Postgraduate

Postgraduate study programs

Supervisors:

Prof. Soňa Nevšímalová, M.D., DSc.
Prof. Jan Roth M.D., PhD.
Prof. Evžen Růžička, M.D., DSc.
Prof. Karel Šonka, M.D., DSc.
Assoc. Prof. Eva Havrdová, M.D, PhD.
Assoc. Prof. Robert Jech M.D., PhD.
David Kemlink, M.D., Ph.D.
Tomáš Kalinčík, M.D., Ph.D.
Hana Brožová, M.D., Ph.D.
Iva Příhodová, M.D., Ph.D.
MUDr. Jiří Klempíř, Ph.D.
Jitka Bušková, M.D., Ph.D.

General PGS themes:

- Disorders of sleep and wakfulness in childhood and adulthood (clinical polysomnographic, biochemical and genetic correlations
- Exogenic factorc with impact on the quality of sleep (detection of changes in sleep macro- and microstructure). Civilisation diseases and quality of sleep.
- Neurodevelopmental problems and neurometabolic disorders of childhood

Annotation of themes:
PGS research projects come out of the supervisor´s long-term study of the problems of sleep from the clinical, neurophysiological and genetic points of view. Research is centered both on primary disorders of sleep and waking but also on secondary sleep disorders concomitant to a number of neurological diseases. Research efforts are aimed also at the growing incidence of civilisation diseases related to disordered sleep quality and quantity. Other options for research projects are in the field of paediatric neurology - a spectrum of developmental, metabolic and degenerative diseases; projects orientated towards clinical, genetic and neurophysiological problems and also toward new diagnostic and therapeutic methods.

General PGS themes:

- Clinical, functional and morphometric parameter correlations in Huntington´s disease
- Non-motor manifestations of Huntington´s disease
- Huntington´s disease: genetic testing impact on patients, persons at risk and caregivers

Annotation of themes:

PGS research projects based upon experience gathered at the Extrapyramidal Disease Centre with respect to the diagnostic, therapeutical and basic research problems related to Huntington´s disease. The Centre maintains close cooperation with the Institute of Medical Genetics, with the Department of Psychiatry and other institutions. The Center is part of the European Huntington´s Disease Network and takes a share in its activities. Available in the Centre´s database are the results of genetic tests, structured anamnestic data and results of auxiliary diagnostic methods including scales for the quantification of the patients´ motor and neuropsychological disorders. The database will help in the choidce of patients for further study cooperation. For clinical research purposes, use will also be made of specific MRI modalities,

of neuropsychological testing by psychologists experienced in handling patients with Huntington´s disease, of speech therapists´ experience in the management of speech and swallowing disorders etc.

General PGS themes:
- Study of motor and non-motor effects of deep brain stimulation in extrapyramidal movement disorders
- Analysis of gait and other inborn and acquired movement stereotypes and their disorders
- Selection, phenotypic characteristics and gene analysis of clinical subpopulations of individuals with extrapyramidal diseases (essential tremor, juvenile Parkinson´s disease, Tourette syndrome and the like)
- Neuropharmacological mechanisms and therapeutic studies in extrapyramidal movement disorders

Annotation of themes:
PGS research projects are inspired by the clinical work done by the Extrapyramidal Disease Centre. Hypo- and hyperkinetic movement disorders in Parkinson´s disease and other extrapyramidal affections serve as model examples for the study of movement control mechanisms in man. Clinimetric, functional-imaging, kinesiological, electrophysiological and neuropsychological methods are made use of for the monitoring of motor and non-motor manifestations of the disease. They are also applied for studying the effects of pharmacological and non-pharmacological therapeutic procedures (including functional neurosurgical operations and physiotherapeutical techniques). Clinical-epidemiological and genetic studies are undertaken for the purpose of learning more about the aetiopathogenesis of each of the pathological entities.

General PSG themes:
- Sleep-related breathing disorders
- Sleep and waking disorders in neurological diseases
- Pathophysiology of sleep and waking disorders
- Social aspects of sleep and waking disorders

Annotation of themes:
The themes are based on the clinical experience gathered by staff members of the Centre for Sleep and Waking disorders of the VFN General Teaching Hospital and CU 1st Medical Faculty. Sleep-related breathing disorders are very frequent, occurring either alone or in combination with concomitant diseases. The rate of sleep disorders underlying neurological diseases is quite significant, which is why our own and foreign neurological centres worldwide devote a great deal of efforts to these inter-relations. Knowing more about them can help expand our knowledge of their pathophysiology as well as improve the patients´quality of life. Research at the Department of Neurology, CU 1st MF, benefits from a well equipped sleep laboratory, a large number of standardly examined patients, and from cooperation with related as well as remote disciplines. While the social aspects of sleep and, in particular, waking disorders are under intensive study worldwide, little attention has been paid to them in the CR so far. Hence, we regard this line of research as useful and prospective science-wise.

General PGS themes:
- Immunosuppressive methods in the treatment of multiple sclerosis including its malignant forms
- Neurorehabilitation for motor function control in MS patients

Annotation of themes:
1. Tests for the safety and efficacy (clinical, immunological, MRI) of combination methods with immunosuppressives in MS management. Introduction of intensive immunoablation method in the treatment of malignant MS. Detection of patients responding to treatment or having risk factors for malignant prognosis with the aid of molecular - genetic methods in cooperation with KDDL laboratory and Prof. P.Martásek, DrSc.).
2. Monitoring the effect of modern neurorehabilitation methods in MS management (including functional MRI) - in cooperation with PhDr. K. Řasová, PhD.
3. Neuropsychology of MS

Note for anyone interested: priority is given to candidates who frequented the Centre for Demyelination Disorder already during the undergraduate studies and who participated both in clinical investigation and in scientific projects.

General PGS themes:
- Pathophysiological mechanisms of movement control in extrapyramidal diseases
- Functional magnetic resonance - new tasks and their application in neurology and neurosurgery

Annotation of themes:
Research is centered on the effects of deep brain stimulation, on the analysis of the physiological mechanisms of voluntary movement control and on the pathophysiological mechanisms of abnormal motor patterns (dystonia,

myoclonus, tremor, Parkinsonism), white matter MR tractography, multimodal evoked potentials, unit brain activity recording, electroencephalography and transcranial magnetic stimulation

General PGS themes:
- Restless leg syndrome - clinical and genetic aspects
- Neurophysiological methods for sleep testing - application of polysomnography and actigraphy
- Genetic association and linkage studies - practical uses of statistical genetics in neurological disorders

Annotation of themes:
Research is mainly concerned with sleep disorder studies at the Centre for Sleep and Waking Disorders, in particular: the restless leg syndrome. Work in this field is centered on the clinical aspects of the syndrome, making good use of especially the monitoring capacity of the sleep laboratory. In cooperation with counterparts in Munich, basic research is in progress of its genetic mechanisms with the aid of large capacity platforms. The association study basic procedures for the detection and verification of the effect of human genome polymorphism can also be applied to other multifactorial diseases with significant genetic components; as for sleep disorders, research into narcolepsy is now in progress.

General PGS themes:
- Multiple sclerosis: prediction and prognosis, neuropsychology, pharmacoeconomy and genetics)

Annotation of themes:
The focus of the research is to investigate clinical and paraclinical predictors of course of multiple sclerosis and the efficacy of treatment. Other researched aspects of multiple sclerosis comprise: efficacy and safety of combined immunomodulatory and immunosuppressive therapy, osteoporosis, immunology, genetics, pharmacoeconomics and neurophysiology. Training in biostatistics and research methods is integrated in the research projects.

General PGS themes:
- Sleep disorders in childhood and their health consequences
- Abnormal movements related to sleep
- Sleep disorders in child neuropsychiatric disorders

Annotation of themes:
Research topics are aimed at child sleep disorders which can influence the quality of life (abnormal movements related to sleep, obstructive sleep apnoea, parasomnias). Sleep assessment can be based on evaluation of polysomnographic characteristics including sleep mictrostructure. Questionnaires and actigraphy represent other possibilities of sleep investigation.
Another topic is an incidence of sleep disorders in child neuropsychiatric disorders (attention deficit/hyperactivity disorder, Tourette syndrome), possible mutual relationship and impact on clinical symptomatology.