

CELL SCIENTISTS TO WATCH

Cell scientist to watch – Victoria Sanz-Moreno

Vicky Sanz-Moreno received her first degree in chemistry and later a master's degree in biochemistry from the University of Oviedo in Spain, followed by a PhD in chemical sciences in the laboratory of Piero Crespo at the University of Cantabria, awarded in 2002. After a short postdoc in the same lab funded by a Lady Tata Memorial Trust Fellowship, she moved to the Institute of Cancer Research in London as a CRUK and Marie Curie Intra-European Fellow to work with Chris Marshall. In 2008, she received the Applied Biosystems and EACR 40th Anniversary Research Award. In 2011, Vicky started her independent research group with a CRUK Career Development Fellowship at King's College London in the Randall Division of Cell and Molecular Biophysics. In 2015, she was shortlisted for the CRUK Communications and Brand Ambassador Prize for communicating science to the public through media work. Vicky has been awarded the 2017 BSCB Women in Cell Biology Early Career Medal. Her group is interested in the actomyosin cytoskeleton and in transcription factors, and how the crosstalk between the two influences invasive and metastatic behaviour in cancer cells.

What inspired you to become a scientist?

You have to be a curious person to become a scientist. There were two big influences in my life: my father is a chemistry professor and a researcher and my mother is an English teacher. I therefore grew up in an environment, in which questioning things and learning were very much encouraged. Also, when I was at university, my grandmother died of cancer. We were very close, and this event gave me a reason to become a scientist. It was the first year of university and I was studying chemistry, so I decided to go for biochemistry afterwards, and from then onwards I've been trying to understand what's different in cancer cells compared with normal cells.

And this is still what motivates you today?

Yes, I have been driven by that from very early days. Of course, nowadays, you get motivated by specific aspects of your research. We still don't fully understand the molecular and cellular rewiring of cancer cells, especially metastatic cancer cells. Now we have more sophisticated tools to answer these questions in a more comprehensive way. Using new techniques, taking advantage of multidisciplinary approaches – which people in the lab also enjoy – and finding novel things at the frontier of two disciplines motivates me.

What questions is your lab trying to answer just now?

The lab is interested in the cytoskeleton of cancer cells and how this cytoskeleton may regulate the different behaviour of a metastatic cell – which is very aggressive and can migrate and survive in a foreign environment – and a cancer cell that cannot do any of this. We think that the actomyosin cytoskeleton is able to coordinate this difference by a very fine-tuned crosstalk with different transcription factors in the nucleus. This is based on our transcriptomics experiments. Previously we've been focusing on cell migration and



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metastatic dissemination. This is a very important problem, but now we are also starting to explore other areas of tumour biology in which the coordination of the cytoskeleton and transcription might also be essential. For example, inflammation that promotes tumours, mechanosensing and the cross-talk with other, non-cancerous cells in the microenvironment. We're trying to broaden our view on how manipulation of the cytoskeleton will impact tumour biology.

What challenges did you face when starting your own lab that you didn't expect?

I became a mother at the same time I got my first position, so I was learning how to do both things. It actually helped me not to become too worried or too obsessed about either of them. Another challenge was the feeling of having other people's futures in my hands – the career of someone in my lab is, in part, my responsibility. That feeling was tough, probably because I hadn't thought about it enough when I had been a PhD student or postdoc.

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Vicky and her son Oliver, enjoying a day out in London

So your comments during a scientific discussion might have a massive influence on the whole project, and more weight than before?

Yes, so I tend to revisit everyone's projects every so often, and no-one gets an unfair amount of time. The students will have equal amounts of my input. Of course, projects at a certain point need more attention, but I make sure I compensate for that later.

How are the challenges you're facing now different?

The big challenges, now that I've run a lab for six years, are funding and publishing. Funding – in the current climate – is the biggest challenge. You want to make sure people have enough resources so they can pursue their projects in the best way possible. As for publishing, I was quite spoilt as a postdoc because I never had a paper rejected; so now, when we do get a paper rejected, I need to cheer up people so they won't be demoralised. We'll just try another journal as they might see it in a different way. You need to encourage people not to get too sad about this and to believe in their own work.

“I see how people ‘grow’ and think about the perfect experiment, and for me, that's been rewarding.”

Are you still doing experiments yourself?

At the moment I really don't manage to do experiments anymore, but I'd certainly go back to it if needed. But, although I initially thought I'd miss doing experiments, I really don't. I get equally excited when my co-workers show me their experiments. Actually, I like it even better, especially if it's someone else's idea that is driving the data I am seeing. I see how people 'grow' and think about the perfect experiment, and for me, that's been rewarding.

How do you achieve a work/life balance when you're trying to establish yourself as an independent investigator?

I don't think you ever do, but at least you're constantly trying. What helped me at the beginning – and still does – is that my husband is very supportive and also a scientist. We help each other as much as we can, split the tasks fifty-fifty and take turns. One thing we changed from six years ago, when our son was born, is that we're not

trying to do everything together. Let's say I take our son to a birthday party and my husband has some time to himself. We're giving each other a bit more space, and when we're with our child we have a bit more quality time.

What is the best science-related advice you ever received?

Both my PhD supervisor Piero Crespo and Chris Marshall were amazing mentors. There's a book full of advice, but two key points stand out: I used to do really big experiments and Chris told me that the question asked was good, but to answer it I would need a simple experiment, to be more reductionist in the approach. Another piece of advice was that the best pair of hands is your own when starting the lab. Thus, in the first years I was very present in the lab and showed everyone the core techniques. Now, even if I'm not in the lab, I am present and people can reach me; that was very good advice from Chris.

What is your advice on establishing good collaborations?

It's one of the things I enjoy most; you are creating synergies by collaborating. We have, and had, very successful collaborations at the Crick Institute, and in Manchester, Spain and France to name a few. In fact, some of my PhD students are co-supervised, with equal responsibility from both supervisors. You may be coming from a completely different angle, but you get interesting results and perspectives by collaborating. But, I guess, at the beginning you should be careful that you don't collaborate with too many people because you'll lose focus – it's about finding a balance.

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What elements, inside or outside the lab, have been key to your success so far?

It's certainly the collaborations, and that goes back to the fact that I truly believe in working together. I don't think you can achieve the same on your own as you can working in a team. I am a very outgoing person and when I go to conferences I enjoy discussing our work with other researchers. Many of my collaborations have started this way. The people in my lab like this idea of team work as well. They all have their own projects, but then a couple of things they're doing in collaboration with someone else.

Could you tell us an interesting fact about yourself that people wouldn't know by looking at your CV?

I do love art and dancing. I think there's a component of creativity in art and science that is very similar. I don't play an instrument but I enjoy listening to different types of music, to both focus and relax. I would write a grant with classical music, correct a student's report with bossa nova or, if I really just want to disconnect, I'd listen to rock 'n' roll – good old Led Zeppelin. On weekends, I dance with my son to unwind – he likes dancing too. We also started to go to jazz festivals for kids or classical music festivals.

Can your students sense your moods depending on the music that is coming out of your office?

Well, they actually gave me a little calendar with little faces representing moods. I don't know if it has something to do with that! *laughs*

Vicky Sanz-Moreno was interviewed by Manuel Breuer, Features & Reviews Editor at Journal of Cell Science. This piece has been edited and condensed with approval from the interviewee.