

BULLETIN

Volume II , Number
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The BBS Program is a large, diverse community of individuals. The BBS Bulletin has been created to help foster a sense of community among this group of people who have much in common but often too little opportunity to enjoy the benefits of that community. It is a place where we can share ideas and learn about what's going on around us.

Behind the Science

by Ji Luo (G1) and Stefan Wawersik (G6)

So what made you decide to go to grad school? Was it the glamour? The lucrative pay? The short hours and long vacations? Maybe it was the fact that you'd tried other jobs and they just didn't seem to fit. In our never ending quest to keep our fingers firmly on the pulse of the BBS community, we at the Bulletin recently asked members of the program to tell us about the odd jobs you've held over the years. We wanted to know what kind of work you'd held outside of science, what shaped your personalities, and what drove you to benchwork. And we wanted a story where you'd do most of the work. Luckily, we got lots of responses, some of which you might find quite surprising.



*BBS Faculty Member, Don Coen "groovin" at
Yale*

It seems many of you have waited tables and bartended at some point in your lives, but how many can say they've juggled knives for a living? Well, maybe nobody. But Rich James (G1) did work as a stir fry chef at a design-your-own-meal Japanese steak house. You know, the kind where the chefs prepare your dinner in front of your eyes, with lots of waving of knives and flipping of salt shakers. This may explain the panache with which he wields a pipetman.

Continuing on the theme of food, among several jobs he's held, Lippy! (G3) was once an ice cream man. He spent a summer driving his truck through "kid-containing neighborhoods," tempting small children with sweet, delicious frozen treats. Like Pavlov's dogs, kids quickly learned to follow him, spending their hard-earned allowances with reckless abandon. The loudspeaker incessantly playing "Pop Goes the Weasel" from the top of the truck didn't exactly make Lippy! a tough target to find. However, Lippy! says this was not nearly as bad as his other job as an Electrolux vacuum cleaner salesman (door-to-door, no less). He explains, "The vacuum cleaner sucked (which was good), but the job sucked even worse."

You think that's bad? Laura Guogas (G1) found herself literally being paid to watch paint dry. This was actually a serious job at a respectable chemical company. She prepared different paint formulations and subjected them to extreme conditions. She froze the paint, she heated the paint, she even tested whether it would grow algae. After all, you don't want your car to turn slimy and green shortly after the first rainstorm of summer.

Roy Auty (G1) also knows a few things about the effects of rain. Five years ago, back in moldy old England, Roy landed himself a job as a handyman for the British Academy of Managers managed to forget to make 400 logoed umbrellas to match the number of attendees. And sure enough, the skies opened up and poured down rain. So it fell to Roy to ferry these visitors from building to building with an umbrella. All of which raises an important question, who goes to England and doesn't bring an umbrella?

For Sherwood Johnson (G2), it seems to have been pet owners which led him to science. Sherwood worked as a small animal vet, where he treated cases sent to him by general practitioners "when their diagnostic capabilities and/or patience with the owners were exceeded." He told us a number of stories, including one about an owner who slept in the bathtub with her dog and took its rectal temperature four times daily, but couldn't understand why the poor pooch avoided her. Suddenly, that PQE doesn't seem so painful.

We also found a number of scientists with a musical background. Prior to graduate school, David Fisher, now a faculty member at the Dana Farber, was a professional cellist and Sheryl Krevsky (G1) taught music at Amherst College. Stefan Wawersik (G6) spent a summer working in the show choir at a local amusement park, where we're sure he looked manly in his mariachi shirt and sequined sash. And BCMP professor Don Coen left college for a time to work as a discjockey and to play in a band in a "mob-owned bar." According to Don, "dealing with employees of the bar was good training for dealing with some scientists." He has still been known to rock an occasional BCMP function or two.

And then there are the really odd jobs. Bruce Spiegelman once had a summer job loading cargo into 747 jets at JFK airport in New York. "It was dangerous, hot, disgusting, and people were always getting injured," he says. "It makes science seem like a vacation." Ramses Ayala worked as a plumber while he was in high school, "but quickly tired of sticking [his] nose in other people's toilets." Keith Blackwell told us that he's serviced jukeboxes and sold tickets at stock car races, and Tom Schultheiss worked as a legislative assistant for two US Congressmen before he turned to science.

Winner of the most disturbing past goes to Michael Ettore, who once worked as a postal clerk. "Lest my fellow BBS'ers feel nervous at the idea of having an ex-postal clerk in their midst," he says, "I am not disgruntled....Yet." Don't forget the athletes among us: Claudine Yballe the tennis instructor, Susan Dymecki the Olympic ice-skater, Connie Cepko the national rugby champion, and Zak Wills, a member of last year's world champion ultimate frisbee team. We don't even have space to list all the marathon runners and Head of the Charles rowers, but we know who you are. So remember, if you think that your colleagues are a bunch of one-dimensional, eggheaded geeks, you're sadly mistaken. We're not one-dimensional at all.

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Upcoming BBS Events

Minisymposium on Human Genetics

Wednesday, May 19th, 4:00 - 6:00PM

Cannon Room, Bldg. C, 240 Longwood, HMS

Women in Science Seminar

MIT faculty member Molly Potter will discuss the study on The Status of Women Faculty in Science at MIT Monday, May 24th, 6:00 - 8:00PM MEC 250, 260 Longwood, HMS

Recent Publications by BBS Students

Hart, A.C., **Kass, J.** (G6), Shapiro, J. and Kaplan, J.M. 1999. Distinct signaling pathways mediate mechanosensation and osmosensation in a polymodal sensory neuron. *Journal of Neuroscience* 19:1952-8.

Aster JC, **Simms W Barrett** (G1), Zavala-Ruiz Z, Patriub V, North CL, Blacklow SC. The folding and structural integrity of the first LIN-12 module of human notch1 are calcium-dependent. *Biochemistry* 1999 Apr 13;38 (15):4736-42

Congratulations are in order!

Soyan Leung (G2) and Jonathan Lieberman were recently engaged. **Rong Li** had a baby girl, named Olivia, on March 15, 1999. **Steven Blacklow** and his wife had a baby girl on April 16, 1999. **Alan Ezekowitz, Marc Montminy, Jen Hood and Pamela Silver** ran the Boston Marathon, and all finished.

Awards

The Collaborative Seed Grant Program recently announced the five winners of its first round of grants. The five team winners are: **Ann Hochschild and Michael Greenberg**, for an E. coli-based assay to study protein-protein interaction; **Peter Howley, Frank McKeon**, Christopher Crum, and **Arlene Sharpe**, for a study of the p63 gene, a homolog of p53, in epithelial cell maturation and oncogenesis; **Catherine Lee** and Beth McCormick, for studies on the induction of IL-8 secretion from intestinal epithelial cells by

Salmonella; **Philip Leder** and Michael Yaffe, for a study of the structure and function of WW domains as therapeutic targets for neurodegenerative diseases and birth defects; and **David Knipe** and Robert Finberg, for the development of prostate cancer vaccines. **Patricia Donahoe** and **C. Ronald Kahn** were both elected to the National Academy of Sciences. **Robert Langdon** recently received the Boston Public School Volunteer of the Year award from BankBoston and Boston Partners in Education.

Hold the Date

The annual **BBS Barbecue** will be held on Wednesday, July 14th on the HMS Quad!

BBS Welcomes our 1999 Incoming Class

James Alvarez, Kathryn Auld, Alejandro Balazs, Emily Bates, Kevin Bitterman, Michael Boyce, Ava Brent, Wendy Chao, Keuna Cho, Serafin Colmenares, Jason Comander, Christin Cvetic, Isin Dalkilic, Dion Dickman, Paraskevi Farazi, Noel Ford, Shelly Fujikawa, Bedrick Gadea, Jenna Galloway, Hui Ge, Jennifer Gervais, Nathan Goehring, Yonatan Grad, Gabriel Hayes, Liz Hick, Haley Hieronymus, Lisa Huang, Tweeny Kau, Zainab Khalfan, Michael Kowalski, Banumathi Kuppusami, Anne Lee, Jeff Lee, Kyriacos Leptos, Forrester Liddle, Brendan Lilley, Jackie Lim, Kwa Liou, Zhihua Liu, Nitasha Manchanda, Arlo Miller, Kenna Mills, Gabriela Motyckova, Yunsun Nam, Sahar Nissim, Liang (Danny) Ooi, Sharon Ou, Donald Prather, Meredith Protas, James Rhee, Cheryll Sanchez-Irizarry, Reynaldo Sequerra, Aryaman Shalizi, Brina Sheeman, Amanda Simons, Donald Smith, Rebecca Spencer, Jennifer Stanford, Lea Starita, Leta Steffen, Peggy Stolt, Cheryl Thompson, Claire Tseng, Jacob Ulm, Alina Vrabioiu, Wayne Wang, Jian Wang, Matthew Willmann, Rebecca Wingert, Sarah Wojiski, Jason Wood, and Zhou Zhu.

Be sure to have your news announced in upcoming issues! email to: cgibililisco@hms.harvard.edu or [click here](#)

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Career Trends in the Life Sciences - part 2

by Cathie Pflieger (G5)

Both the original report and its summary in Nature produced strong reactions from others, as demonstrated in a subsequent letter to Nature (3). The letter's authors, Andrew and Elizabeth Bogan, criticize the assumption that a life science PhD is training useful only for scientific research as narrow-minded and not dynamic. They agree that providing better information to prospective students is an excellent idea, but suggest that these students should be given the chance to decide for themselves whether to continue. Setting arbitrary quotas on the number of PhDs would be foolish, they argue, noting that economic history contains a wealth of examples of failed quota systems. They feel strongly that PhD training provides valuable skills which can be applied to areas other than science research, raising the point that such technical training is invaluable to biotech equity analysts, patent attorneys and venture capitalists.

Given the possibilities for life science PhDs to pursue careers outside of the traditional track, do life scientists find employment in these fields and does this employment satisfy them? The NRC also collected statistics regarding unemployment in recent years. The level of unemployment for life science PhDs has not changed greatly over the past decades, generally remaining just below 2% even up to the most recent 1995 statistics. Employment within academia and government have remained more or less stable, with a dramatic increase in life science PhDs working in industry (4,5), a trend which has not yet plateaued. More importantly, PhDs working "out of field" seem to have chosen to do so. According to recent NSF statistics for underemployment, or "involuntarily out of field" (reported in 4), the number of PhDs who would prefer to remain in science but cannot find work has dropped from 3.5%

Gay and Lesbian Town Meeting, April 22, 1999

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Thus, while increases in the length of time required to complete a PhD, the average age at graduation, the numbers of young scientists taking up postdoctoral fellowships, and the length of time spent as postdocs (2) warrant concern, new life science PhDs appear to be finding employment opportunities that satisfy them. In addition, although the unemployment figure reported for 1995 still reflects the situations of those earning PhDs in 1989 and 1990, the beginning of the sharp rise in the rate of PhD production(1), significant growth in the biotechnology and industry sectors shows no signs of leveling off. Coupled with growing demand for life science PhDs in investment banking, patent law, and journalism, the employment outlook appears less bleak.

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meeting is just one of the first steps in creating a more accepting environment for the entire HMS Community. We have excerpted the article from [Focus, April 30, 1999](#). Please read the entire article in Focus.

HMS Community Meets on Gay and Lesbian Issues

The town meeting on gay and lesbian issues on April 22 drew a crowd that filled the Carl Walter Amphitheater. Dean Joseph Martin, in an introductory speech, addressed the issue of homophobia on a national and state level and in the medical community, expressing concern that for some, homophobia is "the last socially permissible bastion of prejudice."

Citing a study done by the Gay and Lesbian Medical Association, he said that 52 percent of the gay and lesbian physicians surveyed observed substandard care based on the patient's sexual orientation. Additionally, he said, 98 percent believed that gays, lesbians, and bisexuals would have health concerns overlooked if they did not tell the doctor about their sexuality.

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Martin stressed the need to close the gap that differences tend to create between people, and to see

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When asked about her informal survey, she responded "We all have anecdotes about our students and postdocs choosing 'alternative' careers that maybe 10 years ago would not have been at the top of their list. I consider it a good thing to have these choices. However, it seems that academic positions and top jobs in biotech are still available to our trainees who want them. These are the relevant data for our current students to consider." She adds, "It sounds elitist to say this, but our students should know that they are among the top-rated students in the country, and top-rated students who receive good training will have many options available to them that the 'average' student surveyed in the report will not have." Cepko intends to gather data over a larger segment of the DMS community to gain a more comprehensive picture, which will be published in the BBS Bulletin.

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Martin's speech was followed by a panel discussion, moderated by Dean Daniel Federman.

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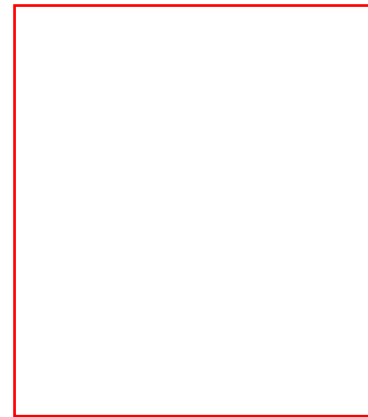
Career Trends in the Life Sciences

by Cathie Pfleger (G5)

The changing nature of employment in the life sciences has prompted recent debate regarding the prospects for current graduate students and postdocs and the training of new graduate students. The "traditional" career path of college, followed by PhD, followed by a research position now generally includes one to two postdoctoral fellowships. At the same time, it is not uncommon for new graduate students to begin their graduate training hearing that there aren't enough jobs or funding and that graduate programs should cut back. Yet these rumors and speculations rarely come with statistics attached. How bad is it really? How many jobs are actually available and for how many people?

A recent report by the US National Research Council

The report concludes that the present level of PhD production now exceeds the current availability of jobs in academia, government, and industry, where doctorate-holders can independently use their training. Indeed, the number of faculty positions in academia did not substantially change between the years 1985 and 1995, whereas more than 50% more PhDs were awarded during that time. The report comments that graduate students and postdoctoral trainees who have invested years of preparation with the expectation of a research career are finding the situation is discouraging indeed. The report made specific



A news summary of the NRC report ran in a recent issue of Nature under the headline "Jobs crisis sparks call for freeze in number of PhD students in US."(2) The story mentioned the possibility of encouraging alternative career paths, but ended up recommending that the PhD degree remain a research-intensive degree, with the primary goal being the training of future independent scientists. This was based in part on the argument that these alternative careers do not require PhD training.

(NRC) released statistics from the last several decades regarding the number of life science PhDs awarded each year, the number of those PhDs employed in postdoctoral positions, the number of faculty positions available, and the unemployment and underemployment rates of life science PhDs (1)

recommendations towards addressing this troublesome situation. These include dissemination of accurate information on career prospects to students and faculty, increasing the independence of postdocs, and restricting the numbers of incoming graduate students.

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Given the possibilities for life science PhDs to pursue careers outside of the traditional track, do life scientists find employment in these fields and does this employment satisfy them? The NRC also collected statistics regarding unemployment in recent years. The level of unemployment for life science PhDs has not changed greatly over the past decades, generally remaining just below 2% even up to the most recent 1995 statistics. Employment within academia and government have remained more or less stable, with a dramatic increase in life science PhDs working in industry (4,5), a trend which has not yet plateaued. More importantly, PhDs working "out of field" seem to have chosen to do so. According to recent NSF statistics for underemployment, or "involuntarily out of field" (reported in 4), the number of PhDs who would prefer to remain in science but cannot find work has dropped from 3.5% to 3.3% between 1993 and 1995.

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Ph.D. Careers in Science

by Vicki Healy (G4)

These days, more graduate students are deciding that the traditional path of academic research is not for them. But what can one do with a PhD in biology outside of academia? To address some of these questions, the BBS Program recently presented the fourth annual Careers in Science Forum, where representatives from nine "alternative" careers told an audience from the HMS community about various opportunities outside of the traditional academic path.

After realizing that she enjoys teaching science more than doing experiments, Acha Lord decided to become a high school teacher at a private school. Her choice to look at private school teaching was

Pfizer, a pharmaceutical company in Cambridge. The perception of research in industry is often of work done in isolated secrecy, yet Milne suggested that this view is false.

While at Pfizer, she has participated in collaborations with multiple academic labs specializing in disease-related fields. Publishing one's work can be a bit more restrictive, but because many projects do not lead to marketable therapies, scientists in industry can often publish their data from such research without restriction.



Eventually, more marketable work can also be published once patent protection is obtained.

Kris Bieker-Brady, a patent lawyer at Clark and Elbing in Boston works daily on obtaining such patents, a

other positions, often going on to work for one of their clients.

Alternatively, scientists with a business bent can find work in management in the biotech industry. Ken Levin, an administrator at the Cambridge-based biotech company Ontogeny, claims that his position allows him to work at the interface of science and business. Biotech companies require science-literate businessmen and women to make strategy decisions, form collaborations with other companies, and find investors to fund the company's

partly dictated by her background: private schools generally don't require their teachers to have a teaching certificate, a prerequisite in most public school systems. Despite such bureaucratic restrictions, Lord feels that having a PhD is to her advantage in the classroom, partly because of her familiarity with designing and executing experiments. She claims that the most important requirement for her position is an ability to interact with students and to be flexible towards their needs.

Bob Morris, a professor at Wheaton College, also stressed the importance of being able to interact well with students. He advised that for acquiring a faculty position at a competitive small college, postdoctoral experience and demonstrated success designing and implementing a class are very helpful. He also said that professors at undergraduate colleges like Wheaton are often expected to carry out a research program. However, because of the

career she describes as an exciting intersection between science, business, and law. To succeed, Bieker-Brady advises that patent lawyers must have strong communication and analytical skills, as well as an ability to deal with pressure and to operate at the edge of their knowledge base.

Forensic science also provides an intersection between law and science. Fred Bieber is a Professor of Pathology and Harvard Medical who serves on a science advisory board of the FBI. For PhDs in biology, there are a number of job opportunities in forensic science, including becoming a director of a crime lab, a DNA expert for a police department, or an FBI agent. To learn more about this field, go to the Career Transitions section of Science's Next Wave web site (nextwave.sciencemag.org) and see the January 15, 1999 feature highlighting forensic science.

If you have an interest in the social impact of science, a career in science policy might be worth considering. Science policy allows scientists to affect a broad range of issues ranging from nuclear waste disposal to human genomics, as the experience of JoAnn Tornow, a White House science advisor, suggested. To embark on a career in science policy (or to simply test the waters), Tornow recommends several one year fellowships, such as those offered by the American Association for the Advancement of Science (AAAS) and the American Chemical Society

work. Levin's job allows him to keep abreast of cutting-edge science without actually doing experiments. "[This] provides small excitement every day rather than six months of bench work for one result," he says.

Journal editing is another potential career for scientists who like to hear about science but are frustrated by the day-to-day aspects of benchwork. Like Levin, Cell Deputy Editor Vivian Siegel must remain up-to-date in a variety of scientific specialties so that when a paper crosses her desk, she can judge both its scientific merits and its potential interest to the general community.

The consensus of all the speakers was that the analytical skills learned while completing a science PhD can be effectively applied to a variety of

limited funds available to smaller labs, small college professors must choose a project that is inexpensive to maintain. Morris enjoys teaching at an undergraduate institution, as it allows him to concentrate more on teaching without completely leaving the world of bench science.

For those who are less interested in teaching, or more interested in science applicable to disease therapies, Jill Milne told the audience about her work at

(ACS) which allow scientists to work on policy on Capitol Hill. Again, for more information, see the Next Wave website.

Former BBS graduate student Christoph Westphal spoke of his experience as a consultant for McKinsey & Co. Westphal equates consultancy with doing a postdoc in business: consultants work on a variety of projects for companies, providing research and objective analysis of business problems. However, one of the drawbacks of the job is the amount of time spent traveling, (though Westphal claims he's always home for weekends). Probably in part because of this, consultants usually only work at McKinsey for a few years, usually using their positions as springboards to

disciplines outside of academia. The forum emphasized the many exciting options for graduate students who are not so interested in university careers. For those considering such "alternative" careers, it is reassuring to know that their PhD is considered by employers in these fields to be an asset rather than an overqualification.