

Tuesday, 10th December, 12.00 pm, Seminar Room

Host: Dr. Pedro Ramos

Myelin imaging and characterization by magnetic resonance imaging

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The proteolipidic myelin membrane covering neuronal axons plays an essential role in the central nervous system. Loss of myelin or demyelination, leads to neuronal loss, functional deficits and cognitive decline. With the progressive aging of population, the increase on the prevalence of demyelinating is a serious threat for industrialized countries. Nevertheless, myelin is naturally maintained by the action of oligodendrocyte cells in the brain which can further participate in the repair (at least partially) of the damage caused to myelin by demyelinating pathologies. This process is known as remyelination. Even though therapeutic strategies are focusing on promoting remyelination, so far no single drug or treatment has been approved for clinical use that promotes this process. This phenomenon is due, in part to the fact that our knowledge of de- and remyelination processes is still limited, somehow as a consequence of the lack of preclinical tools to study them. Our aim has been to develop robust experimental tools that allow us to better characterize experimental models of demyelinating diseases, both at physiopathologic and at functional levels, and to assess the success of potential remyelinating diseases. Ideally those experimental methods should be non-invasive, to allow longitudinal studies in the acute and chronic phases of the disease. In this sense. MRI represents one of the utmost experimental techniques to achieve this goal. Here we present our studies to develop experimental tools to study myelin in a non-invasive and longitudinal way, by means of Magnetic Resonance Imaging, and the uses of these tools to characterize demyelination and remyelination in an in vivo model of disease at anatomical and functional level.