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.
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