

OPTOGENETICS AND OPTOPHARMACOLOGY

April 11th 2018 (Wednesday)

Scientific Complex of SPbPU

St. Petersburg, 29-AF Polytekhnicheskaya st.

9.30 – 11.00	Registration in lobby
11.00 – 11.20	Opening of the conference
Section 1. Moderator P.M.Balaban, I.B. Bezprozvanny	
11.20 – 12.00	Ostrovsky M.A., Kirpichnikov M.P. Optogenetics and Prospects for Prosthetics of the Degenerative Retina (<i>IBCP; MSU, Moscow, Russia</i>)
12.00 – 12.40	Bregestovski P.D. Optopharmacological modulation of neuronal inhibitory ionotropic receptors (<i>KMU, Kazan, Russia; INSERM, Marseille, France</i>)
12.40 – 13:20	Dygalo N.N., Kalinina T.S., Droad U.S., Sukhareva E.V., Bulygina E.V., Konshu D.A., Shishkina G.T., Lanshakov D.A. Behavioral and neurochemical responses to optogenetic and pharmacological modulation of glutamatergic neurotransmission (<i>IC&G; NSU, Novosibirsk, Russia</i>)
Lunch (13.20 – 15.00)	
Section 2. Moderator M.L.Firsov, Vlasova O. L.	
15:00 – 15:40	Malyshev A. Subcellular targeting of opsins in optogenetics (<i>IHNA, Moscow, Russia</i>)
15:40 – 16:20	Petrovskaya L. E., Nekrasova O.V., Dolgikh D. A., Kirpichnikov M. P. Microbial rhodopsins and optogenetics (<i>IBCh; RNRMU, Moscow, Russia</i>)
Coffee break (16.20 – 16.50)	
16.50 – 17:30	Vlasova O. L. Artamonov D.N., Erofeev A.I. , Bezprozvanny I.B. Application of optogenetic approaches to the study of electrophysiological features of neurons in mice - models of neurodegenerative diseases (<i>SPbPU, St. Petersburg, Russia</i>)
17.30 – 17:50	Nalivaeva N.N., Turner A.J. European and international societies for neurochemistry and their role in promoting new developments in neuroscience (<i>IEPhB, St. Petersburg, Russia; University of Leeds, Leeds, UK</i>)
18.00 – 21.00	Buffet dinner (29-AF Polytekhnicheskaya st.)

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Section 3.	
Moderators prof. P.D. Bregestovski, A.V. Zaitsev	
10.00 – 10.50	Semyanov A.V. Optogenetic approaches to study neuron-glia interactions in the brain (<i>IBCh, Moscow, Russia</i>)
10.50 – 11.40	Gainetdinov R.R. , Mikhailova M.A., Budygin E.A. Optogenetically-induced tonic dopamine release from VTA-nucleus accumbens projections inhibits reward consummatory behaviors (<i>Institute of Translational Biomedicine, SPbSU, St. Petersburg, Russia; Skolkovo IST, Moscow, Russia</i>)
Coffee break (11.40 – 12.10)	
12.10 – 13.00	Gordeliy V. Microbial Rhodopsins: Function, Structure, Mechanisms and Optogenetics (<i>IBS, Grenoble, France and Research Center Juelich, Juelich, Germany</i>)
Lunch (13.00 – 14.30)	
14:30-16:00	Poster session
Section 4.	
Moderators N.N.Dygalo, A.Yu. Malyshev	
16.00 – 16:20	Ryazantsev M.N. Application of modern computational chemistry and optical spectroscopy for design of new tools for optogenetics and photopharmacology (<i>SPbAU, St. Petersburg, Russia</i>)
16.20 – 16.40	Rotov A.Yu. , Sitnikova V.S., Ryazantsev M.N., Firsov M.L., Astakhova L.A. Screening of novel optopharmacological compounds: convenient experimental models of photoreceptor degeneration (<i>IEPhB, St. Petersburg, Russia</i>)
16.40 – 17.00	Smirnova E.Yu., Erofeev A.I., Vlasova O.L., Chizhov A.V., Zaitsev A.V. The biological closed-loop system in the optogenetic experiment (<i>IEPhB, Ioffe IPhT, St. Petersburg, Russia</i>)
Coffee break (17.00 – 17.20)	
Section 5.	
Moderator A.V. Semyanov, M.L. Firsov	
17.20 – 17.40	Smirnova T.A. Multiphoton Nikon microscopy for optogenetic and in vivo visualization (<i>Nikon</i>)
17.40 – 18.00	Gruzdeva A. , Ivashkina O.I., Subach F.V., Anokhin K.V. Novel <i>in vivo</i> and ex vivo applications of genetically encoded calcium sensor for imaging of functionally labeled neurons (<i>Kurchatov institute, MSU, Moscow, Russia</i>)
18.00 – 18.20	Nizamieva A.A. Development of a biopacemaker model based on photosensitive HL-1 cells implantation into primary neonatal cardiomyocytes culture (<i>MIPhT, Moscow, Russia</i>)
18.20 – 18.40	Chizhov A.V. Mathematical model as an element of perspective visual prosthetics through optogenous stimulation of visual cortex (<i>Ioffe IPhT; IEPhB, St. Petersburg, Russia</i>)

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14.30. - 16.00. Poster session. Ground floor of Scientific complex.

Poster session (Optogenetics)

Fedotov I.V., Kelmanson I.V., Martynov G.N., Blakley S.M., Sidorov-Biryukov D.A., Fedotov A.B., Kilin S.Ya., Hemmer P., Belousov V.V., Zheltikov A.M. Fiber-optic thermometry in awake animal models (*MSU, Moscow, Russia*)

Erofeev A.I., Bezprozvanny I.B., Vlasova O.L. Light modes of ChR2 expressed in hippocampal neurons in cell culture (*SPbPU, St. Petersburg, Russia*)

Matveev M.V., Vlasova O.L., Bezprozvanny I.B. Neuroimplant with adaptive feedback for optogenetic research (*SPbPU, St. Petersburg, Russia*)

Pisklova M.V., Ivashkina O.I., Anokhin K.V., Influence of optogenetic stimulation of Thy-positive neurons of CA1 field of hippocampus on neuronal expression of early genes and behavior of mice (*Anokhin PINP, Moscow, Russia*)

Smirnova G.R., Roshchin M.V., Vinarskaya A.Kh., Kolotova D.E., Simonova N.A., Balaban P.M., Malyshev A.Y. Anchoring motifs for central or peripheral localization of the opsins for optogenetic prosthetics of the retina (*IHNA, Moscow, Russia*)

Shtyrov A. A. Design of photochromic ion channel blockers with short cis-to-trans thermal relaxation time (*SPbAU, St. Petersburg, Russia*)

Poster session (Biological objects imaging)

Zhilyakov N.V., Khaziev E.F., Latfullin A.R., Malomuzh A.I., Bukharaeva E.A., Nikolsky E.E., Samigullin D.V. Estimation of influence of cholinomimetics and gamma-aminobutyric acid on calcium level in mouse motor nerve ending (*KIBB, Kazan, Russia*)

Zakyrjanova G.F., Gilmutdinov A.I., Tsentsevitsky A.N., Zefirov A.L. Petrov A.M. Chlorine transport in motor nerve terminals: a link with action of olesoxime on synaptic vesicle exocytosis (*KIBB, Kazan, Russia*)

Zachepilo T. G., Lopatina N. G. GLUR1 and GLUR2 subunits of AMPA-like receptors in the honeybee brain. (*Institute of physiology, St. Petersburg, Russia*)

Ivanova M.A., Sitnikova V.S., Karelina T.V., Sibarov D.A., Abushik P.A., Antonov S.M. The study of forskolin neuroprotection in rat cerebellar primary culture by using a confocal scanning microscopy (*IEPhB, SPbPU, St. Petersburg, Russia*)

Mikhailova E.V., Romanova I.V., Derkach K.V., Bondareva V.M., Shpakov A.O. The number and localization of the 5-hydroxytryptamine and dopamine receptors on the hypothalamic pro-opiomelanocortin-immunopositive neurons of mice and their changes in the diet-induced and melanocortin obesity (*IEPhB, St. Petersburg, Russia*)

Morina I.Yu., Romanova I.V. Immunohistochemical investigation of the ways of dopamine influence on orexinergic neurons of the perifornical hypothalamic area of rats. (*IEPhB, St. Petersburg, Russia*)

Plaksina D. V., Ekimova I. V. Confocal microscopy of alpha-synuclein pathology in dopaminergic brain structures in the model of pre-clinical stage of Parkinson's disease in middle-aged rats (*IEPhB, St. Petersburg, Russia*)

Shuvaev A.N., Belozor O.S., Yakimova Y.S., Kasparov S. Bergmann glia contribution to pathogenesis of neurodegenerative diseases in the model of selective cerebellar astrogliosis (*KSMU, Krasnoyarsk, Russia; Gunma University, Japan*)

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Section 6.	
Moderator A.V.Zaitsev, Gainetdinov R.R.	
10.00 – 10.40	Karpova A. Expanding the toolkit for circuit dissection (<i>Howard Hughes Medical Institute, Chevy Chase, Maryland, USA</i>)
10.40 - 11.20	Tsytsarev V.Yu. In Vivo Optical Imaging and Application in Brain Research (<i>University of Maryland, College Park, Washington, USA</i>)
Coffee break (11.20 – 11.40)	
11.40 – 12.20	Fedotov I.V., Pochechuev M.S., Ivashkina O.I., Roshchina M.A., Sidorov-Biryukov D.A., Fedotov A.B., Anokhin K.V., Zheltikov A.M. Reconnectable fiberscopes for chronic <i>in vivo</i> deep-brain imaging (<i>MSU, Moscow, Russia</i>)
Lunch (12.20 – 14.00)	
14.00 – 18.30	Symposium «Biological objects imaging» Moderators: S.M. Antonov, I.V. Romanova
14.10 – 14.30	Krylov B.V., Penniyaynen V.A., Plakhova V.B. Investigation of molecular mechanisms of modulation of nociceptive signals: application of patch-clamp, confocal microscopy, and atomic force microscopy methods (<i>Institute of physiology, St. Petersburg, Russia</i>)
14.30 – 14.45	Zykin P.A., Tkachenko L.A., Nasyrov R.A., Krasnoshchekova E.I. The research of the human brain periolocortical formation using layer-specific neuronal marker proteins (<i>SPbSU, St. Petersburg, Russia</i>)
14.45 – 15.00	Krasnoshchekova E.I., Zykin P.A., Tkachenko L.A., Nasyrov R.A. Developmental Features of Corpus Callosum in Children Revealed by MRI (<i>SPbSU, St. Petersburg, Russia</i>)
15.00 – 15.15	Litvinov I.K., Belyaeva T.N., Bazhenova A.S., Leontieva E.A., Orlova A.O., Kornilova E.S. The imaging of cells in culture: the research of changes in photophysical properties of luminescent semiconductor quantum dots of various structure (<i>Institute of cytology; ITMO University, St. Petersburg, Russia</i>)
15.15 – 15.30	V.V. Kosheverova, I.K. Litvinov, M.V. Kharchenko, R.S. Kamentseva, E.S. Kornilova. Influence of detergents on fluorescent properties of quantum dots localized in endosomes (<i>Institute of cytology, St. Petersburg, Russia</i>)
Coffee break (15.30 – 16.00)	
Symposium «Biological objects imaging»	
16.00 – 16:15	Samigullin D.V., Khaziev E.F., Zhilyakov N.V., Bukharaeva E.A., Nikolsky E.E. Imaging of calcium in motor nerve terminals (<i>KIBB,; KFU, Kazan, Russia</i>)
16.15 – 16.30	I.V. Kubasov, D. A. Bobkov Optical and electrical responses of cardiomyocytes in an isolated rat heart during development of hypoxia

	<i>(IEPhB, St. Petersburg, Russia)</i>
16.30 – 16.45	I.A. Zhuravin, D.S. Vasilev, N.L. Tumanova, N.M. Dubrovskaya, N.N. Nalivaeva Using confocal microscopy for studying distribution of the polylysine dendrimers of the 3rd and 5th generation in rat brain. <i>(IEPhB, St. Petersburg, Russia)</i>
16.45 – 17.00	Vasilev D.S, Tumanova N.L., Dubrovskaya N.M., Alekseeva O.S. , Zhuravin I.A. Prenatal hypoxia upregulates transthyretin protein production in choroid plexus of rat pups during the first month after birth. <i>(IEPhB, St. Petersburg, Russia)</i>
Coffee break (17.00 – 17.30)	
Symposium «Biological objects imaging»	
17.30 – 17.45	Prutskova N. P., Seliverstova E. V. Methods for quantification of protein reabsorption on fixed kidney preparations. <i>(IEPhB, St. Petersburg, Russia)</i>
17.45 – 18.00	Sibarov D.A., Stepanenko Y.D., Ivanova M.A., Sitnikova L.S., Antonov S.M Purkinje cells development in primary culture of neurons. <i>(IEPhB, St. Petersburg, Russia)</i>
18.00 – 18.15	Yarmiev I.Z., Yakovleva O.V., Comparison of exo- and endocytosis of synaptic vesicles in nervous terminal of mice in alloxan and streptozotocin models of diabetes mellitus <i>(KFU, Kazan, Russia)</i>
18.15 – 18.30	I.V. Romanova, K.V. Derkach, I.Yu. Morina, I.B. Sukhov, L.A. Kuznetsova, A.O. Shpakov The changes in the ratio of orexigenic and anorexigenic factors in the hypothalamus of rats with cafeteria diet-induced obesity <i>(IEPhB, St. Petersburg, Russia)</i>

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WORKSHOP "OPTOGENETICS AND OPTOPHARMACOLOGY"	
10.00 – 11.00	Bregestovski P.D. Light in analysis function of nervous system (<i>KMU, Kazan, Russia; INSERM, Marseille, France</i>)
11.00 – 12.00	Smirnova E.Yu., Zaitsev A.V. Application of optogenetic methods for suppression of epileptic activity (<i>IEPhB; Ioffe IPhT, St. Petersburg, Russia</i>)
Coffee break (12.00 – 12.30)	
12.30 – 13.30	Gordeliy V. From Bacteriorhodopsin to Optogenetics (<i>IBS, Grenoble, France and Research Center Juelich, Juelich, Germany</i>)
Lunch, culture program	

April 15th 2018 (Sunday)
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WORKSHOP "OPTOGENETICS AND OPTOPHARMACOLOGY"	
10.00 – 11.00	<i>Prof. Hausser M.</i> All-optical interrogation of neural circuits (<i>University College London, UK</i>)
11.00 – 12.00	Balaban P.M. Optophysiological study of Memory Mechanisms (<i>IHNA, Moscow, Russia</i>)
Coffee break (12.00 – 12.30)	
12.30 – 13.30	Discussion
13.30 – 14.00	Closing of the conference