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Interplay between inflammation, immunity and Thrombosis: Role of platelet and Neutrophil P2X1 receptors

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This lecture will present the latest findings on the contribution of innate immune cells in thrombosis. It will also address the recent view of platelets as rapid first-line immune responders. Focus will be made on the role of P2X1 receptors for extracellular ATP. It has long been recognized that inflammation shifts the hemostatic mechanisms in favor of thrombosis. Upon tissue damage or infection, a sudden increase of extracellular ATP occurs, that might contribute to the crosstalk between inflammation and Thrombosis. On platelets, P2X1 receptors act to amplify platelet activation and aggregation induced by other platelet agonists. These receptors critically contribute to thrombus stability in small arteries. Besides platelets, studies by our group indicate that these receptors are expressed by neutrophils. They promote neutrophil chemotaxis, both *in vitro* and *in vivo*. In a laser-induced injury mouse model of thrombosis, it appears that neutrophils are required to initiate thrombus formation and coagulation activation on inflamed arteriolar endothelia. In this model, by using P2X1 mice, we recently showed that P2X1 receptors, expressed on platelets and neutrophils, play a key role in thrombus growth and fibrin generation. Taken together, these data suggest that P2X1 receptors are involved in the interplay between platelets and neutrophils. Activation of these receptors by ATP on neutrophils and platelets might be involved in the regulation of inflammation, immunity and thrombosis.

Biography

Cécile Oury, PhD in Biology, has studied platelet biology for 15 years. In 2001, she was the laureate of the prize Boerhinger Ingelheim for her research on Thrombosis and Haemostasis. She is now Research Associate at the Belgium Fund for Scientific Research, and she is the Head of the Laboratory of Thrombosis and Haemostasis, part of the Unit GIGA-Cardiovascular Sciences at the University of Liège, Belgium. GIGA is an interdisciplinary institute comprising >250 scientists active in biomedicine. Oury's research focuses on the elucidation of the mechanisms of thrombosis using in vitro studies and animal models. She has a h-index of 18, more than 50 international peer-reviewed papers and 1434 citations. Oury is a Council member of the Belgian Society on Thrombosis and Haemostasis and a member of the International Society on Thrombosis and Haemostasis.

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