

Platelet function in health and disease - *in vivo* and *in vitro* approaches

Platelets are essential vascular effectors of hemostasis and thrombosis. Understanding platelet biology is therefore of paramount importance in the fight against ischemic events, which are leading causes of death worldwide [1]. In addition to this long-recognized, essential role in hemostasis and thrombosis, platelets have important functions in acute and chronic inflammatory processes and immune defense [2]. As vascular first responders, they partner with innate immune cells to orchestrate host defense in acute inflammation and infection [3, 4]. For example, platelets are implicated in initial activation, recruitment and transmigration of neutrophils. Also, by linking inflammation to coagulation, platelets may contribute to trapping pathogens, a process termed “immunothrombosis” [5, 6]. At the same time, platelet anti-inflammatory function is crucial to prevent excess tissue damage. This pleiotropic role of platelets is not limited to acute inflammation – for example, platelet-leukocyte aggregate (PLA) formation and CD40L release has been identified to contribute to chronic inflammatory processes like atherosclerosis [7, 8].

The complex interplay of platelets with coagulation and inflammatory processes requires detailed analysis of an array of platelet functions to better understand their role in health and disease. Therefore, this Advanced Methods Course (AMC) will cover several methods to analyse platelet function *in vitro* (i.e. platelet aggregation, adhesion and activation assays) and demonstrate models to assess thrombus formation in real time in *in vivo*.

Speakers and supervisors

Leo Nicolai and Joachim Pircher (Medizinische Klinik und Poliklinik I, LMU)

Literature

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