© 2022. Published by The Company of Biologists Ltd | Journal of Cell Science (2022) 135, jcs260167. doi:10.1242/jcs.260167

FIRST PERSON

First person – Aude Pascal

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. Aude Pascal is first author on 'Annexin A2 and Ahnak control cortical NuMA–dynein localization and mitotic spindle orientation', published in JCS. Aude is a research assistant in the lab of Régis Giet at University of Rennes, France, who is particularly interested in developmental biology. She has always been struck by the fact that a whole organism displaying multiple functions arises from a single cell. For this reason, she has oriented her research on mitosis and meiosis to study the different steps, components and structures involved in these processes.

Aude Pascal

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

During mitosis, the mitotic spindle attaches sister chromatids to equally segregate the genetic material into the two daughter cells. The orientation of the mitotic spindle within the cell will also define the position of the daughter cells in the tissue. In this study, we have identified two novel cortical mammalian proteins (annexin A2 and Ahnak) that are implicated in the regulation of the anchorage of the mitotic spindle's astral microtubules to the cortex. Furthermore, we show that these two proteins transduce cell adhesion information to the mitotic spindle.

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

While progressing in the research project, the need to endogenously tag the giant protein Ahnak (700 kDa) became apparent. I therefore set up the CRISPR knock-in technique in human cells in our laboratory. The design and cloning of the vector to insert GFP via homologous recombination was a real technical challenge. The multiple and valuable exchanges with E. Gallaud who had some CRISPR experience in flies and C. Benaud who had some expertise in mammalian cells have allowed me to successfully overcome this challenge.

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

The 'eureka' moment was when we obtained the GFP knock-in cell population using CRISPR/Cas9 coupled to FACS sorting. For the first time, we were able to observe, using live fluorescence microscopy, the endogenous Ahnak protein within cells and to follow its cortical localization throughout mitotic progression.

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

JCS has been publishing excellent papers in the field of cell biology for several decades. The journal has maintained a remarkable level of quality. We appreciate the professionalism of the editors during the manuscript evaluation process until the final editorial decision.

Aude Pascal's contact details: Université de Rennes, CNRS, INSERM, IGDR (Institut de Génétique et de développement de Rennes) - UMR 6290, ERL U1305, F-35000 Rennes, France.
E-mail: aude.pascal@univ-rennes1.fr

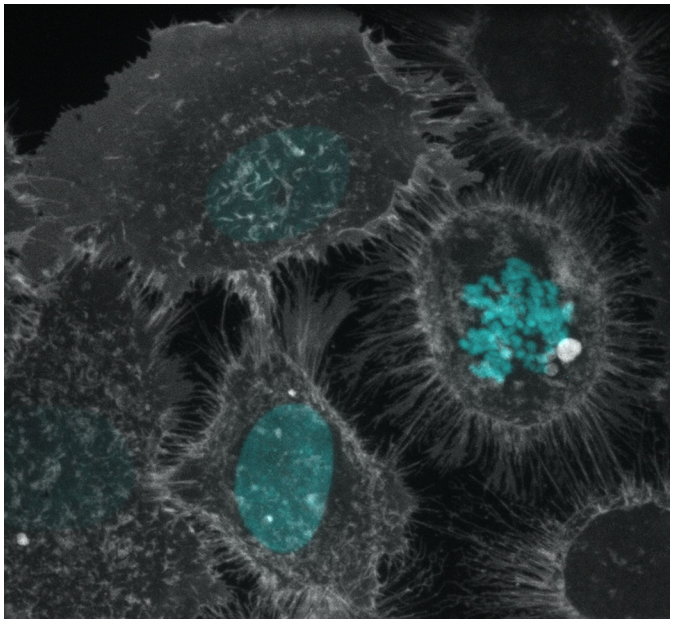
Have you had any significant mentors who have helped you beyond supervision in the lab? How was their guidance special?

As a research assistant, I have to point out that this manuscript is a team work. This is the aspect of academic research I enjoy. This work gives me the opportunity to interact with students, post-doctoral fellows and researchers coming from different backgrounds and nationalities. Combining our various skills allows research to move forward. My three co-authors (C. Benaud, E. Gallaud and R. Giet) in this publication are the three mentors that have supported me, each with their own valuable qualities.

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?

When I began my career 20 years ago, we performed old-school cloning. DNA was purified by phenol:chloroform extraction, and cloning performed by restriction enzyme digestion and subsequent ligation. We then verified our sequences ourselves with dATP35 sequencing. These sequence reactions were then separated on large acrylamide gels, which were dried and subjected to autoradiography. It was a time-consuming process. In the past years, the rapid technical evolution in the field of molecular and cell biology has been an ongoing challenge. Having to keep learning new techniques kept me motivated to perform my work. For instance, the emergence of nucleic acid purification kits, high-throughput sequencing and cloning by recombination has changed our approach to research. Furthermore, access to live and high-resolution microscopy enables the observation of live specimens in more concrete and interesting ways. All the technical progress in

Journal of Cell Science (2022) 135, jcs260167. doi:10.1242/jcs.260167



Membrane and DNA staining of a HeLa cell in interphase and upon entering mitosis. The membrane is visualized via MyrPalm–GFP and DNA with DAPI.

these last few years has caused our work in the research laboratory to evolve and remain stimulating.

What's next for you?

While remaining in my research team, I wish to be more involved in training and helping the students we host in the lab. The success of their research work is key for the pursuit of their career. On the scientific side, I will continue to study microtubules and their associated proteins, and combine both basic research with studies associated with clinical pathologies.

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

I am fond of art. I love to go to museums and see art exhibitions. I have recently visited the exhibition about 'Cézanne and Kandinsky' in Paris. It's an exhibition in immersion at the 'Atelier des Lumières'. You can go and visit it until December 2022, so don't miss it!

Reference

Pascal, A., Gallaud, E., Giet, R. and Benaud, C. (2022). Annexin A2 and Ahnak control cortical NuMA–dynein localization and mitotic spindle orientation. *J. Cell Sci.* **135**, jcs259344. doi:10.1242/jcs.259344