Viktoriia Kartysh

*BSc (Hons) Biomedical Sciences*

**Pyroglutamylated Aβ and α-synuclein phosphorylated at serine 129 in mixed Alzheimer’s and Lewy body disease**

Alzheimer’s disease (AD) and Lewy body diseases (LBD) are among the most common neurodegenerative diseases associated with dementia. Cases that fulfill neuropathological criteria for both AD and LBD are classified as mixed dementia. Accumulations of toxic proteins are found in the affected brains: neurofibrillary tangles and amyloid β plaques in AD patients, whilst Lewy bodies composed of α-synuclein in LBD patients. Pyroglutamylated Aβ (pE(3)-Aβ) and α-synuclein phosphorylated at serine 129 (pS129α-syn) are sub-species of Aβ and α-synuclein respectively.

Specialised stains were used to visualize and quantify pE(3)-Aβ and pS129α-syn in human *post-mortem* brain tissue. Data from project was statistically analysed revealing a synergistic relationship between protein aggregates. The study depicted a positive correlation between pS129α-syn and pE(3)-Aβ in the striatum and between HP-t and pE(3)-Aβ in the amygdala. Differences in pathological load in mixed AD/DLB cases were subsequently assessed across clinical diagnoses and statistically, no significant differences in proteinopathies were observed.

Funding source: **Newcastle University**

Supervisor: Prof Johannes Attems