A cell surface, lipid raft-based signalling complex links amyloid-beta to tau via Fyn

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United Kingdom

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A cell surface, lipid raft-based signalling complex links amyloid-beta to tau via Fyn

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Research Abstract

Alzheimer’s disease is characterised by a build-up of amyloid protein in the brain, which clumps together to form toxic aggregates. These aggregates latch on to the surface of nerve cells in the brain by attaching to proteins on the cell surface. One of the key cell surface proteins involved in binding amyloid is the prion protein. Binding of amyloid to the prion protein causes activation of signaling pathways in the neurons and ultimately the modification of another key protein tau. These changes cause the nerve cells to malfunction and eventually die. We have evidence that to function in this way the prion protein has to be located in particular regions (so called lipid rafts) at the cell surface that are rich in cholesterol. Removing the cholesterol disrupts the

binding of amyloid to the prion protein and the subsequent signaling pathways in the cell. We hypothesise that a cell surface, lipid raft-based signaling complex is key to the binding of amyloid and the subsequent cellular responses, that the prion protein and another protein that we have identified (LRP1) are key structural and functional components of this complex, and that this complex is altered in Alzheimer’s disease and in aging.

Further information available at:

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