Journal of Alzheimer's Disease 14 (2008) 363
IOS Press

Preface

Is Tau Aggregation Toxic or Protective?

This special issue is dedicated to one of the histopathological hallmarks of Alzheimer's disease (AD), the neurofibrillary tangle, whose main component is phosphorylated tau in an aggregated form. In the brain, accumulation of tau pathology correlates with the progression of disease, and it has been suggested that tau pathology, either as phosphorylated tau or aggregated tau or both, could be toxic to a neuron. However, much controversy exists concerning the role of tau aggregation, and while many support the notion that aggregates are toxic, others opine the converse and suspect a role in neuronal survival. Such divergent views within the field of neurodegenerative diseases are not uncommon.

In this issue, diverse views on the role of phosphorylated tau and aggregated tau in disease pathogenesis are presented by leading experts in the field. At one end of the spectrum, the presence of phosphorylated tau as a strong polyanion, could be dangerous for a cell, independent of being the primary cause of its death. The presence of large protein aggregates could also affect the cellular machinery such as the proteasomes, lysosomes, or autophagosome, needed for protein degradation, or simply leave little space for the function of cell organelles or transport within the cell. Alternately, at the other end of the spectrum, aggregated tau could play a protective role promoting neuronal survival in AD.

Overall, these scholarly and insightful articles present opinions that express the gamut of possible functions of tau protein. The search must continue for the functional role of phosphorylated and aggregated tau that could facilitate early intervention to promote healthy brain aging.

Jesús Avila, George Perry and Mark Smith

ISSN 1387-2877/08/$17.00