

Event: Careers in Data Science/Bioinformatics

Host: Career Development Subcommittee, The Fellows Committee

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Co-organizers: Youngchan Kim and Bomi Song

Panelists: Dr. Ioannis Kagiampakis, AstraZeneca, Scientist; Dr. Celine Hong, NIH, Staff Scientist; Dr. Chris Barbour, Atrium Insight, Data Scientist

Christopher Barbour (Chris) is a data scientist (statistical consulting) at Atrium Insight, where he utilizes machine learning and artificial intelligence to help industry clients maximize the power of their data. Prior to joining Atrium in October 2019, he worked as postdoctoral research fellow at the National Institute of Allergy and Infectious Diseases. He worked with the Neuroimmunological Diseases Section since 2015 through an Intramural Research Training Award and has been a co-author on numerous papers on neurological disorders and multiple sclerosis research. While working on his Ph.D. at Montana State University (MSU), Chris worked with Statistical Consulting and Research Services from August 2015 to December 2018 and provided statistical expertise to a wide range of domain experts across the Montana University System. Chris was also a recipient of the 2017-2018 Kopriva Graduate Student Fellowship at Montana State University, the 2018 American Statistical Association Biopharmaceutical Section Scholarship, and the 2019 American Statistical Association Medical Devices and Diagnostics Section Student Paper Competition. Chris told us his typical days vary, depending on what projects he's on. He emphasized the coachability of an employee to the company, because things happen quickly in a company and you should learn things fast and adapt to the current trends. Communication of complex statistical models to the general public has been a challenge but is really important to do. Organization skills to juggle among multiple tasks are crucial to work in an industry setting. You should start looking for a position in general one year ahead of your desired start date. Read the job descriptions and fill in the gaps in your knowledge for the positions. Be sure to read up on items in your resume to prepare for questions in the interview. Don't put down things that you don't know about, you will get asked about them. Informational interviews are incredibly valuable to get a sense of the career path you want to take on from someone who's doing it. Apply a lot, even just to practice interview skills. Glassdoor helps applicants with potential interview questions and the interview process. Local meetups (e.g., Data Science DC) and various conferences are great opportunities for networking. R and Python are perhaps the hottest skills to have right now, and experiences with applied statistics and bioinformatics are a must. Cloud computing experiences, usually with the Amazon Web Services, will be helpful.

Dr. Celine Hong received her Ph.D. in bioinformatics at the University of Georgia and pursued a postdoctoral training at NHGRI with Dr. Les Biesecker. After finishing her postdoc training, she joined Bioinformatics and Computational Biosciences Branch at NIAID, and subsequently joined NIAID DIR clinical sequencing initiative where she worked with the institute leadership to help plan and launch an institute-wide sequencing initiative. After a successful launch of the program, Dr. Hong transitioned as a research scientist at NHGRI to pursue her research endeavors. Dr. Hong is currently a staff scientist in Biesecker lab studying genomic data to understand and identify clinically relevant regions of human genome. Dr. Hong was awarded

NIAID director's award for years 2016-2019 and was a nominee for 2019 NIH Director's award. Dr. Hong has had experiences as a service core member, a project manager and a researcher, so she has been through the pros and cons of all of these three positions. Personal connections are vital, and communication and how to be a team player are also essential for success. Dr. Hong has learned to compromise because nothing can really go exactly as planned. For all her three transitions, she found that people are the most important element.

Dr. Kagiampakis graduated from the University of Crete, Greece with a bachelor's degree in biology. He did his master's at the same university in molecular biology and biomedicine. At 2003 he got accepted at Texas A&M University, where he graduated with a Ph.D. in Biochemistry a few years later. During his Ph.D. he worked both as a bench scientist and as a bioinformatician focusing on the development of an automatic data analysis pipeline. Dr. Kagiampakis did his postdoc at NCI Frederick working on the HIV program as a bench scientist. Then he continued my career at Johns Hopkins as a Research Associate in bioinformatics at Stephen Baylin's lab working on cancer epigenetics. After 2 years Dr. Kagiampakis moved to Medimmune, currently AstraZeneca, as a Bioinformatics Scientist. His present research is in translational medicine and more specific on biomarker development. Dr. Kagiampakis stressed that during the interview, you will need to demonstrate your competence to code, either through publications, projects done in the past, or coding on site. You will need hard proofs that you can code. Adaptation and fast learning are essential. For immigrants that are thinking about applying a green card, be sure to hire a good lawyer. The green card might be the biggest obstacle for an immigrant to get a job. Application is a number game, the more you apply, the more offers you might get.

Questions and Answers:

Q: Is it okay to apply for multiple positions in a company?

A: It is not recommended. The hiring manager can see everything on the table, for example, what positions you apply and what resumes you use. If you apply for both bench and bioinformatics, it would appear that you are not sure about what you really want to do. If you only apply to one type of job under different titles, however, it would be okay.

Q: Are publications required to get a data scientist/bioinformatician position?

A: Having a publication that demonstrates your abilities on coding and data analyses will definitely help. Alternatively, you could show your abilities by having your own GitHub repository. A few more pieces of advice for those who consider industry jobs would be (1) working on projects with AI will help. Coursera has many AI/machine learning courses. (2) You might consider an industry postdoc. (3) You need to update your LinkedIn and put keywords to increase the discoverability of your profiles. (4) Work-life balance in the industry can be challenging because you need to learn a lot of new things. (5) Getting your foot in the door of the industry, even not the ideal position, can position you on the right track.

Q: Difference between statistician and bioinformatician?

A: In general, epidemiologists/statisticians who can code are eligible for the bioinformatician positions. However, it could vary by job descriptions. Don't pay too much attention to the titles, but read carefully the job descriptions.

Q: How to transition into a project manager?

A: Dr. Hong's transition into a project manager was more due to her networking and good timing, than her project management skills. She didn't have the skills at that time and she learned on the spot. She asked the leadership to create a full-time position for her as a contractor. People skills are really important.

Q: What's the interview process like?

A: One position might attract more than 100 applicants, 10 phone interviews could be handed out, and the hiring manager could talk to 5 applicants. If you are invited to an on site interview, you are one of the 3 top candidates.

Q: Examples of a good mentor in your career development?

A: Chris said that, among more than 100 positions that he applied, all three offers he got were from his grad school or through his connections with the American Statistical Association. OITE resources at the NIH are wonderful to have and Chris was sitting in one of these FelCom events last year himself, when he didn't know about informational interviews or a LinkedIn profile. So it's never too early or too late to start attending these events and building your network.

Celine said that all her mentors contributed to her career development and she always seeks advice from her mentors. Her summer internship mentor's brother was in the industry so she got to hear an insider opinion. Her postdoc mentor connected her to colleagues both in the academia and industry so she could have a sense of both worlds.

According to Ioannis, it is great to have mentors but it is OK if you don't have one. He himself got his job without any help. He encouraged people to be persistent during their job search, and to apply a lot because it's a number game. He also encouraged to talk to your colleagues if you can't talk to your mentor.

Q: Master vs. Ph.D.?

A: In the industry, with a PhD degree, you will gain a higher starting point, and probably faster and higher promotion. Again, a short postdoc would be better if you want to transition into the industry. Think carefully about what you want to do in your Ph.D., because some techniques will go away quickly even if they are hot right now, such as RNA-Seq. The problem solving skills a Ph.D. training brings are really what the companies look for. In the realm of data science and bioinformatics, things evolve quickly and you need to keep up.

Q: Any Resume tips?

A: Prepare resume that does not exceed two pages, one page of your skills relevant to the job and one page of relevant publications. The Cover Letter is actually more important than the Resume because the recruiters look at the Cover Letter first. If they are impressed, they will read the first part of your Resume, and then read the second part. Put key words in your Resume to pass the machine screening. Utilize the OITE Resume services, including writing

sessions and mock interviews. Definitely have someone read your Resume. Use the job descriptions to write your Resume and start early to shape your Resumes, like one year before you want to start your next job.