



**Heineken  
Prizes** 50 YEARS



**KNAW**

## **Dr A.H. Heineken Prize for Medicine 2014, awarded to Kari K. Alitalo**

Ladies and gentlemen,

Blood and lymphatic vessels are essential for the human body to stay alive and well. They carry fluids, oxygen, immune cells and antibodies to all of our tissues and organs, just like road networks transport cars. Without them we die. If they malfunction, we become sick.

For eighteen years, Kari Alitalo has been at the forefront of research into how these networks are constructed and maintained. He has been a leader among those looking for better treatments for cancer and vascular disease.

He is probably best known for his research on the biomolecular mechanisms that promote and regulate vessel growth. It wasn't that long ago that no one really understood why vessels grow in a particular direction, or when and how medicines could influence their behaviour.

Knowledge such as this is vital for finding treatments for many vascular diseases. One of those disease is a condition of the lymph vessels called lymph oedema, in which fluid fails to drain properly from the limbs causing them to swell. Tumour cells also use these and blood vessels to spread to different organs. And tumours need blood vessels to grow. Cancer treatment would benefit greatly from a better understanding of how lymph and blood vessels form and how we can safely inhibit new vessel growth without interfering with our existing healthy vessels.

Kari Alitalo and his colleagues discovered the first molecular 'lock' that if opened with the right key, makes cells in the skin change into lymphatic vessels. And through understanding the lock, he went on to find the key. That turned out to be a growth factor that acted very specifically on the cells of lymph vessels.

Since that seminal finding, four more molecular locks and four more keys have been identified. Kari Alitalo was involved in three of those findings, that not only work on lymph vessels but also on those for blood. But his research has not stopped there.

He has gone on to turn these discoveries into treatments. Three potential medicines are now in the early stages of development for use in the clinic because of his work. One is to treat lymph oedema. Another could keep cancerous tumours in check by not letting them grow blood vessels. The third may slow down cancer metastasis by blocking the growth of new lymphatic vessels.

Ladies and gentlemen,

Kari Alitalo has said that when he was a young man, he considered studying mathematics because he was very good at it.

At the very last moment however, just as the student registration was closing, he changed his mind and decided to study medicine. He felt that he could contribute more to the world by advancing treatment of patients than by being a mathematician.

The jury is delighted that he made that choice for all of the patients who will be treated in the future for debilitating vessel diseases. Please join me in honouring Kari Alitalo, winner of the 2014 Heineken Prize for Medicine.