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FIRST PERSON

First person – Bram van Steen and Lanette Kempers

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. Bram van Steen and Lanette Kempers are co-first authors on 'Transendothelial migration induces differential migration dynamics of leukocytes in tissue matrix', published in JCS. Bram is a PhD student in the laboratory of Jaap van Buul at Sanquin Research, Amsterdam, The Netherlands, investigating the secrets of cell behavior and migration using advanced models and microscopy. Lanette is a PhD student in the same lab studying the process of sprouting and angiogenesis using various microscopy approaches.

Bram van Steen and Lanette Kempers

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

B.v.S. and L.K.: The interaction between blood vessels and the immune cells that defend your body against pathogens is currently often studied in animals or with classical cell biology techniques. We would like to study these processes in a model without having to use animals but with all the complexity you can also find in the human body. In this study, we created artificial blood vessels on a chip, using cells derived from humans; we show that our approach is closer to *in vivo* conditions than other techniques, and we reveal parts of the process that we could not study before using the classical *in vitro* tools. Using this approach, we reveal different migration modes between different types of white blood cells, both in how they exit the vessel and in the way they migrate into the tissue.

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

B.v.S. and L.K.: Our lab did not have any experience working with organs on a chip. For this project, we adopted a blood-vessel-on-a-chip model that was originally published by another lab and, with their help, adapted this model and designed new experiments and assays ourselves. Obviously, this came with a lot of ups and downs and, since there was no experience with this kind of work, we had to set everything up ourselves. In order to get everything working, it was key to keep persevering and constantly being creative, trying new approaches every week until a solution worked.

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

B.v.S. and L.K.: During the project, there was the first time we were sitting behind the microscope trying to capture leukocyte extravasation in our blood vessel on a chip and actually saw a neutrophil cross the vessel wall. The moment that happened for the first time was truly magical – seeing the whole process of creating an artificial blood vessel, isolating primary neutrophils from blood and then putting it all together under the microscope. With a lot of challenges along the way, you tend to forget what you are working towards. Then you see the cells actually moving, interacting and doing their job, and this makes you remember what you are doing it all for.

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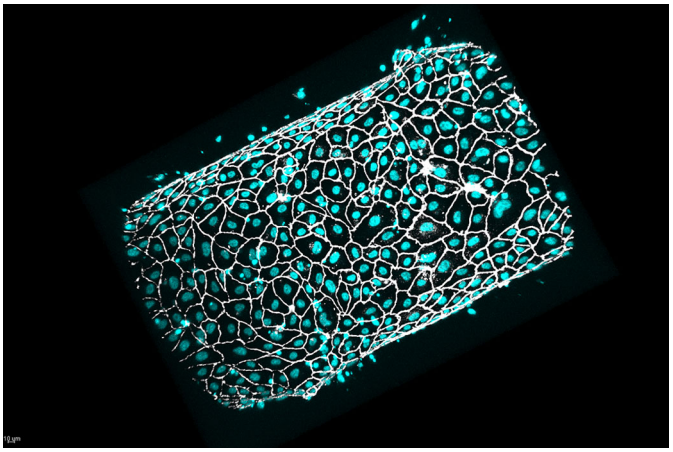
Why did you choose Journal of Cell Science for your paper?

B.v.S.: Journal of Cell Science and The Company of Biologists have an audience that encompasses all aspects of cell biology. We feel that the readership of JCS will be very interested in getting to know the things you can achieve using the new tools we applied in this study, as well as the actual research findings.

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?

L.K.: I have always been interested in biology, and for a while considered becoming a medical doctor, but in the end, I decided that science was more my cup of tea. Discovering how



VE-cadherin and DNA staining of HUVECs in an artificial blood vessel on a chip.

all the complex pathways are connected keeps me interested and entertained. What I love about science is the freedom and the variety. Today you are pipetting samples, tomorrow you are building blood vessels and next week is filled with conferences. There are no limits!

What's next for you?

B.v.S. and L.K.: A postdoc abroad (outside of The Netherlands) is something we would both like to pursue next!

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

B.v.S. and L.K.: We thrive at conference parties. That is our time to really shine! :)

What advice would you give to other young researchers or people pursuing a career in science?

B.v.S. and L.K.: Experiments will often not work out and you can get stuck for reasons beyond your control or understanding, which can be a frustrating experience. At moments like this, it is important to really take a step back, preferably have a nice beer in the sun with your colleagues, and then start afresh the next morning. Solutions usually come to you when you are relaxed and not actively thinking about work.

Reference

van Steen, A. C. I., Kempers, L., Schoppmeyer, R., Blokker, M., Beebe, D. J., Nolte, M. A. and van Buul, J. D. (2021). Transendothelial migration induces differential migration dynamics of leukocytes in tissue matrix. *J. Cell Sci.* **134**, jcs258690. doi:10.1242/jcs.258690