Transmembrane proteins ASCT1 and ASCT2 are ubiquitous neutral amino acid transporters. Apart from their transporter function in metabolically active cells, they also serve as receptors for a wide group of retroviruses. All retroviruses recognizing the transmembrane receptor ASCT2/ASCT1 share a similar *env* gene, encoding the envelope glycoprotein. Syncytin-1 is the envelope glycoprotein, encoded by human endogenous retrovirus type W, produced in placental cytotrophoblasts of primates, including human. Interaction of receptor binding domain of Syncytin-1 and specific extracellular region of ASCT2 is responsible for fusion of neighbouring cells and formation of multinucleated syncytiotrophoblast. The importance of syncytiotrophoblast lies in higher efficiency of feto-maternal exchange of nutrients and simultaneously in modulation of immune response of mother towards fetus. Defect in syncytiotrophoblast differentiation often leads to complications during pregnancy and impairs the proper development of embryo. Characterization of protein domains responsible for the interaction between Syncytin-1 and its receptors is important to uncover genetic causes of these pathologies. Furthermore, understanding the interaction helps us to clarify the mechanism of cell entry and explains the molecular basis of host sensitivity or resistance towards retroviruses.

Key words: ASCT1, ASCT2, ECL2, RDR, receptor, endogenous retrovirus, HERV-W, retroviral glycoprotein, Syncytin-1, cell fusion, syncytiotrophoblast, immunosuppression