INTERVIEW

PETER STENVINKEL

Collaborating on vitamin K and hibernating bears

His last visit to CARIM coincided with The European Fine Art Fair (TEFAF) in Maastricht. Apart from superior art (a little beyond his budget unfortunately), Prof. Peter Stenvinkel discovered new possibilities for cooperation between his group at Karolinska Institutet and Prof. Leon Schurgers' lab in Maastricht. They share a huge interest not only in vitamin K, but also in what we can learn from hibernating bears and other solutions found in nature.

Peter has been a visiting professor at CARIM for about a year. He is a professor of nephrology at Karolinska University Hospital, focusing on risk factors for metabolic, cardiovascular and nutritional complications of chronic kidney disease. He has just published a popular science book called 'Nature's intelligence' about his interest in biomimetic studies, that is, solutions developed in nature that inspire scientists. How can naked mole rats grow to an extremely old age without developing cancer? How can bats escape disease from harmful viruses and how can a bear sleep for five months without losing most of its muscle, as humans would do in such a case?

But first, how did the cooperation with CARIM start?

"It started with me listening to one of Leon's lectures many years ago, where I recognised his interest in vascular disease, vascular aging and vitamin K. We wrote a couple of reviews together, we sent some samples from Sweden to Maastricht for analysis, and that resulted in a couple of collaborations. And I should add that during the last years we have been actively collaborating in two EU Marie Curie consortia, INTRICARE and CaReSyAn."

How exactly do Karolinska and CARIM complement each other?

"The researchers I've met in Maastricht have very similar mindsets to ours at Karolinska Institutet. We approach problems the same way and have fun working together, that's always a good thing. The competence and analyses on vitamin K that Leon is an expert at, we don't have here. And it's important in nephrology: our patients undergo premature aging, especially in their vasculature, and I would think Vitamin K plays a very important role in this

accelerated vascular ageing process. What we contribute to the cooperation is patient samples. We have small pieces of arteries from patients undergoing living donor transplantation, which can help in this research."

Do you also share your interest in biomimetics with the Maastricht colleagues?

"Yes, indeed. Leon and Tilman Hackeng visited us in Stockholm in late May, to brainstorm about lessons from nature and the animal world. I expect that the current environmental changes will accelerate biological aging processes, thus increasing lifestyle diseases in the future. I think we can learn how things are being solved in nature."

Can you name an example?

"There's a Greenland shark that can become more than 400 years old. What can this elusive creature teach us about premature aging in humans? For me as a kidney doctor, it's just amazing that a bear can survive many months during hibernation without peeing, and without getting ill. If we understand that, we hope to find opportunities to protect humans against osteoporosis, kidney disease, thrombo-embolic complications and muscle wasting. But we also try to learn from animals what to eat. I'm more and more concerned that the artificial ultraprocessed food that we humans now consume in such large quantities creates health problems. We need to eat more according to nature's original intentions, and I think we can learn from animals how we can improve our health with our food habits."

Nevertheless, you seem optimistic about the future

"Yes, there are reasons for hope, despite a long series of grim climate reports. In these challenging and uncertain times, marked by conflicts and environmental crises, it seems like we live in the 'worst of times'. After watching the news on TV it's easy to forget that in many ways life on our planet has never been as good as it is today. Four out of five children with cancer are cured and WHO believe AIDS can be eradicated by 2030. We have learned so much already and every dimension of human activity is rich with solutions that can help bring humanity back into balance with our natural systems. With former and present world leaders like Trump, Putin, Bolsonaro and even Geert Wilders in the Netherlands, we need to make our politicians realise: science is the only way forward if we want to solve health and environmental problems."

SCIENCE IS THE ONLY WAY FORWARD IF WE WANT TO SOLVE HEALTH AND ENVIRONMENTAL PROBLEMS