

FIRST PERSON

First person – Ana Loncar

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. Ana Loncar is first author on 'Kinesin-14 family proteins and microtubule dynamics define *S. pombe* mitotic and meiotic spindle assembly, and elongation', published in JCS. Ana is a PhD student in the lab of Phong Tran at Institut Curie, Paris, France, investigating spindle assembly dynamics and chromosome segregation.

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

Cells divide to make more cells (a process called mitosis), or to make reproductive cells such as sperm and egg (a process called meiosis). Both mitosis and meiosis require cells to make a spindle, which drives chromosome separation. It is generally accepted that mitotic spindles can be different from meiotic spindles. However, the precise similarities and differences are not known. My work is the first to compare mitotic and meiotic spindles in the same organism, fission yeast. I showed that meiotic I spindles are larger and more dynamic than mitotic spindles. The differences can be related to precise changes in the number of molecular motors (proteins which produce force) and changes in microtubule dynamics (polymers which form the spindle). This finding has implication for mitosis and meiosis in human cells, because molecular motors and microtubules are conserved throughout evolution.

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

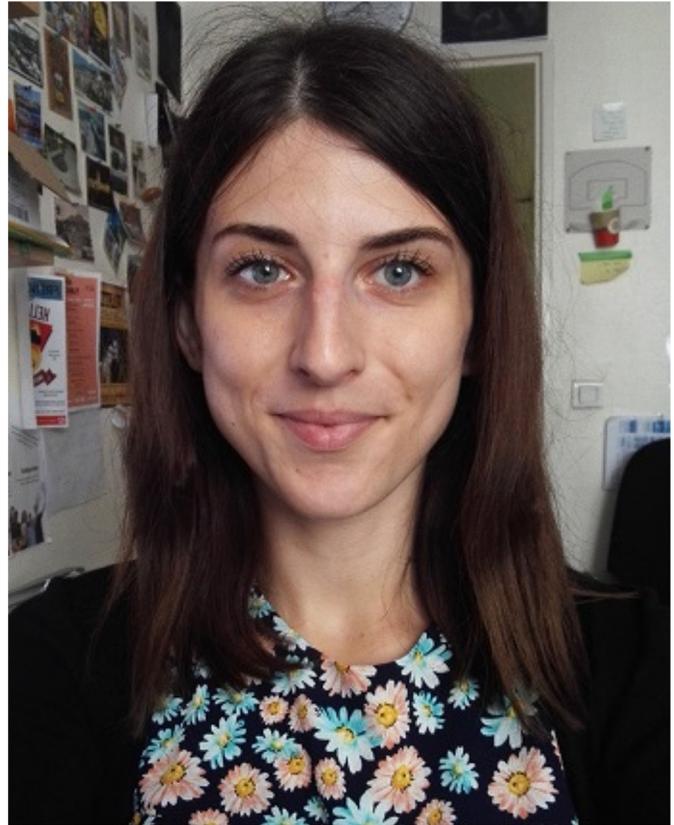
Well, into the second year of this project on comparing mitotic and meiosis spindles, I discovered that there were mistakes in some of the key strains used in the study. Correcting these mistakes took 6 months, and changed the initial conclusions of my project. The erroneous strains were created previously, and I used them without first confirming that they were correct. I lost valuable time in the already short PhD training period. This was a very painful lesson. In retrospect, I learnt to appreciate this mistake, because it taught me to be more critical and careful in my experiments.

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

The start of my PhD was the first time I worked with a spinning disk microscope to film cellular dynamics. Seeing the fluorescent microtubules assemble a spindle in real time was so exciting, and made me realize how quantitative live-cell imaging can provide answers to some of my scientific questions. Even though fluorescent imaging is now routine in my work, I still get the same excitement each time I tag and view a new protein through the microscope.

Ana Loncar's contact details: Institut Curie, 12 rue Lhomond, 75005 Paris, France. E-mail: ana.loncar@curie.fr



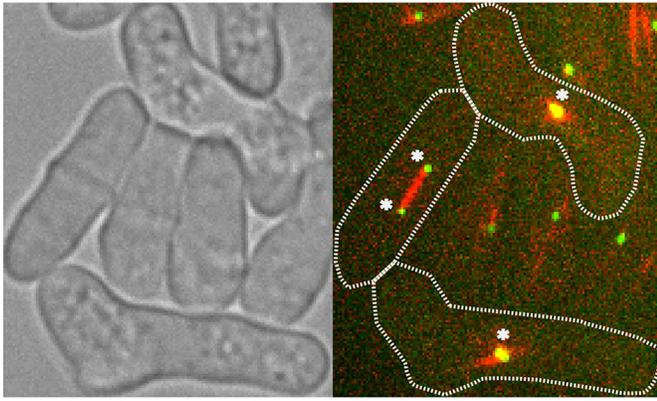
Ana Loncar

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

Over the years, I have enjoyed reading many papers in the Journal of Cell Science. The journal publishes many papers on the microtubule cytoskeleton and its diverse functions, including spindle assembly dynamics. Thus, my work on the mitotic and meiotic spindles fits naturally well with the journal.

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

My co-authors Phong Tran and Sergio Rincon were essential during my PhD training. As head of the lab, Phong is one of the most positive and optimistic people I have met. You can be sure that he will take his time to stop at your bench, share his excitement about a new finding, and accompany it with a little motivational speech. He has a mantra of three things that make a good scientist: ability to generate new ideas, ability to test the ideas, and ability to communicate the results. I like this mantra, and think it can be applied to other aspects of life beyond science. Former postdoc Sergio taught me methods in fission yeast. He always loved to be at the bench, but jokingly warned us to not act like him, but instead seek a balanced personal and work life. Finally, a special thank you goes to Ivan-Kresimir Svetec and members of his team at the University of Zagreb. They shaped my early years as a student, and encouraged me to pursue the PhD.



Spindle assembly in *cut7Δ pk11Δ* mitotic and meiotic cells. Left panel, DIC photo of mitotic and meiotic cells in the same field of view. Right panel, fluorescence image with tubulin in red and the spindle pole body in green. Mitotic cells assemble a bipolar spindle and meiotic cells assemble monopolar spindles. Asterisks mark spindle poles. Scale bar: 5 μ m.

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?

Toward the end of my university years in Zagreb, Croatia, the country was in political turmoil as the government failed. At about the same time, a university friend lost her battle with leukemia. These tragic events made me realize that life is precious. It galvanized my need to make the most of my life, and take advantage of what life may bring, wherever that may be. I decided to pursue a

scientific career, and I wanted to do so in an outstanding training environment. I was fortunate to be chosen for the Marie Curie fellowship, which led to my relocation to Paris, France.

Who are your role models in science? Why?

There are too many to name, but I will single out my co-author Anne Paoletti. She seems to have an encyclopedic knowledge of the relevant scientific literature, has good ideas on how to address scientific conundrums, and is skilled at critically evaluating presented data. She always seems to do twice as much as others, and her day appears to last longer than 24 h! Yet, she is always available to offer advice, and selflessly offers help in navigating the stereotypical French bureaucracy. She is a great role model, not just as a scientist, but also as a woman.

What's next for you?

I would like to return to my country Croatia, and use my experience to improve the way science is thought about and taught at schools. I would love to be more invested in education and/or science popularization. I plan to orient myself towards such career options in the future.

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

I love to run and enjoy playing Mario Kart competitively.

Reference

Loncar, A., Rincon, S. A., Ramirez, M. L., Paoletti, A. and Tran, P. T. (2020). Kinesin-14 family proteins and microtubule dynamics define *S. pombe* mitotic and meiotic spindle assembly, and elongation. *J. Cell Sci.* **133**, jcs240234. doi:10.1242/jcs.240234