

## FIRST PERSON

# First person – Francesco Baschieri

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. Francesco Baschieri is joint first author on 'Frustration of endocytosis potentiates compression-induced receptor signaling', published in JCS. Francesco is a postdoc in the lab of Guillaume Montagnac at the Institute Gustave Roussy, Villejuif, France, where he is investigating how cells interpret and respond to physical forces.

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

Cancer cells often overgrow in small spaces, which causes them to experience compression. To study what happens in these conditions, we put some cancer cells under a weight and observed that their capacity to internalize material from the outside (a process called endocytosis) was reduced. Additionally, cell compression led to the release of HB-EGF, a ligand of the EGF receptor (EGFR), a receptor often activated in cancer. We showed that the reduction of endocytosis synergized with this pathway to hyperactivate EGFR under compression. We also observed that other receptors could hijack frustrated endocytosis to increase signaling under compression and possibly increase the fitness of cancer cells.

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

Visualizing the signaling receptors that we studied (EGFR and c-Met, mostly) requires TIRF microscopy, but we didn't have such a system in our institute. This study was one of the reasons that convinced the microscopy platform at our institute to add a TIRF module to one of their microscopes. Then, we had to find a way to make this imaging technique compatible with our homemade cell compression device, and it took some training to be able to image the same cell before and after compression.

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

The first time we tried to compress cells under the microscope and we managed to see the EGFR going into clathrin-coated endocytic structures, we started to believe that this project was actually do-able!

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

I share the same vision of open science as the JCS editorial board, and I deeply appreciate the efforts of JCS in helping early-career researchers and in supporting innovative publishing practices, such as the new project Review Commons.

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

Besides Dr Guillaume Montagnac, my current supervisor, I receive significant guidance from my PhD supervisor Dr Hesso Farhan. Not



Francesco Baschieri

only is he always open for collaboration, but he also spends quite some time answering my doubts about how to pursue an academic career.

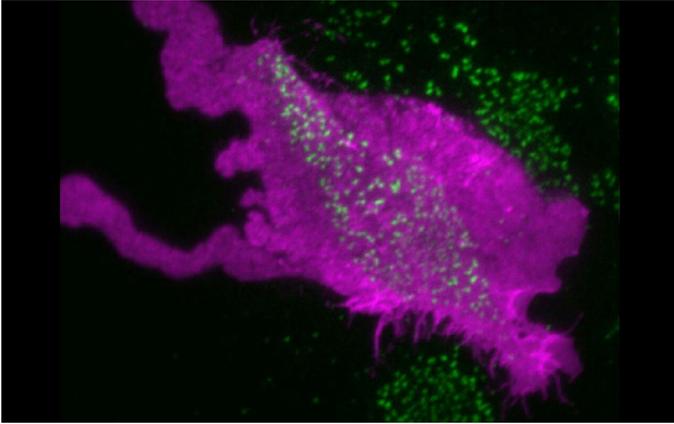
### What motivated you to pursue a career in science, and what have been the most interesting moments on the path that led you to where you are now?

I had a very talented biology and chemistry teacher in high school. Even though she was close to retirement, she always kept up-to-date and her lessons were full of new notions that we could not find in our textbooks. The idea that biology was such a new discipline convinced me to enroll as a biology student at university. During my Master's, I had the opportunity to meet a few international PhD students on a summer school, and this convinced me to go for a PhD. Of course, serendipity played an important role all along my path, making me find labs with friendly and supportive people. Working in a pleasant environment is always a good experience that prompts you to continue on the same path.

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

Despite me being a huge fan of complicated techniques (especially concerning microscopy), I admire stories from old scientists who made incredible discoveries with almost no tools, using simply their observation and reasoning. The example of Rita Levi-Montalcini really struck me: against all prejudices of her time, she studied medicine, she performed experiments on chicken eggs in her room, and she even had to flee, abandoning all her results, twice!

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HeLa cell expressing AP2 tagged with mCherry (in green) and the EGF receptor tagged with GFP (in magenta). Cells were treated with the metalloprotease inhibitor Batimastat and subjected to compression for 45 s.

And despite all that, she was awarded the Nobel Prize for her works on NGF!

#### What's next for you?

I still have some time to spend as a postdoc in my current lab and I am currently working on another mechanobiology project, this time more focused on cancer cell migration.

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

I adore snow, but I am sort of cursed; wherever I go, it never snows. I even went to visit a couple of friends in Oslo at the end of February this year and I managed to find the only weekend of the past winter where temperatures stayed constantly above the zero!

#### Reference

Baschieri, F., Le Devedec, D., Tettarasar, S., Elkhatib, N. and Montagnac, G. (2020). Frustration of endocytosis potentiates compression-induced receptor signaling. *J. Cell Sci.* **133**, jcs239681. doi:10.1242/jcs.239681