Traumatic brain and spinal cord injuries are worldwide medical problems. Disruption of the tissue leads to the changes in the cellular and extracellular matrix composition. This newly formed scar is not permissive for the axonal regrowth. Its function in prohibiting neuronal plasticity is similar to the perineuronal nets present in undamaged brain. One of the key components of both perineuronal nets and scar is proteoglycan aggrecan. In this thesis I focused on the function of aggrecan in central nervous system, mechanism of its growth inhibitory feature and research in the field of traumatic brain or spine cord injury treatment. It is important topic, since currently there are not any approved human therapies to recover axonal growth at the site of formed scar.