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3D NEURAL STEM CELL MODELS OF ALZHEIMER'S DISEASE

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Number of death caused by dementia has doubled in the last 15 years bringing it to the 7th leading cause of global death. Alzheimer's is the main form of dementia characterized by amyloid- β plaques and neurofibrillary tangles. It is critical to establish a relevant disease model in order to understand the pathology of the dementia and also develop a drug.

Introduction of 3D cell culture technologies provided us with improved model for cellular research for drug discovery and other medical applications. It was very challenging to create reliable human disease model due to high levels of soluble and insoluble toxic amyloid β ($A\beta$) species that do not recapitulate the true Alzheimer's disease pathology.

Recently, Kim et. al created a three-dimensional (3D) human neural stem cell model of Alzheimer's disease using β -amyloid precursor protein and presenilin-1 overexpressing ReNcell™ VM human neural stem cell lines. This 3D cell model was able to induce robust extracellular deposition of amyloid- β , including amyloid- β plaques, and high levels of phosphorylated tau in the soma and neurites, as well as filamentous tau. This model is a valuable tool to study age-related Alzheimer's dementia as well as other neurodegenerative disorders.

Biography

Marina Wiklander has completed her PhD in 2008 in Experimental Haematology at the Uppsala University in Sweden at the department of Genetics and Pathology. She is the Field Marketing Specialist for Cell Culture portfolio at Merck.

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