



Charcot Research Fund 2010

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40.000 € / 2 years

Study of a new potential autoantigen in multiple sclerosis

In a previous study carried out by the Biomedical Research Institute (BIOMED), a new protein was discovered (SPAG16 isoform 2) which is attacked by antibodies naturally produced by the body in a group of MS patients. This protein is a possible autoantigen in the pathological process of MS. There is virtually nothing known about the function of this protein or the possible role it may play in the development and progress of MS. Therefore this project will attempt to gain a better insight into the biological properties of SPAG16 isoform 2, and examine the relevance of this new potential autoantigen in the MS pathological process.

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39.323 €

Manipulation of dendritic cells and regulatory T cells in a model of experimental autoimmune encephalomyelitis (EAE)

Autoimmune diseases results from a harmful reaction of the immune system against certain cells or cell components of the patient. In multiple sclerosis, misguided T lymphocytes recognize components of the central nervous system and mount a chronic inflammatory reaction against it. To promote an immune reaction properly, T lymphocytes are dependent on certain signals coming from specialized antigen-presenting cells: the dendritic cells. This is also the case in autoimmune reactions. Dendritic cells deliver various so-called "costimulatory" signals. These latter signals can be manipulated using blocking reagents, to prevent T cell activation and potentially also harmful autoimmune reactions. At the same time it can be possible to retain the activity of a regulatory subset of T lymphocytes (Treg cells), which down-regulate auto-reactivity, as these Treg cells are less dependent on costimulation. This could result in long term effects, even after withdrawal of blocking reagents. Therefore, it will be tried in this project to manipulate costimulation in order to prevent effector T cell activation, while still allowing Treg activation, and thus to permanently suppress the autoimmune process.

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25.000 €

Immune biomarkers of disease activity in MS and interplay between Th17, Th1, Tg9 and T regulatory cells

The aim of our project, entitled "Immunological bio-markers of acute inflammation in MS", is to detect the changes in expression of certain cytokines that play a key role in the disease's attack and remission mechanisms. These molecules can be either over-expressed or under-expressed in the different phases of MS, and the highlighting of such changes would make it possible to establish an index of activity of the disease by means of a simple blood test. Such an index could be used to assess the patient's evolution, the need to start a course of treatment, and the degree of effectiveness of said treatment. The target cytokines are the interleukins 4, 9 and 17, which characterise various lymphocytic sub-populations. These lymphocytes' response to the presence of fragments of proteins from the myelin will also be analysed.

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Consequences of a viral infection on the development of murine experimental autoimmune encephalitis

Experimental models of multiple sclerosis involve either mouse immunization with myelin peptides or infection with neurotropic viruses, but do not completely reproduce the human disease. The purpose of our project is to examine the consequences of a viral infection on the pathogenic responses triggered by a concomitant immunization and to determine whether this combined stimulation provides a closer model to the disease.