Vol. 117, n. 2 (Supplement): 83, 2012

PKCɛ expression is required during proplatelet formation in murine model

<u>Giuliana Gobbi</u>¹, Cecilia Carubbi¹, Daniela Galli¹, Daniela Di Marcantonio¹, Giovanna Bucci¹, Elena Masselli¹, Valeria Queirolo¹, Prisco Mirandola¹, Mauro Vaccarezza¹, Joseph E. Italiano² and Marco Vitale¹

¹Department of Anatomy, Pharmacology and Forensic Medicine, Human Anatomy Section, University of Parma, Parma, Italy

² Hematology Division, Brigham and Women's Hospital, Harvard University, Boston, MA, USA

Megakaryocytes (MK) remodel their cytoplasm into long proplatelet extensions to generate platelets [1]. We have previously demonstrated that PKCepsilon expression is strictly regulated during megakaryocytopoiesis (MKpoiesis), and its forced expression in the late phases of MK differentiation impairs platelet production [2,3]. However, our preliminary data suggest that PKCepsilon positive platelets may be released around the acute event of myocardial infarction, affecting their aggregation potential. Primary fetal liver (FL) cells isolated from CD1 pregnant mice are the preferential model to study the platelet formation mechanism [4]. Therefore, here we focused on the mouse PKCepsilon positive model to elucidate the role of PKCepsilon in MK maturation.

Our data show that not only PKCepsilon expression increases during mouse MK differentiation, but also its forced down-regulation strongly reduces pro-platelet formation. Therefore, PKCepsilon is strongly required for murine proplatelet production. On the basis of these results and other known model systems, we show that PKCepsilon has a relevant role in the completion of platelet release.

References

- [1] Italiano JE et al. (1999) Blood platelets are assembled principally at the ends of proplatelet processes produced by differentiated megakaryocytes. J Cell Biol 147: 1299-1312.
- [2] Gobbi G et al. (2007) Timing and expression level of protein kinase C epsilon regulate the megakaryocytic differentiation of human CD34 cells. Stem Cells 25: 2322-2329.
- [3] Gobbi G et al. (2009) Phorbol ester-induced PKCepsilon down-modulation sensitizes AML cells to TRAIL-induced apoptosis and cell differentiation. Blood 113: 3080-3087.
- [4] Thon JN and Italiano JE. (2012) Visualization and manipulation of the platelet and megakaryocyte cytoskeleton. Methods Mol Biol 788:109-125.

Keywords: Megakaryocytopoyesis, PKCepsilon, proplatelet formation.