

Title: **Synthesis of peptide inhibitors of Tau protein aggregation.**

Student: Adrián Fontela González

Date: January 2020

Supervisor/s: Dr. Ernest Giralt Lledó

Departament de Química Inorgànica i Orgànica.

Secció de Química Orgànica. Facultat de Química, UB

Dra. Macarena Sánchez Navarro

Institute for Research in Biomedicine IRB

Alzheimer Disease (AD) is an irreversible neurodegenerative illness that slowly destroys the ability to remember and carry out quotidian tasks. AD is characterized by A β deposits and tau aggregates, among others.

Tau Protein, mainly found in neurons had become a clear target because of its pathogenic aggregation, since is related to neuronal death and therefore with Alzheimer Disease.

To interfere with the protein aggregation, peptides blockers or inhibitor peptides are proposed. However, there is an extra difficulty in which de Blood-Brain Barrier takes a key role. BBB is known as a barrier that protect the brain limiting the access of injurious substances but also from drugs.

Nevertheless, there is a solution that consists in the application of BBB-shuttles which are peptides able to increase the transport to the brain of compounds that cannot cross unaided. Combination of peptides inhibitors and BBB-shuttles, prepared by Solid-Phase Peptide Synthesis (SPPS), increase the probability of inhibitors to reach to Tau protein.

Keywords: Alzheimer Disease, Tau protein, peptides inhibitors, tau aggregation, BBB-shuttles, Solid-Phase Peptide Synthesis.