Julien Muzard, J Blood Disord Transfus 2013, 4:5
http://dx.doi.org/10.4172/2155-9864.S1.004

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference on
Hematology & Blood Disorders
September 23-25, 2013 DoubleTree by Hilton Hotel Raleigh-Durham Airport at RTP, NC, USA

Exploring & neutralizing human glycoprotein VI-collagen interaction: Creation & characterization of synthetic peptides & humanized anti-thrombotic antibody fragments

Julien Muzard
CNAM University, France

Glycoprotein VI (GPVI), a key receptor for platelet activation by collagen, plays a critical role in hemostasis *in vivo*. The GPVI-collagen interaction has been clearly involved in the formation of thrombi on atherosclerotic lesion that are responsible for acute ischemic events. The neutralization of the collagen- GPVI interaction thus represents a promising strategy to develop novel antithrombotic agents. Two approaches were evaluated in this study:1) Blocking GPVI with antibody fragments, and 2) Triggering a binding competition using a novel synthetic peptidomimetic.

1. Starting from a well-characterized hybridoma secreting an IgGk, a recombinant single chain antibody fragment (scFv) was designed and characterized. It retains the binding proprieties of the parental IgG (e.g. high affinity, neutralization of GPVI-collagen). The purified scFv inhibits the platelet aggregation induced by collagen in conditions which mimic the arterial flow. Humanized scFvs were finally obtained and can be used as building units to create larger antibody fragment with therapeutic potential. Furthermore, the strategy developed here is simple, efficient and straightforward and could also be used for humanizing other antibodies.
2. Using a molecular evolution procedure, a set of peptidomimetics of human GPVI were identified and synthesized. One of them binds to collagen with a nanomolar affinity *in vitro* and competes with GPVI for binding to collagen. Collagen accumulation (fibrosis) was detected in vivo using a radiolabelled peptide and this capacity can be used to develop a non-invasive isotopic imagery method for the diagnostic and the evolution of fibrosis.

Biography

Julien Muzard completed his Ph.D. in Biotechnology (University Paris Diderot) in 2007 and spent five years as postdoc. The first was at Paris-Tech, followed by positions at the Center for Molecular Innovation and g Discovery, University College Dublin. He is now a fellow in Computational Biology at CNAM University, Paris. His interests are mostly related to *in silico*, *in vitro* and *in vivo* aspects of binding recognition and the creation of molecular entities from scratch. He is coauthor on about 20 publications and main inventor on 5 patents granted in various disciplines (basic research, diagnostic and therapeutics).

julien.muzard@ucd.ie