

2012 NIH Career Symposium Newsletter

There are more career options for scientists today than ever before, but how do you go about choosing the right path for you? On May 18, 2012, 69 panelists shared their career journeys and offered advice on how best to pursue your dream job during the 5th Annual NIH Career Symposium. Beginning with the panel of leaders, who stressed the importance of turning mishaps into opportunities, the panelists overwhelmingly encouraged trying new things, taking risks, and striving for personal satisfaction.

During four sets of four overlapping sessions, panelists described their work in academia, industry, and government, disseminating information to the public, and the myriad of different bench opportunities. Couldn't make it to all sixteen sessions? Luckily, we have gathered together a talented group of NIH postdocs and graduate students to report back on each panel, providing an inside look into the 2012 Career Symposium.

Remember that the first step towards your perfect job is finding out what it might be! We hope that this Symposium Newsletter will help you make the most of this exciting time in your career journey.

2012 NIH Career Symposium Committee, Editing Board

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Following the Leaders: Career Advice from Experienced Scientists

Catastrophe has struck: you have applied to 99 jobs (or medical schools or graduate programs or whatever else) and have been rejected from every single one. But that's not the worst of it—what are you going to tell your friends?!

Failure is something that every successful scientist must eventually confront. At the 2012 NIH Career Symposium Keynote session, a panel of four experienced scientists delved into the topic of failure with honesty, wisdom and humor.

"I've made more mistakes than everybody else on the planet and had some spectacular

failures," said Lawrence Tabak, D.D.S., Ph.D., Principal Deputy Director of the NIH. But, as he continued, an event that seems catastrophic at the moment often enough turns out to be a minor setback.

Whether it was failing to get into medical school, failing to get a coveted job, or—even worse—getting the coveted position and then failing to make it work, each of the panelists described those setbacks as key, pivotal moments in their careers.

"Successes and mistakes... I think those are two different sides of the same coin," said Kim Nickerson, Ph.D., Assistant Dean of the College of Behavioral and Social Sciences, at the University of Maryland, College Park. After failing at a research position at Johns Hopkins University, the lessons that Nickerson learned led him to a job helping others avoid his mistakes.

In retrospect, it all seems clear: with all its varied twists and turns, the path to a successful career can be “a mixture of serendipity and great luck,” said Tabak. But while those twists and turns are taking place, “you never know what’s really good for you,” said Bahija Jallal, Ph.D., Executive Vice President of Research and Development at Medimmune. “When you make a mistake, you learn from it,” she continued, “and when you learn from it, then it’s not a mistake.”

How do you know, in the moment of catastrophe, where to go next? A mentor, the panelists agreed, is an excellent resource. The best mentors, said Tabak, “are the ones that adapt to your needs,” that can adapt their advice to wherever you are in your career at the moment. Or, as Jallal put it, “[good mentors] are the ones that challenge you and get you out of your comfort zone,” and see “more in you than you can see yourself.”

Even with advice, though, “you’ve got to know yourself,” said Nickerson. There are, after all, millions of potential mentors out there, including acquaintances, bosses, coworkers, friends and family. “Trusting your intuition is the only way that you can take advice and filter it,” said Sharon Milgram, Ph.D., Director of the Office of Intramural Training and Education (OITE) at the NIH. “Appreciating that there are very few really bad decisions you can make, if you take bad advice and you follow it, it’s kind of like going to a bad movie—so what?”

In the midst of a failure or a mistake, one might believe that one’s career is surely at an end. But each of the four highly successful panelists demonstrated that a bump in the road—even a really big one—is not the end, but rather a place to learn, reevaluate, and follow your heart and passion to the next step. “Don’t be afraid to fail,” said Tabak. “Whatever you are dealt, look for the opportunity that will present itself.” Successful scientists are not people who have never failed catastrophically—successful scientists are those who pick up the pieces, learn something wise, and follow their hearts to the 100th adventure that awaits.

Lesley Earl is a Postdoctoral Fellow at the National Cancer Institute (NCI). Her current position entails science writing and

communications for both the Living Lab for Structural Biology and the Biophysics Section in the Laboratory of Cell Biology. She is passionate about music, sailing, writing, and all things science.

Careers in Government

For scientists with advanced degrees and excellent communication and critical thinking skills, the Careers in Government panel described what some may consider a dream job for a non-bench scientist: a career in cutting edge science on a 9 to 5 schedule.

Five panelists presented examples of wildly diverse career paths. Sunita Shukla, M.P.H., Ph.D. and Elizabeth Webber, Ph.D. wanted non-bench positions even before starting their postdocs at NIH. With her supervisor’s assistance, Webber switched departments at NIH to gain experience before starting as a program analyst at the National Institute of Neurological Disorders and Stroke (NINDS). Shukla finished her postdoc during a recession and used persistence to gain a position as a Food and Drug Administration (FDA) Scientific Reviewer. Perhaps Sury Vepa, Ph.D., J.D. presented the best example of how careers change over time, starting as a researcher for AstraZeneca, then teaching at Johns Hopkins University before earning a law degree and practicing patent law. Vepa is now a Senior Licensing and Patenting Manager in the Office of Technology Transfer at the NIH. Maureen Gwinn, Ph.D., DABT had a versatile career that led her to a position reviewing risk assessments at the EPA as a “toxicologist who has never taken a course in toxicology.” Karl Salzwedel, Ph.D. began research on acquired immune deficiency syndrome (AIDS) during his undergraduate years, and began his career working at an AIDS-based start-up company that felt the bite of the recession. Now, as a program officer at National Institute of Allergy and Infectious Diseases (NIAID), Salzwedel manages grants and works directly with researchers to coordinate extramural AIDS research to fill gaps in the field.

The panelists promoted the work-life balance offered by government jobs as a main selling

point. Many departments have flexible scheduling, 1-3 days of optional telecommuting, and alternate work schedules, which increase the hours worked in a day to gain an extra day off. Plus, government employees are expected to work only forty hours per week (a strange concept for many postdocs). Most General Schedule (GS) level positions, or direct employees of the government, require a US citizenship; however, many contractor positions do not.

Navigating USAjobs.gov was perhaps the main downside that was discussed of working for the government. USAjobs.gov is the third party vendor website that processes federal government job posts. The panelists emphasized that even if you are the most qualified, the hiring manager may not see an improperly written resume. Using one of the many books or classes dedicated to getting past this website, or researching the process in an informational interview, will be to your advantage. Webber also encouraged the audience to monitor the website often, as most postings are available for only a short time.

The overriding theme of the panelists' advice for pursuing a career in government was to create opportunities for luck. By participating in activities that demonstrate your interest in government work, and through the contacts and skills you develop doing this, you will set yourself up to be 'lucky' in finding a job. Begin early. As Shukla said, "[You] really have to start asking yourself as early in your career as possible... what non-bench career do I want." Postdoctoral positions are optional for some jobs. Going beyond one to two years in a bench-side postdoc may exceed the benefit of the skills gained. Additional fellowships, such as the AAAS Science and Technology Policy Fellowship, offer relatively short, but valuable resume-boosting preparation. Situated at the heart of the US Government and surrounded by Federal Agencies, we are uniquely situated to pursue careers in the government sector. Given the attractiveness of life in a federal job, go get proactive about your luck today!

Benjamin Porter is a Postdoctoral Fellow in the laboratory of Alan Koretsky at NINDS. He is working to develop an awake rodent model in MRI/fMRI to examine the auditory system.

Careers Protecting Public Health

Careers in public health are ideal for scientists passionate about preventing epidemic diseases and global health crises. Exciting and diverse, public health careers are typically found at government agencies like the Centers for Disease Control and Prevention (CDC), the Department of State (DoS) and NIH. Professionals in this field plan, analyze, and report on research or policies that affect public health both locally and internationally.

Tiana Garrett, Ph.D., M.P.H. is an Epidemic Intelligence Service Officer at the CDC. Like most scientists who go into public health, Garrett knew early on that she wanted her work to have impact beyond the academic sphere; "I really wanted to understand how to help populations rather than treat cells," she said. At the CDC, her job is to address immediate public health issues that affect the District of Columbia, including outbreaks and emergency response. "Every day is different," said Garrett. "It definitely satisfies everything that I had in mind for my career."

While an M.P.H. is required for some positions, it is not necessary for all careers in public health. Andrew M. Hebbeler, Ph.D. is the Acting Deputy Director of the Office of Cooperative Threat Reduction at the U.S. DoS. In the Biosecurity Engagement Program, he works with scientists and engineers around the world to prevent terrorists from gaining access to potentially dangerous materials, expertise, and knowledge. After studying immunology as a graduate student and postdoc, Hebbeler became an AAAS Science and Technology Policy Fellow at the DoS, an experience that paved the way to his current position.

A postdoctoral and policy fellowship, however, are not required to break into the field of public health either. David A. Kosub, Ph.D. is a Public Health Analyst at the National Institute of Allergy and Infectious Diseases (NIAID). Within the Office of Science Management and Operations, he reports on the research at NIAID. "The work that I'm

doing is talking to Congress and advocacy groups, and writing up reports about how we are potentially curing and finding new ways to treat infectious and autoimmune diseases,” he said. Like many public health professionals, Kosub works on ‘big picture’ projects designed to evaluate ongoing research programs.

Careers in public health also exist outside of government agencies. Khisimuzi Mdluli, Ph.D. is the Director of Biology at the Global Alliance for Tuberculosis Drug Development, a not-for-profit organization. As a microbiologist with pharmaceutical industry experience, Mdluli manages drug development projects aimed at discovering new treatments for TB. He collaborates with academic scientists, pharmaceutical partners, and contract research organizations to design experiments and fund research.

As Garret emphasized above, there is no such thing as a ‘typical’ workday in this field. Whether they are preparing their director for a meeting, writing reports for dissemination to the media, or teleconferencing with representatives from pharmaceutical companies, part of what is so exciting about this field is how engaged it is with the outside world.

One attendee asked what activities and skills graduate students and postdocs need to make themselves marketable for careers in public health. “Getting involved is absolutely critical,” said Hebbeler, “I did outreach education [and was] involved in postdoc associations.” The panelists agreed that doing work related to public health outside of the lab and gaining non-technical writing experience is important.

Networking and informational interviews are essential to finding out what positions are available before they are advertised. “Don’t be afraid to take risks when you’re looking at your next step,” Kosub urged. If you have a passion for public health, then now is the time to get started and get involved!

Meghan Mott is a Postdoctoral Fellow at the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Her research focuses on understanding the basic principles of synapse function by studying the neuromuscular

junction in zebrafish. She received her Ph.D. from the University of Louisville where she studied cytokine genetics and expression in Autism Spectrum Disorders.

Careers in Science Administration

The roads to a career in science administration are as diverse as the people who walk down them. Ask scientists that work in this field how they found this career path and you will never get the same answer twice. What you will find is that science administration requires a broad range of skill sets and a passion for promoting and communicating science.

The NIH Career Symposium session Careers in Science Administration panelists comprised all of these qualities and more. Rashada Alexander, Ph.D. “suffered” through postdoctoral training but after numerous informational interviews and completing an AAAS Science and Policy Fellowship, she now enjoys a career in health science policy evaluating portfolios and formulating congressional reports. Ian Brooks, Ph.D. had two frustrating postdoctoral experiences and had to rely heavily on extensive networking to land an internship at the University of Tennessee. He transitioned into a project management position where his duties involved grant writing, web design, and coordinating pilot project funding programs before he was recently promoted. Wendy Reed Williams, Ph.D. is the current Director of the Offices of Responsible Research Training and Postdoctoral Affairs at The Children’s Hospital of Philadelphia (CHOP), where she “designs, implements, and evaluates [postdoctoral] training programs.” Dean Frohlich, Ph.D. pursued science administration because he liked the idea of developing a broader view of science than you achieve while staring at Western blots. He now brushes elbows with entertainment celebrities as he manages grant allocations and acts as a liaison for the Stand Up to Cancer nonprofit partnership between entertainment executives and the American Association for Cancer Research. Jana Stone,

Ph.D. has been at her current position as Scientific Coordinator for the Duke Center for Systems Biology for less than a year, and described her job with a laugh, “Whatever is needed is what I do!” So far, that includes teaching courses, creating a student curriculum for professional development, and developing multi-faceted communication skills.

All the panelists agreed that you have to be willing to take risks and do things you haven’t done before in order to find the right position. According to the panel, developing strong organization, writing, and communication skills are keys to success in science administration. The panelists encouraged attendees to think outside the box to gain writing and communication experience, citing examples such as writing a budget for daycare and speaking to high school students at a science fair. Lastly, practice, practice, practice—your elevator speech, networking, and writing research summaries.

Recognizing the skills that you have developed, beyond grasping a pipette, during your postdoctoral and graduate education experience is the biggest hurdle to cutting ties to the research bench. Many of the qualities you’ve acquired through rigorous academic training— problem solving, writing articles, collaborating with other scientists, and attention to detail—are already readily applicable to science administration. If you can find a way to let those qualities shine through on a resume (not a CV!), you will pave your own road to success in science administration.

Elizabeth Walsh is a Postdoctoral Fellow at the NIAID. She currently studies the complex interplay between innate and adaptive immune receptors in the development of lupus.

Careers in Scientific Communications

You love writing and editing but are not sure how to turn that into a career. You want to know if there are jobs combining the two. If

this sounds familiar, the panelists at the scientific communication session had several useful tips for you.

The panelists all started out like us: graduate students who moved onto postdoc positions. Somewhere down the line they discovered their passion for scientific communication and decided to turn it into a career. Although they all followed different paths, they all ended up landing their dream job.

One of the panelists, Dario Dieguez Jr., Ph.D. is a neuroscientist by training. His first job as a science writer was right here at NIH. This experience landed him a position as a senior research program manager at the Lupus foundation of America. He also writes a blog for Scientific American and enjoys the flexibility and freedom offered by the job. Jason Kreisberg, Ph.D., a research editor at Nature Biotechnology, on the other hand, had no formal training before making this transition. His job involves evaluating a manuscript not for the grammar or the proper presentation of results but for its impact in the scientific community, he said. He attends plenty of meetings and does a lot of editing but hardly any writing at all. Being a freelance science journalist, Amy Maxmen, Ph.D. presented a different flavor of the field. She has experienced several styles of science communication such as being a writing intern, fact-checker, journalist and an editorial assistant. Being a freelancer brings with it its unique set of issues such as negotiating for rate per word and paying for her own health insurance. Jennifer H. Meyers, Ph.D. is the science coordinator for the American Association of Immunologists and has a dual role- coordinating the peer-review process and managing the scientific program at the annual meeting. The job is extremely fast-paced and you cannot procrastinate because then things pile up so quickly that it becomes almost impossible to handle, she said.

When asked about tips on being a good writer, they responded – you need to have a lot of practice and should ask for feedback from as many people as possible. As for preparing for a future career in science communication the suggestion was to try a variety of writing such as publishing papers, writing for the lay public, and blogging. It is important to build up a portfolio, they said.

They also stressed the importance of networking.

Formal training, although useful, was not a necessity, said Maxmen who herself was an AAAS Science and Technology Policy fellow. For those who are currently applying for jobs, Meyers cautioned that paying attention to grammar in the job application was critical. Grammatical errors reflect very poorly and could be detrimental. In response to the question about the most appreciated perk of the job, they all seemed to agree that it was telecommuting and flexible hours. When asked whether they miss bench-work, Maxmen summed it up very well by saying “Anything you get out of bench-work, you can get out of cooking”.

It seems obvious but for those who are interested in this career path, all you need to do is start writing and then write some more. This is an exciting field that gives you a broader perspective of science and an opportunity to bring it to the scientific and non-scientific community. Most jobs also give you the flexibility of work hours and an option to telecommute. The salaries are competitive and job satisfaction is high. Did I hear someone say “It’s a win-win situation”?

Monika Deshpande is a Postdoctoral Fellow in Dr. Jonathan Wiest’s laboratory at NCI. She investigates the role of MAP3K8 in resistance to Taxol in a lung cancer model. She loves science communication, cancer biology and event management.

Careers in Science Education

Have you always been passionate about educating the next generation of scientists, or wished more people would appreciate and understand the basics of science? If so, you might want to consider a career in science education. The panel for this session consisted of members from a broad range of educational institutions, from a community college to a professional science society, and provided various aspects on the current field of science education.

One of the first questions from the audience was whether formal training in education is necessary. There is no doubt that postdocs are very knowledgeable in their field, yet would this be sufficient to grant them a career in teaching? While formal training in education would be helpful, the consensus among the panelists was that it was not necessary. Degrees such as Masters in Teaching do not qualify you to teach, in the same way that knowing the material, such as a Ph.D. in Biology would confer, does not make you a good teacher. As John McGready, M.S., Faculty at the Department of Biostatistics, Johns Hopkins University, Bloomberg School of Public Health, said “the best way to learn to teach is to do it”. Idalis Villanueva, Ph.D., Lecturer at the Fischell Department of Bioengineering, University of Maryland, recommended to “find resources that can help make you a better educator”, such as workshops or classes offered on campus. Sharon Milgram, Ph.D., Director of the OITE at the NIH, who was in the audience, made a surprise appearance and reminded us of the Scientists Teaching Science Workshop, which is available through OITE and will soon be offered online.

For those of you interested in getting involved in science education without having to teach in a classroom, the panelists suggested various new avenues of teaching. Chad Knights, Ph.D., Associate Professor of Biology and Natural Science at Northern Virginia Community College, mentioned that “publishers are frequently recruiting faculty and educators to help develop their textbooks and new methods to update them”, including supplemental materials such as online educational videos and apps for smartphones. In addition, as a public educator, Emily Dilger, Ph.D., a Public Education Coordinator at the Society for Neuroscience, frequently interacts with science teachers and museums to promote the distribution of scientific knowledge.

The panelists agreed being at academia allowed more flexibility in deciding how to use their time during the day. For instance, Knights commented that with the exception of set class times, you are able to decide when and where to work. For people with a young family, this was agreeably a decisive factor. Although, Dilger did warn that at organizations

such as where she works, there is more variability of workload when certain periods may be more hectic than others compared to the steady schedule at academia.

Being an educator is definitely not a simple task. It requires much effort to learn the material above and beyond what you will actually teach, and devotion to the students as well. However, having a Ph.D., most of us are half way there! We know our stuff and have gained many transferable skills along the way, such as mentoring, multi-tasking, and explaining science to a diverse audience. If you are truly interested in a career in science education, all you need in addition would be to gain experience in teaching. As Dilger reminded the audience, "There are plenty of opportunities out there."

Minkyong Lee is a second-year Postdoctoral Fellow at the National Human Genome Research Institute (NHGRI) working on the mechanisms underlying metastasis. She is an avid member of the NIH community, participating in various activities around campus. Outside of the lab, she enjoys biking, baking, reading, and trying out new restaurants with friends.

Academia: Are You Ready?

Interested in knowing how to embark on a successful academic career? The panel of faculty members at this session discussed not only the expectations from a candidate for an academic position, but also how to prepare to apply and succeed in securing a job.

The daunting question for a postdoc usually is when to go on the job market. "When you are independent of your advisor" promptly answered Eric C. Greene, Ph.D. from Columbia University. If you are able to direct your own research and have a clear idea of the path to be taken, it may be time to look for an independent position. Importantly, there may never be a time when you are totally ready.

For a job application, a strong CV is crucial. However, if publishing in a high impact journal causes a gap in your CV, it doesn't matter, opined JoAnn Trejo, Ph.D. from the University of California, San Diego. You can also give an explanation through a good cover letter. Additionally, it is fine to do a couple of postdocs if it makes your CV stronger. Interestingly, some may consider two and a half to three years of postdoctoral experience premature for an Assistant Professor position. On the other hand, multiple postdocs may suggest a primary interest in research, marring your chances of getting a job at a teaching-focused university. Having teaching experience on your CV, however, may help overcome that suspicion.

Research needs funding, and successfully funded candidates are usually hired. Among postdoctoral grants, NIH-supported 'K' grants are well acknowledged. Early submission is encouraged, and Hyrum D. Carroll, Ph.D. from Middle Tennessee State University suggested attending NIH workshops on grant writing in the second or third year of your postdoc.

Teaching experience is another eminent component of a job application, and good opportunities are offered by the Foundation for Advanced Education in the Sciences (FAES) here at the NIH. Sydella Blatch, Ph.D. from Stevenson University stressed its importance especially for those interested in teaching cum research positions. Although requirements may vary with each institution, having teaching experience is critical since it can act as a filter for your job application.

Today, teamwork and collaboration between labs are encouraged everywhere in academia. That's what makes science exciting and increases its pace, according to Trejo. Some institutes may support collaboration between a new Assistant Professor and his/her postdoc advisor if it boosts publications. This is probably good news for those interested in cross-disciplinary research, since collaboration is crucial here. That being said, the panelists stressed that you need a focused research proposal that has a clear direction. Even at teaching-focused institutes, teamwork is required in the classroom for teaching as well as in administrative positions that are important in running the University.

While applying for a job, it is also important to thoroughly research the institution. Ask people in the department about its composition and work culture and ask your postdoc mentor if he knows anyone in the department. Networking is also crucial for this, and helps in making your application stand out. At a teaching institute, you may want to know what the student body is like and if you are ready to face the challenge.

So which candidates are successful? Those who have done their research about the institution they are applying to, give an impeccable seminar and a superb chalk talk about the research proposal for their first grant.

As we progress through our careers we all need mentors. This panel of scientists who briefly acted as our mentors, imparted us with valuable advice about academia. It is “part of your responsibility to actively look around [for mentors]”, said Greene. Mentors can be found in more than one person. Additionally, do not underestimate self-mentoring through reading career development articles in leading scientific journals.

Madhumita Pradhan is a Postdoctoral Fellow in the lab of Dr. S. Stoney Simons Jr., NIDDK, NIH.

Academia: Job Packets & Interviews

This panel’s speakers had a variety of viewpoints on preparing an application for a faculty position. This is not surprising, because they represent distinct institutions and departments. Jorge Cruz-Reyes, Ph.D. is an Associate Professor at Texas A & M University, a large state school, while Vasiliki Ikonomidou, Ph.D. is an Assistant Professor at George Mason University, a smaller (and local) public institution. Nicola Partridge, Ph.D. is a Professor at the School of Dentistry at New York University (NYU) School of Medicine, a private school in New York City, and Nicholas Mitchell, Ph.D. is an Assistant Professor at St. Bonaventure University in

New York State, a small, private liberal arts school. The speakers covered a range of topics and offered a breadth of information on how to put a job packet together, and also hopefully had people thinking about the type of research institution that would fit them best.

Where should you apply?

Before putting your application together, research the positions and ask questions: Is the focus on teaching, as is the case with St. Bonaventure University? Are you expected to be extensively productive in research, like at NYU Medical School? A balance between teaching and research can be achieved at State Schools, such as Texas A & M and George Mason University. Partridge chairs the Basic Science and Craniofacial Biology department at NYU, where “new faculty are given three years to make progress in their research, and do not teach in their first two years. If they are not at a particular point after three years, they will get a warning. If they do not succeed one year after being warned, they are asked to leave.” This type of pressure does not exist at St. Bonaventure, where publishing, grant-writing, and tenure pressures are “modest”. However, faculty members are expected to teach and do administrative work with little time for research, which leads to different types of stresses. Other disadvantages of being a faculty at St. Bonaventure are mediocre research facilities, and the lack of potential collaborators in the sciences to help you with your research. These are all important issues to consider before putting your job packet together.

Your cover letter

It is crucial to draft a thorough cover letter, because this is often the first item that is reviewed. “[Keep] the department strengths in mind when writing your letter” states Mitchell, and “be specific about your goals and abilities.” In other words, do not discuss your love of teaching when applying for a position in Partridge’s department at NYU, where research is more of a priority. Ikonomidou also stresses that equipment needs should not be discussed in the cover letter. If you are asking for an expensive item that is beyond the departmental budget, the search committee may not make it past the cover letter.

What should your proposal look like?

“[It] should look an R01” according to Cruz-Reyes. It should be set up similarly, be concise, and importantly, be fundable. Mitchell adds, “what you write and how you write it is important for your packet and for the sustainability of your career.” Spend time going over your application with your mentor, and “do not clash with him or her”, emphasizes Cruz-Reyes. Mitchell advises to “keep in mind that money is low at teaching school”, so be aware of how much lab supplies cost (keep a list of lab items during your postdoctoral years), take pictures, and keep these costs in mind when writing your proposal.

Do you have enough publications?

Again, this depends on the institution. From Partridge’s perspective, you should have at least six first author papers total. Cruz-Reyes emphasizes quality over quantity, and states, “good publications are the most important thing in your packet.” For a teaching school, a large number of publications are not required, according to Mitchell.

Do you need a grant to apply?

For NYU, you are expected to secure your own funding (K99/R00) to compete for a position. If you cannot get funded, mention grants you received as a postdoctoral fellow, and any that you applied for and did not get. At St. Bonaventure, mentioning grants that were not funded will keep you competitive if you have a good research plan and great publications.

The interview

Most interviews consist of a chalk talk and a public seminar. At Texas A & M, the chalk talk is an opportunity to share the details of your proposed project and lab (e.g. how many postdoctoral fellows you intend to hire) with department faculty in a closed-door session. Since teaching is important at Texas A & M, “your public seminar is expected to be comprehensible to students, and focus on big questions that you intend to research in the future” states Cruz-Reyes. Other tips to consider: Always ask questions when you interview. Know your funding options, the tenure process and everything possible about the department and school as a whole. Be aware of what each individual in the department does. Don’t pretend. Be polite says Ikonomidou, and he reminds us that

departments are “looking for a colleague, and not just another faculty member.”

Figure out what you want out of an academic career before applying. Ask for help, and talk to people. Most importantly, interview in as many places as possible. Not getting ten interviews is nothing. Start worrying about jobs once you reach 100 interviews without success. Most importantly, good luck!

Nadine Samara is a postdoctoral fellow at NIDDK in Dr. Wei Yang's group. She uses biophysical methods, primarily X-ray crystallography to better understand the mechanism of nucleotide excision DNA repair. When she's not at the bench, Nadine enjoys reading, writing, running, traveling, and cooking. Most of all, Nadine loves talking to people from around the world and learning about their cultures and experiences.

Academia: Negotiating and Transitioning

So you’ve gotten a call back for a second interview? That is fantastic, but the hard part is not over yet. Successfully negotiating a start-up package that will get you through to tenure is crucial. Once you do accept a position, there is the matter of transitioning from a huge government institution like NIH, back to academia. This panel included three Assistant Professors who recently made the transition, James A. Coker, Ph.D., University of Alabama at Birmingham, Nicholas Fitzkee, Ph.D., Mississippi State University, Betsy Kleba, Ph.D., Westminster College, and one seasoned veteran, Gregory Dressler, Ph.D., University of Michigan Medical School, who is now on the other side of tenure. They had some great advice based on their experiences, which can be broken down to five main points.

Negotiate everything before starting

Negotiations end when you accept an offer, so be sure to get everything you need before accepting. So, what do you need: first, a salary; second, start-up money. Both your salary and start-up should be “hard” money, meaning it will not be reduced if you do not

get a grant during this time. In addition to salary and start-up money, you may be able to negotiate for equipment, dedicated time at core facilities, even graduate students and teaching assistants. If you are lucky enough to have multiple offers, don't be shy about using them to your advantage during the negotiation.

Shoot for the moon

Some universities will offer a standard package, which gives a good starting point, but others will just ask what you need. Be careful of this, because people tend to underestimate in this situation. Make a list, with prices, of anything and everything you think you will need for the lab; then, ask for more. This is likely your last chance to negotiate for a while, so take this opportunity to get whatever it is that you need to be successful.

Get it in writing

Document everything that is promised to make sure there are no misunderstandings. Don't assume anything either. You may be shown a lab full of glassware and equipment, but that doesn't mean it will still be there when you arrive.

Find a mentor

Depending on the university, mentors may be assigned individuals or a committee, or you may have to seek them out on your own. Once you have a mentor, keep them informed of both progress and setbacks. Make an effort to get to know several of your other colleagues as well. They can be incredibly helpful by sharing their experience, so you can avoid making the same mistakes.

Take your time in hiring

Wait a year before hiring anyone. Use this time to set up your lab and get settled into your new environment. It is your lab and you should set it up the way you want. Think about what kind of person you need. If you need work done fast, hire a tech. However, if you need more of a colleague, a postdoc or research faculty may be better.

When asked about the worst part of the transition to academia, the panel cited the usual challenges of getting grants, balancing teaching with research and dealing with graduate students. The best part they say,

however, is doing whatever you want. In other words, it is all worth it.

Jo Tucker did her undergraduate work at the University of Kentucky. She is currently in her second year as a Postdoctoral Fellow in the Laboratory of Tumor Biology and Immunology at the NCI.

Innovations: Careers Behind the Scenes

Have you ever wondered how discoveries from the bench eventually benefit society? Welcome to the world of innovations, where research findings become commercial products. Concepts like patentability, marketability and funding strategies are inherent to this process, and people who started as bench researchers are providing these services. They are developing analytical portfolios on research trends, dealing with intellectual property (IP) issues, negotiating collaborations and consulting on mergers.

The innovations panel featured Manna Beyenne, Ph.D., technology transfer specialist at NCI; Fraser Brown, Ph.D., J.D., patent lawyer at Cooley's LLP; Leah Sartorius, Ph.D., principal at Boston Consulting Group; and Peter S. Choi, Ph.D., public health analyst at the NIAID. All of them were bench researchers who transitioned to various fields of innovations.

Transitioning away from the bench is challenging. The biggest hurdle, according to Choi, was "adjusting the skill set." Representing someone else's project and convincing people from non-technical fields about its potential distinguishes this field from bench research. In this scenario, respecting team member and client ideologies to reach a viable solution by a deadline requires managerial skills in addition to intellect. For Sartorius, learning business world terminology was an additional challenge, while Beyenne described one of her personal challenges as, "identifying inherent transferable skills and marketing them".

Practical exposure is critical to overcome these challenges. A Ph.D., along with a relevant internship or certification (e.g. regulatory affairs or patent agent certification), is expected. Panelists talked about different institutes at NIH that can provide this exposure through their policy and technology transfer offices. Beyenne joined NCI as a fellow at their technology transfer center. NIH also offers various courses on relevant topics through the Foundation for Advanced Education in the Sciences (FAES). Groups like the Fellows Consulting Club and the Science Policy Discussion Group at NIH are good platforms to learn more about these careers.

Good communication skills are an asset, but the types of communication skills required vary within the profession. As Brown stated, “to be a successful patent writer, you need to be very detailed and technically specific.” A trial attorney, on the other hand, requires superior debating skills. Sartorius encouraged practicing communication skills, emphasizing precision and brevity.

In fast-paced, client-centric private sector jobs, these professionals get handsomely rewarded. Government jobs, with 40 work hours per week and opportunities to telework, may be more family friendly than private jobs. There are plenty of opportunities to move up in the professional hierarchy. In addition, careers in consulting and policy-analysis have a wide scope in industries and governments globally. Adding relevant skills, degrees and accreditations are necessary at all levels.

Commercialization of research is a service industry that heavily depends on technical knowledge. A career in this field requires developing interpersonal skills. In a nutshell, the field of innovations is for people who understand science and technology and can effectively communicate its benefit to the business, manufacturing and administrative worlds.

Pabak Sarkar is a Postdoctoral Fellow at NIAAA, working on biophotonics and technique development. While in graduate school he was intrigued by the concept of ‘free energy’ and how it drives vital biological processes. Now he shares the same enthusiasm about the economics of

biomedical research and the ‘free energy’ of the field.

Industry: Careers Developing Biomedical Tools and Devices

If you want a career that’s fast-paced with multiple projects and diverse opportunities, consider a career in industry. While the scientists comprising the Developing Biomedical Tools and Devices panel serve in different roles in bringing science tools to the market, they uniquely meet important needs of their companies from being the go-to person on several application development projects to setting up and interfacing science and business operations. The responsibilities are challenging, but also exciting and fulfilling.

The panelists illustrated several options for a trainee considering a career in device development. For example, Colin Coros, Ph.D., M.B.A., Vice President of Operations at Delta Genomics Centre, pushes to get a university spinoff on its feet, while Kelly Mercier, Ph.D., NMR Applications Scientist at LipoScience, still works primarily at the bench overseeing other scientists (and putting out the occasional fire). In a small company, a single individual wears many different hats and can be involved in science and business operations, as Coros and Arne Thompson, M.S. of Cellular Dynamics International emphasized. Those in larger companies juggle many projects at once. Kai Cheng, Ph.D., from the Jackson Laboratory enjoys this, saying that even if things go wrong with one or two of his assignments, many more are going smoothly. The pace of industry requires scientists to move on quickly from failures and focus on productive ventures. This difference between academia and industry means the panelists feel less frustration from being stuck than they experienced in their training.

Cultivating people skills is important in industry. Bowen Cui, Ph.D., Senior Scientist at Qiagen, claimed interviews are as much for assessing an applicant’s personality as their background. Scientists must share data, collaborate, and treat projects with less

ownership than in academic settings. One must also operate in a management structure, responding to those above and directing those below. Adapting to new colleagues is necessary too, since one of the hardest aspects of industry jobs is high turnover. The interactive style of work might be new for academic scientists, but the panelists stressed that all postdocs are well-trained in problem solving and critical thinking skills that are equally important to high performance in industry.

Networking is critical in any career and job search, but the panelists did not have a one size fits all approach. Most sought information from former group members, and some found out about opportunities that way. Thompson asserted he always found someone on the inside when interviewing to help him understand the company dynamics and what the interviewers were looking for. Taking advantage of gatherings is important too—Cui favors making strong impressions at job fairs, Cheng learned about his job by networking at a scientific meeting, and everyone expands their networks with collegial interactions. Cui even managed to take advantage of a chance meeting in an elevator to learn of a position opening.

“You define your own career path,” stated Cui near the end of the session. Indeed this panel was made of people who actively investigated the options in business and industry once deciding academia was not right for them. Thompson said knowing what you want to do is both the hardest and most important part of a job search. The panelists are happy with their current jobs, but their careers are still evolving. When the five of them were asked where they saw themselves in ten years, the attendees got ten different answers. This highlights the many exciting opportunities available in industry for young scientists.

Jessica Lamb is a Postdoctoral Fellow in the National Institute of Deafness and other Communication Disorders. She studies wave vibrations of tissues in the inner ear that transform acoustic signals to perceived sound in the lab of Dr. Richard Chadwick.

Industry: Discovering a New Drug

Industry is everything you have heard about it; it is a fast-paced career where expertise is expected, constant change is the norm, and teamwork is the key to success. This was the consensus from the distinguished panelists which included Anna Hansen, Ph.D. from MedImmune, Matthew Meyer, Ph.D. and Chris Towler, Ph.D. from Novartis Institutes for Biomedical Research, Thomas Paul, Ph.D. from Celgene Corporation, and Tasha Sims, Ph.D. from Regeneron Pharmaceuticals. What follows is advice gleaned from those just beginning careers in industry jobs designed to better equip you when entering their dynamic job market.

The power of networking was discussed frequently during the industry seminar as the best way to gain access into companies. More specifically, Hansen pointed out that it is the contacts that are four to five years ahead of you career-wise that will be your biggest asset because they will be the ones involved in hiring at the ground level within a company. Thus, it is important as you begin to enter the job market that you reconnect with former colleagues via LinkedIn and other networking resources to get your name circulating amongst industry members, especially because job opportunities are not always posted.

Expertise is vital to job placement within industry. Industry hires experts, not potential. They want productivity now. Paul recommends paying attention to the fields gaining popularity in industry two years into your postdoctoral position. Speaking of his own postdoctoral work, Paul thought he was in an area that did not interest companies until he got feedback while at conferences and discovered that epigenetics was quickly becoming a hot topic important to industry leaders. Because of his expertise, he was a sought-after commodity by the time his postdoctoral position ended.

Once you gain access to the world of industry, it is important that you sell yourself as much as possible. The panel advised that you

remind yourself that you are an expert; companies demand expertise, so make certain you communicate your worth and negotiate on your own behalf early on in the hiring process. Highlight the ways in which you meet the goals of the company and investigate their structure so you know where you fit into the company's hierarchy. A bonus of companies wanting experts is that they usually promote additional education by financing it when applicable, providing a mechanism for growth and enrichment once you are hired.

As for a day in the life of an industry scientist, the panelists admitted that it varies. Depending on the structure of the company, most doctorate level positions spend more time at a conference room table than at a lab bench. Some of the panelists still manage to fit in some bench-time but it is rare (less than 15%) in most cases. However, all panelists are actively involved in experimental design and data analysis which keeps them grounded in the lab environment even though they no longer produce the data. Despite this separation from bench work, all the panelists still found the research very rewarding.

Ultimately, to garner a career in industry you need to do your homework. Maintain contacts through networking, keep up with trends in science, hone your skills in areas vital to industry, and learn to promote yourself. Heed these words of advice from the expert panel members and you may land your job in industry. According to Thomas Paul, "as a career choice it cannot get much better."

Dana D. Dean is a Postdoctoral Fellow in Dr. Joe Frank's section of the Laboratory of Diagnostic Radiology Research (LDRR) within the Clinical Center. Her research focuses on models of traumatic brain injury and stem cell biology. She received her Ph.D. from Texas A & M University College of Veterinary Medicine where her doctoral research investigated a virally-induced mouse model of Multiple Sclerosis.

Industry: Developing a New Drug

If running gels, pipetting samples, and spending hours at the microscope are already starting to lose their charm, a permanent hiatus from the bench may be worth considering. At this session, panelists working at different stages of the drug development pipeline, which spans from discovery to market launch of a new drug, related their experiences and gave advice on how to follow in their footsteps.

Panelists first discussed their transition into industry, and offered ways to maneuver around a lack of experience. "Suggest proving what you can do if you have no experience," said Manuelle Rongy, Ph.D., a Regulatory Affairs Associate and Medical Writer at Allphase Clinical Research. After interviewing for this position, she was assigned homework—to write an executive summary of a document. Rising to the challenge, with a little help from Google, she beat out a much more experienced candidate because the company preferred Rongy's writing. Mahesh Kumar, Ph.D., Clinical Project Manager at NPS Pharmaceuticals, recommended beefing up your resume by taking online training courses, such as the free ones offered by the Drug Enforcement Administration, the Association of Clinical Research Professionals, and the Society of Clinical Research Associates. Jennifer Shen, Ph.D., R.A.C., Scientific Reviewer at the U.S. Food and Drug Administration Center for Devices and Radiological Health, suggested applying to smaller companies. "In small companies... they allow you to grow, even if you might not fit the job description directly," noted Shen.

But that doesn't mean you should send out the same resume for every position you apply for. "Building up your resume to the job description is critical," said Shen. "If you have a great clinical experience, and [that fits] the job description, emphasize that...you need to make that cut first before the hiring manager even looks at you like a human."

Attendees raised several questions about how to prepare for a career in the drug development industry. As it turns out, there is no "best route." For Qusai Al-Share, Ph.D., a Ph.D. in pharmacy followed by a postdoctoral fellowship at both the University at Buffalo and Novartis Pharmaceuticals Corporation readied him for his current position as a Clinical Trial

Leader at Novartis, where he oversees a team of physicians, statisticians, and clinical pharmacokineticists. As part of his job, Al-Share must also be able to examine pre-clinical data before moving to the next step, the clinical trial. “How would I know the details without some research [experience] in my career?” he asked. Rongy, who began her current position directly after receiving her Ph.D. from McGill University in 2010, had a different perspective. In her career search, she was told by people working in industry, “If you get a postdoc first it’s not experience, because it’s still bench work,” said Rongy. Kumar has even encountered people without Ph.D.s working at the medical director level. These people learned on the job. “What you are doing in your Ph.D., this person is doing in industry,” explained Kumar.

While there is no one path towards a career in industry, there are certainly skills you can develop further while doing graduate or postdoctoral work at NIH. Kumar recommended improving your ability to work in a team, because working as an administrator in industry requires “keeping everyone happy,” while Shen suggested honing your communication skills. She explained that networking is extremely important, and can provide you with job opportunities, as she interviewed with the company she currently works for because she knew people there.

All in all, the panelists provided key pointers and advice that should give any young and restless NIH researchers a head start on planning their escape routes from bench work.

Heather Dolan is a Post-Baccalaureate IRTA currently serving as an Editorial Intern for the NIH Catalyst. She is affiliated with the NICHD, having spent her first 5 months at NIH in the laboratory of Dr. Juan Bonifacino. She received her B.S. in chemical engineering from Carnegie Mellon University.

Industry: Launching a New Drug

Are you interested in leaving bench research while still using your science knowledge? Read what our four panelists involved in the last stage of drug development—launching a new drug—have to share about their scientific career.

When a new drug is ready to be launched to the market, it takes a wide variety of professionals to do so successfully. As an Associate Director in the Medical Affairs department at Vertex Pharmaceuticals Inc., Mrudula Donepudi, Ph.D. works in the publication arena, where her overall objective is to “design a plan on how to disseminate [clinical] data at the right time, to the right audience” when that data is in the development pipeline. Donepudi was a research fellow before taking her first non-bench position as a Medical Communications Scientist at Acusphere. Melissa Drysdale, Ph.D., Senior Medical Science Liaison at Millennium Pharmaceuticals, facilitates scientific exchange among investigators, sales representatives and medical professionals. She travels extensively to speak to top tier medical professionals and to represent key opinion leaders to the company, as well as to educate sales professionals about new drugs and attend sales meetings. Prior to becoming a medical sales liaison, Drysdale was a research professor for two years after completing a postdoctoral training. As a Program Manager at Rho, Inc. and Director of Clinical Operations at Pulmotect, Carrie-Lynn Langlais, Ph.D., R.A.C. manages product development programs and represents the company to venture capitalists. Her professional expertise encompasses all aspects of drug development, including chemistry, regulatory affairs, non-clinical development (animal work) and clinical aspects. After earning her Ph.D., Langlais embarked in the area of drug development as a medical writer and then a senior regulatory affairs specialist. Last, Andrea McConnell, M.S., Co-Founder of Two Quills, LLC, worked for eight years as a sales representative for AstraZeneca, where, by working with pharma and academia, she was able to enjoy both ends of launching a new drug. At Two Quills, she trains entrepreneurs to develop effective sales and marketing skills.

The panelists left bench science mainly because of family obligations or, for

McConnell, because of a personality geared toward sales. The psychological transition was not easy and with time they finally accepted that leaving bench research was the right decision, and a rewarding one. The panelists used different strategies to succeed in their transition. For example, Drysdale realized that, even though her Ph.D. was not in a clinical discipline, she could “be more than just Ph.D. smart” by presenting complex data in a simple manner and making her thesis work clinically applicable. The panelists recommend trying to reach outside the box to gain medical knowledge and experience away from the bench. For instance, Donepudi, during her graduate studies, took advantage of the proximity of big pharmaceutical companies to form collaborations. Moreover, networking extensively with relevant professionals was a requisite for the panelists to make informed decisions and be successful with their job search and careers. The panelists agreed that what matters most for professional success in industry is to have great communication and project management skills rather than a specific type of personality.

When asked whether having a mentor was important in their career, the panelists unanimously answered that mentorship, whether from friends, colleagues, or even company representatives, was always beneficial. In fact, mentors turned out to be critical for Donepudi when she had to temporarily replace her ill boss after only eight months on the job and keep delivering high quality work.

The panelists also addressed the issue of work-life balance, which varied from career to career. After you’ve jumped and are on the other side, it will not always be *la vie en rose*! Drysdale travels 70-80% of her time and finds it difficult to maintain work-life balance, but she enjoys a good salary and occasional telecommuting. Langlais avoids burnout by working many hours only on weekdays and by telecommuting one day per week. Because her company does not expect its employees to work on weekends, Langlais enjoys feeling “[she is] doing more than expected” as opposed to feeling there is “never enough done” as a postdoc. McConnell likes to “work smart, not long hours”. She works 40 hrs per week but highlights that flexibility is key, since

her days as a sales person can vary from 12 hrs in the field one day to 5 hrs in the field and various other administrative tasks another. Finally, Donepudi achieves balance by prioritizing her work, being “completely engaged” at work with very few breaks, and “fully present” when she is with her family.

The process of launching a new drug creates fascinating and challenging job opportunities in the drug development arena. As long as new drugs get approved for commercial use, positions for launching them will remain to be filled by energetic, knowledgeable, and passionate scientists.

Anne M. Miermont is a postdoctoral fellow at the NCI. Her current research interest is to improve MAPK pathway-targeted therapies for pancreatic cancer. She is the recipient of the Sallie Rosen Kaplan Postdoctoral Fellowship for Women Scientists in Cancer Research. Originally from France, Anne received her Ph.D. in Tumor Biology from Georgetown University.

Career Options for Clinicians

When asked the question “Why medicine?” many of my classmates, and now colleagues, held the altruistic notion that they want to help people and make a difference. This feeling is universal amongst clinicians, whether they practice medicine in the community or are involved in academic clinical research, bench research, or the pharmaceutical industry. Career options for clinicians remain quite vast; the only limitation is what you put on yourself, and maybe time.

Jason Sager, M.D., Oncology Medical Innovation Director at Sanofi, stated that what guides him in his career is “What can I do in my life that would make the largest possible impact for cancer patients & humanity?” In a similar vein, Crystal L. Mackall, M.D., Chief of the Pediatric Oncology Branch at the NCI, advised that what we do should be from the heart and true to who we are. Do we really choose our career based on our heart and mind and the altruistic notion of what we can

accomplish? Craig Hendrix, M.D., Director of the Drug Development Unit at Johns Hopkins University, feels his decision to pursue what he did was based on more of a gut feeling than anything else.

We have to ask how we will divide our time as that is a precious commodity and one that is often the key limitation that we will face. Do we give up on direct patient care altogether in the pursuit of a larger goal, or do we follow an 80/20 model with minimal clinical involvement? Nicholas Sarlis, M.D., Ph.D., F.A.C.P., Vice President and Head of Medical Affairs at Incyte Corporation, has given up direct patient interaction. He works in the pharmaceutical environment where teamwork and business acumen are critical to success, as he has a fiduciary responsibility to his shareholders. On the other hand, Mackall working for the NCI spends about 30-40% of her time with clinical responsibilities with quite a bit of translational research. Niranjana Bhat, M.D., M.H.S., Medical Officer for the Division of Vaccines and Related Product Applications at the FDA, has found his balance with the intersection of public health and science.

While this is all great and idealistic, we are faced with a harsh reality after completing rigorous clinical training: *debt*. The average medical student graduated with \$200,000 dollars of debt, and honestly speaking, these academic jobs just don't pay the bills. When asked the question, "Pay or Prestige", Hendrix says nothing is the same as the rush he gets when he talks to others about science. With the average new assistant physician salary just over \$100,000 this may be hard to pay off the amount of debt we often carry.

What then makes someone a good fit for industry? Sager felt that it is key whether the person has identified a goal, set out to achieve it and completed the goal. Sarlis feels the best measure of defining this is how a person deals with conflict. In addition, he often asks what the candidate can sacrifice (in terms of weekends a year) for the position.

Though this panel presented a range of view points, the common guiding principle was finding a way to make a difference. With so many career options available for clinicians, the only limitation is our imagination, and perhaps time!

Avani Shah is a first-year medical oncology fellow at NCI. She completed her medical school training at the George Washington University as well as her Internal Medicine Residency.

Careers in Unexpected Places

"Life is like a box of chocolates, you never know what you're gonna get"

— Forrest Gump

As Ph.D. scientists, we are trained to be purposeful. After sitting through the first few sessions of the NIH career symposium, it was clear that many of the panelists seemed to know exactly where they wanted to be and how to get there. However, there are jobs in unusual places that might not be as obvious as the well-beaten paths. If you are willing to look at these places, you might be pleasantly surprised.

The four panelists had very diverse experiences: Athena Keene, who holds a Ph.D. in Biology and did two years of postdoctoral work at the FDA, recently joined Afton Chemical Corporation, a chemical company that supplies fuel and lubricant additives, as a toxicologist; Jennifer Kimmel holds a Ph.D. in Biochemistry and did 5 years of postdoctoral work studying enzyme kinetics before she joined Kraft Foods as a protein chemist within the Ingredient & Process Research Group; Eric Nicholson, Ph.D. is a prion researcher who found his niche within the National Animal Disease Center of the U.S. Department of Agriculture; and Amanda Weyerbacher, Ph.D. is at L'Oreal as a senior scientist in the product safety department.

What sets these people apart from other job seekers is that they are more willing to look into "unlikely" places. They found a broader perspective of who they are and what they are capable of doing. As Nicholson put it: "Don't define yourself by what you have done, but what you can do". The skill sets that enable a person to obtain a Ph.D. are applicable to many areas of life. The panelists encouraged

being an optimistic job seeker—if there was one word in the job announcement that matched their resume, they were willing to explore the option, as there is room for flexibility in many job descriptions. Interestingly, at a time when networking has become the buzz word for job hunters, three of the four panelists found their jobs by answering job announcements in the public domain.

Another important aspect of job searching outside of academia is to avoid letting academic achievements overshadow other valuable experiences. In fact your specific research portfolio might not matter much outside of academia. For example, what set Weyerbacher apart from other candidates was not her Ph.D. work, but her prior experiences with clinical trials before she entered graduate school. Even non-professional pursuits can contribute to career choices. Kimmel has a passion for food and cooking, which is why she was interested in Kraft foods, while Weyerbacher chose L’Oreal over other job offers because of her personal interest in cosmetics.

The panelists also shared the challenges of making the transition from academic research settings to corporate research settings. The interviewing processes can be quite different. In contrast to an interview for an academic job, where your past academic achievement is the primary focus of examination by peers, Weyerbacher did not even have to talk about her Ph.D. research. Kimmel did present her research, but it was critical for her to find a way to communicate science in a concise and meaningful manner suitable to the audience. Once on the job, time management skills, people management skills and communication skills matter more to the success of a career outside of the ivory tower. The panelists also discussed the corporate culture of productivity, ranging from two required papers per year at the Department of Agriculture to performance reviews at Afton Chemicals and goal setting at Kraft and L’Oreal.

The panelists provided a unique insight into the more unusual places a Ph.D. can do research, encouraging the audience to explore different options and make room for the unexpected. The take-away message is that there is more to scientific research than

pharmaceutical companies and academia if you are willing to look. After all, each one of us is blessed with a box of chocolates, you never know which one is going to open a door for you.

Caiyi Li has been lucky enough to indulge her curiosity and flex her creativity for many years doing research in fields of microbial pathogenesis, molecular immunology and epigenetic regulation of gene expression. She is currently a research fellow at NCI, working on her marketability. If you have any question about this story, email her at Caiyi.li@nih.gov

Still Uncertain? Come Explore!: Finding your career path

You spent the day learning about the variety of career options out there and somehow ended up feeling more confused than ever. This interactive and informal session may have been just what you needed to get some answers and clarification. OITE Deputy Director Pat Sokolove, Ph.D., and Career Counselors Anne Kirchgessner and Elaine Diggs were on hand to give insight into everything from specific career path options to social networking.

Of interest to those who are still uncertain, the panelists covered some basic guidelines for how to approach the decision of which career path to pursue. Initially it is best to start the process with a self-assessment: what are your interests, strengths and values? Next, you should take time to explore different career options that fit your personal profile and determine what will be a good fit for you. By attending the Career Symposium you are already off to a great start learning about different career options, but if you still need more information to narrow down your search there are a number of books available from the OITE Career Library, such as *Put Your Science to Work*.

A great next step is to schedule informational interviews with people in the types of careers you are interested in, either in person or on the phone. Guidelines for how to set up and

engage in an informational interview are available on the OITE website (<https://www.training.nih.gov>). Conducting these types of interviews will provide valuable firsthand insight into which career is really a good fit for you and help you narrow your job search.

Social media can be another useful tool, LinkedIn is a way to find other professionals with similar interests and background as you and learn where they work and what type of jobs they have. A tip from Sokolove was to be sure to use a personalized invitation when sending a connection request rather than the impersonal generic request. Kirchgessner recommended LinkedIn as a tool “not just for people to find you but for you to find them.” You should be proactive in searching for key words that reflect your specialized areas of interest and join groups associated with those topics to expand your network.

Networking is a key component to building a successful career that many people struggle with. As Diggs advised, “there’s nothing mysterious about it, like Nike says, ‘just do it.’” Joining professional associations and getting involved is a great way to network with other people in your field. By investing time in establishing and maintaining working relationships, you gather information essential to your career progress and pass along useful knowledge to help others in your network along the way. For those who struggle with networking, or just don’t know where to start, the Career Library has resources that can help you such as the books *Power Networking*, and *Networking for People Who Hate Networking*.

Finally, when it comes down to it, how do you decide what career is best for you? You can evaluate the pros and cons of each job, but in the end you should go with your gut feeling. Knowing yourself and thoroughly exploring your options ahead of time will help. *What Color Is Your Parachute?: A Practical Manual for Job-Hunters and Career-Changers* by Richard Nelson Bolles is a great place to start. If you are an NIH intramural trainee there are a number of resources available to you as well, from workshops to one-on-one appointments with career counselors like Kirchgessner and Diggs. Be sure to take

advantage of these great opportunities and get your career search moving forward!

Wendy Knosp is a Postdoctoral Fellow working in the laboratory of Matthew Hoffman at the National Institute of Dental and Craniofacial Research. She is currently studying the role of FGF signaling in salivary gland biology.

Transition to Independence – Successful Acquisition of a K99/R00 Award

You have finally come to terms with the fact that you are somewhat a glutton for punishment. You spent at least 5 years as an indentured servant getting your graduate degree(s). You could have taken the industry route, the science writing route, or the non-research faculty route, but you need to make your own mark in the world of science. You’ve set your sites on becoming a Principle... wait for it... Investigator, a PI! Currently, you are slogging through your postdoc conducting postdoctoral research with the goal of acquiring a job as an independent investigator. It has begun to sink in that this is actually only another milestone on your journey to research and contribute to the body of knowledge. The tenure clock starts running when you get hired and you have, depending on the institution, 5 to 10 years to prove yourself; namely by acquiring funding and publishing in high impact journals. We should mention here that success rates for R01 grants submitted to NIH last year dropped to 18%.

This means you need to have a plan to ensure you are successful in your endeavor to become a research intensive PI. Fortunately the NIH offers a program to help you. The K99/R00 is the NIH Pathway to Independence Award. I was able to attend the 2012 NIEHS Biomedical Career Fair at the end of this past April and received some great information from Bill Schrader, Ph.D. (NIEHS Deputy Scientific Director and Training Director) and

Carol Shreffler, Ph.D. (Program Administrator, NIEHS) on this program.

The K99/R00 award consists of two parts and is one of the few available to non-U.S. citizens as well as U.S. citizens. This award can be utilized at intramural and extramural institutions. The K99 portion lasts up to two years and ends when you attain tenure-track employment. This portion of the award is mentored training and provides for career development for two years to set you up for success and independence, not to mention the all-important publications resulting from your proposal. The R00 portion is the research portion of the award and begins when you start employment at said job. This is an initial three year grant (non-renewable) that you take with you when you start a tenure track position. This makes you a much more desirable candidate. Not only do you have funding in hand for the first three years, you also have proven success in writing and attaining a NIH grant. Furthermore, for most institutes the success rate of the award is higher than an R01.

If you are interested in writing a K99/R00 award, you should be thinking early on in your postdoc about a creative, achievable idea to explore. Think about where you will be in five years, how your field will evolve in five years, and how you can parlay initial K99/R00 research into additional R01 grant success where the data, publications, and grant expertise from your K99/R00 award will be essential. Talk to your PI about a project. Discuss and agree to a line of work you can pursue and your PI does not plan to continue. Ensure that it has stamina for future novel important research. Talk to your grants advisor (i.e. Bill Schrader for NIEHS). To be competitive in your K99/R00 award you will need to have one or two first-author papers in good journals as well as some preliminary research to support your idea, so be thinking about it now. In addition, the R00 award portion is only awarded if the institution has the facilities to support your research. Lastly, you can't have had more than five years of postdoctoral training when you apply.

So my fellow scientists, be prepared, and start thinking proactively about research ideas to turn into a K99/R00 application. Talk to your institute's grants advisor and go to *Grants.gov*

for more information about the K99/R00 and other awards as well as the ability to look up all currently funded grants. This will allow you to see what ideas are funded as you think about your future research ideas.

John S. House is a first-year Postdoctoral Fellow at NIEHS, working in the Lung Respiratory Biology group under the guidance of Stephanie London and Darryl Zeldin conducting research into GWAS identified genes for pulmonary lung function in mouse models. He received his Ph.D. in Molecular Toxicology working on transcription factors in cellular differentiation, and admits he is a glutton for punishment.