Post-doctoral position is announced by

Laboratory of Plasticity and Reparation of the Nervous System,
Division of Neuroanatomy, Department of Anatomy, Faculty of Medicine MU Brno,
Czech Republic

The position is available for 3 years with a flexible starting date from April 2007. Salaries will be determined by the candidates' academic record, experience, training and publications.

Successful candidates will hold a PhD and/or MD and have an excellent experience with rodent experiments, anatomical and molecular biology techniques. Good English, talent and enthusiasm for research are also expected.

Interested candidates should send their CV, cover letter, statement of research interests and future career aspirations as well as contact information for two referees to

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About Us

Laboratory of Plasticity and Reparation of Nervous System is a member of European Glia Network with main research programme dealing with interactions between neurons and glia cells during development and reparation of the nervous system. The well-equipped laboratories are housed in the new building of the Masaryk University Campus in Brno-Bohunice and the research activities are supported by various grants.

Last years, academicians and clinicians of the Laboratory have obtained a number of results published in prestigious journals and accepted by worldwide professional community.

We are offering a participation in scientific projects with remarkable clinical outcomes.

Applicants are invited for a postdoctoral position to investigate following TOPICS:

Endogenous cannabinoid receptors and neuropathic pain - experimental study

A treatment of neuropathic pain is serious medical problem with regard to little knowledge about cellular and molecular mechanisms of its origin. It is possible to induce mechanoallodynia and thermal hyperalgesia in animal experimental models that matched to cases of neuropathic pain in human. Simultaneously, the experimental models admit to study the cellular and molecular changes occurring in critical structures of the nervous system. The theme includes a study of the expression of CB1 and CB2 cannabinoid receptors in the dorsal root ganglia, peripheral nerves and spinal cord in experimental models of neuropathic pain by means of immunohistochemical methods and ELISA test. The results can distinctively contribute to better understanding of a role of endogenous cannabinoid system in induction of neuropathic pain and its control by endogenous analgetic system.

A role of cytokines in the development of neuropathic pain

Following a peripheral nerve lesion there are cellular and molecular changes producing a condition for reinnervation on one side, and they induce neuropathic pain on the other side.Cytokines are suggested to be key signal molecules inducing the changes which provoke neuropathic pain. The cellular and molecular changes occur not only on the impaired side but also on the structures of collateral side. The theme is focused on qualitative and quantitative study of selected cytokines (TNFα, ILb, IL6, IL10) in the spinal cord as well as ipsi- and contralateral dorsal root ganglia, peripheral nerves of experimental models of neuropathic pain by immunofluorescence, ELISA or Western Blot techniques.

A role of chemokines in the development of neuropathic pain

A nerve lesion resulted in a cellular and molecular changes not only in the dorsal root ganglia homologous to corresponding nerve, but the changes expand to adjacent ganglia. Above mentioned changes include among others an invasion of blood cells stimulated by chemokines. Recently, a little information is available about interaction among neurons and glial cells of the dorsal root ganglia and invaded blood cells in the process of neuropathic pain induction. The theme is aimed to qualitative and quantitative study of selected chemokines and their receptors (SDF1, CXCR4, MCP-1, Fractalkine/CX3CL1/ and fractalkine receptor /CX3CR1/) in the nervous system of experimental neuropathic pain models by immunofluorescence, ELISA and Western Blot techniques.

Cellular and molecular mechanisms stimulating a growth and differentiation of afferent and motor axons

Cellular and molecular changes proceed distal to the nerve lesion to create a milieu stimulating axon regeneration. In spite of high techniques for microsurgical reconstruction of damaged peripheral nerve, results of functional reinnervation are not satisfactory. A distinct improvement of functional reinnervation is based on new findings of cellular and molecular mechanisms which play critical role during nerve regeneration and reconnection of neurons and their target tissue. The study of expression of the intrinsic and extrinsic factors like neurotrophins and extracellular matrix molecules in experimental models of nerve regeneration is goal of the theme.

Cellular and molecular mechanisms of selective navigation afferent and motor axon after traumatic lesion of peripheral nerve

Clinical results of functional reinnervation following nerve lesion are not satisfactory even thought microsurgical reconstruction is mastered at the top level. To improve this situation can solve only knowledge of cellular and molecular mechanisms that guarantee exact and selective navigation of regenerating axons to target tissue. The goal of theme is immunohistochemical study of extracellular matrix and other molecules which play a role for selective navigation of axons in experimental models of the nerve lesion.

Phenotypic characteristics of Schwann cells alongside motor and sensory axons as a factor of functional nerve reinnervation and preparation of nerve prosthesis

Schwann cells are glial cells of the peripheral nerve making myelin or cytoplasmic sheath around the axons. The cells play an important role during regeneration of lesioned nerve.To this time, it was believed that Schwann cells of afferent and motor axons share equal phenotype. A number of results including those obtained by our laboratory indicate some quantitative immunohistochemical differences among Schwann cells of different physiological types of axons. The difference of Schwann cells may suggest a considerable involvement for stimulation of axonal growth and maturation of regenerated axons, and thus for successful functional reinnervation after nerve lesion. The programme is aimed in quantitative immunohistochemical differences in expression of selected molecules in Schwann cells of afferent and motor axons.