



Pere Santamaria, IDIBAPS

Friday, February 21th, 2013, 13:00h CELLEX first floor A11

Title: A nanomedicine platform for the treatment of autoimmune disease

Abstract:

Our work focuses on advancing nanomedicines for the treatment of autoimmune diseases. The complexity of spontaneous autoimmune responses is a barrier to the design of strategies that can selectively purge the immune system of autoreactivity without impairing systemic immunity. We have discovered that treatment with NPs coated with mono-specific, disease-relevant peptide-major histocompatibility complexes (pMHC) can restore normoglycemia in diabetic animals and resolve limb paralysis in animals affected by experimental autoimmune encephalomyelitis. We have established that pMHC-NP therapy functions by expanding, in an epitope-specific manner, autoantigen-experienced regulatory T-cells that suppress the recruitment of other autoantigenic specificities. This expansion is dramatic, correlates with therapeutic efficacy, including duration of disease reversal, and can be monitored by analysis of peripheral blood, thereby functioning as a biomarker of therapeutic efficacy. I will briefly describe the experimental results that led to the discovery of the paradigm and therapeutic approach, will present unpublished new data on experiments testing several of its predictions, and will summarize our ongoing efforts for clinical translation.

Related article:

Tsai et al., Immunity 32:568, 2010

Biography:

Dr. Santamaria is Group Leader in the Institut d'Investigacions Biomediques August Pi i Sunyer in Barcelona, and Professor in the Department of Microbiology, Immunology and Infectious Diseases in the Faculty of Medicine at the University of Calgary, Canada.

He earned M.D. and Ph.D. degrees from the University of Barcelona, Spain, in 1983 and 1987, respectively, and completed his medical specialty training in Clinical Immunology in 1987 (program MIR), also in Barcelona. From 1988 – 1992, he pursued postdoctoral research training in the Department of Medicine and Institute of Human Genetics at the University of Minnesota in Minneapolis. He joined the Faculty of Medicine at the University of Calgary in 1992 as Assistant Professor. In 2009, he was Founder of Parvus Therapeutics, Inc., a bio-pharmaceutical company that specializes in the development of nanovaccines for the treatment of autoimmune diseases. He joined IDIBAPS In 2011.