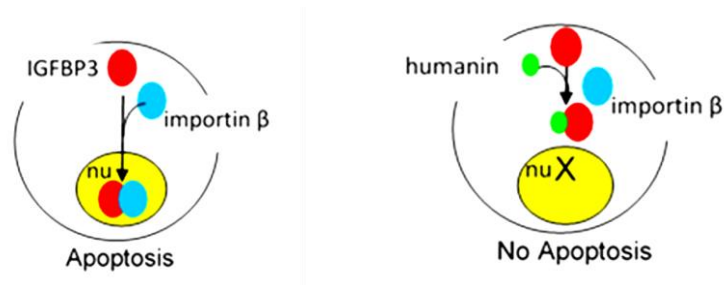


Exploring the Interaction of Humanin and its Analogs with Insulin like Growth-Factor Binding- Protein 3 and Regulation of Apoptosis in Alzheimer's Disease

Samanthi Herath Gedara, Eastern Michigan University, M.S. Thesis, Ypsilanti, MI, 2015.

Apoptosis of neuronal cells is known to result in neurodegenerative diseases such as Alzheimer's disease, and insulin like growth-factor binding- protein 3 (IGFBP-3) is known to induce apoptosis. The mitochondrial derived peptide humanin may prevent cell apoptosis by binding to IGFBP-3 modulating its effects. We hypothesize that humanin protects against neuronal cell death induced by IGFBP-3 via a mechanism that blocks the importin β -dependent nuclear import of IGFBP-3 (Figure).



Solid phase peptide synthesis, competitive ligand dot blotting, co-immunoprecipitation and enzyme-linked immunosorbent (ELISA) based binding assay were used to investigate how humanin and analogs of humanin affect IGFBP-3-importin β 1 interaction. Co-immunoprecipitation demonstrated that humanin interfered with IGFBP-3 and importin β 1 interaction *in vitro*. An ELISA- based binding assay was used to quantitatively measure the affinity of the humanin peptide to IGFBP-3. Better understanding of this mechanism may provide clues for therapeutic drug development against Alzheimer's disease in the future.