

FIRST PERSON

First person – Julien Pernier

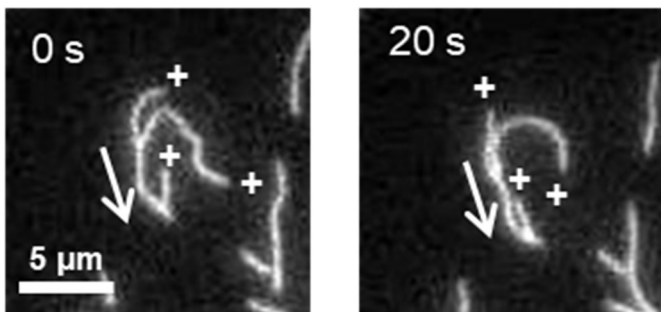
First Person is a series of interviews with the first authors of a selection of papers published in Journal of Cell Science, helping early-career researchers promote themselves alongside their papers. Julien Pernier is first author on 'Myosin 1b flattens and prunes branched actin filaments', published in JCS. Julien conducted the research described in this article while a postdoc in Patricia Bassereau's lab at the Institut Curie, Paris, France. He is now a postdoc in the lab of Christophe Le Clainche at the Institute for Integrative Biology of the Cell (I2BC), Gif-sur-Yvette, France, investigating the roles of actin-binding proteins in actin network dynamics and organization.

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

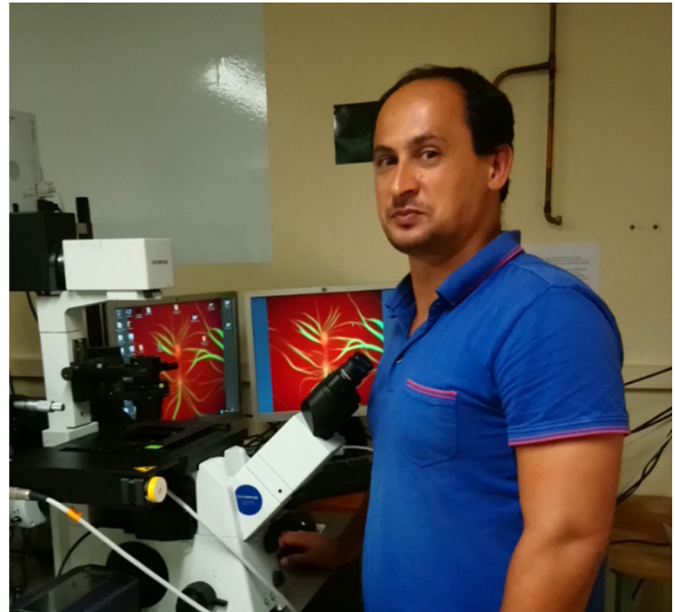
The organization of the cell and its dynamics are controlled by the balance between various networks of actin filaments, which are composed by the association of a protein called actin. One such network is formed of linear filaments; another is formed of branched filaments. Motor proteins, like Myosin 1b, that are associated to the cell membrane can glide on actin filaments. The aim of my study was to mimic this cellular phenomenon by reconstituting a system with the different components, in order to understand the role of Myosin 1b in the balance of these different networks, using microscopy. This work reveals that Myosin 1b favors the formation of a linear actin network and reduces the formation of a branched network.

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

The most difficult challenge was the combination of many purified proteins in my experiments. Getting all of the active proteins together took a lot of time and effort.



Myosin 1b reorganizes branched structures. Time-lapse images of stabilized branched F-actin sliding on Myosin 1b, showing a change in the angle between mother and daughter filaments. Crosses indicate barbed ends, and the white arrow corresponds to the direction of sliding.



Julien Pernier

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

The 'eureka' moment came when we observed branched filaments gliding on Myosin 1b, then large variations in the orientation of the branches relative to the mother filaments and, finally, detachment of branches.

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

I published a paper a few years ago in Journal of Cell Science. The role of myosin in actin organization and dynamics is one of the themes of Journal of Cell Science, so we decided to try this journal.

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

My first mentor in the actin world is Marie-France Carlier. I would like to thank her for everything she taught me and for the daily scientific discussions. I would also like to thank Patricia Bassereau and Evelyne Coudrier for giving me the opportunity to join the Institut Curie, to expand my knowledge in cell biology and biophysics, and to work with Myosin 1b. I thank Christophe, my current supervisor, for his advice.

What's next for you?

I have now joined the team of Christophe Le Clainche as a postdoc in the Institute for Integrative Biology of the Cell (I2BC). The objective of my new project is to decipher, through *in vitro* reconstitution, the elementary links between actomyosin force, integrin regulation and extracellular matrix properties that underlie focal adhesion mechanosensitivity. I have also applied to the 'CNRS concours' to obtain a permanent position in this lab.

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

I love to play handball, which allows me to stay balanced.

Reference

Pernier, J., Morchain, A., Caorsi, V., Bertin, A., Bousquet, H., Bassereau, P. and Coudrier, E. (2020). Myosin 1b flattens and prunes branched actin filaments. *J. Cell Sci.* **133**, jcs247403. doi:10.1242/jcs.247403