



2018 Dr A.H. Heineken Prize for Medicine, awarded to Peter Carmeliet

Presentation speech by Christine Mummery, chair of the jury of the 2018 Dr A.H. Heineken Prize for Medicine

Basic science, ladies and gentlemen, is all about trying to figure out how things work. It is about delving deep, and it's about asking new questions the moment that previous questions have been resolved.

Sometimes people think that basic science doesn't go well with looking for applications. They think that you need very different types of scientists for each type of work.

Today's laureate proves that's not always the case. Some people in fact stand out in doing both.

Peter Carmeliet, ladies and gentlemen, has been working for a long time to understand how blood vessels arise and grow. He often used tropical Zebrafish to do that, because they are transparent.

He asked questions like: When and how do blood vessels first develop? In which direction will their new branches grow? How does that work in the healthy body, and how can it be affected by disease?

His work has spanned several decades and been extremely successful. He helped identify the importance of certain 'growth factors', as they are called: chemicals in our body that carry signals between cells. Whenever these signals are present, tissues in our body respond in very specific ways.

Carmeliet has been at the forefront of research into how growth factors affect the development of blood vessels. He was among the first to study 'vascular endothelial growth factor', or VEGF. He helped us see how VEGF enables embryos to build vascular systems. But he also discovered very unexpectedly that VEGF affects the growth of nerve fibres. And he revealed roles for another growth factor, 'placental growth factor', or PlGF, in the growth of blood vessels and nerves.

Step by step, Carmeliet has over many years helped unravel how these chemical signals work and interact with cells in our bodies.

Many researchers, ladies and gentlemen, would be content just doing that: gaining a better understanding of how the body works in its healthy state. But Carmeliet was driven to go one step further.

He was determined to know whether his findings might help cure serious diseases. And he indeed found evidence that the growth factors he studied were important in cancer and diseases of the nervous system. They help tumours attract blood vessels to create their own blood supplies. And they affect nerves in the devastating disease ALS.

Carmeliet reasoned that interfering with these growth factors might benefit patients. So he developed antibodies against growth factors, to block their activity. And the results were so promising that clinical trials have been initiated to find out if they really work towards curing patients.

In sum, the jury finds that Peter Carmeliet has contributed greatly to what we know about what key growth factors do in our bodies. He showed us how they manage the development of nerves and blood vessels in the embryo and in disease. He is now leading the way towards using that pioneering knowledge towards treatments that could ultimately benefit large numbers of patients.

So, ladies and gentlemen, I hope you will join us in congratulating Peter Carmeliet, winner of the Heineken Prize for Medicine 2018!