

BOLSA DE TÉCNICO DE INVESTIGAÇÃO (M/F)

Referência: PTDC/SAU-MII/100588/2008

Título do Projecto: “Functional and biological characterization of SSc5D, a novel molecule of the Scavenger Receptor Cysteine–rich family”

Código interno: PR202507

Está aberto concurso para recrutamento de um(a) bolseiro(a) de Investigação para colaborar no projecto acima referido, financiado pelo programa COMPETE - Programa Operacional Factores de Competitividade na sua componente FEDER e pelo orçamento da Fundação para a Ciência e a Tecnologia na sua componente OE.

A bolsa, em regime de exclusividade, terá a duração de 12 meses, eventualmente renováveis por mais 24, com início previsto a 1 de Junho de 2010. O valor mensal da bolsa será de € 745.00, pago por transferência bancária (preferencialmente).

Local de trabalho: IBMC - Instituto de Biologia Molecular e Celular (Grupo de Activação Celular e Expressão Genética), Porto, Portugal

Programa de trabalho: (ver anexo).

Perfil pretendido:

Os candidatos devem possuir Licenciatura em Bioquímica, Farmácia, Biologia ou afins, experiência prévia em laboratório com técnicas de biologia molecular, cultura de células, e bioquímica, e ser fluentes em Inglês.

Descrição das tarefas:

O candidato escolhido deverá colaborar na preparação de plasmídeos, manutenção de culturas celulares, transfeções de células, e trabalho de bioquímica e biologia molecular. É também esperado que o candidato possa desenvolver ou melhorar novos métodos ou tecnologias relevantes ao trabalho do laboratório.

Submissão de candidaturas: As propostas deverão incluir uma carta de motivação, CV, e uma carta de referência, e ser enviadas desde 7 até 21 de Maio de 2010 para candidaturas@ibmc.up.pt, referindo o código interno (PR202507).

A contratação será regida pelo estipulado na legislação em vigor relativamente ao Estatuto de Bolseiro de Investigação Científica, nomeadamente a Lei 40/2004, de 18 Agosto, e o Regulamento de Bolsas de Investigação Científica do IBMC (www.ibmc.up.pt/fellowships.php).

Functional and biological characterization of SSc5D, a novel molecule of the Scavenger Receptor Cysteine-rich family

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Supervisor: Alexandre M. Carmo

We have recently cloned a novel member of the Scavenger Receptor Cysteine-Rich (SRCR) superfamily, a soluble protein produced mainly by macrophages, that we termed SSc5D. In order to determine the biological, presumably immunological, function of SSc5D, we will construct a mouse defective in the expression of the SSc5D gene, and analyze the composition and behavior of the immune system of knockout mice in SPF conditions as well as upon challenges with different pathogens. Moreover, we will characterize the functional properties of human and mouse SSc5D, addressing the molecular and structural features of the protein, tissue expression and binding specificities. The SRCR superfamily comprises a group of molecules that contain one or more protein modules that have structural homology with the extracellular membrane distal domain of the macrophage type I scavenger receptor. Proteins that belong to this superfamily, and more particularly to the SRCR-SF group B in which SSc5D is included, are typically expressed in cells associated with the immune system. SRCR proteins are thought to be capable of recognizing complex patterns of macromolecules present in bacteria and other pathogens, and thus participate in innate immune responses. SSc5D was the last member of the family to be cloned, contains 5 SRCR domains very homologous to each other, and a long C-terminal domain predicted to be highly glycosylated, with a high content of O-linked sugars. An alternative-splicing generated isoform was detected, which excluded this mucin-like domain. This suggested, among other things, that the protein may have at least two functional regions, capable of binding distinct biological entities and establishing interactions between different immunological cells, or alternatively between host cells and foreign pathogens. In order to extensively and thoroughly characterize SSc5D in its various biochemical and biological aspects, this project will involve a consortium of well-established groups with different, yet complementary, skills, that will guarantee that all aims of the proposal will be achieved. The Cell Activation and Gene Expression group at the IBMC will engineer and express different domains of SSc5D, from both Human and mouse origins, and functionally characterize the protein addressing the binding specificities of the scavenger receptor domains, and of the C-terminal domain. This will include the analysis of binding to different cells and tissues, as well as to diverse types of foreign pathogens. In the Transgenic Unit of the Gulbenkian Science Institute we will produce a mouse defective in the expression of SSc5D and initially characterize the resulting phenotype of the SSc5D knock-out mouse, while the Microbiology and Immunology of Infection group at the IBMC will conduct further analyses on the mouse model, subjecting the animals to diverse infectious agents and immunological challenges. It is expected that the detailed characterization of the SSc5D knock-out mouse, together with the functional characterization of the protein will provide solid biological information on the immunological role of SSc5D, and will contribute to a better understanding of the superfamily of Scavenger Receptor Cysteine-rich proteins.