Research team

The research group of this project will be integrated into the 3D laboratory “Development, Differentiation and Degeneration” (https://www.cib.csic.es/es/departamentos/biomedicina-molecular/laboratorio-3d-development-didifferentiacion-y -degeneration), whose overall objective is to understand the physiological mechanisms of cell proliferation, differentiation and death during development and the alterations of these processes in pathological situations. More recently we have begun nanotechnology work applied to the in vivo detection of intracellular and tissue parameters.

Dr. Catalina Hernández-Sánchez and Dr. Enrique J. de la Rosa lead the line “Cellular and molecular alterations in retinitis pigmentosa and other neurodegenerative diseases, and new therapeutic approaches” (https://www.cib.csic.es/project/cellular-and-molecular-alterations-retinitis-pigmentosa-and-other-neurodegenerative). In the last two decades the group has developed research aimed at better understanding the molecular and cellular bases of the pathology, as well as the search for experimental therapies for the treatment of neurodegenerative diseases, particularly those that affect the retina. Initial studies were focused on the therapeutic potential of proinsulin, a neuronal survival factor characterized by the group in studies of embryonic development. The main achievement of this approach was the founding in 2007 of ProRetina Therapeutics, S.L., a spin-off of the CIB-CSIC whose mission was the development of therapies for retinal dystrophies. The results of that research were included in 2006 in a patent (licensed to ProRetina Therapeutics) and in an orphan drug application approved by the EMA and the FDA. At an academic level, the group continued the search for neuroprotective molecules, broadening our interest to neurotrophin receptors, to the GSK-3 pathway and, more recently to innate immunity, in all cases with published results. The idea underlying the study of inflammation and the innate immune response is that the cellular and molecular mediators of those immune responses are likely to have early and widespread expression, regardless of the mutation causing RP. In this way, their study can provide new therapeutic targets for the potential treatment of a significant proportion of patients. It is also important to highlight, as an indication of the group's commitment to transfer, another patent on a new molecule has been filed recently.