

Citation for Doctor of Engineering (honoris causa)

PROFESSOR PATRICK WASHINGTON SERRUYS MD, PHD, FACC, FESC

Patrick W. Serruys (MD 1972 Leuven, Belgium; PhD 1986 Erasmus University, the Netherlands) is Professor of Cardiology at the National Heart & Lung Institute at the Imperial College in London and chairman of the Scientific Board of European Cardiovascular Research Institute (ECRI) and Emeritus Professor at the Erasmus University, Rotterdam, the Netherlands.

Professor Serruys has transformed interventional clinical practice in cardiology through key advances based on principles of biomedical engineering. Beginning with establishing the methodology of quantitative coronary angiography to using computational fluid dynamics to explore the fundamental relationship between hemodynamics and heart disease, to engineering the latest fully biodegradable coronary polymeric vascular scaffolds, he has remained at the forefront of cutting-edge, interdisciplinary research based on the fusion of medicine and engineering for over 30 years.

In 1980, balloon angioplasty was introduced at the Thorax Centre, Rotterdam where Prof Serruys was Research Director for Medical Imaging in Cardiology at the time. Professor Serruys was called upon to elucidate the phenomenon of restenosis post angioplasty. Professor Serruys developed a world-wide network of experts from diverse disciplines assisting him to unravel the problem of restenosis. After multiple unsuccessful pharmacological trials to control restenosis he shifted attention to a purely mechanical device solution - stents preventing restenosis. In 1986 he introduced this technique to patients in the Netherlands, and he conducted the first international randomized trial which eventually led to FDA approval for his technique, which is now standard practice around the world.

Experimentally, at a very early stage he explored the possibility of human cell seeding on the stent as well as the use of polymeric stents in animals. In 1999, using ideas from molecular biology, Professor Serruys and Eduardo Sousa in Brazil introduced the use of drug-eluting stent.

As the implantation of permanent metallic prosthesis is seen as a major drawback in the treatment of coronary artery stenosis, Professor Serruys introduced in 2006 the use of fully biodegradable polylactic acid drug-eluting scaffolds that eliminated the presence of a permanent metallic foreign body in the coronary circulation.

In 1996, he was awarded the Transcatheter Cardiovascular Therapeutics Career Achievement Award, recognizing him as “the most influential world-wide cardiologist”. He received the Andreas Gruentzig Award; the J. B. Herrick Award of the American Heart Association; a Lifetime Achievement Award by the American College of Cardiology in 2011 as well as the Ray C. Fish Award by the Texas Heart Institute for Outstanding Achievement and Contribution to Cardiovascular Medicine; the Gold Medal Award for Outstanding Contribution to the Science and Practice of Cardiology, by the European Society of Cardiology. He has received honorary degrees from the University of Athens, Greece, and Complutense University, Spain.

He served as the principal investigator for over 60 major international clinical trials, edited 39 textbooks, and co-authored over 3257 peer-reviewed publications. His publications are characterised by an h-index of 145. He has supervised 91 PhD students, many of whom are eminent in the field of cardiology today.