Research Project Proposal
Academic year 2015-2016

Project Nº 9
Title: Does MMP-10 play a role in cardiac repair after ischemia?

Department/ Laboratory
Laboratory of Atherothrombosis. Program of Cardiovascular Diseases. CIMA

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Summary
Cardiovascular diseases of ischemic nature, such as myocardial infarction (MI) or stroke, are the leading cause of morbi-mortality in western societies. After an ischemic episode the heart undergoes extensive remodelling. Metalloproteinases (MMPs) play a role in atherosclerotic plaque progression, thrombosis, fibrinolysis, ischemic damage and tissue repair. MMP-10 is required for proper skeletal muscle regeneration after hindlimb ischemia or toxin induced damage, and has also been involved in liver repair after injury (1-3). However, no information is available on the expression of MMP-10 in cardiac tissue or its implication in remodelling after myocardial ischemia. We will study the relevance of MMP-10 in heart repair and remodelling after MI, using an experimental model of permanent ligation of the left descending coronary artery in wild type (WT) and MMP-10 deficient (Mmp10/-) mice. Cardiac tissues will be harvested at different time points after occlusion (day 3/early wound healing, and days 15 and 30/late remodelling) to do an extensive morphological analysis. In addition, we will identify new pathways and MMP-10 substrates involved in tissue repair after myocardial ischemia by using genomics and proteomics. That will be the base to investigate in vitro novel molecular pathways and mechanism regulated by MMP-10. The knowledge of MMP-10 functions in repair and remodelling, together with the mechanisms involved, will provide new therapeutic targets in tissue regeneration after myocardial ischemia.
## References


## POSSIBILITY OF PhD

YES *

* (PhD grant required)