

PhD Position: Program INPhINIT Fundació La Caixa

“Synaptic Molecular Pathology in Cognitive Disorders”

(Dr. Àlex Bayés)

CENTRE: IIB SANT PAU - Fundació Institut de Recerca de l’Hospital de la Santa Creu i Sant Pau

ADDRESS: C/ Sant Quintí 77- 79, 08041 Barcelona / www.recercasantpau.cat

CENTRE DESCRIPTION: The Research Institute of the Hospital de la Santa Creu i Sant Pau (HSCSP-IR) was created on 4 June 1992 as a private scientific foundation. Its mission is to promote basic, clinical, epidemiological and healthcare research in the health science and biomedical fields, with the ultimate aim of improving the health of the population. On 10 December 2003, the Autonomous Government of Catalonia approved affiliation of the HSCSP-IR as a University Research Institute attached to the Autonomous University of Barcelona (UAB).

The HSCSP-IR has as its mission to improve the health and quality of life of the population through the production and dissemination of scientific knowledge, the training of researchers to an international standard, innovation in health and the incorporation of medical advances in clinical practice and in healthcare policies.

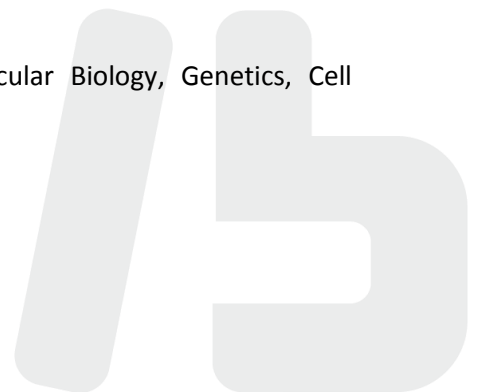
The HSCSP-IR is currently one of the most active research centres in Catalonia, especially in relation to translational research and the application of new discoveries to clinical practice. Since 2011 it has been part of the Catalan System of Research Centres (CERCA).

On 17 May 2009, the HSCSP-IR and nine other organizations created the Sant Pau Biomedical Research Institute (IIB Sant Pau), with the aim of strengthening collaborative translational research and bridging the gap between basic research and clinical practice so as to ultimately improve patient care.

AREA OF KNOWLEDGE: Life Sciences Panel

GROUP OF DISCIPLINES: Human Biology, Microbiology, Molecular Biology, Genetics, Cell Biology, Genomics and Proteomics, Biochemistry

GROUP LEADER: Dr. Àlex Bayés / abayesp@santpau.cat



RESEARCH PROJECT/RESEARCH GROUP:

Alex Bayés Lab Website - <http://www.molecular-synapse.org>

POSITION DESCRIPTION

-Research Project / Research Group Description:

Research Project: There is a growing body of data suggesting a central role of the synapse in psychiatric disorders. The existence of synaptic diseases or “synaptopathies” is increasingly accepted amongst the neuroscience community. Our studies on the human synapse have revealed it as a ‘hotspot’ for nervous system diseases, especially Intellectual Disability, Schizophrenia and Autism Spectrum Disorders (please see our papers in Nature Neuroscience, Molecular Psychiatry, Biological Psychiatry, Journal of Neuroscience, Nature Communications or Nature Reviews in Neuroscience; full publication list in lab web: www.molecular-synapse.org). Nevertheless, for most synaptopathies the underlying molecular pathophysiology is unknown. In this project we will investigate how dysfunctions of synaptic molecular mechanisms contribute to mental and behavioural disorders. We will focus in the forms of autism and intellectual disability caused by the genes SYNGAP1 and SHANK2. Identification of the key synaptic molecular pathways altered in these conditions will not only help us better understand the molecular roots of these conditions but also identify key proteins and signalling pathways for pharmacological intervention. Research Group Description: The Molecular Physiology of the Synapse Laboratory, led by Dr. Àlex Bayés, was established in May 2012. We are focused in understanding the organization and dynamics of the proteome of excitatory synapses. We want to unravel how synaptic proteome dynamics orchestrates synaptic plasticity, ultimately contributing to cognition and behaviour. Furthermore, we want to understand how disruption of normal molecular synaptic physiology contributes to cognitive disorders such as Intellectual Disability or Autism. As we are interested in understanding the functioning of the synaptic proteome as a whole we take advantage of a Systems Biology experimental approach, mainly involving mass spectrometry-based proteomics and bioinformatics.

-Job position description:

The PhD student will have the opportunity to develop an innovative research project in the field of molecular neurosciences. He/she will investigate the synaptic molecular mechanism relevant to neurodevelopmental disorders causing intellectual disability and autistic features.

The PhD student will join a young and dynamic basic research group at the Biomedical Research Institute Sant Pau, one of the largest and newest biomedical research institutes in the area of Barcelona. This group is part of the Neuroscience Research Area of the Institute, which includes research laboratories working on Alzheimer’s Disease, Parkinson’s Disease,

Psychiatric Disorders, Neuropharmacology, Neuroimaging, Down Syndrome or Neuromuscular Disorders amongst others.

He/she will receive intensive training in molecular and cellular neuroscience research as well as in related disciplines, such as Biostatistics, Bioinformatics, Proteomics, Mass spectrometry and clinical neuropaediatrics among others.

He/she will have the opportunity to attend national and international meetings relevant to the subject of his thesis and will also participate in international research and training secondments in the laboratories from our close collaborators in the United Kingdom, The Netherlands and The United States of America.

OTHER RELEVANT WEBSITES

Biomedical Research Institute Sant Pau Website: <http://www.recercasantpau.cat/en/>

