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Cellular Microbiology Interview - Dr Jessica Quintin

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Cell Micro Interview Jessica Quintin 28th May, 2018, IP

1. What is your research background - what did you first start working on at the beginning of your academic career?

I first studied developmental biology – I have always been passionate about how the encounter between two cells can result in a new organism. I therefore aimed at doing a PhD in developmental biology and went to one of the best laboratories, in Strasbourg, studying one of the best model systems – *Drosophila*. I joined the group of Dominique Ferrandon in the laboratory headed by Jules Hoffman. Dominique joined Jules Hoffmann's laboratory to initiate systematic genetic approaches to identify the genes involved in *Drosophila* innate immunity, after his PhD under the direction of Prof. Nüsslein-Volhard (Nobel prize recipient in 1995 for her work on the genetic control of embryonic development using *Drosophila*). Jules was subsequently awarded the Nobel prize in 2011 for his discovery of Toll as a crucial mediator for mounting effective immunity against fungi (again!) and the subsequent discovery of TLRs in mammals. Joining Dominique's group, I studied something a little different from developmental biology – because *Drosophila* was being used as a model system to study immunology as well. And I therefore started working on an amazing fungus called *Candida*. That was when I fell in love with studies of host-fungal immune interactions. So my first steps had a lot of opportunity and luck deciding my future. I am not sure if I mean luck – but I seized the opportunities that came to me and some of these were not planned initially. I am deeply enthusiastic and opportunistic person and so this suited me.

2. Have you always wanted to work in academia?

Yes, although when I was young I did not know what I wanted to do was called “academia”, what I wanted to be was to be “savant” – someone who discovers and knows things. It quickly happened I realized I needed to do a PhD and to work towards this.

3. How has your early work brought you to what you are working on now?

After working in Strasbourg I continued to work on human fungal pathogen-host interactions, but I quickly realized that to fully embrace this field I would need to also work with mammals and to study immunology in this context. So I looked for a post-doctoral in fungal immunology using mammalian models and I moved to the Netherlands to the laboratory of Professor Mihai Netea. There, Mihai had a new “area” in the back of his mind that he proposed I could work with him on this problem. For the next 5 golden years I worked on a new concept of memory in the innate immune system that has come to be called “trained immunity” using fungal model systems. This was discovered because fungal pathogens (again!) mediate this form of innate immune memory. During this time, I increased my knowledge of the field and published some highly cited papers that are the foundations of this new field. If I may, I would suggest to young scientists that they should be aware of new opportunities that come their way and to be flexible and open to work on areas that are seen as new and risky. Also be proactive and ask those people you want to work with – don't just wait for opportunities to come your way or to limit yourself to well established fields.

4. What first attracted you to your field?

Again when I started as a PhD student (thinking I will do developmental biology study in *Drosophila*) I was offered to work on a different project on human fungal pathogen using the *Drosophila* as a canonical model of innate immunity with Dominique Ferrandon. I was a

curious, and deeply enthusiastic person but I have to admit I had little or no knowledge about fungal immunology. I therefore had to make myself aware of the whole medical mycology field and to familiarise myself with this new area. I found this area to be complex and exciting. I am a firm believer that scientists have to have this fundamental excitement and enjoyment in reading about science. If you are not – do something else, or think before engaging with this long path. If you don't enjoy walking on stones- do not go hiking in the mountains.

5. What do you think the most interesting questions are at the moment in your field?

In medical mycology there are no vaccines or established immunotherapies. Establishing and taking advantage combined therapies and immunoboosting is, I think, going to be crucial in the future. So trying our best to translate to translational what we find in our laboratories, including innate immune memory, is part of the questions that needs to be addressed at the moment.

6. Where do you think fungal microbiology is headed in the future? What do we need to be thinking about?

We need to think more about targeted interventions and possibly personalized medicine in this area. Fungal infections are difficult to treat and each infection is different and we need new approaches in therapy and diagnostic's to make a difference. Immunotherapy is still too little explored and is a major opportunity for clinical interventions in the future.

7. What do you enjoy the most about your work? And what about the least?

I enjoy the most is having the independence to be a group leader and the freedom to develop ideas that interest me and the freedom to collaborate with anyone I want.

What I enjoy the least is the pressure of being a group leader! The endless administrative deadlines that come with the job. The treadmill of writing and reporting on grants and the constant evaluations that happen. But this is simply the job. But I don't think anyone tells you this when you get started and you should be warned that freedom comes with a price – which is not being able to be full time in the lab anymore! There is nothing quite like having the thrill of having your very own results. Being a group leader is also about being a manager and we receive very little training in being an effective manager or a mentor, or a financial expert a psychologist and many other things that you have not been trained for. You need to be adaptable!

8. Academia is known for being challenging in terms of high workloads and long hours - how do you strive to achieve a work-life balance?

To be honest I don't know if I achieve this – not be the benchmarks of society. But I am very happy in my work. And when I am "off" work I immerse myself in that too. It is important to me to go running, to work off adrenaline. I also enjoy the creative arts – I perform theatre and paint and these take me into different areas. However, I think these all are part of my love of science – being creative and responding to challenges. This needs to be actively organized or there never seems to be enough time.

9. What has been the most surprising result you've had in your career so far?

I don't want to tell you about some of my most surprising results! I am not sure if I am more surprised when the result confirms or refutes my hypotheses. But you have to be humble in science - some of your best ideas are simply wrong. In the end only nature is right. Sometime being wrong is an important contribution.

10. What advice would you give to other early career researchers starting out in their career given your experiences?

Do not listen to people who tell you that it is very difficult to be successful or that there is no space in the field for you to succeed. And do your best to take all the opportunities that come your way, and work as hard as you can to address your personal aims and objectives. Just go for it. If you don't try you certainly won't be successful (but still have a plan B)!

11. What has been your most rewarding experience so far? Why?

My most rewarding experience so far was the first conference that I attended and when I defended my PhD. That was the first time I presented my data. The first time I got external feedback and the first time I appreciated that others were interested in my work. It was also great to meet my peers for the first time and to realize that I could work and interact with them. I felt then that I had become part of a greater community and that I belonged to it. I realized at that time I was a scientist and part of this community. Of importance, nothing could happen without good mentoring and help from other people, and I have been helped by many people over the years. You need to interact, to try and find this help for yourself and do not let it be limited to those who work immediately with and around you.