PhD Position: Program INPhINIT Fundació La Caixa

"Characterize adipose-derived stem cells released exosomes and identify conditioning strategies capable to enhance their cardio-reparative potential in a preclinical animal model of myocardial infarction"

(Prof.Lina Badimon Maestro)

CENTRE: IIB SANT PAU - Fundació Institut de Recerca de l´Hospital de la Santa Creu i Sant Pau

ADDRESS: C/ Sant Quintí 77- 79, 08041 Barcelona / www.recercasantpau.cat

CENTRE DESCRIPTION: The Research Institute of the Hospital de la Santa Creu i Sant Pau (HSCSP-IR) was created on 4 June 1992 as a private scientific foundation. Its mission is to promote basic, clinical, epidemiological and healthcare research in the health science and biomedical fields, with the ultimate aim of improving the health of the population. On 10 December 2003, the Autonomous Government of Catalonia approved affiliation of the HSCSP-IR as a University Research Institute attached to the Autonomous University of Barcelona (UAB).

The HSCSP-IR has as its mission to improve the health and quality of life of the population through the production and dissemination of scientific knowledge, the training of researchers to an international standard, innovation in health and the incorporation of medical advances in clinical practice and in healthcare policies.

The HSCSP-IR is currently one of the most active research centres in Catalonia, especially in relation to translational research and the application of new discoveries to clinical practice. Since 2011 it has been part of the Catalan System of Research Centres (CERCA).

On 17 May 2009, the HSCSP-IR and nine other organizations created the Sant Pau Biomedical Research Institute (IIB Sant Pau), with the aim of strengthening collaborative translational research and bridging the gap between basic research and clinical practice so as to ultimately improve patient care.

AREA OF KNOWLEDGE: Life Sciences Panel

GROUP OF DISCIPLINES: Medicine, Public Health, Sports Science, Nutrition, Clinical Psychology, Healthcare Management

GROUP LEADER: Prof. Lina Badimon Maestro / lbadimon@santpau.cat

RESEARCH PROJECT/RESEARCH GROUP

Includes a brief description of the main lines and challenges of research of the group as well as information about the team and the scientific output

http://www.recercasantpau.cat/en/group/molecular-pathology-and-therapeutic-of-ischaemic-and-atherothrombotic-diseases/

POSITION DESCRIPTION

-Research Project / Research Group Description:

The research group led by Prof Lina Badimon at the Research-Institute -Hospital Santa Creu i Sant Pau has a wide experience in stem cell-based strategies. Within the last years the group has focus on understanding the loss of function in adult adipose stem cells at a molecular level. This understanding has allowed gain/rescue stem cell function as well as implementing stem cell conditioning to improve ischemic organ repair. The group has also carried out pre-clinical translational models of stem cell therapy followed-up by cardiac magnetic resonance imaging/3D echocardiography and has published track record on methodologies needed to characterized stem cells as functional genomics, proteomics and system biology. The expertise and international leading position of Prof Badimon is endorsed by a large number of publications in highly qualified peer-reviewed international journals (over 500 in PubMed) and a highly quoted work in the scientific literature (more 30,000 citations).In relation with the Research Project, implantation of adult stem cells into the ischemic damaged myocardium has been investigated for its potential to repair/regenerate the injured cells within the infarct zone. However, administration of autologous stem cells exerts modest and limited benefits in ischemic heart disease because of the impairing effects of cardiovascular risk factors on stem cell potency. Allogenic adipose-derived stem cells (ASCs) may overcome such limitations. Due to their low immunogenicity and paracrine potential they may be good candidates for cell therapy. Additionally, administration of the ASC-secretome in combination with ASC synergistically contributes to enhance neovascularization of the infarcted tissue through a complementary and coordinated protein effectors network. The AIMS of the study are to characterize the paracrine mediators (secretome components of ASCs) and identify the molecules endowed with regenerative potential

-Job position description:

Our project main objective is to characterize adipose-derived stem cells released exosomes and identify conditioning strategies capable to enhance their cardio-reparative potential in a preclinical animal model of myocardial infarction. The specific activities to be developed by the predoctoral fellow will be the following : 1) carry out in vitro studies in order to better

characterize paracrine effectors transported by ASCs released exosomes; and 2) precondition ASCs with the goal to enhance the cardioprotective potential of the released exosomes.

The cardiac effects will be characterized in a preclinical experimental model and all these approaches will be performed with the use of "omic" platforms and the state-of-the art imaging modalities.

Because of the complexity and clinical-resemblance of the methodological approaches we offer the opportunity of acquire translational research experience to a clinical cardiologist by applying to INPhINIT "la Caixa" Fellowship Program. This approach will facilitate the clinical transitional of the preclinical findings. The fellow will run experimental work and prepare manuscripts as well as participate in congresses and symposiums. The fellow trained in our group will also be cooperating with our group´s national and international cell therapy networks. We are members of TERCEL (National network on Cell Therapy), TACTICS (Transnational Alliance for Regenerative Therapies in Cardiovascular Syndromes; www.tacticsalliance.org) and the European Society of Cardiology Working Group on Cardiovascular Regenerative and Reparative Medicine (https://www.escardio.org/Working-groups/Working-Group-on-Cardiovascular-Regenerative-and-Reparative-Medicine/About). All these initiatives have the main goal of standardizing procedures from cell isolation and bioprocessing to the design of first preclinical and after clinical trials.

OTHER RELEVANT WEBSITES:

Red CIBERCV: https://www.cibercv.es/en

Red TERCEL: http://www.red-tercel.com/tercel_mision.asp