

Prof. Francesco Cosentino receives nomination for a chair of Cardiovascular Medicine at the Karolinska Institutet, Stockholm



Prof. Francesco Cosentino, born in Rome, Italy, studied Medicine in his hometown at the University "La Sapienza" and there received postgraduate training

in Internal Medicine and Cardiovascular Diseases. Later moved to the Mayo Clinic, Rochester, MN, USA, and after to the departments of Cardiology at the Inselspital in Bern and University Hospital in Zurich. From 1991 to 1994 he worked with Prof. Zvonimir Katusic in cardiovascular research at the Mayo Clinic and Foundation focusing on the role of endothelium-derived mediators (i.e. nitric oxide, reactive oxygen species, prostaglandin H₂, endothelin) in the regulation of vascular tone and on tetrahydrobiopterin as co-factor of endothelial nitric oxide synthase (eNOS). In 1995, he moved to the cardiovascular research unit at the department of Cardiology of the Inselspital in Bern under the supervision of Prof. Thomas F. Lüscher and Prof. Bernhard Meier and returned to his hometown in 1996. In the same year, he fulfilled all the requirements for a PhD in Biomedical Sciences/Vascular Pharmacology at the Mayo Graduate School. He became assistant professor and later associate professor of Cardiology at Sant'Andrea Hospital, University "La Sapienza" in Rome under the supervision of Prof. Massimo Volpe, an internationally renowned expert of the renin-angiotensin system. Ever since he spent part

of his time in the cardiovascular research division of the department of Cardiology of the University Hospital and University of Zurich leading an international research team focusing on the effects of glucose on the endothelium and vascular function. In 2004, he became Lecturer and in 2010 Titular professor at the University of Zurich. In 2007, he spent a sabbatical in Zurich in the cardiac catheterisation laboratory.

His recent work focused on the molecular mechanisms of diabetic vascular disease and in particular the effects of high-glucose on endothelial function. In landmark studies, which are highly cited, he provided novel insights regarding the role of PKC β intracellular signalling in hyperglycaemia-related vascular dysfunction and inflammation demonstrating that high glucose in human aortic endothelial cells causes PKC-dependent upregulation of eNOS and inducible COX-2 expression as well as reduced NO release and selective increase of thromboxane production. These results are also relevant in understanding the intracellular signalling associated with pathological hyperadhesiveness of arterial endothelium in this setting.

He was able to demonstrate that high glucose activates the mitochondrial adaptor protein p66Shc and in turn causes oxidative stress and endothelial dysfunction. Of note, the activation of this adaptor protein is persistent after glucose normalisation and, therefore, this observation may explain the lack of efficacy of many therapeutic interventions to reverse diabetic vascular disease. He recently described an intricate molecular mechanism which may contribute to explain why vascular complication of diabetes have not been im-

proved by intensive control of risk factors in recent clinical trials. He reported that the mitochondrial adaptor p66Shc, critically involved in ROS generation, is the upstream molecule driving vascular hyperglycaemic memory. The identification of persistent p66Shc upregulation epigenetically-regulated in the setting of hyperglycaemia may allow targeted approaches to reprogram these modifications. Prof. Cosentino strongly believe that the removal of epigenetic tags may be the most promising option to dampen oxidative stress, vascular inflammation and thus prevent cardiovascular complications in people with diabetes.

His works are published in the best journals of medical literature such as the *Proceedings of the National Academy of Science*, the *Journal of Clinical Investigation*, *Circulation* and *Circulation Research* as well as the *European Heart Journal*.

Prof. Francesco Cosentino is member of *European Society of Cardiology (ESC)* guideline writing committee on "Diabetes, Prediabetes and Cardiovascular Diseases".

In the *European Society of Cardiology* Francesco Cosentino is a Board Councilor.

Since 2009 he is Associate Editor of *European Heart Journal*. He is also Member of the Executive Committee of the *European Registry on Chronic Ischemic Cardiovascular Disease* promoted by the ESC and EURObservational Research Programme to collect data on current status of patients with CAD and/or PAD, including their demographic characteristics, clinical profiles, therapeutic strategies and outcomes.