professor position.

Many letters will specifically state that the appointment is a “tenure track assistant professor” position. Others may call the appointment a tenure probation period, tenure line, probationary faculty member eligible for tenure, tenure stream, tenure eligible, tenure equivalent, tenure accruing track, or tenure related.

Teaching responsibilities. Teaching responsibilities are specifically mentioned in over 75 percent of the offer letters. The norm is to delay any teaching until the beginning of the second year of the appointment. The delay gives a new faculty member an opportunity to prepare materials for his or her classes and to provide for additional time to get a laboratory up and running. The downside to postponing teaching is that it is critical for a new faculty member to be able to attract good graduate students to his or her lab and classroom, and contact with students is one of the best ways to recruit.

Teaching is also one of the areas that may be considered when a new faculty member comes up for tenure. A good evaluation may not add many brownie points to a tenure package, but a bad evaluation may certainly hurt.

In addition to delaying teaching, serving on a committee, which may be time consuming, should be delayed at least a year and be considered carefully before accepting. Some committee assignments, such as graduate admissions, can be extremely useful, while others, such as curriculum development, may be too time consuming.

Term of appointment. About half of the offer letters address a specific term of appointment. The most common term of appointment is for three years and is renewable for an additional four years if progress is satisfactory. Other terms of appointment are year to year, depending on progress, and a few are for an initial term of six or seven years. The terms of appointment fall into the general scheme of the tenure process whereby beginning assistant professors are typically appointed for two three-year terms plus an additional year to complete the promotion process.

Reappointment for the second term is not automatic and may involve a vote by the tenured faculty within a new faculty member's department. For reappointment, the selection committee may consider scholarship, funding, teaching, service, letters from colleagues, and comments from postdocs and students. At most institutions, approval for reappointments usually requires approval and review only by the dean or equivalent.

At the end of the six- or seven-year period, the university will conduct a review for tenure. The most important considerations for promotion will be a faculty member's grant support and scholarship in the form of high-quality publications where he or she is the primary corresponding author.



Start-up support. One of the major keys to a new faculty member's success is to have sufficient resources at the outset to start and maintain a lab, to ensure time to gather data in support of grant proposals and to apply for funding. A new independent investigator should operate his or her lab in much the same way that a CEO of a small business operates.^{1,2} From an early BWF survey, CABS awardees who were in faculty positions supervised, on average, a staff of 6.6 (+/-) and their labs had an average annual direct cost funding of \$300,000 (+/-).

Recent institutional offers of start-up support (excluding salary) for Ph.D.s averaged \$800,000 (range \$500,000 to \$1,400,000), with a median of \$750,000. Start-up offers for physician-scientists averaged \$800,000 (range \$100,000 to \$2,110,250), with a median of \$710,000. Faculty can use this money for equipment, consumables, personnel costs, and professional travel. In many cases, the funds are made available for the first three years and normally (but not in all cases) may be carried forward if not spent. A few institutions may allow unused money to be placed in an interest-bearing account, with the interest added to the total start-up support.

Start-up funds are initially determined from equipment and supply lists that a new faculty member presents when negotiating a faculty position. In most cases, equipment purchased with start-up funds becomes the property of the institution. Equipment purchased with BWF award funds, however, is transportable. In addition to providing a sum of money, start-up packages may include details regarding the use of shared equipment (new faculty members should be sure that shared equipment is truly shared) and administrative support. One institution was so proud of its "renowned machine shop" that it made a point of stressing that the shop would be available to the new faculty member.

As part of a start-up package, the space that the university provides a new faculty member will be an extremely important consideration.

New faculty members should set up their labs as soon as possible. Many institutions will allow the use of start-up funds as soon as the appointment is officially approved. New appointees can get a head start by ordering equipment and hiring technicians before they arrive.

As part of a start-up package, the space that the university provides a new faculty member will be an extremely important consideration. Over half of the offer letters will mention either a specific location or a square footage. If laboratory space is being remodeled, an appointee should confirm the date that the space will be available. Laboratory and office space will range from about 500 square feet to 2,000 square feet; for BWF awardees, the average has been about 1,000 square feet. If renovations are required, a new faculty member should be involved in the planning and should find out if the costs are to be taken out of start-up funds or borne by the institution.

In the institutional offers made to BWF awardees, there was only one instance in which the space that was offered was considered inadequate. After additional negotiations the issue was resolved.

Relocation expenses. Relocation and moving expenses are usually part of an institution's personnel policy and may not be specifically addressed in the offer letter. Again, about half of the offers did not address these expenses. Relocation reimbursement values ranged from \$2,000 to \$15,000, and many letters stated only that the institution will cover the cost of moving.

In addition to providing actual moving expenses, some institutions will provide a housing allowance or access to on-campus housing. This is particularly true in areas with a high cost of living, such as San Francisco, Palo Alto, and Cambridge. Institutions may provide a one-time cash supplement (ranging from \$7,500 to over \$100,000) or may have a specific program for housing benefits. The University of California system has a mortgage program that provides a low-cost loan with a salary supplement.



Offer letters often contain additional common components:

- Joint appointments
- Availability of specific types of equipment
- Specific assignments, such as committee participation
- A date in the future when the new faculty member will be required to provide part of his or her salary from outside grants
- A mentor and mentoring details
- What is expected for promotion and tenure
- Sabbaticals and/or professional development leave
- Spouse employment, dual career couples, trailing spouses
- Institutional support in the form of nominations for other awards and grants
- Annual performance review
- Continuing support for a specified amount of time in the event the new faculty member does not get funding
- Conditions for renewal of appointment
- Support for a trip to look for housing
- Parking
- Criminal background check prior to employment
- Schools of medicine may require incoming faculty members to sign a confidentiality certificate for compliance with HIPPA regulations
- Disclosure of outside employment activities
- Offer contingent upon approval by appropriate institutional officers and committees

Physician Scientists

Physician scientists who are clinically trained, unlike Ph.D. scientists working in an academic research environment, often have the added responsibility of clinical service. Some observers may see this as an added difficulty in the path to tenure for the physician-scientist because of competition with the Ph.D. who does not have clinical responsibilities. Others say that this gives the physician-scientist an additional benefit because he or she poses the quadruple advantage of scholarship, teaching, institutional service, and clinical practice. Initial data from BWF's awardees suggests that physician scientists do somewhat better than their Ph.D. counterparts when research support, article publications during award, and citation rates are considered³. BWF's CABS awardees must, however, devote 80 percent of their effort to bench research, so clinical or other service cannot constitute more than 20 percent of an awardee's effort.

In regard to starting salaries and start-up packages, cited above, the fact that there were only two female physician-scientists in the cohort of 16 means that no meaningful comparisons can be made.⁴

Unlike Ph.D.s, more physician scientists tend to remain at their postdoctoral institutions for their faculty appointment: 37 percent versus 19 percent. Eighty-seven percent of the physician-scientists have their primary appointment in a school of medicine, while 67 percent of Ph.D.s have their primary appointment in a school of medicine.

Certain issues that apply only to the physician-scientist may be included in the offer letter. These issues include:

- How any excess clinical income will be paid
- Rules governing clinical work outside the institution
- Required continuing medical education
- Non-compete agreement

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- Malpractice insurance (normally paid by the department)
 - Particular mention of protected research time because of clinical responsibilities
 - Licensing and hospital staff fees
 - A date by which specialty boards must be passed
 - Compliance with billing practices
 - Terms of clinical service, which for physician-scientists is usually four weeks per year or one-half to one day per week. In addition, physician-scientists may be required to work a given number of weekends per year.

Big Decisions

Choosing a first faculty position will be one of the most important decisions that a scientist will make during his or her professional career. This means all scientists considering a first appointment should seek an environment where they can grow professionally and where their careers will prosper. Remember, each institution and their affiliated agencies has an investment in the success of new faculty members and desperately wants them to succeed. But each new faculty member also should remember that his or her research and subsequent publication in high-quality journals should be of top priority.

One final note is that awardees pursuing their first faculty appointment do not need to get everything in writing. Negotiating every small detail may create an adversarial environment with the hiring department. Rather than aiming for a 10-page offer letter, it will prove better in the long run to build a bridge, not a fence.

Negotiating every small detail may create an adversarial environment with the hiring department.

Addendum

The Burroughs Wellcome Fund discontinued the Career Awards in the Biomedical Sciences program in 2006 because of the anticipated impact of the National Institutes of Health's new K99/R00 Bridges to Independence mechanism. BWF replaced the CABS program with the Career Awards for Medical Sciences program, which is focused on the physician-scientist who is making the transition from a mentored position to an independent investigator. The program provides \$700,000 in support over five years. The first 22 awards were made in 2007, and at this writing, faculty appointments have been approved for six. Their average starting salary was \$140,000 and average start-up package was \$662,000. All awardees went to clinical departments for the faculty portion of the award.

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Originally published in Focus – Summer 2008

MANAGING YOUR LABORATORY



Coming On Board: Navigating the Unknown Choices and Challenges Every New Faculty Member Needs to Know About

by Mweia Uqoezwa, Science Writer

New faculty members at research-oriented institutions face many questions, choices, and challenges that can add up to a head of premature gray hair or the need for prescription sleep aids.

At the beginning of a new investigator's adventure-filled journey, there may be times when he or she might wish for a little help from a sage, a compass, or even a magic wand. At such times, learning from people who already have been down this path can go a long way in helping new faculty better navigate the realities that lie ahead.

This article highlights some gems of wisdom gleaned from a panel of experienced investigators that the Burroughs Wellcome Fund convened to explore how new investigators can best transition into faculty life. The five panelists offered both practical advice and words of caution.

Thinking back on his time as a new faculty member, Dr. Louis Muglia, M.D., Ph.D., a Professor of Pediatrics at Washington University in St. Louis, shared one piece of advice which was to find mentors.

"Even though you are entering into a full-time faculty position, you still need mentors. I still have my mentor," Muglia said. He said finding these "incredibly important people" who can provide guidance and support is



essential when getting started because there are so many issues that are not predictable. Former mentors from previous institutions will still be there for advice, he added, but new investigators also will find it valuable to find mentors at their current institutions.

How can new investigators find a mentor if one is not assigned at their institution? Muglia recommended that new investigators stay open and communicate with the people around them. “I think very quickly you realize who may be interested in serving as a mentor and who is not,” he said.

In addition to finding mentors, new investigators also should interact with colleagues in their own departments, explained to Dr. George Langford, Ph.D., the Dean of Natural Sciences and Mathematics at the University of Massachusetts-Amherst.

“Departments are very interesting units with lots of politics that you have to be aware of as a new faculty member,” Langford said. “You have to build relationships, understand the dynamics of the people, how they interact with each other.”

Langford added that it’s always good for new investigators to have more senior faculty members who know what the investigators are doing—including being familiar with the projects in their laboratories and with their graduate students—and who will support their efforts. He also shared one strategy that he used as a junior faculty member to make this happen: he volunteered to pick up visiting professors from the airport and take them to dinner. The next day he would transport them to the faculty labs in the department.

“This made me visible to the other faculty members, kept me up to date on what everybody was doing, and made sure that everybody knew what I was doing,” Langford said. “It made me a part of the department and helped to make it a nice home for me.”

New investigators should know what they want to accomplish, and then move ahead gradually.

The panel members said new investigators also should learn more about how their institutions at large work. Dr. James Bassingthwaighe, M.D., Ph.D., a Professor of Bioengineering and Radiology at the University of Washington, said one thing he found surprising was the slow pace of many universities.

“All new faculty come in with new ideas, and you want things to move—not just your program, but you want the institution to advance as well,” he said. “This is challenging to make happen quickly because institutions can’t move fast. There is too much inertia. Universities have no mind; they are just a body, a hierarchy of influence.”

Bassingthwaighe advised having patience. “New investigators should know what they want to accomplish, and then move ahead gradually. Many things will require collaboration and communication with people in different departments,” he said. “All of this takes a lot of time, and patience.”

Dr. Margaret Hostetter, M.D., a Professor of Pediatrics at the Yale University School of Medicine also urged new investigators to take time early on to understand the timeline at their institutions for becoming an associate professor, assistant professor, and tenured professor.

“Make sure to know what the promotion tracks are at your institution and what the obligations are,” she said. “You don’t want to be caught in a situation where you’re saying, ‘What? My tenure review is in a month!’”

Hostetter also offered a piece of advice that she considers important for life both in and outside of the laboratory: don’t make it if you can buy it. She said this would be especially important for new investigators who already have a family or want to start a family, and who may be wondering how to balance a new position with family responsibilities?



“There are ways to bring together those demands from the lab and from the home front and say, ‘What’s really important here?’” Hostetter said. “You may have to be the cookie mom or the donut dad, but that doesn’t mean you have to make them from scratch. What’s important is the cookie, not the fact that you made the lemon frosting yourself.” The point, she said, is that new investigators should make the best use of their time by being practical and using their resources wisely. It is possible to buy time and do better science by buying things premade, both at home and in the lab.

New investigators also may be surprised by the challenges involved in managing funds and projects, according to Langford. “This is one aspect of life that you have not had to deal with as a postdoc, but suddenly you will have to make strategic decisions about how much of your funds to spend on graduate students or on supplies for the lab,” he said, adding that this may prove challenging for the first couple of years. New investigators typically want to be fully involved in each project in their labs, but they also must generate enough resources to last them through the lab’s initial stages until they are in a position to secure extra funding.

“There are some big decisions that have to be made, so the more you think it through, the better,” Langford advised.

Dr. Martin Matzuk, M.D., Ph.D., a Professor of Developmental Biology at Baylor College of Medicine in Houston, shared some advice from his own experience in managing funds. “I grew up with parents who were very stingy with money, and so I tend to be very conservative with the money that I spend,” Matzuk said. “This worked to my benefit starting



out, as it allowed me to keep my start-up expenses at a minimum.” As one management strategy, he suggested finding and buying old equipment. Institutions often have places where they sell used equipment that may be useful. In a nutshell, he advised, “Don’t spend all your start-up money right away, and buy stuff on eBay.”

The panelists all agreed that there was one particular aspect about life as a new faculty member for which they were least prepared: managing people. Indeed, the panelists reported that when it comes to personnel issues, they have not found a “golden rule” that leads to smooth sailing. This area, the panelists concluded, may be one in which new faculty have to go with their gut and develop their own instincts.

“I’m still not sure how to deal with people,” Matzuk said.

Originally published in Focus – Summer/Fall 2007

The People Puzzle: Investing in the Right People. What is the best way to start hiring when first getting your lab off the ground?

by Mweia Uqoezwa, Science Writer

For young investigators facing that exciting time in their career when they start their independent research programs, one of the biggest challenges is finding the right people to get the job done well. A researcher has to plunge into the role of human resource manager and make key hiring decisions.

This article highlights helpful advice from a Burroughs Wellcome Fund career development meeting where a panel of experienced investigators addressed the questions of who to hire first and what qualities to look for when recruiting people to your laboratory.

One choice that faces you immediately when first getting your lab off the ground is who should be the first addition to your research group. Should you invest in an expensive but productive postdoctoral fellow or nurture a talented but green graduate student? What about hiring a technician?

According to Dr. Martin Matzuk, M.D., Ph.D., a Professor at Baylor College of Medicine, the overall goal is to find someone good.

“Whether early on or later in your career, hiring a bad person is a big mistake, whether it’s a post-doc, student, or technician. Higher end is always the best choice.” His first hire was a technician who had lots of experience with mouse manipulation, which allowed Matzuk to get started with developing his much needed knock-out mouse models.

Like several of the panelists, Dr. Margaret Hostetter, M.D., of Yale University’s School of Medicine, also initially hired a technician. She believes that there are definite advantages to hiring a technician first, especially an experienced one.

“A good tech is worth the investment in terms of having that anchor person in the laboratory who can hold data and hopefully may be there longer than the two or three years of, say, a postdoc,” Hostetter explained. She said, ideally, your first hire is someone who will be around in your lab



for a long time who you can “really indoctrinate” and groom into your way of doing things. This way, he or she also becomes a very knowledgeable resource that your students can turn to for advice.

Dr. Louis Muglia, M.D., Ph.D., who set up his lab at Washington University, closely echoed these sentiments about the value of an enthusiastic, committed technician who can serve as the technical core of the lab. He described his first technician as the one who ran the whole show. “She became my right arm and meant everything to me. She helped me build a good foundation and was very productive long-term,” Muglia said.

This key decision also depends highly on your position and the resources available to you at your institution. If you have the right amount of grant money, post-docs are usually a good choice, as they require the least supervision. For Muglia, his technician was his only help for the first year, then came postdocs. Three years later his lab took on its first graduate student.

When considering graduate students, one panelist cautioned that not all schools have the same quality of students. Some universities do have graduate students who work at a high level, are very committed, and make great additions to the lab. Dr. George Langford, Ph.D., Dean of Natural Sciences and Mathematics at the University of Massachusetts-Amherst, added that getting your first graduate student is an important thing to do. “It’s important to have graduate students in the lab, and they’re likely to be interested in working in situations where other graduate students are involved. I would not delay in recruiting your first graduate student when starting a lab.”

Everyone agrees that getting the best person possible is really the core issue. But how do you know who is the best person? What should you be looking for and what are the most important factors to keep in mind?



Langford stated that quality people are skilled, positive, and energetic. “You want people who bring a positive energy to the lab. If possible, you want to avoid people who run into roadblocks and then bring down the energy of the lab.” He recommended finding people with whom you can work well. “Using an interview process will give you information about who the person is and how engaged he or she is in the work you are doing.”

Furthermore, Hostetter sees the interview as an opportunity to assess honesty—a quality she deems as essential. “Because you are going to be depending on these people to give you their data, you want someone who is not going to throw out experiments, so you want to make sure you have someone who is going to report data in an unbiased way,” she said.

An interview question that she often asks is this: “What would you do if I asked you to supervise a student with an experiment in which the answer could either be blue or white, and you notice that even though the result is blue, the student is writing that it’s white. How would you handle that?” In her experience, their level of maturity and honesty will come through in their response.

There are significant details in a resume that can be quite revealing. One factor to pay attention to is whether a candidate has had a fairly long-term position. Jumping around repetitively from lab to lab could be a sign of a potential problem. It may be a personality problem or an honesty issue, but beware when people say that all their previous labs ran out of money.

“You want people who bring a positive energy to the lab. If possible, you want to avoid people who run into roadblocks and then bring down the energy of the lab.”

George Langford, Ph.D.

An alternative way to protect yourself from unwanted surprises is to call up past mentors or employers and ask questions. All panelists agreed that getting letters from mentors is really important, especially for postdocs and technicians. But don't just take those well-written, praise-filled paragraphs as fact. Sometimes a mentor may write a great letter because they want the person to get a job and get out of their lab.

One last thing to keep in mind when starting out in these unfamiliar waters is this: don't be afraid to ask for help. At your institution there are people whose specific jobs are to supervise employee-related issues. So make use of the staff and even other faculty members to help you in the recruiting process.

Originally published in Focus – Winter 2007

Balancing Responsibilities: Being a Great Mentor

by Mweia Uqoezwa, Science Writer

As a researcher in your first-ever faculty position, you have recruited the people for your new laboratory: a skilled technician, a promising postdoctoral fellow, your first graduate student. Now you are wondering how to balance encouraging these individuals to be creative and independent with getting the necessary results for the projects outlined in your grant proposal.

At first blush, the roles of a productive scientist and a good mentor may seem to pull you in opposing directions. However, with a few tricks shared by the Burroughs Wellcome Fund's panel of researchers at a career development meeting, a young investigator can learn to effectively balance these responsibilities.

First, it's important to keep in mind that your grant proposal is a plan, not a contract. "You've laid out your research program, usually a five-year plan for the National Institutes of Health," said Dr. Margaret Hostetter, M.D., the Jean McLean Wallace Professor of Pediatrics at Yale University School of Medicine and Co-Chair of BWF's Career Awards for Medical Scientists program advisory committee. "But while you may have specific aims that you need to keep in mind, it's important to be open to the natural discovery process of science—even if it leads you down a path different from the one you originally described."

With this understanding, you can allow invention and imagination at the bench, Hostetter said. Being innovative in experimental design and bringing in new or better techniques encourages creativity and development in your students while addressing your specific aims.

Getting the graduate students you need to "sign on" to your project will be less challenging if you can identify those who are most likely to be excited about your work, said Dr. George Langford, Ph.D., the Dean of Natural Sciences and Mathematics at the University of Massachusetts, Amherst and a member of BWF's Career Awards in the Biomedical Sciences program advisory committee.



“One way to really get students excited in the laboratory is to include them as part of an important project and shape the project in a way that enables them to finish it in a reasonable amount of time,” Langford said.

Dr. Martin Matzuk, M.D., Ph.D., the Stuart A. Wallace Professor of Pathology at the Baylor College of Medicine and Co-Chair of BWF’s Career Awards in the Biomedical Sciences program advisory committee, has successfully helped his two most recent graduate students finish their degree programs in under four years.

“Part of the trick is giving them two projects at the beginning—one a long-range Ph.D.-quality project that you don’t know if it’s going to work; the other more of a tool-maker, master’s degree-type project,” Matzuk said. Giving them this second project that you can “almost guarantee” they are going to figure out enables the students to learn the art of completing projects.

“You also have a responsibility to help your students graduate with publications so they are prepared to move on to positions as postdocs or [on to] other wonderful opportunities,” added Dr. Suzanne Pfeffer, Ph.D., a Professor and Chair of Biochemistry at Stanford University and a member of BWF’s Interfaces in Science advisory committee. Because time is an issue for them, Pfeffer said, your job may also include learning to tell them when to stop a project.

In all, no small order has landed on your plate. Which may well leave you wondering how to balance the responsibilities of mentorship and the expected levels of productivity from graduate students and postdocs.

Hostetter highlighted the need to provide both formal and informal mentoring. Formal mentoring includes using lab meetings to keep track of what’s going on.



“Have everybody present his or her work at every meeting, so you have a pretty good handle formally on where everyone is and you don’t have a six-week lapse before hearing from a graduate student that things aren’t going well,” she recommended.

Alternatively, another approach used by Dr. Louis Muglia, M.D., Ph.D., a Professor of Pediatrics and Director of the Division of Pediatric Endocrinology and Diabetes at Washington University, is setting up time to meet with each person individually for one hour every week. “Even if I don’t see them everyday, this way they know I will be available for them to go over any problems. I think knowing that you are there to listen to them is extremely important to their progress,” said Muglia, who is a member of BWF’s Career Awards for Medical Scientists program advisory committee.

The second approach, informal mentoring, involves infusing your own work ethic into your lab, while keeping the lines of communication open at all times. For example, as Matzuk said, if your actions help ensure that at least one other person in the lab—student, postdoc, or technician—works really hard, then that will inspire others in the lab to work hard, too.

“If one student comes in on weekends, it raises the expectation that others will also come in on weekends,” he said.

For young investigators who may not be excited by the promise of more responsibility and even more administrative tasks to manage, Matzuk suggested that you stay in touch with the actual techniques and experiments in your laboratory as a way to boost productivity.

“One way to really get students excited in the laboratory is to include them as part of an important project and shape the project in a way that enables them to finish it in a reasonable amount of time.”

George Langford, Ph.D.

“Even though I’ve been out of my postdoc for 13 years now, I’m still in the lab doing tissue culture, taking care of mice, and doing transfections,” he said. “This is one way to interact closely with students, postdocs, and technicians—and to stay in touch with the reasons why I liked science in the first place.”

When it comes to recruiting graduate students, BWF’s experts say the good news is that as a new faculty member, you have an automatic advantage—students seem to want to work with the newest professor. They see this as an opportunity to get in on the ground floor and make a significant contribution. Other tricks to effectively recruit great students include volunteering to be on the institution’s admission’s committee, teaching first-year courses, and having undergraduate students in your lab who can rave about how much they like working there.

Originally published in Focus – Spring 2007

Preparing for the Unexpected

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

In 2004, Hurricane Katrina flooded the Tulane University and Louisiana State University medical centers, both in New Orleans. Tulane suffered more than \$400 million in damages and LSU estimated rebuilding its medical system at \$750 million. While this extensive damage is certainly atypical, disasters are not necessarily rare occurrences.

More recently, Hurricane Sandy ravaged the Mid-Atlantic seaboard causing university closures and causing damage to a number of research institutions, especially in New York City. During other hurricane seasons the Atlantic seaboard has been beaten up and institutions threatened from Miami to Dalhousie. In 2001, the world's largest medical research and care complex, the Texas Medical Center, home to Baylor College of Medicine, University of Texas Health Science Center at Houston, Rice University, and dozens of other research institutions and hospitals, flooded after Tropical Storm Allison dropped rain day after day. California institutions are perpetually exposed to the inevitability of earthquakes and the accompanying risks of flood and fire.

And it's not just nature that threatens: man-made disasters from building fires to terrorist attacks can take a laboratory or institution offline without warning. In the event of a disastrous event, how can scientists prepare for the unthinkable, and what can be done ahead of time to minimize potential downtime? Two BWF awardees that have dealt with disaster, Dr. Paul Brindley, Ph.D. at Tulane and Dr. Lynn Zechiedrich, Ph.D. at Baylor, explained how their experiences have influenced their labs' plans for facing unexpected events in the future.

“The biggest issue at the very start was communication... Nobody knows anyone else’s non-work addresses. You’ve got to have a backup communications system in place.”

Paul Brindley, Ph.D.

“The biggest issue at the very start was communication,” says Brindley. Tulane’s computer systems, including web access to email, went down. “Nobody knows anyone else’s non-work addresses. You’ve got to have a backup communications system in place,” he said. “Get the telephone numbers and backup email addresses of your employees, plus key faculty colleagues and head of department, and a way to contact the emergency personnel at your institution.”

Zechiedrich’s emergency plans received a test in 2005 when Houston evacuated for Hurricane Rita. “I worked with my lab group to shut down the lab,” she said. “We backed up all data, turned off all computers, and took all laptops and CDs of backed up data along with manuscripts and notebooks that housed the data for the papers we were writing then with us.”

Everyone in the lab left equipped with a list of phone numbers, email addresses, and alternative email addresses; the list was sent by email—to both addresses—in case anyone lost the paper copy while Houston systems were down. People and information can be moved, but what about reagents, enzymes, stocks, and cells?

“Share reagents,” Zechiedrich encouraged. “The more you share, the more you can get back if your stocks are destroyed. But if at all possible, store reagents at a remote site.”

“A lot of your key reagents exist in forms that can do well in liquid nitrogen tanks,” Brindley pointed out. “If you top them off with liquid nitrogen before you leave, you’ll get a month to six weeks of storage if they are not opened. You could even get a couple of people and carry a small tank with you—it will fit in a sedan or pickup or an SUV.”



Knowing your institution's emergency plans—especially if those plans have never been tested—is a good idea. Understanding the chain of authority including who is going to be in charge at the ground-level in an active emergency and pre-certifying your most trusted employees so that they can act in the interests of your lab will only help. In the wake of New Orleans' widespread civil uncertainty, Tulane guards were keeping people, even professors, out of buildings; during Houston's flood, only principal investigators were being allowed into laboratories at Baylor.

"Some PIs were out of the country," Zechiedrich said, "and because of that, nobody was allowed into their labs to put dry ice in the freezers (to try to save stocks)."

The emotional effects of having the lab unexpectedly shuttered are important, as well. "Part of it was a psychological thing," said Brindley. "We couldn't do anything. And research is a competitive business."

His group didn't stop working long, though: they quickly regrouped in nearby Baton Rouge where a friend helped arrange some temporary space, where Brindley wrote an important paper.

Zechiedrich's lab was inaccessible for six weeks. "We continued to have lab meetings and to plan and think and think and plan. I refused to dwell on 'poor us' and 'what we've lost', and instead used the time to really plan out our next experiments." Their mental efforts paid off with a burst of productivity and publications in the months after the lab was re-opened.

For an awardee facing a serious disaster, calling the BWF program officer early in the recovery is the best first step.

For an awardee facing a serious disaster, calling the BWF program officer early in the recovery is the best first step. The Fund can often make supplemental funding available for those who have had a serious disruption.

“Our focus is on the career development of individual investigators, and we know this kind of event can derail a career,” said Queta Bond, BWF’s President. “The flexibility of BWF dollars can help you stay on course and let you reassure your trainees that your lab can rise above this challenge.”



Originally published in Focus – Summer 2006

COMMUNICATING AND FUNDING YOUR SCIENCE



Constructing a Winning Grant

by Jenny Cutraro, Science Writer

Grant writing is a process rife with obstacles, but a recent grant writing workshop held in Atlanta was faced with a novel obstacle: competing with the din of construction around the hotel. Despite the jackhammer's disruption, though, workshop attendees left the two-day program armed with tips and tools for navigating the sometimes-tricky terrain of the grant writing process.

A Special Course for Grant writing for Top Postdoctoral Fellows in Parasitology, hosted by the Burroughs Wellcome Fund, in partnership with Sigma Xi, aimed to produce, critique, and polish fundable proposals by highly regarded “rising” scientists. The course is one way that BWF hopes to help young researchers jump start their careers in an era of tight research dollars, said Dr. Victoria McGovern, Ph.D., Senior Program Officer at BWF.

But participants took far more from the workshop than a list of writing tips. Time and again, participants noted the sense of camaraderie that evolved as the workshop proceeded. It's these kinds of informal connections that can help researchers succeed, especially in the early phases of their careers, says former Education Programs Manager at Sigma Xi, Sharlini Sankaran. “You tend to think of grant writing as a very isolating process, but the purpose of the workshop was to foster a sense of collegiality among this cohort of participants,” she said.



“Now, instead of seeing each other as threats or as competition, the participants see each other as cohorts and community,” said Sankaran.

Dr. Torsten Ochsenreiter, an Assistant Professor at the University of Georgia, shared his opinion. “This was a very important networking opportunity,” said Ochsenreiter. “The Burroughs Wellcome Fund wants to advance careers, not just fund research. Victoria made it clear that we are part of the family now. They really are interested in us, and it is reassuring to know there are funding agencies out there that care about the people and not just the research.”

The workshop brought together two-dozen post-doctoral researchers in parasitology and included a discussion session with program officers from major funding institutions, including the National Institutes of Health and the Bill and Melinda Gates Foundation, and established researchers in parasitology. The course was divided into two-parts: one following a Molecular Parasitology Meeting at the Woods Hole Oceanographic Institution; the second followed an American Society of Tropical Medicine and Hygiene meeting in Atlanta.

The workshop focused on four main points:

Know your program officer. “Program officers exist to make the grant navigation process a little easier,” said McGovern, emphasizing that any grant applicant should become comfortable talking with his or her program officer. “Program officers work for you whether they are in the federal government or in the foundation sector,” she explained. “Our whole job is to make sure our dollars go to the best investigators who need them.”

“You’re applying for your first major grant and you lay out an entire 30 year program, but you’re proposing to do it in the next 22 months. Doing that is really common, and it’s a huge way to shoot yourself in the foot.”

Victoria McGovern, Ph.D.
Burroughs Wellcome Fund

Dr. John Rogers, Ph.D., a program officer with the National Institute of Allergy and Infectious Diseases, concurred. “A new investigator absolutely should get to know his or her program officer,” he said. “We might not know the science in detail but we can help applicants target their applications. I like to think I am the cheerleader for our applicants,” said Rogers. Like other program officers, Rogers encourages potential applicants to seek him out for advice either at meetings or via phone and e-mail.

Do your homework and choose the right award. It’s also important for potential applicants to understand the requirements of the grant they are considering—another common theme of the workshop. The Bill and Melinda Gates Foundation, for example, only funds applied research in developing countries, and potential applicants must keep that in mind, said Gates Foundation program officer David Brandling-Bennett.

In addition, applicants should take care not to try to accomplish more than the scope of the grant would permit—a common mistake that program officers see in first-time applicants, said McGovern. “You’re applying for your first major grant and you lay out an entire 30 year program, but you’re proposing to do it in the next 22 months. Doing that is really common, and it’s a huge way to shoot yourself in the foot,” she said. “It’s human nature—you get excited and want to tell the whole story.” One strategy she suggested to avoid oversell in a grant application is to use your accompanying letters of recommendation strategically. “You could talk to your advisor about describing some of your research future in the letter,” she said.

Rogers also strongly encourages researchers to identify the particular study sections their applications are likely to be targeted toward and to learn about the members of that section. “Be aware of papers published by people on the roster; they can get quite annoyed if you don’t cite their recent work and it’s relevant,” he explained.



If at first you don't succeed... While it's frustrating to put in all the work necessary for a grant application only to not have it funded, Rogers and McGovern both emphasized how important it is that researchers who are turned down for a first-time grant application revise and resubmit.

“When you get your application back, you have recommendations with respect to how to improve it, and statistics are on your side—your chances of funding will increase when you resubmit,” said Rogers. “For an RO1 you're allowed two revisions. So you basically have three chances. Don't give up.”

Don't rush, follow instructions and leave time to proofread. Proofreading and following instructions should go without saying, yet many of those offering suggestions at the workshop came back to these points over and over again. And it's not just young investigators who run into trouble following instructions on grant applications; plenty of established researchers try to bend the rules, too, the panelists noted. One spoke of her own advisor in graduate school, who filled in an application in a smaller font than the one required in the instructions so that he could fit more information into the allotted space. Needless to say, she quipped, he didn't get that grant.

“For an RO1 you’re allowed two revisions. So you basically have three chances. Don’t give up.”

John Rogers, Ph.D.

That example speaks to the larger issue of allowing plenty of time to complete a grant application, Sankaran said. “It’s funny how people try to get around instructions or just don’t bother reading them—especially if they’re working last minute,” she said. The temptation to procrastinate can be even greater in today’s era of electronic filing, she said, but cautions that planning ahead will save you the headache of trying to file an overwhelmed server at 11:59 p.m. on the due date.

Finally, don’t underestimate the value of proofreading, Rogers cautioned. “Spelling or grammar mistakes will be a strike against you. Clearly written applications will keep the reviewers on your side,” he said.

Originally published in Focus – Spring 2007

Working with the Institutional News Office

by Russ Campbell, Communications Officer

A toxicologist recently lamented to a local television reporter about the media coverage of a chemical spill that occurred in a town near North Carolina's Research Triangle Park. The toxicologist maintained that the region is full of scientists such as himself, yet the media seemed to question only first responders, such as firefighters, who did not have the expertise that toxicologists could have offered. The reporter asked, "Who are you?"

The media, often time-strapped and shooting for tight deadlines, is looking for someone to put a story in context. It seeks to add a human face to a story. "Don't complain that the media is getting it wrong if you are not willing to stand up," said Helen Chickering, the reporter on the receiving end of the lament. "We need to know who you are."

For research scientists at major institutions, the media relations office can be a valuable outreach resource. At a recent American Association for the Advancement of Science meeting on communicating science, a panel comprising Chickering, a medical correspondent for NBC News, Karl Leif Bates, the manager of research communications at Duke University in Durham, N.C., and Dr. David Smith, Ph.D., an Engineering Professor at Duke, discussed how the university news office, professors, and the media can work together.

Bates, a former journalist, suggested that as soon as a researcher finds out he or she has a paper accepted, the university news office should be one of the first stops. "Don't call the news office the day the journal hits your desk," he said during the panel discussion. "We need a heads up. What we do is help you determine if the research paper is worth media attention, and if it is, how we're going to make your key points and describe it in lay language."

Every institution has a news office—whether it's called the office of communications, media relations, public information, or simply university news. There generally is a person in charge of your department, often referred to in communication patois as a beat.



This person's job is to find stories to promote the institution in a favorable light—to show the cutting-edge and important research its faculty is conducting. A good person in this role will take the initiative to introduce himself or herself, pass you a business card, or perhaps buy you a cup of coffee at the nearest cafe. If not, there's no reason not to find out who your contact is in the media office yourself and open the lines of communication.

According to Bates, the communications/news/public information officer's role is to act as a professional translator to describe your research in lay terms and emphasize key points: that is, the (limited number of) things you need the media—and thus the public—to know.

Professor Smith had a major news story fall into his lap. His research on a so-called “cloak of invisibility” tied in neatly to Harry Potter mania, which was published as his work was reaching its peak. Timing did play an important role for Smith. The demand for toxicologists following the death of pseudocceleb Anna Nicole Smith only further demonstrates the role timing plays in the media's interest in a particular research field or new discovery.

“The media does a really good job, if you give them the right statements and give them what they need,” Smith said. And what do reporters need? Again, timing is everything. Reporters want a speedy response. They want to know if you're going to be a source for their story and help them beat their deadline.

Because of time, reporters will often bypass the university news office after they have logged some legwork on a search engine. Some news offices try to insist on reporters contacting them first, but this has the potential for disaster as the reporter has little time to navigate a university's bureaucracy.



The National Association of Science Writers encourages a free flow of information and a system that is as efficient as possible. The news officer should help the reporter and the scientist when needed to make the exchange of information as painless as possible.

Often, the reporter will contact the news office to track down an expert on a particular story. This is where the relationship with the news officer pays dividends, by having him or her diverting or directing calls in your direction.

The news officer's role has changed over time, especially in the past 10 years or so. The primary concern of the news office once was connecting with reporters and traditional news outlets. With the explosion of the Internet and Web-based media, this is no longer the case. For one thing, and this is especially true with science, many media beats (except for a few major newspapers) have dwindled down to the general reporter. For example, the News & Observer, which is based in Raleigh, N.C. and covers the Research Triangle Park region, does not have a dedicated science writer. The news officer needs to be able to communicate clearly to someone without a science background.

Even if journalists don't deem your big finding as newsworthy as Smith's research on invisibility cloaks, Chickering noted that many traditional media outlets utilize their websites to cover news items that do not make the print edition or receive airtime, which increases the chance of a story getting coverage. Many newsrooms are also becoming their own media centers. Duke University recently unveiled Duke Research, an online magazine devoted to research at Duke and its researchers.

Originally published in Focus – Spring 2008

What do reporters need? Again, timing is everything. Reporters want a speedy response. They want to know if you're going to be a source for their story and help them beat their deadline.



Handheld Science: Meetings and Technology

by Russ Campbell, Communications Officer

There's a YouTube video making the rounds of a band that, while sitting on the subway in New York, breaks into a song. There's nothing new about singing on a subway car in New York City, but in this instance, the band used apps on their iPhones as their instruments and recorded a video on their iPhone cameras.

Mobile devices have come a long way fast. If a band can record a video using an index card device, surely scientists have found them useful at scientific meetings?

I met Dr. Erin Rericha, Ph.D. at an Opportunities at the Interface of Physics and Biology meeting in Chicago. She was taking notes on the slick front of her iPad that rested in her lap. I was taking notes too, but unlike Erin's, which were going directly electronic, mine would have to be deciphered in a week or so from my notebook.

Trying to mask my iPad envy, I asked her what she liked about the device and her response was: "It has changed the way I approach scientific meetings."

Her response shouldn't have surprised me but it did catch me a bit off guard. Handheld devices are not merely gadgets to check the weather and update fantasy football teams, they have the ability to alter the way we interact. This is not a new concept. Clay Shirky talked about communication technology in his book *Here Comes Everybody*. "When we change the way we communicate, we change society. The tools that a society uses to create and maintain itself are as central to human life as a hive is to bee life."

While Shirky is looking at a much larger picture of group dynamics, on the scientific meeting front, Rericha's iPad has enriched her experience at



meetings. During dinner conversations phones and iPads are passed around to watch movies of data. “A lot of science I do is with high speed and high resolution cameras,” she said. “You don’t get a feel for the data until you’re able to sit with the data and zoom in and observe.” It helps in understanding what the scientist is attempting to accomplish in a particular experiment.

The instant access is another benefit of the mobile devices. It helps, as Rericha says, to get to the next order of questions. Rather than delaying the moment and emailing a paper when you get back to the office, Rericha can pull the article, discuss the data, and keep the energy around the questions.

“The other thing I really like is that while I’m having a casual poster conversation at another poster I can show them what I’m working on,” she said. “I don’t have to drag them over to my poster.” I asked if these devices will make posters obsolete but she doesn’t think posters are going away anytime soon.

“You can scan the posters when no one else is there and you wouldn’t have that ability if you had everything electronically,” she said. “Having the handhelds makes it much better; you can show your dynamic data that you can’t with just a poster. Posters use snapshots of movies to demonstrate the dynamics... on the handheld you can show multiple movies. For people to understand your data more deeply, the technology is invaluable.”

Having the iPad also helps her network better among her peers. No longer does she find herself wondering where she put the piece of paper with contact information. “I find myself following up more and doing all the polite things that we all intend to do, but we get distracted by other things or of course lose the paper.”



I asked media consultant Denise Graveline, who has led workshops on communications for scientists, for her advice on how scientists can use their mobile devices at meetings. Graveline recommended using mobile devices at scientific meetings for networking and communicating their research. She suggested using an application like Evernote (www.evernote.com), an organizational tool for bookmarking and taking notes, to remember contacts. “This app lets you take a photo right from your phone of a business card or colleague with a nametag, then enters it into a notebook. Later, you can easily find it just by searching for a name or institution—even the text on a name tag.”

Graveline further emphasized that having the record of the person’s photo will help underscore the connection between the person’s name and face. She also recommended scanning meeting paperwork and business cards into Evernote to minimize the number of papers you need to bring with you to meetings.

To keep your papers organized, try the Papers app by Mekentosj. Papers stores all your papers as PDFs that you can view on any connected device, and it features iTunes style browsing with organizational features like categories and tags.

Relying on an iPad at a conference has an additional benefit besides the size difference over lugging your computer around: iPads don’t have to be taken out for security, and they also fit on an airplane tray table, making travel to and from meetings calmer and more productive. If you want to work on your presentation from an iPad, try Keynote, presentation software designed by Apple. Just make sure the conference technology support can handle presentations generated in Keynote.

“Use apps for Twitter, Facebook or Foursquare to let your colleagues know you’re at the conference and to organize meetups.”

Denise Graveline
Media Consultant

“Use apps for Twitter, Facebook or Foursquare to let your colleagues know you’re at the conference and to organize meetups. Ask for the conference hashtag (a short code preceded by #) and use it when you post to Twitter or Facebook—then anyone searching for the conference will see your post. It’s a great way to find old friends and meet new ones,” encouraged Graveline.

She also recommended including the conference hashtag on your first slide of a talk at a conference along with your own Twitter handle so that colleagues can follow the conversation and give you appropriate credit and visibility. Your mobile device can come in handy while you’re presenting a talk, too. You can use an e-reader in place of paper or index cards if you need to present from a prepared text. Just email a Word or PDF document to your Kindle, then adjust the font size so it’s readable. For iPads, try the app Promptster, which lets you write and edit your text, then serves as a teleprompter to help you read it.

As an added bonus, Graveline advocates stopping by the press room to make sure the meeting staff has your Twitter handle in order to contact you.

Tablets have a role for productivity not only on the road but also in the lab itself. Maintaining an electronic lab notebook that syncs to a secure server solves the problems of data backup and remote accessibility, and doing so also allows for keyword searches over years of experiments. Students, post-docs, and technicians won’t be the only ones who benefit from a tablet-based lab notebook; faculty members can easily monitor their trainees’ daily progress from their own homes or offices. Evernote has extension apps that allow for writing with a stylus before importing into the Evernote interface, but if you want the all in one experience—hand writing/drawing, typing, and annotating figures—try the low-priced Notability app.

Originally published in Focus – October 2010

BALANCING WORK WITH THE REST OF YOUR LIFE



Work Life Balance

by Marla V. Broadfoot, Ph.D., Science Writer

When Dr. Jerry Strauss, M.D., Ph.D., started his scientific career in the 1970's, no one was talking about the notion of a work-life balance. Research was a monastic tradition of long hours and little glory, and Strauss accepted that.

"I worked like crazy and my family life was a blur—I don't even remember my children growing up," said Strauss, Dean of the School of Medicine at the Virginia Commonwealth University. "But it was worthwhile because I was trying to achieve something, to solve medical problems through my work in the laboratory."

Looking back, Strauss doesn't regret his decisions, though he concedes that the next crop of researchers is trying to achieve more of a balance between work and family life. One of those junior investigators, Dr. John White, Ph.D., commented at a gathering of Careers at the Scientific Interface (CASI) award recipients at the Burroughs Wellcome Fund in Research Triangle Park, NC that he didn't want his personal life to be a blur, sharing that he had a nine-month old that he didn't want to miss growing up.



According to a recent survey of scientists and researchers working around the globe, that work-life balance is difficult to achieve. A majority of the 4225 active researchers surveyed said that family responsibilities clash with their professional duties at least two to three times a week. Though the survey was administered by the Association for Women in Science (AWIS), it found that men and women alike are struggling to find a balance.

Strauss and his fellow BWF panelists Dr. Rai Winslow, Ph.D., and Dr. Dana Pe'er, Ph.D., a CASI recipient, have all experienced the demands of running a lab, doing good science, and having a life. To each of them, succeeding in that balancing act meant giving something up.

"I absolutely could not sacrifice my daughters and my time with them—I am a very involved mother both one-on-one and in their school," said Pe'er. "I could not sacrifice my science, and I put my heart and soul into that. So I pretty much sacrificed myself, my sleep, and my workouts. In fact, I think since my Burroughs Wellcome interview I've gained about 70 pounds. My sacrifice was my health."

Even though Pe'er chose to make family a priority, her career has flourished, and she is now an Assistant Professor of Biological Sciences at Columbia University. Columbia is one of many universities and academic institutions with flexible workplace policies such as parental leave, provisions to stop the tenure clock, and child care centers. Yet many researchers don't feel that their places of employment are truly family-friendly. In the AWIS survey, one third of researchers said that ensuring good work-life integration has negatively impacted their careers. Some even delay having children (nearly 40% of women respondents, 27% of men) because of their jobs.

“I was so driven to work in my lab, that it was really hard for me to achieve a balance. Long days, long weeks—I was completely out of touch with my family.”

Rai Winslow, Ph.D.

In 2011 the White House and the National Science Foundation launched the Career-Life Balance Initiative, a ten-year effort to promote gender-neutral, family-friendly practices. For example, the NSF will allow researchers to delay or suspend their grants without penalty in order to care for a newborn or newly adopted child. Even with such policies in place, it is still difficult to quantify how much effort is necessary to make that critical discovery, publish that paper, or secure tenure.

Working parents are constantly going to be faced with choices on where to spend their time, even if some decisions like stopping the clock are made for them at the institutional level.

“I was so driven to work in my lab, that it was really hard for me to achieve a balance,” said Winslow, a Raj and Neera Singh Professor of Biomedical Engineering at Johns Hopkins University. “Long days, long weeks—I was completely out of touch with my family. But I truly think that is the level of devotion you need to succeed in this very tough game, particularly at this time. I still tell my students that if you are going in the academic direction, you have to be totally serious, totally committed to what it takes to succeed.”

For those with that level of devotion, a scientific career can be very rewarding. Any given day, your sweat equity could result in a discovery that rewrites textbooks or improves health. The job involves a great degree of intellectual freedom and flexible hours, paradoxically making it even easier to achieve that work-life balance as compared to other professions. Strauss, whose wife is a corporate lawyer, often took advantage of that flexibility by bringing his son to the laboratory with him.



“I guess I should qualify when I say my life was a blur because it doesn’t necessarily mean a bad blur. It was just happening very fast. I spent a lot of time in the lab, but I also was able to spend time with my kids and my wife,” said Strauss. “I think it is a different model than some may choose today when so many are compartmentalizing their work and family life.”

Within that compartmentalized approach lies the mantra that you can have it all, just not at the same time. You may not be able to coach little league and secure your first R01 at the same time. Similarly, those extended travels or sabbatical may have to wait until the kids have grown and left the nest. Still, family-friendly policies are making it possible for working parents to do more, and in creating them, many institutions are also reaping benefits.

“Establishing these policies creates an institutional halo that attracts a higher quality of graduate student or postdoc,” said Strauss. “If you have someone who has to take leave in your lab, it can be a hit in terms of productivity, but in the overall scheme of things, we all have to create a work environment that recognizes the events that take place in the usual lifespan of the people who work in our laboratories.”

“...we all have to create a work environment that recognizes the events that take place in the usual lifespan of the people who work in our laboratories.”

Jerry Strauss, M.D., Ph.D.



Women's Issues Breakfast

by Russ Campbell, Communications Officer

At a Burroughs Wellcome Fund Women's Issues Breakfast, more than 40 women who recently became or will soon become research professors at major institutions got together with established female scientists (and a few men, too) to discuss the challenges that face women in science. They tackled questions such as what can be done to make life better for women on campus, how to keep more women in science, and how to help them succeed.

At the top of the list of challenges were issues associated with having a family in addition to a thriving career. Leading the discussion were Dr. Sara Sawyer, Ph.D., then a postdoctoral fellow at Fred Hutchinson Cancer Research Center, and Dr. Meta Kuehn, Ph.D., an Associate Professor of Biochemistry at Duke University. Kuehn candidly shared her personal story of the challenges she has overcome while having four children along her journey to tenured professor. She started her position at Duke while she was pregnant with her first child, gave birth to her second child three years later, and when she decided to have a third, she got more than she bargained for with twins. But life went on, and she learned that the world does not stop because you are having a baby. Publishing doesn't stop. Nothing stops.

"When your funding period comes to an end, your reviewers don't care about your personal issues. They care only about what you've done," Kuehn said. The reality, she said, is that it's always and never a good time to start or grow a family. So women have to live with what life brings, and realize they can do it. Women have done it before, she explained, so women facing such issues today are not alone.

Many women agree that the key to making it all work is having a strong support system. Kuehn credits her very supportive, flexibly minded husband for making it possible for her to achieve what she has. She noted that it can be difficult, if not impossible, for any woman to do it alone, without support from a spouse, friend, or family. Many of the choices that women face in life can make them feel like they are taking on the world alone.



But female faculty share many of the same challenging choices, starting with the choice of whether or not to have children. Some women feel pressured to have children because they know that students and junior faculty are looking up to them, and they want to show that it can be done. Most women who do well in science do so because they are high achievers and feel the urge to get everything right. If they don't get it right, they may feel as if they are letting someone down—their family, their parents, their chair, their department, and even all of womankind.

With children comes the choice of childcare. Most women in science do not have the luxury of living in the same city as their family, so there are no parents or grandparents to turn to for help. After the daycare decisions comes the choice about school and after-school care. This can be a big issue for researchers, since some women find it difficult to leave their labs at 5 p.m. on the dot, while expecting their postdocs and students to work into the night.

Some of the most important choices involve time and money. How should they be spent? How can money be used to buy more time? For example, should a female scientist do the housework or pay someone to do it? Should she go to that conference, or does she need to spend that time with the kids? Or can she just wrap the conference in with the family vacation? Another time issue is how to spend treasured free moments. Should she spend it on herself, hanging out or at the lab, being a mom, or catching up on some work at home?

The big question is how one woman can do it all—take care of her family, manage a lab, be an involved member of her department, and take care of herself. One answer offered by conference participants is for each woman to take good care of herself first. For many women, the biggest problems arise from putting themselves at the bottom of the priority list.



Another answer is to reach out and communicate, sharing concerns, worries, and needs. This helps women appreciate how much they have in common with others and to feel more supported. Meeting participants encouraged women to get involved in an organization focused on women in science. One participant asked other women to follow her lead and plan events at their home institutions where women are invited to talk about their work along with their challenges as a woman in a faculty position, and to share advice. Other suggested options include developing a women's network, not only of scientists, but also of women in other advanced professions going through the same things, dealing with the larger cultural issues of the role of women as leaders and the conflict of contemporary motherhood.

This conflict may explain why so many women choose not to stay in science or to pursue more flexible nonfaculty positions. Some female mentors feel great pressure to be a role model to encourage female graduate students and postdocs to pursue academic careers. However, it is more important for mentors to freely discuss the many paths open to their female students and to show them the good and rewarding parts of this work. One of the best things female faculty can do for their female students is to encourage them by helping them see how good they are and by building confidence in their work.

Originally published in Focus – Summer/Fall 2007

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Meta Kuehn, Ph.D.



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Acknowledgments

Series Developer: Victoria McGovern, Ph.D.

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