Jose Silva studied biology at the University of Porto, before leaving Portugal to obtain a PhD degree at Imperial College London in the laboratory of Neil Brockdorff. He did his postdoc with Austin Smith at the University of Edinburgh as an EMBO fellow. In 2008 he started his own group at the Wellcome Trust – Medical Research Council Cambridge Stem Cell Institute at the University of Cambridge. Jose is currently a Wellcome Trust Senior Research Fellow. His lab studies the biology of induced pluripotency with particular focus on the molecular mechanisms that underlie this process.

What motivated you to become a scientist?
My motivation was being curious. My family is religious and everything was kind of explained by religion but I have this need of knowing more about life. There was a news piece on TV – the presentation of the Nobel Prize; I don’t even remember who it was but that inspired me. I think I was 14 years old and, so, I made up my mind that I wanted to follow biology and be a scientist.

You work on nuclear reprogramming and induced pluripotent stem cells. What are the specific questions that your group is currently trying to answer?
We know what the reprogramming players are but we don’t really understand how it all works. The questions we are addressing are related to trying to understand what the molecular mechanisms are, by which the key reprogramming factors work. We know there are transcription factors that mediate reprogramming; but how do they do it? These transcription factors are encoded by genes that are expressed in our target cells – pluripotent cells; specifically, they are Oct4, Nanog and Sox2. Some are Yamanaka factors, others are encoded by genes that I have identified as having nuclear reprogramming capacity. Nanog was, actually, the first identified gene with nuclear reprogramming ability in the conversion of somatic cells back into pluripotent cells. I published this work just a few months before the Yamanaka discovery. Since then, I continued studying how Nanog mediates reprogramming.

What are the experimental roadblocks that you faced and how did you address them?
Well, you’re always facing experimental roadblocks. To me, whenever they appear I see a great opportunity to make a relevant finding. The induced pluripotent stem (iPS) cell system had clear advantages over the cell fusion system I was using, because you could define your factors and at the end generate diploid pluripotent cells. But when I adopted Shinya Yamanaka’s system, the only cell products I was making were these highly proliferative cells that wouldn’t undergo the conversion into iPS cells. I found inspiration in the work that my colleagues in the lab were doing. They were defining new culture conditions to maintain pluripotent cells’ self-renewing, and when I used their conditions in the reprogramming system they turned out to be instructive in terms of inducing these cells to undergo reprogramming into iPS cells. So out of an experimental roadblock, I ended up making what was a very interesting finding at the time, which highlighted the importance of the culturing environment for the reprogramming process. When you face difficulty, it can actually be quite exciting.

“However [experimental roadblocks] appear I see a great opportunity to make a relevant finding.”

How did you establish your collaborations and what advice on collaborating would you give to someone who is planning to start their own lab?
Many of the collaborations I established came naturally. It was easy to collaborate with people I knew from my time as a postdoc, and it...
When you started your own lab, were there any challenges you faced that you didn’t expect?
The greatest challenge was that I thought it would be easy to obtain grant funding. At the start – because I’d done OK and I had a few offers to go to different institutes to start my own lab – I had the impression that it was going to be easy to obtain funding. I was quite fortunate that I got the first grant that I applied for, but there were some issues. It was my first application and I was not well advised as to how much the costs would be, and so this grant was a bit short on funding. Essentially, I had the budget for one post and limited research consumables in a field which is highly competitive and where experiments can be quite expensive. I needed to do certain adjustments, and it was hard to go through that 5-year period with what was quite limited funding.

Do you think taking time for science outreach activities should be more of a priority for scientists?
I think it’s important for the general public to hear from the scientists directly, to be educated about what we really do in the lab, and not to just have this view of science from what they read in tabloids and newspapers. At the same time, it’s actually quite a rewarding experience for the PI. I’ve been surprised with the questions I’ve had from the lay audience. They tend to be quite interesting!

“…it’s important for the general public to hear from the scientists directly…”

I asked you earlier about why you became a scientist. What motivates you now?
Science is a bit like an addiction. I’d say I’m continuously excited with the next thing: the next question, the next result. It’s actually quite a rewarding experience for the PI. I’ve been surprised with the questions I’ve had from the lay audience. They tend to be quite interesting!

Could you share with us an interesting fact about yourself that people wouldn’t know by just looking at your CV?
I have a passion for football. I support Benfica, my local team back in Portugal. I follow the results and I watch the games on the computer whenever I can. I also, kind of passionately, follow the Portuguese national football team. I’d say that that is probably my second obsession.

Video interview
An additional, short video interview with José Silva is also available, and can be viewed directly here: http://jcs.biologists.org/lookup/suppl/doi:10.1242/jcs.180257/-/DC1 or on the JCS Interviews page: http://jcs.biologists.org/content/cell-scientists-watch

José Silva was interviewed by Anna Bobrowska, Editorial Intern at Journal of Cell Science. This piece has been edited and condensed with approval from the interviewee.
Video Interview Short