**Title:** Defining the role of beta-1 integrin in reparative angiogenesis

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**Background:** Angiogenesis, the process of new vessel formation, is fundamental for the maintenance of tissue homeostasis and the efficient repair post-injury (ischemia). Blood vessel sprouting and consolidation is a tightly regulated process, involving mainly 2 cell types: endothelial cells, forming the lumen of the blood vessels, and perivascular cells, regulating the vessel tone and permeability.

Previously, we have identified the adhesion molecule integrin beta1 as a fundamental player in this process. The removal of this protein from endothelial cells led to poor post-injury recovery through reduced arterialisation, a processes whereby existing vessels thickens in response to the removal of a major vessel nearby, in order to carry the excess blood to the tissues downstream.

**Aim:** In this project, the student will investigate the effect of integrin beta1 knockdown in the functionality of perivascular cells **in vitro,** in order to establish if they have a role in the observed defective post-ischemic repair mechanisms.

**Methods:** To do so, they will perform **primary mammalian cell culture**, **transfection**, **viability assays** and **migration assays**.

**Clinical perspective:** The elucidation of this mechanism might shed some light on the underpinning mechanisms associated with the natural repair machinery and help identify new interventions for patients affected by these diseases.