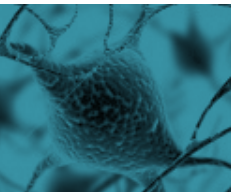

SUCCESSFUL**PROJECTS**

AMRePACELL \\ DEVELOPMENT OF NEW EXPERIMENTAL MODELS FOR MENTAL RETARDATION AND AUTISM BY IPS TECHNOLOGY: GENERATION OF HUMAN AFFECTED AND ANIMAL MODEL NEURONS BY REPROGRAMMING SKIN FIBROBLASTS AND TESTING GENE CORRECTION USING IN VITRO AND IN VIVO MODELS.

Austria\ Canada \ Finland \ France \ Germany \ Italy \ Israel \ Luxemburg \ Poland \ Romania \ Spain

Most proteins encoded by genes involved in mental retardation (MR) and autism disorder (AD) are associated with the synaptic junction between neurons. Studying the function of these proteins, as model of MR and autism, will not only help to better understand the molecular mechanisms of synapse formation, plasticity and learning and memory processes, but will also open the possibility of future therapeutic approaches for such invalidating disorders. Previous efforts to decipher the pathophysiological mechanisms of MR rely on the functional characterization of mouse models. Here we propose to use a new technology based on the genetic reprogramming of human somatic cells from patients carrying a mutation in MR and AD genes to derive cells that are pluripotent (iPS). In vitro differentiation of these iPSs toward the neuronal cell fate will lead to both excitatory and inhibitory neurons ,which we will use for an exhaustive and multidisciplinary analysis including morphological, biochemical and functional assessment of the synaptic activity and gene expression profile. Finally, we will also explore in mouse the possibility to use iPS cells for assessing lentivirus-mediated site-specific integration of cDNA constructs into defect genes and into gene-correct mutant iPS as possible cell therapy.

COORDINATOR | CARLO SALA

PROJECT**PARTNERS:**

Carlo Sala
IRCCS Foundation, National Neurological Institute Carlo Besta, Milano, Italy

Eckart Gundelfinger
Leibniz Institute for Neurobiology, Magdeburg, Germany

Pierre Billuart
Institut Cochin, Paris, France

Jacek Jaworski
International Institute of Molecular and Cell Biology, Warsaw, Poland