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Adam Ruben, Ph.D. delivered his comedy filled keynote address, “Surviving Your Stupid, Stupid Decision to Go to Grad School”, to a packed room of young, aspiring scientists at the 2012 NIEHS Biomedical Career fair. Ruben wears many different career hats including one of an accomplished writer, comedian, storyteller, and molecular biologist. In addition to his day job, developing a malaria vaccine at Sanaria Inc. in Rockville Maryland, Ruben has performed stand-up comedy for over a decade and writes the humor column "Experimental Error" in the otherwise respectable journal Science.

Early on in his talk, Ruben emphasized why he believes that attending events like the career fair is a valuable step on the career path. “One of the questions I get asked the most is can I get one [a job]”, stated Ruben. In his answer to this popular question Ruben explained that the unemployment rate for Ph.D.’s is very low, only about 2 percent, and so it is definitely possible for young scientists to find a job.

“The value of a career event like this one is learning about the career you want,” stated Ruben.

Ruben used humor throughout his talk to poke fun at some of his own experiences as a graduate student at John Hopkins University. He explained how a particular incidence that involved him working three 21 hour days in order to get data to his mentor for a seminar, where his mentor never even mentioned the data, made him question, among other things, what he was still doing in graduate school. The good news is that Ruben did survive graduate school, and now has a successful job in the real world. Working for a small biotech company has given Ruben the opportunity to do a little bit of everything including quality assurance and running clinical trials. According to Ruben, one of the biggest perks of his job is the ability to follow his research project from start to finish.

When it came to his advice to the audience, Ruben emphasized the importance of getting out and trying new things. For example, Ruben talked about some of his experiences judging science fair projects and how it is both entertaining to see what high school students can come up with but also eye opening to learn about the state of science education in this country. Teaching short courses to undergraduate students about pandemics as well as instructing elementary school science teachers about his own research are both two other experiences Ruben found valuable for his own career development. He strongly encouraged the audience to find these types of things to do by simply saying yes to something. “You never know what doors might be opened by just saying yes to something,” stated Ruben.

In his conclusion Ruben recounted another one of his own experiences as a sixth year graduate student to make a final point to the audience. He talked about a meeting that he and his fellow sixth year graduate students had had with their advisors. Collectively Ruben and the other students asked their mentors the age old question of why haven’t we graduated yet? The professors then answered back with the question of why haven’t you graduated? This was the moment where Ruben made the profound realization that he, not his mentor or anyone else, actually had the power to control his own career path.

“You have more control [of your own career path] than you think you do,” declared Ruben who then advised the audience to take control, and responsibility, for the course of their own careers. Ruben explained that he believes in what he is doing with his work and that he got involved in science in order to help people, and that is exactly what his company is trying to do. “Be empowered,” were Ruben’s final words rounding out a very entertaining but also uplifting keynote address.
Faculty Careers in Teaching-Intensive Schools

By Sabrina Robertson, Ph.D.

The teaching intensive panel had three professors from a variety of schools that provided unique perspectives on the surprising diversity of positions available in this career path.

Shweta Trivedi, Ph.D., is currently a Teaching Assistant Professor in the Department of Animal Science at North Carolina State University where she teaches two courses as well as focuses much of her effort on professional development of Pre-Vet students. She provided the audience with important information regarding her position that does not require laboratory research in addition to teaching responsibilities but does require pedagogical research.

Alyssa Summers, Ph.D., is in her 3rd year of a tenure track position as an Assistant Professor of Biology at The University of the South: Sewanee University. She offered excellent advice on balancing expectations for teaching as well as for generating publishable undergraduate driven research.

Finally, Jennifer Brigati, Ph.D. a tenured professor at Maryville College, has served on numerous faculty searches and offered key insight into what it takes to get a job at a small teaching centered college that requires research projects for undergraduate students, but not necessarily published research results.

While the diversity of this panel meant that most questions had multiple answers, some underlying themes were emphasized by all the panelists.

- **Research the institution** and the **position** you are applying for because often times your success depends primarily on how good you “fit” within the university.
- In conjunction with this notion, tailor your application to “fit” with the university.
- When interviewing, present your research in a **non-technical** manner. In fact, many of the panelists suggested finding a unique way to tailor your talk as if you are presenting it to undergraduates.
- Collectively, the panelists agreed that with the competitive nature of the current job market both a postdoctoral research experience as well as a strong, independent teaching experience will bolster your chances remarkably of landing one of these positions.

The take home message from this panel was that, as a future applicant for a teaching intensive faculty position, you should thoroughly research the institution you are applying to. Many of the institutions have widely different requirements and goals for their faculty. At some institutions, publications may still be an important aspect of obtaining tenure while at others no research at all is required. In the end, you want to make sure that your goals for the future align well with the institution you choose.
Regulatory affairs professionals work in industry, academia, and for the government to ensure that all the proper laws and regulations are followed during clinical development. The panelists in the regulatory affairs panel consisted of Ayoola Aboyade-Cole, Ph.D., a regulatory associate in the Clinical Protocol Office at the UNC Lineberger Comprehensive Cancer Center, and Erika Pfeiler, Ph.D., a microbiologist at the FDA.

Both panelists stressed the importance of communication skills in their job with Aboyade-Cole describing how she must communicate daily between companies, investigators, IRB members, and other regulatory staff to ensure that regulatory submissions are completed correctly and on time. Pfeiler added that while she reviews the Chemistry, Manufacturing, and Controls (CMC) section of Investigational New Drug (IND) applications she also works on a team with many other scientists at the FDA during this process. Pfeiler estimated that she spent about 70 percent of her time writing and reading and about 30 percent of her time in meetings or doing program management activities.

Despite the fact that neither is at the bench, both participants felt that they used their scientific knowledge and training daily in their job due to the technical nature of the documents they are involved in preparing and reviewing. In fact, Pfeiler noted that it was a big jump to be focusing on science all the time and there are times she wishes she could take a break by doing something routine such as making media.

Entering into a regulatory career path can be a challenging transition, but both panelists offered helpful suggestions. Pfeiler described how she entered into the FDA through the Commissioner’s Fellowship program, which is designed for scientists to receive training at the FDA, noting that there are lots of opportunities for continued growth and training at the FDA. Aboyade-Cole stressed the importance of networking, noting that even though she is shy by nature, she took the opportunity to speak with everyone she came across and asked them for other people she could also speak with. Additionally, she took advantage of many of the free certification and training classes offered at UNC for things like Good Clinical Practice standards as well as a class through the North Carolina Regulatory Affairs Forum to prepare for the RAC exam, a certification in the field.

Both panelists noted that they were able to obtain jobs without the certification, but that it may be helpful in showing a basic knowledge of the field to potential employers. The panelists spoke to the variety of career options open to those who enter the regulatory field, as there are regulatory professionals in industry, government, and academia. Additionally, the field could prepare one for jobs in scientific review, project management, and science writing. However, getting to your dream job right out of graduate school or after a postdoctoral fellowship could be difficult as you may need to take a more entry level job to gain experience.
When asked if they liked their jobs, Drs. Anastacia Berzat, Nicole Zandy and Thad Schug all gave a resounding, “Yes!” Dr. Berzat went on to describe how she discovered her passion for organizing events during her postdoctoral years. While pursuing her scientific projects, Dr. Berzat noticed that by her 4th year as a postdoc she spent almost 50 percent of her time on organizing committees, which she found she immensely enjoyed. Dr. Zandy found her passion for problem solving in graduate school, also by volunteering for planning committees. Dr. Shug noted that, “once you find what you love; you need to be aggressive in pursuing it.”

The lively panel discussion covered 2 major points: 1) how do you set yourself up for the job you want, and 2) how do you then obtain a position?

When setting yourself up for a position in project/program management, it is interesting to note that all 3 panelists did either an internship or volunteer work in order to build up their experience in this field before obtaining their first position. While a post-doc is required or heavily suggested for many positions, Dr. Zandy of Quintiles did not do a post-doc.

All 3 panelists emphasized that, “getting a job is a full-time job.” They suggested it is best to be as aggressive as possible and “check modesty at the door.” Additionally, networking was considered essential, even cold emailing people at places of interest. Each cover letter and CV should be tailored for the specific position, even using the same wording as the job description. According to the panel, people should expect their job search to take about a year.

As the amount of data obtained by research increases, project/program management becomes more essential. The panelists were passionate about their expanding field throughout the dialog. Project/program management seems to require persistence and passion, but for those lucky enough to have a career in this area, the work is extremely satisfying.
The panel on careers in “Big Pharma” had three members who had been through the job-seeking process within the past two years. Two of the panelists, Dr. Johannes Freudenberg and Dr. Claudia Generaux are employed at GlaxoSmithKline (GSK), a large pharmaceutical company. The third panelist, Dr. Vladimir Grubor is employed in the Plant Science division of BASF, a large chemical company.

Dr. Freudenberg is a Computational Biologist who earned a masters degree in Biomedical Informatics from Universität Leipzig in Germany and then a Ph.D. in Bioinformatics from the University of Cincinnati, Ohio. He held two brief, one year, postdoctoral fellowship positions, one in Cincinnati and the other at NIEHS before joining GSK in their Research & Development organization.

Dr. Generaux is an Investigator in the Drug Metabolism and Pharmacokinetics group of GSK. She earned her B.S. degree in biology from Washburn University in Topeka, KS. After a year working in a toxicology laboratory and then four more years working for a contract research organization, Dr. Generaux went to the Molecular Pharmaceutics Division of the Eshelman School of Pharmacy at UNC-Chapel Hill to earn her Ph.D. in Pharmaceutical Sciences. She joined GSK directly after obtaining her doctoral degree.

Dr. Grubor received his Ph.D. in Molecular Genetics at the University of Melbourne, Australia where he studied the molecular mechanisms of insecticide resistance in insect pests. He changed fields to do a postdoctoral fellowship in cancer genomics and bioinformatics at the Cold Spring Harbor Laboratory in New York. Dr. Grubor completed a second postdoctoral fellowship at Duke University Medical Center. He then obtained his position as a scientist (bioinformatician) at BASF Plant Science.

Another question was raised on how to determine what position to which you should be applying. People in the audience were confused by the different titles and names for positions in
different companies. The advice given was to read a variety of job descriptions from each company, even if that particular job is not one in which you are interested, so that you can learn what each company expects — in education and experience levels — for different position titles. Additionally, the panelists remarked that the job title is frequently not set in stone, meaning that the company may change the title to reflect the qualifications of the candidate hired. You do not necessarily need to do a postdoctoral fellowship in order to find a job in industry. Industry experience is not always a necessity for getting an industry job. Usually the job announcement will list how much industry experience is needed for each position. You have to use your judgment on whether or not you fit the qualifications. For example, a job announcement which lists 0-2 year’s industry experience or even one where industry experience is listed under “preferred” or “desired” qualifications, rather than “required” qualifications would be suitable for someone without industry experience. In addition, the panelists agreed that your degree is less important than your skill set when applying for a job. To put it simply, if you have the required skill set for the job, then you should apply and if your skills match what the job requires, you have a very good chance of getting hired.

On the topic of interviewing, the panelists had several pieces of advice. If you do a search on the Internet for the “top 10 interview questions,” those questions are worth reviewing. They said that you should think about and have answers prepared for questions of that nature. Also, they said that beyond being able to talk about your scientific skills and qualifications (which are very important), social skills are a top priority as well. Being able to engage in small talk is essential, as you will likely have a day-long interview in which you will have time to meet with all of your potential workgroup members, in addition to giving a presentation and having formal interviews. The people you talk with will be evaluating your compatibility for the team work environment.

The panelists agreed that the most difficult adjustment to make in the transition from postdoc or graduate student to working in a large industry environment was the elevated need for task prioritization. Time management and understanding what priorities to assign to different tasks were important in dealing with the faster timeframe of projects. A typical industry project might last weeks, where academic projects routinely go on for years. Communication is the key to getting jobs done. You have to coordinate with people on your team, and often with people across the country and all over the world in order to work together to successfully complete a project. In the same vein, balancing management duties and experimental duties requires you to learn how to set priorities and follow them. Learning how to use whatever calendar software your company utilizes is an absolute essential, because many companies use programs that allow other employees to view your calendar to help with scheduling. This really helps you coordinate meetings and experiments with your team.

When asked whether they had input on project design, the panelists remarked that ideally, yes, they are often able to have input on the design of their projects simply because it makes for more efficient work. Time management was mentioned again while stressing that efficiency was very important. Often times there are so many meetings that your time to complete work outside of meetings was drastically reduced. Effective management of that time allows them to complete their work.
In a typical day at their companies, they spend time coordinating with junior scientists, communicating with their team, providing expertise on a variety of projects and design experiments on their own. Specifically, experiment design of your own is possible if you can influence a project within your area of expertise.

An audience member asked a quick question about whether you should change your area of expertise after your Ph.D., or is that a bad idea. Dr. Grubor, who did just that, remarked that changing your field of study when starting a postdoc was an excellent time to do it.

On the topic of how to start their job search, the panelists had a number of recommendations. Network, network, network! Come to the career fair. In fact two of the panelists remarked that they were at the career fair asking questions just like the audience only one or two years ago. They said that you should get your resume in order so that you have a solid framework in place to modify for each job to which you apply, and that you should keep your resume very specific for each different job application. You should identify your skill set and use those skills to search for jobs that match your qualifications. Identifying a geographic area, or set of areas is important to many people. Obviously, the Internet was the method of choice for searching for jobs, and the panelists recommended that you utilize the company career websites if those companies are within your geographic areas of interest and are likely to need someone with your skill set. When writing a cover letter, you must personalize it for the company and the position. You should emphasize what the company is doing that is of interest to you, and why you want to work for that company. Let them know what you can do for them and why you are a good fit.

Comments on work/life balance for working in a large industry company were generally favorable. Hours are usually 9-5 with some exceptions when needed, but the panelists all agreed that even with occasional weekend or late night work, it was still far better than what most scientists in academia experience. As far as improving yourself, you have opportunities to learn new skills as long as you can fit it into your schedule. There are plenty of opportunities at large companies to learn new things. The work environment is usually supportive and less competitive than that of academia since you are not essentially competing for funding. The downside is that it is possible to be laid off at any time if the company changes tracks and your expertise is no longer a part of that track. The panelists suggested that part of your interview process should involve you interviewing the company. You need to know what the company culture is like to make sure that the company is an appropriate fit for you.

The highlights of the session which were emphasized repeatedly were:

- Your skills are what will get you hired. If you have the skill set that a company needs, and can get the message across to the company, then you are highly qualified for that job.
- Networking is an essential tool in your job search. Knowing people and being connected to the people they know is a way to find jobs and they can sometimes help you wade through the crowds and congestion of the application process and can often help you get an interview.
- Time management, knowing how to prioritize and communication are essential to being successful in an industry job at a large company.
Faculty Careers in Research-intensive Schools

By Staton Wade, Ph.D.

The individuals in this panel included:

Dr. Marsha Cole has been an assistant professor of Biochemistry and Molecular Biology at the University of Louisville for about 6 months.

Dr. Christopher Geyer has been an assistant professor in the Department of Anatomy and Cell Biology at Eastern Carolina University for 1 ½ years.

Dr. Jennifer Freedman is in the clinical research faculty track as a Research Scientist in the Genitourinary Clinical Research Group at the Duke Cancer Institute at Duke University.

There were two major themes of questioning during this panel:

What does it take to land the coveted assistant professor position?

- Everyone agreed that the most important aspect in finally getting their position was fit within the department. This fit can often outweigh certain credentials on your CV when departments are comparing finalists and making a decision.
- While having funding (such as a K99/R00 award) coming in certainly helps, it is not necessary to land a position. Taking the initiative to apply for funding even if you don’t get it is important.
- Using connections is a good strategy for starting your job search. Don’t solely rely on posted positions. Use your collaborators and mentors to help reach out and identify potential opportunities.
- Follow instructions for the application packet. Be prepared for the interview: don’t forget about things like the human health significance of your project or knowing what you will put into your first grant.
- The process takes a long time- at least 9 months to a year.
- The research faculty track can be a good stepping stone to a tenure-track academic career instead of a second post-doc. One advantage of research faculty over research fellow or associate positions is that there are more options to apply for independent funding.

What happens once you’re hired?

- Negotiation is complicated. Start-up packages vary widely between institutions and even within institutions or departments. Ask for what you need before you arrive. You are not likely to get more out of the institution once you get there.
- Know what departmental equipment is available and make sure they have what you need or can provide for it in your start-up package.
- Getting your lab started is overwhelming and fun. It takes time and thought into things you may not be used to dealing with. Some aspects mentioned were: budgeting and allocation of funds, staffing, dealing with difficult colleagues and rules and regulations of the specific institution.
Science Communications

All scientists must communicate their ideas. The target audience can vary from academic peers to sponsors and investors to policy makers to the general public seeking to learn about the latest scientific developments. In each case we have to conduct our message in a way that caters to the specific audience. There were three diverse representatives from the field of Science Communication in this panel. Camile Grubor is a technical grant writer for Advanced Liquid Logic. Anne Knowlton is a scientific editor for the journals Current Biology and Developmental Cell. Heather King is looking forward to starting her new job as a Senior Science Communications Specialist with MDB.

Science communications is not a traditional career path for academically trained scientists to choose and all three panelists mentioned how they found there was a general lack of support from their postdoctoral mentors about pursuing this career path. This lack of support was not due to their opposition to this route but rather due to a lack of expertise and or experience in the field. All three panelists also advised that this career path has required them to switch from being a focused expert in one narrow field to one who has to become an eager learner with much broader horizons.

You have to be self-advocate and look for the opportunities to gather writing experience, advised the panelists. All three also warned the audience not to expect the transition to be easy. Several options were suggested as a way to develop and demonstrate your writing skills: open a blog, become a member of fellows’ editorial board or you can even volunteer to write for a science column of a local newspaper. All the panelists did believe that having a postdoctoral experience was beneficial in their job search.

In response to the question of what aspect of their job did the panelists enjoy the most Knowlton replied that she found traveling to conferences and visiting multiple research institutions to be extremely exciting. Gruber stated that she likes being part of growing and dynamic company where she is constantly exposed to learning and innovation.

Finally, the question arose of how you actually find jobs in the science communication career field. Networking, networking and again networking, replied all three panelists. They also advised that one of the best sources to get more information is the National Association of Science Writers.
The Science Outreach Panel had four panelists, all with diverse careers in the field of science outreach. Josh Hall, Ph.D., is the Director of the Post-baccalaureate Research Education Program at the University of North Carolina at Chapel Hill. Craig Roberts, Ph.D., is the Assistant Direct of Education at The Duke Institute for Brain Science at Duke University. Jonathan Wai, Ph.D. is a Research Scientist for the Duke University Talent Identification Program at Duke University. Jana Stone, Ph.D. is a Scientific Coordinator for Duke Center for Systems Biology at Duke University.

The panelists were able to put the Duke and Carolina rivalry aside long enough to give the audience insight into their careers. A few common aspects that led them to pursue a career in Science Outreach included a love for teaching, writing, academic administration, and professional development. When asked how they found career opportunities in Science Outreach the answers ranged from simply reading an email to strategically planning and creating the opportunity for themselves.

The overall consensus when searching included being open-minded, carefully read the job descriptions, and match your skills with what is required of the position. One member of the audience also wanted to know what a typical work day was like. It was noted that each day could be different but most of the daily tasks consisted of numerous emails, phones calls, meetings, writing grants, coordinating events, and recruiting students to name a few.

Perhaps one of the most profound questions from the audience was for the panelists to describe why their career in Science Outreach has meaning. One of the advantages of having a career in Science Outreach is the ability to work with and build relationships with people within and beyond your institution or organization. It allows for the creation and promotion of new ideas, experiences, and activities that are purposefully communicated with the public and are beneficial to the community. Another important aspect is being able to mentor students and to follow them as they progress, which is fulfilling and allows one to make a direct impact on the lives of young students.

On the other hand, the panelist did note that there are also some challenges that one might face when pursuing or obtaining a career in Science Outreach. The first challenge involves the fear or decision to pursue a non-traditional career path within academia, industry, or government, with respect to how this is perceived by mentors when a person wants to step away from the research track. The reality is that you may or may not have the support of your mentor but it is important to ultimately choose the career that you want. Other challenges included having to deal with limited funding and resources, getting volunteers, and sometimes having to take care of administrative duties when coordinating events.

In summary, all of the panelists really seemed to love their career in Science Outreach and overall the session was very informative. The panelists suggested that if you are interested in a career in Science Outreach you should let people know you are interested, make connections and network to find opportunities. You should also start getting involved in Science Outreach initiatives.
Clinical Research

By Stella Palli, Ph.D.

The Clinical Research panel participants included: Linda Grasfeder, Ph.D., RAC, a clinical pharmacology associate at ClinPharm Consulting LLC; Elaina Howard, Ph.D., a clinical research scientist at Impact Pharmaceuticals, and Joan Packenham, Ph.D., the director of the Office of Human Research Compliance at NIEHS.

All three panelists emphasized the importance of networking for transitioning from a postdoctoral position into a position in the clinical research field. Dr. Howard mentioned how her interest in scientific writing had led her to participate in extracurricular activities, medical writing for American Journal Experts, which proved to become very useful for her current job.

Dr. Grasfeder explained that she was not interested in pursuing an academic career following the completion of her Ph.D., so instead she joined the Duke Clinical Research Center for an internship in clinical research. She also pointed out that she had an interest in learning about the regulatory aspects of clinical research and so she joined the RAC exam study section, offered yearly through the North Carolina Regulatory Affairs Forum. She stated that being able to demonstrate interest and familiarization with the literature and terminology used in the field was very helpful when she applied for her current job.

Dr. Packenham explained how applying for a AAAS fellowship helped to shape her early career. She emphasized the importance of taking part in training programs geared at preparing you for a career in clinical research. In particular she mentioned the ones available in RTP, such as The Durham Technical program for Clinical Research, Society of Research Administrators (SRA) training and event, The Campbell University clinical research program, courses and programs offered at Duke University, etc. Dr. Packenham also noted that the NIEHS Clinical Research Unit regularly communicates with program directors for recruiting purposes and is a great source of information and networking for NIEHS postdoctoral fellows.

All three panelists pointed out that flexibility, communication skills, time management and organization, writing skills, and a results-driven mentality are very important qualities needed for a successful career in clinical research.

The Tips the panelists gave the audience for job hunting included the following: while certifications and additional degrees are generally advantageous, smaller companies are more likely to overlook lack of credentials and focus on transferable skills. A RAC prep course was however highly suggested as very useful tool for gaining an understanding of the documentation and acronyms commonly used in this field.

The panelists concluded by all agreeing that the tasks performed in a clinical research job are very diverse – “it never gets boring!” These tasks can include medical writing, preparation of clinical study reports, New Drug Application submissions, lots of reading, opportunities to run trials, and Investigational New Drug application preparation for client companies.
The Business of Science

By Bhargavi Rao, Ph.D.

The Business of Science panel included three panelists: Stephanie Miller and Morten Jensen are both licensing associates while Jeff Sunman is a patent agent with the law firm of Alston and Bird. The panelists answered questions about their careers to a packed audience eager to learn about their respective career paths.

Both Miller and Jensen explained that they had taken advantage of the opportunity to participate in a paid internship in the licensing offices during their time as a postdoctoral fellow. They both agreed that this step definitely helped them to secure their jobs because they had gotten valuable experience as interns. Jensen also mentioned that NC State University is currently offering internships in their Office of Technology Development.

Miller stated that her job as a licensing associate gives her the unique opportunity to read about a large variety of exciting new scientific discoveries and she is also able to learn firsthand about the new and innovative products that are coming down the research pipeline. She also added that she finds her career to be highly rewarding, both scientifically and financially.

Both Jensen and Miller described the licensing process briefly, and gave the audience an insight into what their typical day is like. Jensen said that although he has a degree in management, he believed that it was not completely necessary to obtain a job as a licensing agent. Sunman also spoke about the patent process and how patent agents interact with the licensing agents from various different companies in order to file patents for all the new and innovative technology. Sunman also mentioned that while having a law degree was not a requirement to become a patent agent, because he does not have one there is not much scope of advancement. All three of the panelists however agreed that they were very satisfied with their current jobs and did not regret the career paths they have taken.

Each of the three panelist said that they did not miss working at the bench and although the majority of their time is spent writing and reviewing documents, they still feel like they are in touch with the latest scientific advancements. Jensen and Miller both mentioned that they had the opportunity in their current jobs to move up the career ladder and eventually become directors for their respective offices. The panel session was an obvious success as many interested audience members stayed after the session was offer to ask questions and network with the three panelists.
Four panelists joined us for the Careers in Small Biotech panel session: Dr. Kelly Mercier, an Applications Scientist at LipoScience, Dr. Patrick Robertson, a Scientist II at Fujifilm Diosynth Technologies, Dr. Brante Sampey, a Study Director for Metabolon, and Dr. Stuart Williams, a Research Scientist for Liquidia Technologies. All of the panelists have transitioned into their current positions within the past few years.

Some questions focused on the differences between small biotech and big pharma companies. The panelists felt that the smaller companies tend to develop a person’s breadth of experience whereas the larger companies might develop a person’s depth of knowledge, but tended to pigeonhole people into being experts in a very narrow field. In other words, you may find yourself being a “jack of all trades” in a smaller company with a wide variety of responsibilities, ranging from a variety of scientific techniques and specialties in addition to responsibilities in the business, marketing and other aspects of the company. Time management is an important skill to balance your scientific duties along with your other responsibilities within the company.

Another difference highlighted was the way money and resources are handled in small and large companies. The panelists said that money concerns were different from small company to small company. Some companies, for example, have branches that bring in income for the research side of things such as diagnostic services and contract research services. Others bring in money through IPO’s, while still others use venture-backed partnerships. One advantage to the smaller companies and the way their money is handled is that everyone in the company has a good idea of what is happening, so it is much more uncommon to get laid off unexpectedly than it might be in big pharma where you might never “see it coming.” It is a good idea to actively keep up with your small company’s financial reports so that you can monitor the situation yourself. That being said, resources like journal subscriptions and other services which are simply expected at large institutions are not as easy to come by in small biotech businesses. The general consensus from the panelists was that when you needed resources or expertise that can’t be found within the company, you just have to get creative in how to solve your problems.

More questions focused on how to get a job within small biotech companies. Networking, unsurprisingly, was a quick answer to many of these questions. One audience member asked how the panelists had found time to network while they were doing their postdoctoral fellowships or graduate studies. The panelists responded that you must carve out time for networking, because it is essential to finding a job. They recommended that contacting “higher up” employees of small biotech businesses (CEO, CSO, etc.) can be a good way to get information about different companies and that people in these positions are often very willing to give a bit of time in order to help people just starting along their career paths.

Doing a postdoctoral fellowship before going into a career in small biotech companies is not always necessary, although one panelist mentioned that experience as a post-doc can provide maturity that will aid you in a career in small biotech. Getting a job is not as dependent upon doing a post-doc as it is
upon what skills you can offer the company. Basically, if you have the desired skill set, then you have a good chance of successfully obtaining employment at a small biotech company. Writing your resume and cover letters to match job descriptions is essential, but panelists suggested that you not confine yourself to a small “box” of skills and experience. If you see a position that is somewhat different from your specific skill set in which you are interested, don’t hesitate to find ways to expand what you know to apply for that job.

In general, the panelists really seem to love working for small biotech companies. They said that they felt appreciated in the positions they hold. Work/life balance is very dependent on the company and the type of work that you do. For some panelists, it was possible for them to take work home in order to balance work with having young children. They emphasized that interviewing is a two-way process and that when you get to that stage, you should be interviewing the company to determine if it is a good fit for you while they are trying to determine if you are a good fit for them.

Wrapping up the panel session, the panelists agreed that job security can vary tremendously between different companies. The best way to protect yourself is to develop your skill set so that you are indispensable to the company.
What kind of positions are there in the federal government? How does one apply for federal positions? What are the benefits and limitations of being a federal employee? This panel was formed to answer these and other questions by drawing insight from three individuals with experience across a wide spectrum of conducting basic research, using research to inform regulatory decisions, and developing regulations in the federal government. In addition, panelists entered their current position as little as a month ago to two years ago, and thus were able to provide a fresh perspective on the transition into a federal position.

Panelists included Dr. Jade Mitchell-Blackwood, who recently accepted a position with the U.S. Department of Agriculture as a Risk Analyst, Dr. John Cowden, a biologist in the U.S. Environmental Protection Agency (EPA) who serves as a Chemical Manager with EPA’s Integrated Risk Information System, and Dr. Kelley Spence, who serves as an Environmental Engineer in the EPA Office of Air Quality Planning and Standards. After briefly describing their scientific training and current positions, the panelists welcomed questions from those in attendance, including discussion about the following areas.

**Key tips for applying for jobs in the government:**

- Position titles may not match the focus of the group listing the position— research what type of work the lab, office, or department is doing to determine whether your experience and training might match
- Utilize key words in the job listing to describe the work you’ve done, tailor the description for each application, and include a 2-3 page resume or cover letter highlighting how your experience matches the position description
- Include all information requested in the application (e.g., start and end dates associated with previous positions) – not doing so could exclude, or delay the application in the review process
- Ask individuals in the government to review your application; connect with individuals in the government who currently are, or might be hiring in the future
- Apply for positions with short posting periods— one panelist noted that they applied for a position that already had a candidate identified and was able to maintain a relationship with the group hiring, which helped lead to a future position

**Deciding whether to work in the government, limitations and benefits:**

- Limitations:
  - Less flexibility in what research to focus on compared to academia
  - Different pay expectations than industry
- Benefits:
  - More job security compared to the “publish or perish” atmosphere often found in academia
  - Work can impact public policy and provides the opportunity to interact with government decision-makers
- Able to bring knowledge from industry to government, while maintaining flexible work hours
- Good support from management and ability to take ownership of a research project

Take home message: There are a wide range of positions in government and other sectors— if you like doing science that may impact public policy decisions then the government may be for you. Get to know individuals in federal positions, determine if it is a good fit for you, and apply to a variety of positions in areas you’re interested in.
Field applications specialists and sales professionals are critical in ensuring that scientists are aware of new equipment, supplies, and technologies and know how to use them optimally in order to generate high quality data. This panel consisted of three professionals in this field: Peter Miller, Ph.D., a field sales manager with GE Healthcare; Andy Larrea, Ph.D., a field application specialist with Pacific Biosciences, and Jacob Sawyer, Ph.D an advanced imaging specialist with Nikon Instruments. Miller started by noting that in contrast to a field applications specialist, a Ph.D. was not as necessary in sales, but that it provided numerous advantages in building trust and rapport with customers. It also helped to set him apart from other sales professionals in the company and made him a valuable resource. Sawyer noted that the most important part of this type of job is the ability to build relationships with your customers and therefore excellent people skills are a must. Larrea added that field applications and sales are related to each other as both often work under the same department head and deal directly with customers.

The panelists each described the route they took into their first job. Sawyer had done a lot of microscopy during his graduate and postgraduate research and found that he was acting as a resource, similar to a core director, to many other coworkers. This was noticed by the local Nikon representatives who said he should consider working for them as he was already doing the same work for free. Miller had some previous sales experience prior to starting graduate school so he knew he might want to go back in that direction. Near the end of graduate school he started speaking with and networking with all the sales professionals that visited his lab to learn what they liked and did not like about their employers in order to target where he wanted to apply. Larrea had seen an ad for a field applications specialist job that required much more experience than he had. Not detoured, he wrote to the company telling them about why he wanted the job and why he would be successful and was hired as their second field applications specialist. He noted that one of his favorite things about his career path was its geographic plasticity, noting that as long as he was close to an airport, he could live almost anywhere he desired.

The panelists also noted that while most of these types of positions do require travel, the amount can vary greatly from company to company and depends on the product line, the size of the market, and the density of potential customers. Typically, one might expect to travel 60-70% of the time, but some of that could be within a short driving distance. Larrea mentioned that on his days off, he has the ability work from home in his flip flops and shorts. He also does not have to think about work on the weekends which is a definite contrast to his academic days. Another benefit noted by the panelists was the competitive compensation offered and that many professionals are able to reach six figure salaries within a few years and there are also other perks such as car, cell phone, and internet allowances. One drawback mentioned was especially true for sales professionals where a large portion of income could be commission based. This could be seen as an upside with high earning potential, but also came with more financial uncertainty with the variability in income.

Miller concluded with a word of advice to the audience about how important it is to look for a company that has a good reputation as that will likely be a key to being successful in this type of career. Larrea added that customer service is always part of the product and therefore this type of career requires you
to be professional and helpful at all times. All of the panelists agreed that it was very important to never burn bridges as you never knew who you might work for or work with in the future.