

# SELF-INTERVIEW WITH ARJEN JAKOBI

## Capture nature's beauty – be it small or large



Delft has a long history in imaging life at the smallest of scales. Almost 350 years ago, Antonie van Leeuwenhoek discovered that life exists in forms much smaller than anyone had anticipated. A haberdasher in the city of Delft, he was a pioneer of microscopy and the first to describe *animalcules* and *minute eels* – single-celled organisms that we now know as protists and bacteria.

With their “Leeuwenhoekjes” the scientists of the 17<sup>th</sup> century could reach magnifications of about 270x. With today’s most powerful electron microscopes we can zoom in much further and image biomolecules down to the precise three-dimensional arrangement of atoms, allowing us to understand their chemistry and help decipher how they make life possible.

My research focuses on studying biomolecular structure using electron cryo-

microscopy (cryo-EM). At the Bionanoscience department we will develop methods to help us and other researchers obtain sharper images of molecular processes involved in the biological questions we try to untangle. I am interested in macromolecular self-organization: often proteins do not act in isolation, but structures of all sorts and symmetries arise from the orchestrated assembly of parts to collectively perform tasks that would not otherwise be possible. In the defense against pathogens our cells build such assemblies into an armory of nanomechanical levers, wrenches and punch pliers to combat these intruders. Having a molecular picture of such assemblies enables us to learn how they work – and provides the possibility to modify them in a way that may improve or revise their function. My curiosity, however, does not stop at these pictures and this is one of the reasons why I am very excited to

join the Kavli Institute of Nanoscience Delft. My Kavli colleagues at the Bionanoscience department build instruments to characterize and manipulate individual molecules, and develop theoretical frameworks to understand the physics of their inner workings. I am very much looking forward to learning from and working with them. *Thinking big about life at the smallest scale* – the motto of the Bionanoscience department could not describe better what we strive to do.

When I came to visit Delft and the Kavli Institute I was immediately struck by the creativity and the enthusiasm of the researchers I spoke to, the vibrant collaborative spirit and the supportive and friendly atmosphere all around. Together with the state-of-the-art infrastructure this convinced me of being a good place to start a laboratory. The support staff have been fantastic in helping me preparing my move and getting started with the lab. I also owe much gratitude to Andreas Engel, who took on the challenge to pioneer cryo-EM at the Bionanoscience department. Much of the equipment is now in place and I cannot wait to start to play with it! Thank you.

In my free time I like being outdoors on my road bike, hiking, climbing or kayaking. The rough and cold of Patagonia just as much as the labyrinth of creeks and rivers of the Biesbosch help me blow out stress and clear my thoughts from the background noise of the day. Nature and travel have led me to discover spectacular landscapes near and remote that I try to capture with my camera. You might say my spare time somehow resembles my work: trying to capture nature’s beauty – be it small or large.

Hello Kavli – I am looking forward to meeting you all in Delft!