

# Table of Contents

## *Focus*

### **Editor's Notes:**

Excuse Me, Aren't You Madame Curie? by Sydney Gary

### **The Marie Curie Nobel Centennial Symposium at Yale University:**

Celebrating Women in Science by Meg Urry and Norma Thompson

Smith College Graduates First All-Women Class of Engineers Camps by Cicily Vahadji and Cordelia Vahadji

Profile: Nancy DeMore, MD, University of North Carolina at Chapel Hill by Risa B. Hoag

Career Preparation for the Twenty-First Century by Holly Falk-Krzesinski

## *National AWIS*

### **President's Remarks:**

Search for New Executive Director and Strategic Planning for AWIS by Elizabeth Ivey

### **The National Office:**

Meetings and Partings ... by Catherine Jay Didion

### **Reactions: Dialogue with AWIS**

### **Articles:**

2004 "For Women in Science" Laureates Announced

What Would a Car Designed by Women Engineers Look Like? by Kathy Ruby

AWIS Board Members Give Presentations at Society of Toxicology Annual Meeting

AWIS Events Shine at Annual AAAS Meeting coverage by Julie Kinyoun, Sally Sizer Fitts,  
Amy Springer, and Sydney Gary

## *In Every Issue*

### **Career Talk**

Beginning a Non-Traditional" Science Career by Nicole Kresge

### **The Road Taken**

Peggy Bruce by Susan Fitzpatrick

### **Finding Our Way**

Should You Go or Should You Stay? by Sarah Jacobs

# Career Preparation for the Twenty-First Century Scientist



Holly Falk-Krzesinski

*By Holly Falk-Krzesinski*

*Holly Falk-Krzesinski (h-falk@northwestern.edu) has been a Senior Lecturer and Assistant Chair of the Department of Biochemistry, Molecular Biology, and Cell Biology (BMBCB) and the Associate Director of the Interdepartmental Biological Sciences (IBiS) Graduate Program at Northwestern University since 1998. Dr. Falk-Krzesinski's primary responsibilities were with the operations and academic and personnel affairs for the department and graduate program. Dr. Falk-Krzesinski has been a member of AWIS since 1997, when, as a graduate student at Loyola University Chicago, Stritch School of Medicine, she was awarded the AWIS Educational Foundation Amy Lutz Reibel Foundation Award. She also served as a counselor to the AWIS-Chicago Area Chapter for one year while at Northwestern. In April, 2004, Dr. Falk-Krzesinski traveled further along her own career path and took a new position as Director of Strategic Centers Operations in the Office of Strategic Initiatives, Office of Research at Northwestern where she now works to advance the university's research enterprise broadly across the entire university.*

*Other core organizing committee members include: Steven Anderson, PhD, Associate Director, Integrated Graduate Program in the Life Sciences (IGP); Rob Harper-Mangels, PhD, Assistant Director, Northwestern University Institute of Neuroscience (NUIN) Graduate Program; Michael Kennedy, PhD, Associate Chair and Director, Master's Program, Department of Neurobiology and Physiology; and Suzanne Olds, PhD, Assistant Chair, Department of Biomedical Engineering.*

## *Career in Limbo*

At 1:00 AM on a Sunday morning I'm sitting in bed crying to my husband, I'm miserable at my postdoc position, and I don't know what kind of job in science will make me happy. I give myself an ultimatum at this point — one year to find a rewarding and happy career in science or leave it altogether for a job that at least pays well. I had hit rock bottom with regards to my career path. Here I was, a recent PhD recipient six months into my postdoctoral fellowship and more unhappy than I had ever been. How could this have happened?

I started graduate school very optimistically — with aspirations to pursue an independent research project and to develop my skills as an independent thinker and scientist. I had worked in both an academic lab and at Abbott Laboratories as an undergraduate and after graduation. I found that my industry experience was

incredibly valuable in understanding how science is done in different types of institutions. But, by the end of my third year of graduate school, I realized that I didn't want to pursue a career as a bench scientist in either academia or industry.

During my five and half years as a graduate student, my graduate program offered two career programs to introduce its students to “alternative” careers. The first program was on science at pharmaceutical companies and the second was an introduction to teaching at a community college or small liberal arts and sciences college. Since I didn't want to pursue a career as a bench scientist in academia or industry, I concluded that I was left with a career in teaching. I actually love to teach, so I participated in every teaching assistant and guest lecturing opportunity that I could find and then applied for many positions. However, I found that full-time jobs were in short supply and part-time positions paid worse than

... I just didn't know about that career path until the day I saw the job ad posted!

graduate school. I decided to take a postdoctoral fellowship position in a lab where I could expand the breadth and depth of my research training and where I could do some additional teaching, but I was miserable.

I channeled my disappointment into finding the perfect job. I made a list of all the things I enjoyed doing both in and out of science and the aspects of my experiences that were not rewarding, and why. I also did weekly online job searches. One Monday morning, chance favored my prepared mind and the perfect job popped up on my computer screen from Science Careers: Assistant Chair for the Department of Biochemistry, Molecular Biology, and Cell Biology at Northwestern University. The position was for a faculty-level administrator, someone responsible for running the operations of a thriving research department. My hands shook as I pulled the description off the printer — it met all the criteria on my list. I immediately called the department chair, and to make a long search story short, I got the job. It turns out that what I really wanted to be all along was a science administrator in academia, I just didn't know about that career path until the day I saw the job ad posted!

Along with the many responsibilities I have that range from budget oversight to facilities and building management to grant writing to teaching, I — along with some outstanding, like-minded administrator colleagues — coordinate the career and professional development programs for the life sciences pre- and postdoctoral trainees. It is the aspect of my job that most enables me to insure my students and postdoctoral fellows know all their options and have the necessary confidence to pursue a satisfying career in science.

Northwestern University has an innovative and amazingly comprehensive suite of career and professional development programs for PhD-level trainees in the life and biomedical sciences (and related engineering disciplines). We are committed to providing our graduate students and postdoctoral fellows with the tools they need to embark on rewarding careers after completing their training at Northwestern. To that end, we offer eight separate, yet interconnected programs (<http://www.biochem.northwestern.edu/ibis/careerdev.htm>) that focus on career opportunities and skill building in and out of academia and prepare our trainees to be competitive for top positions in all areas of the life and biomedical sciences. This is the ultimate measure of our programs' successes.

### *Life Sciences-Focused Career and Professionals Development Programs*

Four of the programs are focused on life sciences trainees. The first program — BioOpportunities — was created in 1996 to provide life sciences graduate trainees in three graduate programs with an opportunity to evaluate various career paths both in and

out of academia. Three career seminars were held that year attended by about 75 trainees. During this academic year (2003-04), over 20 career and professional development seminars and workshops will be held through the four programs, for over 500 trainees in more than nine graduate programs.

These programs do not require tremendous organizational time or money. A \$2,000 grant from the National Institutes of Health (NIH) through the University of Pittsburgh's Survival Skills and Ethics Program<sup>1</sup> provided funding for the first year of the BioSurvival Skills program. Since then, funding for three of the programs, BioOpportunities, BioSurvival Skills, and Pathway to the Professoriate, has been provided by Northwestern's Weinberg College of Arts and Sciences, Feinberg School of Medicine, and numerous NIH training grants. Our costs are small: a \$200 honoraria to outside presenters, travel for one to two speakers each year, and refreshments at each program. On one occasion, an alumnus speaker contributed his honoraria back to the program! The Chicago Science Career Forum receives support from *Science* magazine and the remaining costs are borne by employer fees.

Five of us comprise the core organizing committee, and we alternate organizing sessions of the various programs. Occasionally, a graduate student or postdoctoral organization will co-sponsor an event and we partner with colleagues in University Career Services for the Chicago Science Career Forum. Throughout the years we have developed an extensive network of alumni and other professionals who are interested in participating in our programs making it quite easy to identify enthusiastic, candid, and encouraging speakers.

**BioOpportunities.** This program's primary goal is to introduce graduate students and postdoctoral fellows to diverse life sciences career options, thus helping them identify career paths that maximize their individual skills, training, and talents. The core activity of BioOpportunities is a seminar series featuring speakers drawn from a wide range of professions, unified by the fact that they all have a PhD in the life sciences or a related discipline. Whenever possible, Northwestern alumni are invited to speak, as they provide tangible evidence to our students and fellows of what can be accomplished with training from Northwestern. Most seminars have a panel of two to three speakers, providing the trainees with a diverse range of opinions and pathways in each field. Seminars are conveniently offered once per quarter in the early evenings.

Most recently, BioOpportunities has developed a database of alumni and former speakers to serve as a career resource for our trainees as well as to facilitate essential networking contacts. An extensive career resource library is also maintained in the graduate program offices on both of our campuses to supplement the BioOpportunities seminars.

BioOpportunities seminar topics (topics are repeated on a semi-annual basis):

- Biotechnology and Pharmaceutical Industry
- Science Writing
- Intellectual Property: Patent Law and Technology Transfer
- Regulatory Biology
- Computers in Science

- Development and Fundraising
- Administration
- Teaching
- Museum Science: Bench Work and Outreach/Education
- Government Research
- Science and Public Policy
- Forensic Science
- Consulting and the Business Side of Science
- Clinical Research Careers for PhDs

**BioSurvival Skills.** This workshop series (based in part on other skills programs<sup>1, 2</sup>) helps trainees develop specific skills they need to achieve maximum success as they progress through their training, making them more competitive for the career of their choice. The series consists of interactive workshops, each lasting two to four hours. Some workshops are held on Saturday mornings while others are offered weekday evenings.

BioSurvival Skills workshop topics (topics are repeated on an annual or semi-annual basis):

- Writing and Publishing Scientific Articles
- Finding and Landing the Right Job: Job Hunting, Self-Marketing, Interviewing Skills, and Job Negotiation
- CV and Cover Letter Writing
- Identifying Funding and Grantsmanship
- Oral Presentation Skills

**Pathway to the Professoriate.** This program specifically focuses on the path to becoming an assistant professor at a research institution, and also provides information about non-tenure track academic careers. This program helps insure our trainees are enlightened and demystified about the process of becoming a faculty member and provides valuable insight into the effort required to be successful. Two faculty members — one junior and one senior — meet with interested students and fellows each month over lunch to discuss a specific topic.

Pathway to the Professoriate program topics (topics are repeated on an annual or semi-annual basis):

- Selecting the Right Postdoc
- Grants: Funding During the Postdoc and Faculty Years
- Research and Publishing
- Technology Transfer
- Faculty Job Search and Start-up Packages
- Lab Management, Mentoring, and Leadership
- Teaching
- Service
- The Tenure Process
- Successfully Balancing a Faculty Career and Family
- Non-tenure Track Academic Careers
- Long-term Success: Stories from the Emeritus Faculty
- Postdoc Peer Advice

**Chicago Science Career Forum.** The life sciences doctoral programs, in conjunction with Northwestern University Career Services, The University of Chicago, and *Science* magazine, sponsor the annual Chicago Science Career Forum — a research exposition and employer job fair for PhD-level scientists and engineers. Two



*The Life Sciences building at Northwestern University*

important features of the Chicago Science Career Forum make it a valuable event for doctoral students and fellows. First, the day begins with a poster session attended by all the employers. Here, students and fellows have the opportunity to showcase their research and achievements and to talk extensively with employers. Second, the employers bring PhD-level scientists and engineers to the job fair in addition to human resources personnel. This provides students and fellows with resources on specific jobs as well as career opportunities. Each year, approximately 20 employers participate in the event from all areas of science and engineering including biotechnology, pharmaceutical, business development, management consulting, intellectual property, government, bio-engineering, and academia.

### *Additional Northwestern Career and Professional Development Programs*

Four additional career and professional development programs are offered regularly to students and fellows in all disciplines by The Graduate School, Career Services, and the Searle Center for Teaching Excellence. Science and engineering trainees benefit greatly from the content of these programs and the programs provide them with opportunities to network with colleagues in other disciplines, enhancing their ability to develop interdisciplinary research projects.

**Northwestern University Career Services (UCS).** The UCS provides comprehensive career services to all graduate students and postdoctoral fellows considering non-academic as well as academic opportunities. Career counselors assist students and fellows with career decision making by helping them explore and re-clarify interests, values, and skills through one-on-one counseling meetings and career assessments. Students and fellows can also utilize the Career Resource Center and other online materials to research employers and careers of interest to them. Full-time employment counselors work closely with students and fellows to help them develop individualized job search strategies and refine job search skills (resumes, CVs, interviewing). UCS also coordinates on-campus recruiting and interviews with employers interested in PhD-level scientists.

**To other institutions, Northwestern's programs serve as a template to build similar programs that advance their trainees careers and increase the trainees' opportunities for success and happiness.**

**Preparing Future Faculty (PFF) Program.** This program offers Northwestern life sciences graduate students (and all graduate students across the University) the opportunity to augment their disciplinary training with preparation for the issues and responsibilities that shape professional life in the academy. From monthly colloquia on pedagogy, faculty obligations, and academic governance, to year-long faculty mentorships at diverse regional institutions, PFF prepares graduate students for the multiple roles and responsibilities they will assume as faculty members.

**Searle Center for Teaching Excellence.** The Center engages in a broad range of activities promoting the advancement of university teaching and learning. It does this both formally, through its programs, services, and research, and informally through discussions and consultations. It helps graduate student teaching assistants collect, analyze, and evaluate information about their own teaching; and it engages in research and evaluation projects to contribute to the knowledge and literature on university learning. The Center's Teaching Assistant Fellows (TAF) Program provides extensive professional training for a select group of outstanding Northwestern TAs. Over the summer, the TAFs work to master key principles of learning theory and to develop advanced teaching techniques and communication skills. They then design and lead a series of workshops for a specific group of TAs at the annual fall workshops for all new teaching assistants, as well as a follow-up workshop later in the fall quarter. The Graduate Student Workshop Series for the development of excellence in learning and teaching is designed specifically for all graduate students at Northwestern University. These highly interactive workshop programs integrate the latest research and theory on student learning with the practices of the best teachers.

Searle Center for Teaching Excellence graduate student workshop topics (topics are repeated on an annual or semi-annual basis):

- Teaching for Learning
- How to Design a Better Course
- Alternate Teaching Case Studies: Problem Based Learning and Simulations
- Facilitating: Improving Small Group Teaching
- Innovating: Teaching with New Technology


- Lecturing: Revitalizing Large Group Teaching
- Assessing Students
- Evaluating Teaching

**Beyond Books.** This professional development series presented by The Graduate School and the Searle Center for Teaching Excellence addresses issues on working, teaching, and living at Northwestern and beyond. It is open to students in all disciplines.

Beyond Books program topics (topics are repeated on an annual or semi-annual basis):

- How to Get a Job: Advice from Start to Finish
- How to Write a Distinctive Teaching Philosophy
- How to Write a Winning Vita
- Developing an Effective Teaching Portfolio
- Interviewing and the Job Talk
- Career Options in the Academy
- Beyond the Academy: PhDs in Non-Academic Careers
- Ethical and Legal Issues in Teaching and Research
- Labor Relations and Negotiating Your Salary
- Transitioning from Grad Student to Faculty

### *Preparation for the Future*

So what does the success of all these programs mean? For the trainees it means that graduate students and postdoctoral fellows won't have to endure the self-doubt and lack of career vision that I once did. Northwestern trainees build on the information, skills, and relationships they develop from our career and professional development programs enabling them to aim for — and get — top positions in their chosen field, which advances science at every front. To other institutions, Northwestern's programs serve as a template to build similar programs that advance their trainees careers and increase the trainees' opportunities for success and happiness. 

### **References**

1. The University of Pittsburgh Survival Skills and Ethics Program (<http://www.edc.gsph.pitt.edu/survival>).
2. The University of Texas at Austin Intellectual Entrepreneurship Program (now called the Professional Development and Community Engagement Program; <http://www.utexas.edu/ogs/development.html>).

***Trainee comments are on the next two pages.***



## ***Trainees Comment on Northwestern's Career and Professional Development Programs***

"The Annual Chicago Science Career Forum was an excellent opportunity for networking as well as learning about alternative careers in science. I wanted to participate in the forum in order to meet prospective employers one-on-one in hopes that putting a face with my name would help me better secure a job. There were many employers from private and government research facilities. This was great for those wanting to do 'hands-on' research at the bench. I particularly remember those companies who put forth the effort to bring some of their PhD scientists to the fair. I found it useful to speak with 'real' scientists, not just HR. It really helps you to get a better feel for the type of science these companies/agencies do.

"The career forum also exposed me to a new area, patent law, which I now work in. Prior to the career forum, I had no idea there was a need for PhD scientists in patent prosecution. As part of the forum, we heard a panel of speakers from a variety of places (EPA, big pharma research, patent law, consulting, biotech research) talk about their lives as graduate students and how they entered into their respective careers. A PhD chemist turned patent attorney talked about her job, which sounded fascinating. Fortunately, there were a couple of law firms at the forum seeking new 'scientific advisors' and I was able to submit my resume as well as talk to PhD attorneys. The initial contact paid off. Over the next several months, I had questions as I learned about the field, and the attorneys that I met were happy to answer my questions. Almost a year after the forum, when I was nearing the end of my graduate studies, I received a call from one of the firms, McDonnell Boehnen Hulbert and Berghoff. I interviewed, received an offer, and then went to work for the firm straight out of grad school.

"I subsequently took the Patent Bar and received my Agent's Number. Admission to the Patent Bar allows you to draft and prosecute patents before the Patent and Trademark Office. Only those with a technical background are permitted to sit for the Patent Bar. Thus, most attorneys don't have the qualifications necessary to do patent work, so it is an exclusive field in which to work. Although it was certainly not necessary, I eventually decided to go to law school after working for a year and a half. I felt that a legal degree would complement my PhD and better advance my career. I am currently half-way through law school and I still work part-time for McDonnell Boehnen as a Patent Agent. It has been almost four years since that Career Forum, and I am absolutely convinced that I would not be doing what I do today if it were not for the Annual Chicago Science Career Forum."

***— Michelle McMullen-Tack, PhD  
Graduate of the Interdepartmental Biological Sciences  
(IBiS) Graduate Program***

---

"I have attended several of the career and professional development seminars, particularly the Pathway to the Professoriate program seminars. As a starting postdoc, I realized that I had a rather vague idea of the process of becoming a tenured professor. The Pathway series has been invaluable in providing a clear, structured outline of what to expect along the way. The information has been very practical, both in terms of what I need to do to prepare myself to be as competitive as possible and the expectations that other faculty, the department and the university community in general will have for someone in my (future) position. I think that the career and professional development programs are invaluable and hope that they continue to provide advice and instruction for years to come."

***— Christine Lauay, PhD  
Postdoctoral Fellow,  
Department of Neurobiology and Physiology***

---

"When I was applying to graduate schools in the winter of 1997, one of the features of the IBiS program at Northwestern that intrigued me was the BioOpportunities program. Although I didn't think at that time that BioOpportunities would end up influencing my career decisions, I liked the idea that IBiS helped graduate students figure out their career options before completing their PhD. I attended many of the BioOpportunities programs regularly my first three years — even ones that I was not completely sure that I would end up using as possible career options in the future. Sometimes, I attended sessions and decided that my strengths and weaknesses were not suited for particular careers. Other times I left the sessions with the realization that there are many more opportunities than I thought when I entered graduate school. As I refined my career choice, I started attending the BioOpportunities sessions that focused more on teaching careers. Part of one session on careers in museums introduced me to an environment that later would become my home. Because of this BioOpportunities session, I applied and received a job at the Museum of Science and Industry in Chicago — a job that continues to help me as I complete my degree at Northwestern. Another BioOpportunities program brought a local faculty member from a small liberal arts college to talk about teaching in that type of environment. Now, I have a position at that college replacing that professor while he is on sabbatical this semester. Other professional development programs such as the Pathway to the Professoriate have helped me refine different pedagogical approaches that I have used in the classroom this semester. Without the professional development programs at Northwestern, I think that my graduate school experience would have been more focused on research making me less prepared for a career in teaching at a community college."

***— Nicole Sleiter  
Graduating from the Interdepartmental Biological Sciences  
(IBiS) Graduate Program in Spring, 2004***

"My career plans have taken shape over the last year, and these programs have helped me to understand and evaluate the choices available along the way and to learn better ways to prepare myself to achieve my goals. At the Chicago Science Career Forum, I was able to discuss my work with serious recruiters from research institutions and meet potential employers in fields that I knew little about. I realized then that there were many options available to graduates of research programs that I would never have learned about from my advisor or colleagues. One of the visitors to my poster invited me to come for an interview on the spot.

"In the Pathway to the Professorate program, I have learned about the academic career experience and have found the speakers to be very candid about the positive and negative aspects of their own experiences, including what is expected of you by the department, time commitments for service, and balancing family and career. As a woman pursuing a science career I found the discussion of family particularly useful, and I think it is vital that women know what to expect and what questions to ask of potential employers so that they can optimize their career and family satisfaction by making wise choices.

"Finally, I have benefited the most professionally from the session on resume and CV writing. This is something that I had a lot of anxiety about because I didn't feel confident about the CV I had prepared. In the session, I saw a format that I really liked and requested the example, and now I have put all the same information about myself into a format that better represents my abilities and that I feel very good about sending with post-doc applications!

"The only negative input I have about the career programs is that I wish we had more of them on the Chicago campus. I think that this is being addressed and that with the possibility of linking up via video or even teleconferencing, this need will be filled over time. I have participated in the Evanston programs despite the extra time it involves because I think it is important, but I'm not sure that everyone makes this same choice."

**—Jami Bennett**

***Graduate student in the***

***Integrated Graduate Program in Life Sciences (IGP)***

---

"I feel that the BioOpportunities program was incredibly helpful to graduate students like me, who had invested many years in a doctoral program but did not want to continue a career in academia. The program did a great job in exposing students and post-docs to 'alternative careers.'

"While at Northwestern, I attended several BioOpportunities seminars in which speakers, some who graduated from my program with a doctorate, presented their career choices, ranging from intellectual property law to market analysis and business. These BioOpportunities seminars managed to remove the stigma from 'leaving the bench' by revealing the diversity of career options available to me after graduate school. In addition, the program-sponsored workshops on resume writing and interviewing were particularly helpful because they taught me how to highlight the skill set I developed in graduate school and apply it to an 'alternative career.'

"The BioOpportunities program also ended up playing an instrumental part in my career development. Throughout graduate school, I had always been confident that there was a career out there that would allow me to blend my scientific background and writing skills, I just didn't know it by name. Then, two months before I was set to defend my dissertation, I attended a BioOpportunities seminar on medical writing. There were two speakers at the seminar: one was a science journalist and the other worked for a medical communications company. Both speakers were PhDs who had taken the large step of leaving bench science and academia for an 'alternative' career. By comparing and contrasting their career choices, the speakers were able to help me delineate between different types of writing, and I was able to visualize how my particular skill set might be applied to a career in medical writing.

"Because the undercurrent of pressure to stay in academia is strong, the opportunity to hear the stories of other PhDs was particularly valuable. The BioOpportunities seminars, and in particular, the medical writing career seminar, gave me a chance to assess my personal motivations for leaving the bench.

"By the end of the seminar, I finally had a name for the career I wanted: medical communications. Using what I had learned about resume writing and interviewing, I was able to put together a great resume and portfolio of writing samples, and was offered a position at a medical communications and education company within a few months of graduating. I am now Senior Medical Writer at ACCESS Medical Group, Ltd. With the help of the career development programs at Northwestern, I have found a career outside of academia that is both personally satisfying and intellectually challenging."

**— Stacey Chapman-Tobin, PhD**

***Graduate of the Interdepartmental Biological Sciences***

***(IBiS) Graduate Program***

***and Former President AWIS-Chicago Area Chapter***