Abstract:

NG2 glia represent a new type of glial cells in central nervous system, which does not belong to astrocytes, oligodendrocyte or microglia. and their most frequent marker is chondroitine sulphate proteoglycan NG2. These cells keep their proliferation ability in adult brain and it is generally accepted that they can differentiate into oligodendrocytes. This thesis summarize the current knowledge about membrane properties of NG2 glia, namely expression of numerous types of ion channels and ionotropic and metabotropic receptor on their membrane. NG2 glia express outwardly and inwardly rectifying K+ channels, Ca^{2+} activated K^{+} channels and two-pore domain K^{+} channels. Interestingly, they also express voltage gated Na+ channels, L, T, P/Q and N type Ca2+ channels and voltage gated Cl- channels. Furthermore, nonspecific cationic channels, such as HCN and TRP, were identified in NG2 glia and they express Na^{+}/Ca^{2+} exchanger at high level. There are also ionotropic and metabotropic glutamate and GABA receptors on NG2 glia membrane, together with nicotinic and muscarinic receptors, adrenergic and glycine receptors, metabotropic and ionotropic purinergic receptors, receptors for serotonine, dopamine and histamine. Ion channels and receptors in NG2 glia play an important role in their proliferation, differentiation and migration.