

Career Development Seminar Summary – Careers in Intelligence, Defense, and Homeland Security

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December's FelCom career development seminar focused on opportunities in intelligence, defense, and homeland security. The panelists represented a diverse group of individuals working in the navy, a private company, and several government agencies. These exciting and fast-paced positions allow individuals to work as part of a team on a variety of real-world relevant scientific problems.

Our first panelist, Lieutenant Joshua Swift, Ph.D., serves as a Principal Investigator in the Undersea Medicine Department at the Naval Medical Research Center in Silver Spring, focusing his research on dysbaric osteonecrosis evidenced in Navy divers. Dr. Swift, like several others on the panel, knew in graduate school that he did not want to pursue academic research, where he felt that the impact of his research was nebulous and distant. The Navy provided the opportunity to address current questions and make an immediate and measurable impact on his fellow servicemen. Dr. Swift joined the Navy upon completion of a 6 month application process. The typical path for someone in this position is to complete 2-3 rotations (totaling 6-10 years) of research at various sites, then move on to a more advanced leadership role with less emphasis on research. Currently, his typical week consists of about 50% research (such as blast and musculo-skeletal injury) and 50% administrative duties. This translates to conducting a few research studies, being "on-call" in case of emergency (i.e. when a radioactivity sensor went off on a ship in the Pacific ocean), and working with funding agencies to request and allocate research dollars. He also works with Ph.D. students at the Uniformed Services University of the Health Sciences, where he serves as an assistant professor. He enjoys the multi-disciplinary nature of his position, but says it is difficult to uproot his family and start everything over (including his research) when he is re-assigned every 3-5 years. Skills required for this work include being able to use a systems physiology approach, integrate information, and solve problems quickly. Individuals should be motivated, social, a self-starter, not tied to a particular geographic area or research topic, an effective communicator, adaptable and professional. The salary for this position is on a sliding scale based on experience. Individuals start with \$48,000 taxable salary, \$36,000 tax-exempt salary for housing and related expenses, healthcare, and a Thrift Savings Plan (Federal employee retirement plan) that is not matched. Individuals can collect a pension after 20 years totaling 50% of the highest 3 years' salary, with an additional 3% for each year beyond 20.

The next panelist, Jennifer Blum, Ph.D., works for the independent think tank, Institute for Defense Analyses (IDA), in Alexandria, VA. Dr. Blum completed her doctoral work in astrophysics and had several excellent mentors including Neil deGrasse Tyson (recently of *Cosmos* fame). She knew leaving graduate school that she wanted to continue working as part of a team but not in academia. A friend forwarded her an email regarding a career fair that included IDA. After contacting them several times and establishing a personal connection, Dr. Blum was able to interview and start working at IDA. IDA is an independent and unbiased advisor (meaning unaffiliated with the government or any particular party or views) to the Department of Defense, the Department of Homeland Security, and a few other agencies. The group assesses and reports on military and warfare systems, acting like *Consumer Reports* for the DOD. A typical work week mostly involves being at a computer in an office, but there is also some travel. Dr. Blum travels mostly domestically (to sites including military bases or an aircraft carrier) but some of her colleagues also travel internationally. On these visits she makes unbiased observations regarding military systems, gathers data, analyzes it, and makes reports to Congress regarding her findings. The starting salary is \$80,000+ with annual raises based on performance. A unique feature of this company is that it is a flat rather than traditional pyramid organization, meaning she has many peers but few higher or boss-level employees. Because of this structure, people are able to have a lifetime career at this company

because there is never pressure to move up the ladder or find the next job. Necessary skills include good communication and interpersonal skills, being okay with people not liking you (for reporting the facts about a system versus what people want to be reported), confidence, and being able to work aggressively without coming off as rude or arrogant. She advises everyone to find several strong mentors and get all the advice you can from them, including any lessons they have learned from their own mistakes.

Dr. John Julias spoke next regarding his role as a Program Manager at the Department of Homeland Security (DHS) Science and Technology Directorate. Following graduate school, Dr. Julias spent several years at NIH/NCI (as a Fellow, Research Associate, and finally Staff Scientist). He thought he wanted to go into industry but didn't like the narrow scope afforded to industry scientists. Instead, he informally and untraditionally applied to Booze Consulting, caught someone's eye, and had a great interview resulting in a strategic hire position for vaccines and anti-virals. Dr. Julias had the opportunity to work with several individuals at Defense Advanced Research Projects Agency (DARPA), and their successful collaboration led to a full-time job. DARPA is quite unique in that it is more likely to pursue wild, innovative ideas due to its large budget and support. (DARPA now has moved to more term appointments so it always has an influx of fresh and innovative ideas.) From DARPA he was recruited to DHS through a former colleague. DHS has a broad focus including agriculture, chem/bio-defense, and threat characterization. His typical day includes program development, inter-agency planning, and resolving differences in project tasks and goals between various agencies. He enjoys the diversity of projects and that the end point is concrete and deliverable rather than open-ended and always generating new questions, as he had found in research. Important skills include a good understanding of technology, multi-disciplinary problem solving, the ability to interface with scientific and non-scientific people, knowledge of mathematical tools, willingness to learn and make difficult decisions, and objectivity. Individuals are generally hired in the GS13-15 range, or through direct hire authorities or other alternative mechanisms. Dr. Julias believes that opportunities create themselves, so find people and ask questions—especially, “What worked for you?” Be aggressive, open-minded, and open to change.

Next was Dr. Hillary Carter from the Department of State. Dr. Carter realized in graduate school that she was not fond of bench work. She then obtained a AAAS Science and Technology Policy Fellowship which totally changed her career trajectory. The Fellowship allowed her to rotate through several departments, including the State Department where she stayed despite having no international relations or foreign affairs experience. Dr. Carter works on biosecurity with foreign partners, which involves agreements on climate change, science/technology agreements, ocean and environmental policies, and the proliferation of weapons of mass destruction. She provides assistance to foreign agencies to prepare for and/or prevent bio/chemical/nuclear attacks, and her office therefore employs many MPH (Masters in Public Health) and Ph.D.-level scientists. In this position, a large portion of time is spent on meetings, conference calls and emails. Time is very scheduled. Another large portion of time is spent writing briefings for upper level staff. Additionally, up to 30% of time can be spent traveling overseas. The job is very fast-paced and exciting. There is not really time to critically analyze a problem as she is always reacting to the most recent situation, which can be both a plus and a minus to the job. Important skills include communicating clearly and concisely, being a team player, being willing to make judgment calls with partial information, and juggling several issues at once without going fully in-depth on anything.

The final speaker was Dr. Karl Erlandson who works at the Biological Advanced Research and Development Authority (BARDA) within the US department of Health and Human Services. After graduate school, Dr. Erlandson was a NIGMS Postdoctoral Research Associate (PRAT) Program Fellow here at NIH. This Fellowship allowed him to freedom to do a detail elsewhere in the government, and after about 10 different interviews he was able to spend some time at BARDA, where he was hired following his Fellowship. BARDA works closely with independent pharmaceutical companies to incentivize non-profitable but socially beneficial drugs, providing financial support for early clinical trials through licensure. Dr. Erlandson's position entails running diverse projects, and he enjoys still being able

to drive science forward even though it is on a different level than a research scientist. His typical day includes meetings, helping bosses prepare presentations to Congress, interacting with pharmaceutical companies, interacting with academics, reviewing a lot of primary data (that would otherwise not be shared with outsiders), and working as part of a large group to advise ongoing clinical trials. There is always something new to work on, such as the recent Ebola outbreak or MERS. Skills for this position include the ability to distill details into a high level explanation, quick response time, and teamwork. Salaries start in the GS13-14 range following a postdoctoral fellowship, and even higher if joining as a contractor. There are opportunities to move within BARDA, move to another government agency, or even move to a pharmaceutical company because of the unique relationships that are established.

Overall, everyone indicated they had reasonable work/life balance. Normal work hours were often spent in the office, but several individuals are on-call or have to work additional time when a situation arises, though much of this work can be addressed remotely. There is likely very little or no opportunity in these positions for non-US citizens. Most obtained their position through networking/interfaces directly with the office, although many of these types of positions will be posted on USAjobs. The panelists overall seemed very happy and engaged with their positions, with downsides being bureaucracy, the inability to fund every good idea, the distance from basic research, and the reactive nature of their duties.

Key takeaways from this panel include:

1. Network! Speak to as many people as you can and make yourself memorable. One panelist hooked his current employer by putting pick-up soccer on his resume.
2. Work to cement your written and oral communication skills. Practice as much as you can. Additionally, be sure you can translate the science into layman's terms.
3. Know what kind of scientist you want to be. Do you prefer keeping up with the latest basic research, or are you comfortable being at the implementation end? Would you rather be driving the questions or applying the answers? There is little to no bench work in any of these positions.