

Signaling pathways involved in neuron-astrocyte adhesion and migration

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Astrocytes in the normal brain possess a stellate shape reflecting their non-migratory properties.

Alternatively, in neurodegenerative diseases or after injury, astrocytes become "reactive" in a process known as astrogliosis or reactive gliosis, retract their processes, become polarized and acquire front-to-rear asymmetry typical of migratory cells. On the other hand, neuronal migration is a common process during embryonic development, but only few types of neurons can migrate and differentiate during adult life in the central nervous system. Those that do migrate follow tracks made by glial cells and mainly give rise to interneurons. In vitro, molecular mechanisms involved in adhesion of cells to and migration on extracellular matrix proteins have been widely studied; however, signal transduction pathways explaining how particularly neurons and astrocytes, mutually modulate adhesion and migration are less well known. In this review, we describe and discuss how ligand/receptor interact