A CELL-BASED MODEL FOR THE STUDY OF PATHOLOGICAL FORMS OF TAU PROTEIN

D. Kortazar, R.M. Mella, M. Roura, A. Castilla, I. Badiola, E. Ferrández, J. Gámiz, A.C. Salado, P. Villacé

Innoprot, Derio, Spain

The microtubule associated protein tau (MAPT) is the main component of the neurofibriillary tangles (NFT), aberrant structures that appear in the brain of Alzheimer’s disease patients and other tauopathies, such as FTDP-17 or corticobasal degeneration. Six alternatively spliced tau isoforms are expressed in the adult central nervous system, predominantly located in axons. Tau protein binds to and stabilizes microtubules but in pathological states, it aggregates and loses its important functions. These tau aggregates are composed basically by hyperphosphorylated and truncated forms of tau. Multiple tau gene mutations are pathogenic for hereditary FTDP-17 disease. These mutations have similar effects to hyperphosphorylation in tau and result in NFT formation.

We generated stably transfected cell lines that expressed different forms of tau protein fused to turboGFP in order to study tau behaviour in these conditions and develop a fluorescence-based assay for the screening of new inhibitors for tau kinases.