**POSITION**

**Project Title/ Job position title**

Novel inflammatory and antinflamatory mechanisms associated to cardiovascular damage in hypertension and obesity / PhD in hypertension and obesity research

**Area of Knowledge**

Life Science Panel

Human Biology, Microbiology, Genetics, Cell Biology, Genomics and Proteomics, Biochemistry

**Research Project/Research Group Description**

Endothelial dysfunction, arterial remodeling and increased vascular stiffness are typical features of vascular damage in cardiovascular diseases such as hypertension and obesity and are predictors of future adverse cardiovascular events. In the heart, both hypertension and obesity induce structural and mechanical alterations that impair cardiac performance and predispose to cardiac disease. Several lines of evidence suggest that low-grade inflammation driven by different components of the renin-angiotensin-aldosterone system plays a key role in cardiovascular damage associated with hypertension and obesity. Proinflammatory enzymes such as those involved in oxidative stress and protanoids generation, mitochondrial dysfunction and/or proinflammatory cytokines, are increased in vessels and/or heart of animal models of hypertension and obesity and in patients. They might act through different intracellular pathways to facilitate the cardiovascular damage observed in these pathologies. Moreover, growing studies suggest that not only persistent inflammatory stimuli but also inefficient resolution of inflammation might be responsible for the chronic inflammation observed in different pathologies. However, the role of these mediators in the cardiovascular damage associated with hypertension and obesity remains unclear and it is unknown whether specifically targeting these pathways prophylactically or therapeutically might prevent or reverse the cardiovascular damage underlying these pathologies. Our research project focuses on analyzing novel inflammatory and antinflammatory mediators involved in cardiovascular damage in hypertension and obesity.

**Job position description**

The ESR will perform a wide range of experimental approaches in order to benefit from a multidisciplinary formation plan. He/she will be in charge of the specific project and will be expected to develop the protocols, experiments and further collaborations with other researchers to achieve the better outcomes. He/she will be quite autonomous but daily communication with the PI or other members of the group will be needed, always reporting advances and possible problems. We are a group of experts in vascular biology and he/she will be trained in the study of functional, structural and mechanical properties of conductance and resistance arteries from different species specifically measuring vascular contraction and

relaxation, cellular and extracellular matrix events and vascular stiffness. His/her formation in cardiovascular biology will be complemented with studies in primary cultures of cardiovascular cells (smooth muscle, endothelial, fibroblasts, cardiomyocytes, adipocytes) which will allow him/her to gain further insights in the intracellular mechanisms responsible for the in vivo alterations. These more specific experimental techniques will be combined with general techniques of biochemistry and molecular biology such as RT-PCR, Western blot, enzymatic activities, etc. For mice models the ESR will work on hypertension and/or obesity models using different transgenic mice available in our laboratory or in collaboration with other groups. We also hold active collaborations with clinical researchers at different hospitals in Madrid involved in several aspects of cardiovascular damage. This will allow the ESR to gain access to different human samples to perform a more translational research.

We are looking for an open mind person, willing to travel and to stablish different collaborations. English speaking is mandatory. Candidates should have a background in medicine, biomedicine, or other bio/health sciences. No previous lab experience is needed, but past experience will be taken into account. Team work is essential to this position. References will be welcomed.

**GROUP LEADER**

**Title:** Dr

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**Research project/Research group website:** Novel inflammatory and antinflamatory mechanisms associated to cardiovascular damage in hypertension and obesity.

http://www.cibercv.es/grupos/grupo-de-investigacion/ficha-personal?id=22677

http://www.idipaz.es/PaginaDinamica.aspx?IdPag=125&Lang=EN