Bart LOEYS
Clinical and Translational Research

The 2020 Francqui-Collen Prize in Biological and Medical Sciences is awarded to Bart Loeys for his seminal contributions to the understanding, diagnosis and treatment of human genetic diseases affecting large blood vessels.

After obtaining his medical degree in pediatrics as well as a PhD at Ghent University, he performed postdoctoral research with the world-renowned geneticist Prof Harry 'Hal' Dietz at the Johns Hopkins University in Baltimore, USA. Upon his return to Belgium (initially at Ghent University, currently at the University of Antwerp), he has rapidly gained prominence in his own right as medical geneticist.

Many patients worldwide are severely affected by diseases, known as aortic aneurysms of the aorta: The wall of the aorta, the major blood vessel that originates directly from the heart, is weakened, leading to ballooning of the vessel ('aneurysm') which can ultimately leak and rupture. Up to 1% of deaths in the western world are caused by these aneurysms. In a series of elegant genetic analyses spanning the last 15 years, Dr Loeys has identified the genetic and biochemical basis for a large fraction of these diseases. One of these, first described by Loeys with his Hopkins mentor Prof Harry Dietz, is now termed the Loeys-Dietz Syndrome. Loeys has shown that dysfunction of a central biochemical pathway (known as TGF-beta signaling, which allows communication between cells) leads to aortic aneurysms. The identification of specific mutations responsible for aortic aneurysms has immediate implications for people suffering from familial forms of the disease, which can now be identified in advance and monitored carefully, thus saving many lives. In addition, Dr Loeys' discoveries suggest promising therapeutic approaches for affected individuals.

Dr Loeys is a clinician-scientist and cardiovascular medical geneticist, demonstrating the tremendous promise of precision medicine for bettering the human condition. His work shows how careful analysis of the molecular basis of disease in individuals can bring about a general understanding of biological principles, and at the same time lead to personalized diagnostics and therapeutics.