

## PROJECT

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### 1) Project title

Pharmacological modulation of age-related vascular pathologies

### 2) Abstract (max 500 words)

Age represent one of the main risk factors for cardiovascular diseases, including atherosclerosis and vascular calcification. New interesting pharmacological targets have been recently identified for controlling hypercholesterolemia and dyslipidaemia associated to vascular pathologies, such as PCSK9, ANGPTL3 and Lp(a). During the three years of research, the PhD student will be involved in exploring the pathophysiological role of these circulating proteins in order to predict any potential pleiotropic effects, including anti-inflammatory and anti-proliferative properties. In addition, she/he will investigate the effect of monoclonal antibodies and siRNA directed to each target to define their pharmacological properties. All the activities will involve *in vitro* studies in culture cell lines (human vascular smooth muscle cells, hepatocytes, and macrophages) and molecular (PCR and cloning vectors) and cellular biology experiments (real-time PCR, ELISA, western blot, immunocytochemistry). In addition, *in vivo* experimental studies will be performed by using genetically modified mice (PCSK9 knock-out mice) and models of vascular calcification (adenine-induced). Additional analysis from human samples will be also performed in collaboration of our clinic. The PhD students will be then involved in the design of the experiments, in writing reports and scientific manuscript (reviews and research papers). The final goal is to end with at least 3-5 publications in peer-review journals.