

4th International Conference on **Clinical & Experimental Cardiology** April 14-16, 2014 Hilton San Antonio Airport, TX, USA

Mechanisms modulating fibrin clot structure and thrombosis

Robert A. S. Ariens University of Leeds, UK

Fibrin provides the structural backbone to the developing blood clot or thrombus. The structure of the fibrin clot is a major determinant of the mechanical characteristics of the clot and of the resistance of the clot to fibrinolysis. Clinical studies consistently show that patients with thrombotic diseases form fibrin clots with increased fibre density and small pores that have increased resistance to lysis by tPA and plasmin. Abnormal fibrin clot structure contributes to the thrombotic burden in patients with cardiovascular diseases. The amount of thrombin and fibrinogen influence the final structure of the fibrin clot. However, there are a number of other mechanisms that regulate fibrin clot structure independently of thrombin and fibrinogen concentrations. For example, splice variation of the fibrinogen gamma chain regulates fibrin clot structure by directly interfering with protofibril formation as demonstrated by atomic force microscopy. The clots produced by the variant show reduced rigidity using magnetic tweezers but increased resistant to fibrinolysis. The effects of gamma prime splice variation on fibrin clot structure are also evident at physiological levels in plasma as observed in the PURE study. In addition, we have evidence that the contact pathway of coagulation influences fibrin clot structure but actively regulates fibrin clot structure. Elucidation of the mechanisms that regulate fibrin structure may provide new opportunities for the diagnosis of, or therapeutic intervention with, thrombosis.

Biography

Robert A. S. Ariensis Professor of Vascular Biology at the University of Leeds, where he is Head of Theme Thrombosis. Ariens obtained a B.Sc in Biology from the University of Utrecht, the Netherlands in 1990, and did his postgraduate training with Professor Mannucci at the University of Milan, Italy and with Professor Hemker at the University of Maastricht, the Netherlands. He obtained his Ph.D. for studies on the tissue factor pathway of coagulation from the University of Maastricht in 1997. Research of the Ariens laboratory has a strong focus on studies of fibrin clot structure and function. Ariens is Secretary-Elect for the British Society for Haemostasis and Thrombosis, and Vice-President of the International Fibrinogen Research Society. He was Scientific Chair and Organiser of the 2012 ISFP Congress and International Fibrinogen Workshop respectively, and is a member of the Editorial Board of the Journal of Thrombosis and Haemostasis. He was awarded the Outstanding Investigator Award by the International Fibrinogen Research Society, July 2012.

R.A.S.Ariens@leeds.ac.uk