
Neurosciences

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Neurodegeneration is among the main priorities of European biomedical research due to a significant increase in the incidence of neurodegenerative diseases linked to aging populations in developed countries. Research teams of neurological and psychiatric clinics in collaboration with other CU institutes are involved in this research by studying the mechanism of neurodegeneration in Parkinson's disease and other extrapyramidal disorders, where the work focuses mainly on the genetic background, pathophysiological mechanisms and early biomarkers of neurodegeneration, including sleep and wakefulness disorders. The research of Alzheimer's disease and other dementias includes longitudinal studies in the Czech population focused on risk factors, biomarkers and the possibility of an intervention in early stages of neurodegenerative diseases.

Unknown mechanisms of activation of the memory trace and its propagation across chained neural networks is also studied using neurophysiological methods. This makes it possible to understand the pathophysiology of memory disorders, in particular the development of Alzheimer's disease studied in transgenic animal models. Neuroscience research teams of CU are also engaged in the study of diagnostic markers and the relationship between clinical, imaging, genetic and immunological parameters in multiple sclerosis and other demyelinating and autoimmune diseases. Programmes focused on spasticity mechanisms and actions to influence them in multiple sclerosis and chronic spinal cord injury are also related to the above. Genetic bases and mechanisms of development of impairment in congenital development disorders with a particular focus on childhood seizure disorders are another important item. The research focuses on neurobiological mechanisms and possibilities of their prevention in psychotic disorders, mood disorders and other neuropsychiatric disorders, including eating disorders. Last but not least, many studies of neuropsychopharmacology of pain and drug addiction are in progress.

Selected outputs

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