Proposal for a research internship in “Structural and Functional Biochemistry”

Effect of phosphorus-based dendrimers on Redox metabolism

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Phosphorus-based dendrimers are synthesized at the « Laboratoire de Chimie de Coordination » (LCC) in Toulouse (team of Dr. Anne-Marie Caminade and Dr. Cédric-Olivier Turrin). Dendrimers are non-linear, hyperbranched polymers whose size and structure are perfectly defined. Dendrimers are developed towards many fields of application, including the biomedical field. Over the recent years, we have shown that a particular phosphorus-based dendrimer capped with AzaBisPhosphonate groups (the ABP dendrimer) activates human monocytes towards an anti-inflammatory response in vitro (1,2), and that it inhibits the development of mouse Experimental Arthritis (3) and Experimental Autoimmune Encephalomyelitis (EAE) (4) in vivo. More recently, we have discovered that the ABP dendrimer can also regulates the Redox metabolism in various eukaryotic cells.

The main objective of the proposal is to delineate the regulatory mechanisms of the ABP dendrimer on Redox metabolism in myeloid lineage cells such as human monocytes, and rodent microglia (microglia are resident macrophages from the Central Nervous System).

Tentative techniques: cell culture, flow cytometry, cellular biochemistry, quantitative RT-PCR.

References:


