Academia versus industry: choosing a career in drug discovery

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SJ Caswell is a Senior Protein Scientist at AstraZeneca (Cambridge, UK) as well as a member of the *Future Drug Discovery* Early Career Panel. Here she speaks to Editor Jennifer Straiton about her choice of pursuing a career in industry rather than academia, gives her advice to students looking to enter the field of drug discovery and discusses what more can be done to promote equality in STEM.

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Can you tell us about your career path to date?

I completed my A levels in Biology, Chemistry, Physics (as the only female in a class of ~15, this was a challenge) and Geography. I went on to complete my undergraduate degree in Biochemistry at Cardiff University (UK). After the second year of this undergraduate program I had the option to carry out a year-long work placement in an industrial or academic setting, therefore, I worked for a year at the MRC National Institute for Medical Research (London, UK) and ended up doing a 12-week long summer placement in a different lab following this. After finishing my degree, I completed my PhD and a short postdoctoral position at the Francis Crick Institute in London (UK). After careful thinking and exploring a number of options, in January 2019 I started working as a Senior Protein Scientist for AstraZeneca (AZ).

What are you working on at the moment?

Within the Protein Science team at AZ, I work on a number of projects in the oncology space. Our main goal is to produce high-quality recombinant proteins to support biochemical assay development, high-throughput screening, structural biology, biophysics and other downstream uses. These all form part of a drug discovery cascade, which is constituted by different screening and validation techniques.

What do you enjoy most about your work & what do you find most challenging?

Primarily, I love the collaborative working within my job – particularly within Protein Science as we interact with so many different teams. Each team focuses on a specific area of the early drug discovery process and these are all interdependent. We meet frequently to update each other on our results and make decisions together about how to progress. I also really enjoy the opportunities for development at AZ, be it learning new skills as part of my role or through a number of available courses. One thing I do find challenging (or miss) is performing the whole process of research myself. For example, producing a protein, crystallizing it and carrying out the assays. This may be seen as a benefit of academia; however, projects do progress much more quickly within this industry setting. Another challenge which is no doubt faced by every scientist is when experiments either do not work, or do not work as expected – no matter how well you plan, the science is still in control!

What was your thought process in choosing a drug discovery career in industry over academia?

This is a great question. I took a substantial amount of time considering these options and what academia and industry could each offer in both the short and long term. I spent a long time talking to people in industry and asked questions, such as 'what do you do on a daily basis?' and 'what are the main differences between academia and industry?'. Further to this, I tried to find out as much as I could about the specific academic labs I was interested in, as jobs in academia can vary greatly on a lab and location basis. I questioned which job options were available in

academia and industry and what these could lead to in the future. In addition to questions regarding the job roles, I had to ask myself a number of questions about what I wanted, including ‘do I want to be a PI?’ and ‘how do I feel about fixed term contracts?’. Finally, I weighed up all the pros and cons of each, looked at the job opportunities available, went with my gut and was fortunate enough to get a job!

In your opinion, what could be done to get more women involved in STEM, particularly in the field of drug discovery?

Differences between sexes in the workplace are frequently discussed and it has been reported that behavioral differences, in addition to gender bias, may put women at a disadvantage, with fewer women applying for specific jobs and gaining promotions or senior leadership positions.

I believe that many of these behaviors attributed to women are not necessarily negative and therefore the focus should move away from how men and women ‘should’ behave, and move toward continuous open and honest discussions about the range of behaviors observed and experiences people have had. I hope that this would identify a number of things – first, highlight unconscious bias or thought processes that both men and women may have and provide an opportunity to address and challenge these and highlight positive and negative behaviors. Ultimately, I would hope that this would create an open environment within STEM that could encourage all genders.

Very importantly, I think that those who already work in STEM, be it teachers, academics, colleagues or management need to empower and encourage those moving into or developing their careers in STEM to give them the confidence to progress. In terms of drug discovery, I am proud to say that all places I have worked provide opportunities for student work experience, frequently engage with schools and provide funding and placements for students as well as PhD positions. All of these are vital to engage and encourage the next generation.

What advice would you give to students considering a career in STEM?

Identify and pursue what you most enjoy. Speak to as many people as possible in the fields that you are interested in and find out about their jobs and career paths, this will allow you to understand the requirements of specific jobs but also start building your network. Look at the different job opportunities in the STEM field you are interested. Get as much work experience possible, this will not only build your skills but also give you a real insight into whether this is the right career path for you.

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