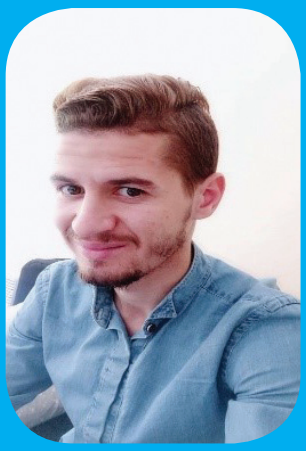
MERZOUGUI CHARAF EDDINE



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Doctoral School: MEGeP
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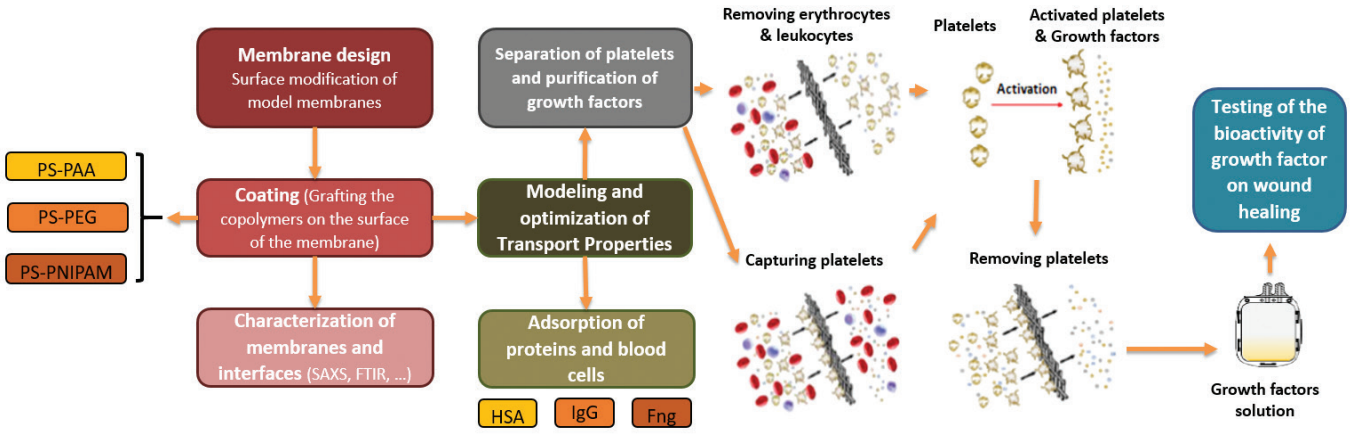
HEALTHCARE ENGINEERING : AN INNOVATIVE PROCESS FOR THE PURIFICATION OF PLATELET-DERIVED GROWTH FACTOR (PDGF)

Ingénierie pour la Santé : Procédé Innovant de Purification des Facteurs de Croissance dérivés de Plaquettes

The project aims at using membrane advanced technologies for addressing several critical needs related to blood cells screening and the concentration of a growth factor expressed after the activation of thrombocytes.

Current research on the first objective (cells screening) is oriented toward the depletion of leukocytes, as they can potentially carry along viruses and thus, should be removed from the blood before blood transfusion. Here, we propose to design membrane materials to selectively separate thrombocytes from other blood cells. The reason for doing so is that these cells, once activated, express a growth factor, namely platelet-derived growth factor or PDGF, which role in the wound healing process of diabetic ulcers is predominant.

Up-to-date, the synthesis and purification of PDGF is done via biotechnology approaches, but the yields remain limited. Here we propose to apply our knowledge on polymer synthesis and surface modification as well as our expertise in the design of membranes for blood-contacting devices and in membrane transport to tackle these challenges. In a first step, experiments to study the polymers-proteins of blood interactions are planned using advanced characterization tools such as SAXS, FTIR, which makes it possible to choose the most suitable polymers for surface modification.



General scheme of the project