

## FIRST PERSON

# First person – Etienne Boulter

First Person is a series of interviews with the first authors of a selection of papers published in Journal of Cell Science, helping early-career researchers promote themselves alongside their papers. Etienne Boulter is first author on 'Cyclic uniaxial mechanical stretching of cells using a LEGO® parts-based mechanical stretcher system', published in JCS. Etienne is a Research Associate in the lab of Chloé Féral at the Institute for Research on Cancer and Aging (IRCAN), Nice, where he has a long-lasting interest in the study of cell adhesion and related signaling processes, which currently focuses on mechanical signaling.

### How would you explain the main findings of your paper in lay terms?

We were simply trying to create a simple and affordable system to stretch cells in culture. A system that could be assembled and used by cell biologists with little background in physics. We have a long-lasting interest in studying cell adhesion and its associated signaling. As we recently focused on the crosstalk between mechanical signaling and cell metabolism, we studied the role of the bifunctional protein SLC3A2, which Chloé Féral, head of the lab, has investigated in the past. Along the course of this study, we started developing our own tools including this cell stretching system.

### Were there any specific challenges associated with this project? If so, how did you overcome them?

We are not engineers nor physicists. That is what motivated us to design such a device but simultaneously constitutes a weakness in the process of developing such a tool. We weren't pretending to be expert physicists either – we had no knowledge or experience in mechanical device design, engineering or assembly so we had to find suitable ways and means to design and assemble the device, hence our approach to use LEGO® bricks.

### When doing the research, did you have a particular result or 'eureka' moment that has stuck with you?

There was no particular 'eureka' moment with this project – more of an increasing awareness that the device we designed on the side of another project may indeed be unexpectedly robust and useful, at least way beyond our initial expectations!

### Why did you choose Journal of Cell Science for your paper?

Journal of Cell Science is one of few journals that still publishes method articles, in the form of Tools and Resources. Our device is not fancy and does not constitute a major breakthrough on a specific technique but can be useful to scientists with limited knowledge in physics and limited access to financial and technological resources. We think of Journal of Cell Science as a rigorous down-to-earth journal that seems to appreciate such a value and contributes to the advancement of cell biology. We also like very much the fact that JCS editors are academics that have to face similar challenges as their authors on a daily basis.

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Etienne Boulter

### Have you had any significant mentors who have helped you beyond supervision in the lab? How was their guidance special?

Indeed, I have been very lucky to interact with a number of exciting and high-profile scientists at various stages of my career. I did my PhD in Nice, France, with Ellen Van Obberghen-Schilling back in the early 2000s at the now defunct ISDBC (now IBV), which was directed at the time by Jacques Pouyssegur. We were very lucky to share the same floor and lab space with Jacques' team and we held common lab meetings. He was, and still is, world-renowned for his work on cell proliferation and cancer. As a graduate student at that time, I cannot say that I was able to fully understand and appreciate the depth of all the scientific discussions, but he was such a brilliant mind and passionate individual that he definitely influenced me on pursuing an academic career. Then, in 2006, I joined the lab of Keith Burrige at UNC Chapel Hill (NC, USA) as a postdoc to work on Rho GTPases. He has definitely been my most influential mentor, a lifetime role model and ever since, a friend. His mentoring strategy was indeed very challenging for a young postdoc. I remember sitting in his office very early on and Keith asked me "what do you want to do?". That was the deal: once in his lab, you could develop your own project. That was challenging because you had to face and overcome the difficulties on your own – with some guidance of course – but at the same time extremely rewarding because your project was really yours and you could take it once you left. I think he thought of himself more like a support to his trainees' developing career. This turned out to be a wonderful time and great training to become an independent investigator, and I will never thank him enough for that.

### Who are your role models in science? Why?

Keith Burrige is definitely my main role model in science. Not only is he an amazing scientist but he is also one of the kindest people I know. He always puts the individuals and their well-being at the forefront; science would come second but not at the expense of your health and well-being. I have learned that from him and I try to apply it every day with my lab mates. Others have also influenced



**Team brainstorming for the cell stretching system.**

me or shared advice that helped or mentored me in one way or another: Channing Der, Jacques Pouysségur, Vytas Bankaitis, Franck Polleux, Reinhard Faessler...

#### **What's next for you?**

I guess I'll keep doing science at the bench. It's what I like most. Currently, our group has some interests in understanding how focal

adhesion proteins regulate mechanosensing. I am also always exploring the possibility of developing new tools and I have spent quite some time trying to set up a magnetic tweezers system on a motorized LEGO® arm but we face new challenges that stretch our physics knowledge to its limits.

#### **Tell us something interesting about yourself that wouldn't be on your CV**

Among other things, I have always enjoyed outdoor activities such as rock climbing and hiking, especially living close to the Alps during my time in Nice. Recently, I picked up trail running again after a long hiatus in outdoor activities owing to the time constraints when having young kids. Although I am a pretty lame runner, I really enjoy running out there, in the backcountry and I must confess I became quite obsessed at some point with this crazy race held in Tennessee, not far from North Carolina ('The Barkley Marathons') and its race director Lazarus Lake. Not that I ever envision to even apply to such a race, but I think he also is a very brilliant mind in his own way. I think there are lessons to be learnt from his work and quite frankly, I also just enjoy his laid-back southern attitude! Also, beside my love for LEGO® bricks, I am a North Carolina BBQ aficionado!

#### **Reference**

**Boulter, E., Tissot, F. S., Dilly, J., Pisano, S. and Féral, C. C.** (2020). Cyclic uniaxial mechanical stretching of cells using a LEGO® parts-based mechanical stretcher system. *J. Cell Sci.* **133**, 234666. doi:10.1242/jcs.234666