

## Postgraduate course in Biomedicine Advances in Neurosciences B90005

**English version 2. 5. – 13. 5. 2022**

**Course mode: electronic/distance**

Guarant of the course: prof. MUDr. Karel Šonka, DrSc. ([ksonka@lf1.cuni.cz](mailto:ksonka@lf1.cuni.cz))

Secretary of the course: Mgr. Irena Růžičková ([iruzi@lf1.cuni.cz](mailto:iruzi@lf1.cuni.cz))

Please, sign up using this link: <https://forms.gle/P9zSkeWrD862PaLS6>

morning 8:30 - 12:00 (unless stated otherwise)  
afternoon 13:00 - 16:00 (unless stated otherwise)

### Monday 2.5.

MORNING			
	Modern neuroanatomy and its methods	prof. MUDr. R. Druga, DrSc.	Off-line
	Sensory functions	doc. MUDr. P. Zach, Ph.D.	Off-line
AFTERNOON			
	Synaptic transmitters and receptors	RNDr. R. Tureček, CSc., Ing. M. Králíková, Ph.D.	Off-line

### Tuesday 3.5.

MORNING			
	The role of glia in the CNS: physiology and pathophysiology	doc. MUDr. L. Vargová, CSc. / Ing. M. Anděrová, CSc.	Off-line
	Brain extracellular space and extracellular matrix	doc. MUDr. L. Vargová, CSc.	Off-line
AFTERNOON			
	Purinergic P2 receptors and their role in neuroendocrine cells	RNDr. H. Zemková, CSc.	Off-line
15.00 – 15.45	Opioid peptides, their receptors + cannabinoid receptors	Mgr. J. Jakubík, Ph.D.	On-line

### Wednesday 4.5.

MORNING			
	Voltage-dependent ion-channels and action potential	RNDr. J. Krůšek, CSc.	Off-line
	Ionotropic glutamate receptors and excitatory synaptic transmission	prof. MUDr. L. Vyklický, DrSc.	Off-line
	Genetics of ionotropic glutamate receptors in neurodevelopmental and neuropsychiatric diseases	RNDr. A. Balík, Ph.D.	Off-line
	Synaptic plasticity: Mechanisms of LTP and LTD induction in the hippocampus	Mgr. M. Kořínek, Ph.D.	Off-line
	Excitotoxicity and neurodegeneration	Bc. T. Smejkalová, Ph.D.	Off-line
AFTERNOON			
13.00 – 14.30	Biological clock and circadian regulation of sleep	doc. PharmDr. A. Sumová, DSc.	On-line

14.45 – 16.15	Sleep, wake and clinical disturbances	prof. MUDr. K. Šonka, DrSc.	<b>On-line</b>
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### Thursday 5.5.

MORNING			
	Neurobiology of learning and memory a advanced methods in the studies of the brain and behavior	prof. RNDr. A. Stuchlík, Ph.D., prof. MUDr. J. Laczó, Ph.D.	<b>Off-line</b>
AFTERNOON			
13.00 – 14.15	Balance systems and vestibular disorders	doc. MUDr. Jeřábek, CSc.	<b>On-line</b>
	Neurophysiology of hearing	prof. MUDr. J. Syka, DrSc., MUDr. O. Profant, Ph.D.	<b>Off-line</b>

### Friday 6.5.

MORNING			
	MRI in clinical practice and white matter imaging	prof. MUDr. M. Vaněčková, Ph.D.	<b>Off-line</b>
	The role of MR in the imaging of neurodegeneration and brain iron quantification	MUDr. P. Dušek, Ph.D.	<b>Off-line</b>

### Monday 9.5.

MORNING			
8.30 – 9.30	Neural mechanisms of electroencephalography and evoked potentials.	prof. MUDr. P. Jiruška, Ph.D. / Ing. Jan Kudláček, Ph.D.	<b>On-line</b>
9.45 – 10.45	EEG and evoked potentials in brain research and in clinical practice	Mgr. J. Hammer, Ph.D. prof. MUDr. P. Marusič, Ph.D.	<b>On-line</b>
11.00 – 12.00	Introduction to epilepsies	prof. MUDr. P. Marusič, Ph.D.	<b>On-line</b>
AFTERNOON			
	Patophysiology of epilepsy	doc. MUDr. J. Otáhal, Ph.D.	<b>Off-line</b>
	Patophysiology of brain vascular disorders and brain trauma	doc. MUDr. L. Vargová, Ph.D.	<b>Off-line</b>
15.00 – 15.45	Cerebrovascular diseases and brain trauma - clinical neuroimaging	doc. MUDr. A. Tomek, Ph.D.	<b>On-line</b>

### Tuesday 10.5.

MORNING			
	Pathophysiological mechanisms of movement control and their disorders	prof. MUDr. R. Jech, Ph.D.	<b>Off-line</b>
9.45 – 10.45	Physiology of speech production and speech dysfunction in movement disorders	doc. Ing. J. Ruzs, Ph.D.	<b>On-line</b>
11.00 – 12.00	The basics of neurodegeneration	prof. MUDr. J. Roth, CSc.	<b>On-line</b>
AFTERNOON			

13.00 – 13.30	Autoimmune diseases of the CNS	prof. MUDr. E. Kubala Havrdová, CSc.	<b>On-line</b>
	Introduction to genetic studies in neurological disorders	doc. MUDr. D. Kemlink, Ph.D.	<b>Off-line</b>

### Wednesday 11.5.

	Emotion - from physiology to psychopathology	prof. MUDr. J. Horáček, Ph.D.	YouTube
	New therapeutic options in treatment of mental disorders	prof. MUDr. P. Mohr, Ph.D.	YouTube
	Depressive disorder - clinical and diagnostic criteria and treatment approaches	doc. MUDr. M. Bareš, Ph.D.	YouTube
	Insomnia and parasomnia	MUDr. J. Bušková, Ph.D.	YouTube
	Neurobiology of Schizophrenia	prof. MUDr. C. Höschl, DrSc.	<a href="https://youtu.be/aRITMq8nrmQ">https://youtu.be/aRITMq8nrmQ</a>
	Biomarkers in psychiatry	MUDr. M. Kopeček, Ph.D.	YouTube
	Functional imaging in cognitive psychology and psychiatry	Mgr. et Mgr. I. Fajnerová, Ph.D.	YouTube
	Addiction	MUDr. T. Páleníček, Ph.D.	YouTube

### Thursday 12.5.

MORNING			
	Pain mechanisms	prof. MUDr. R. Rokyta, DrSc.	<b>Off-line</b>
	Molecular mechanisms of pain	MUDr. J. Paleček, CSc.	<b>Off-line</b>
	Treatment of the pain	doc. MUDr. J. Fricová, Ph.D.	<b>Off-line</b>
AFTERNOON			
	Clinical and electrophysiological aspects of neuromuscular disorders	MUDr. Radim Mazanec, Ph.D., MUDr. Jana Haberlová, Ph.D.	<b>Off-line</b>
15.00 – 15.45	Stem cells, biomaterials, and nanotechnology in CNS	doc. RNDr. P. Jendelová, Ph.D.	<b>On-line</b>

### Friday 13.5.

MORNING			
8.30 – 9.10	Status v advancement of neurosurgery (robotics, neurotransplantation, neuroprosthetics)	prof. MUDr. V. Beneš, DrSc.	<b>On-line</b>
	Pediatric neurosurgery: overview and specifics	doc. MUDr. V. Beneš, Ph.D.	<b>Off-line</b>
10.15 – 11.00	Brain tumours: from lab to clinical practise	prof. MUDr. D. Netuka, Ph.D.	<b>On-line</b>
11.15 – 11.55	Cerebrospinal fluid - anatomy, physiology and its importance in CSF circulation pathology.	doc. MUDr. RNDr. O. Bradáč, Ph.D.	<b>On-line</b>
12.05 – 12.45	Neurosurgery of the peripheral nervous system	prof. MUDr. Pavel Haninec, DrSc.	<b>On-line</b>