



P-047**A MEMBRANE PROTEIN IN THE NUCLEUS****Barbara Vodicska^{1,2}, Antal Nyeste², Eszter Tóth³, Ervin Welker^{2,3}**

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Prion and Shadoo proteins, which belong to the prion protein super family, are membrane proteins. They have a secretion signal on their N-terminus therefore they use the secretory pathway for folding and trafficking. On their C-terminus they have a glycosylphosphatidylinositol (GPI) anchor which attaches them to the cell membrane. While studying the subcellular localisation of these proteins with the use of fluorescent protein tags we found the Prion protein in the cell membrane of mammalian cells but, surprisingly, the Shadoo protein showed nuclear localisation in a fraction of cells in addition to the normal membrane localisation. My aim was to explore the cause of this duality.

I examined the localisation of several fusion fluorescent protein constructs in mammalian cells to reveal which part of the Shadoo protein is responsible for the extraordinary localisation. There are particular segments in both proteins which are capable to direct them to the nucleus from the cytosol but the question remains: How can a secretory protein get out of the secretory pathway to the cytosol?

My results suggest that the GPI anchor signals of the two proteins have different effects on the nuclear localisation of secretory proteins: in the presence of the Prion protein GPI signal the nuclear localisation is almost entirely eliminated. In contrast, the presence of the Shadoo protein GPI signal on the same protein results in an increased nuclear localisation. Our results suggest that there may be a pathway for proteins to transit from the secretory pathway to the cytosol. This may be of great importance concerning proteins which are involved in signal transduction or which have dual functions. Our results call for further examinations to reveal the mechanism of this transition.