CURRICULUM VITAE

FIRST/LAST NAME
Irina Mukhina

DATE/PLACE OF BIRTH
Feb 27, 1962, Gorky, Russia

SITIZENSHIP
Russian

LANGUAGES
Russian, English

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EDUCATION AND DEGREES

2000	Dr Biology Sci. Institute of General Pathology and Pathophysiology of RAMS, Russia
1991	PhD in Biology. Military Medical academy, St. Petersburg, Russia
1979 – 1984	B.Sc. and M.Sc. degrees in Biology, Biological Faculty of Gorky State University, Russia

ACADEMIC RANK:

Professor (2006)

EMPLOYMENT:

From 2006	Professor, Neurodynamic and Neurobiology Department, Nizhny Novgorod State University, Russia
From 2001	Head of the Normal Physiology Department, Nizhny Novgorod State Medical Academy, Russia
From 1998	Head of the Central Research Laboratory, Nizhny Novgorod State Medical Academy, Russia
1984-1997	Research Assistant of the Central Research Laboratory, Nizhny Novgorod State Medical Academy, Russia

PROFESSIONAL MEMBERSHIPS AND SERVICE:

From 2009	Member, European Neuroscience Society
From 2005	Chair, Physiological Society of Nizhny Novgorod
From 1985	Member, Pathophysiological Society, Russia
From 1984	Member, Physiological Society, Russia

Scientific editor: *J. Modern Technologies in Medicine (from 2013);*
Reviewer for the following journals and grants: *J. Neuroscience (2012), grants of the Russian Foundation for Basic Research (from 2011)*

RESEARCH INTERESTS

Main theme: Systemic and cellular control of the physiological functions, the functional systems,

cellular and network electrophysiology and imaging, neurodynamics

Key words: Neurophysiology, neuroimaging, control of the physiological functions, cellular cultures, ischemia, hypoxia, oxidative stress, adaptation, HRV analysis

THEACHING EXPERIENCE:

From 2009	Tutor (consultant) of the Normal Physiology Department, SAITM, Sri Lanka
From 2007	Regular lecture courses “Introduction to neurophysiology”, “Network plasticity”, “Physiology of excitable tissue”, “Synaptic plasticity”, Nizhny Novgorod State University, Russia
From 2000	Regular lecture course “Human Physiology”, Nizhny Novgorod State Medical Academy, Russia
From 1998	Regular practical course “Human Physiology”, Nizhny Novgorod State Medical Academy, Russia
From 1998	Supervising a PhD student from Nizhny Novgorod State University and Nizhny Novgorod State Medical Academy. 16 theses were defended under my supervising.
From 1986	Supervised a graduate student Nizhny Novgorod State University and Nizhny Novgorod State Medical Academy, Russia
1984	Qualified as a teacher in Biology and Chemistry, Gorky State University, Russia

GRANTS and AWARDS

2010 – 2015 - GRANT OF THE RUSSIAN GOVERNMENT (11.G34.31.0012)
2008-2014 - Program of Russian Academy of Sciences “Molecule and cell biology”.
2008-2015- GRANTS OF THE RUSSIAN FOUNDATION FOR BASIC RESEARCH (GRANT NOS. 08-02-00724, 08-04-97109, 09-04-01432, 09-04-12254, 09-04-12304, 09-02-97083, 10-01-00690-a, 11-04-12144-ofi-m-2011, 13-04-12067-ofi-m-2013, 13-02-97145, 13-02-01420)
2009-2010 - GRANT OF THE BRITISH ROYAL SOCIETY (09-02-92611)
2009- 2011 - GRANT OF THE RUSSIAN MINIISTRY OF EDUCATION (2.1.1/6223, 2.1.1/13659)
2008-2009 – INVITED PROFESSOR, RIKEN BRAIN SCIENCE INSTITUTE, JAPAN; SINICA UNIVERSITY, TAWAN
2012 – OVERACHIEVER IN PUBLIC HEALTH

SELECTED PEER-REVIEWED PUBLICATION

1. Vedunova M., Sakharnova T., Mitroshina E., Perminova M., Pimashkin A., Zakharov Yu, Dityatev A. and *Mukhina I.* Seizure-like activity in hyaluronidase-treated dissociated hippocampal cultures. Frontiers in Cellular Neuroscience. 2013 August 7; 149:8. doi: 10.3389/fncel.2013.00149
2. Pimashkin A, Gladkov A, *Mukhina I*, Kazantsev V. Adaptive enhancement of learning protocol in hippocampal cultured networks grown on multielectrode arrays. Front Neural Circuits. 2013 May 24; 7:87. doi: 10.3389/fncir.2013.00087
3. Shirokova O.M., Frumkina L.E., Vedunova M.V., Mitroshina E.V., Zakharov Yu.N., Khaspekov L.G., *Mukhina I.V*. Morphofunctional characteristics of neuronal network development in dissociated hippocampal cultures. Modern Technologies in Medicine, 2013, № 5(2), с. 6-13;
4. Lebedeva O. S., Lagarkova M.A., Kiselev S.L., *Mukhina I.V.*, Vedunova M.V., *Usova O.V.*, Stavrovskaia A.V., Yamshikova N.G., Fedotova E.Yu., Grivennikov I.A., Khaspekov L.G., Illarioshkin S.N. Morphofunctional properties of induced pluripotent stem cells, received from human skin fibroblast and differentiated in dopamine neurons. Neurochemistry, 2013. 30:3, 1-9.
5. Vedunova M.V, Mitroshina E.V, Sakharnova T.A, Bobrov M.Yu., Bezuglov V.V., Khaspekov L.G., *Mukhina I.V.* N–arachidanoildopamin action on neuron network function of primary hippocampal cultures during hypoxia modeling. Bull Exp Biol Med., 2013, 156, 447-450.
6. Balashova A.N., Dityatev A.E., *Mukhina I.V*. Forms and mechanisms of homeostatic synaptic plastycity. Modern Technologies in Medicine, 2013, № 5(2), с. 98-107.
7. Kokaya A.A., Vedunova M.V, Mitroshina E.V., Kozyakov V.P., *Mukhina I.V*. Neuron sensitivity to low intensive electromagnetic radiation at gydrazine toxic action // Russian Military Medical Vestnic. 2013. 2 (42) C. 109-115.

8. Siminov A.Yu., Kastalsky I.A., Mironov V.I., Prokin I.S., Pimashkin A.S., *Mukhina I.V.*, Kazantsev V.B. Signal processes in a brain: analysis of multichannel findings and simulated neuron network // Vest. NNU. 2013. 3(1). C. 231-239.
9. Zakharov Y., Mitroshina E.V., Vedunova M.V., Korotchenko S.A., Kalintseva Ya.I., Potanina A.V., *Mukhina I.V.* Fluorescent analysis of metabolic activity pattern of neuron-glia network. Optical journal. 2012. 9(6):47-51.
10. *Mukhina I.V.,* Korotchenko S.A., Dityatev A.E. Molecules of extracellular matrix, there receptors and extracellular proteases as synaptic plasticity modulators. Neurochemistry. 2012. 29 (2):106–117.
11. *Mukhina I.V.,* Vedunova M.V., Sakharnova T.A., Dityatev A.E. Modulation of primary hippocampal culture bioelectrical activity by means of extracellular matrix enzymatic degradation. Modern Technologies in Medicine. 2012. 2:7-15;
12. Mitroshina E.V., Vedunova M.V., Mironov A.A., Sakharnova T.A., Pimashkin A.S., Bobrov M.Yu., Khaspekov L.G., *Mukhina I.V.* Neuroprotection by N-arachidonoildopamin during brain acute hypobaric hypoxia model. Neurologic Vest. 2012. Vol. 54, Iss.1, pp.14-20.
13. Zakharov Y., Ershova A., Golubkin N., and *Mukhina I.* Ion concentration quantification with the help of single-wavelength dye fluorescence. Applied optics. 2012. Vol. 51, Iss. 10. pp. 95-99.
14. Sakharnova T.A., Vedunova M.V., *Mukhina I.V.* BDNF and its role in the CNS function. Neurochemistry. 2012. 4(4):269–277.
15. Vedunova M.V., Sakharnova T.A., Mitroshina E.V., *Mukhina I.V.* Antihypoxic action of BDNF during modeling of hypoxia in dissociated hippocampal cultures. Modern Technologies in Medicine. 2012. 4:17-23.
16. Melnikova N.B., Bolshakova A.E., Sidorova M.V., Pianzina I.P., Gulyaev I.V., Tikhobrazova O.P., Solovieva T.I., Mukhina I.V. Development of pharmaceutical composition misephosphon with dimephosphon and its investigation during osteoporosis modeling. Chemistry-Pharmaceutical J. 2012. T. 46, №8. C. 33-38.
17. Wlodarczyk J, *Mukhina I,* Kaczmarek L, Dityatev A. Extracellular matrix molecules, their receptors, and secreted proteases in synaptic plasticity. Dev Neurobiol. 2011. 71(11):1040-53.
18. Vedunova M.V., Korotchenko S.A., Balashova A.N., Isakova A.I., Khaspekov L.G., Kazantsev V.B., *Mukhina I.V.* Influence of short-term glucose deprivation on neuron network function of primary hippocampal culture on multielectrode arrays. Modern Technologies in Medicine. 2011. 2:7-13.
19. Obukhova L.M., *Mukhina I.V.* The role of the olfactory epithelium basal cells in neurogenesis. Cellular Transplantation and Tissue Engineering. 2011. 6(1):49-55.
20. Pimashkin A.S., Kastalskiy I.A., Simonov A.Yu., Koryagina E.A., Korotchenko S.A., *Mukhina I.V.*, Kazantsev V.B., Spiking signatures of spontaneous activity bursts in hippocampal cultures. Frontiers in Computational Neuroscience. 2011. 5:46. Epub 2011 Nov 11.
21. Siminov A.Yu., Mironov V.I., *Mukhina I.V.,* Kazantsev V.B. Mathematical models of network activity with extracellular action potention. Vest. NNU. 2010. 2-2: 585-590.
22. Rakhcheeva MV, Bugrova ML, Mukhina IV, Zhabereva AS. Atrial natriuratic peptide and experimental vasorenal hypertension in rats. Patol Fiziol Eksp Ter. 2010.4:31-3.
23. Yakovlev A.Yu., Emelianov N.V., *Mukhina I.V.,* Dvornikov A.V., Snopova L.B., Kalenyev G.V., Riabikov D.V., Mineeva N.V. Infusion drugs for prevention of multiple organ failure during acute massive loss of blood (experimental investigation). General resuscitation science. 2010. 6(3): 48-51.
24. *Mukhina IV,* Bygrova ML, Romanova GA, Shakova FM, Prodius PA. Contralateral ultrastructural changes of the perifocal zone of the local ischemia caused by photoinduced thrombosis of the rat prefrontal brain cortex. Patol Fiziol Eksp Ter. 2010. 4:43-8.
25. *Mukhina I.V.*, Khaspekov L.G. Modelling and pharmacological correction of destructive processes in neuron network on multielectrode arrays. Annals of Clinical and Experimental Neurology. 2010. 2:44-51.
26. *Mukhina I.V.*, Kazantsev V.B., Khaspekov L.G., Zakharov Yu.N., Vedunova M.V., Mitroshina E.V., Korotchenko S.A., Koryagina E.A. Multielectrode arrays as new possibilities in investigation of the neuronal network plasticity. Modern Technologies in Medicine. 2009. 1:8-15.
27. *Mukhina I.V.*, Kazantsev V.B., Khaspekov L.G., Korotchenko S.A., Koryagina E.A. Network dynamics and spiking activity in cultured hippocampal neurons. Procs. Topical Problems of Biophotonics — 2009, Nizhny Novgorod. 2009. July, 218-220.

28. Khaspekov L.G., *Mukhina I.V.*, Bobrov M.Yu., Kazantsev V.B., Frumkina L.E., Zhakharov Yu.N., Mitroshina E.V., Vedunova M.V. Cannabinoid receptor agonist N-arachidonoyldopamine modulates neuron-to-astrocyte calcium signaling in hippocampal cell culture. Procs. Topical Problems of Biophotonics — 2009, Nizhny Novgorod. 2009 July, 247-249.
29. Andreeva NN, Solov'eva TI, Balandina MV, *Mukhina IV*. The effect of ozonated physiological solution on the postreperfused lipid composition and the level of carbohydrate metabolism substrates. Biomed Khim. 2009. 55(6):750-8.
30. Durnovo EA, Ianova NA, Kontorshikova KN, *Mukhina IV*, Frolov AV. Radio wave influence upon the local processes of free radicals oxidation intensity in oral cavity operational field in laboratory animals. Stomatologia (Mosk). 2009. 88(3):17-20.
31. Runova EV, *Mukhina IV*. Temporal location of changes in the cardiac rhythm frequency structure based on discrete wavelet transformation. Fiziol Cheloveka. 2008.34(2):124-7.
32. *Mukhina IV*. Cultured neuronal networks as models for the study of information processing. Procs. Topical Problems of Biophotonics – 2007, 4-11 August 2007, 291-295.
33. *Mukhina IV*, Kulikov RS, Yakovleva EI, Andreeva NN, Prodanezs NN, Snopova LB, Bugrova ML Characteristics of arterial remodeling in postresuscitation period. General resuscitation science. 2007. 3(2):8-13.
34. Garyaev PP, Kokaya AA, *Mukhina IV*, Leonova-Garyaeva EA, Kokaya NG.Effect of electromagnetic radiation modulated by biostructures on the course of alloxan-induced diabetes mellitus in rats. Bull Exp Biol Med. 2007. 143(2):197-9.
35. *Mukhina IV*. Control mechanisms of biological processes in extreme conditions. Nizhny Novgorod Medical J. 2005. 1: 122-128.
36. *Mukhina IV*. Normal physiology: Learning materials for practical classes on Normal Physiology. Nizhny Novgorod: Publishing House of NizhSMA, 2005. - 90 p.
37. Smirnov AA, Gustov AV, *Mukhina IV*, Iakovleva EI, Korshunova IuA, Bugrova MA. The influence of ceruloplasmin on the rat neocortical ultrastructure in circulatory hypoxia. Zh Nevrol Psikhiatr Im S S Korsakova. 2005. 14:50-3.
38. Andreeva NN, *Mukhina IV*. Mexidol corrects model post-reanimation changes in cerebral lipid metabolism Eksp Klin Farmakol. 2005. 68(3):37-41.
39. Kraĭnova TA, Efremova LM, *Mukhina IV*, Anastasiev VV. Antioxidant and antihypoxic effects of the ceruloplasmin preparation in the hypobaric hypoxia model. Eksp Klin Farmakol. 2003. 66(3):62-5.
40. Dvornikov AV, *Mukhina IV*, Krilov VN. HRV and mental stress in rat during beta-blocker application. Nizhny Novgorod Medical J. 2003. 1:17-22.
41. *Mukhina IV*, Lapshin RD, Yakovleva EI, Bugrova ML. Influence of ozonized saline on cortex structure in reperfusion period. Morphology. 2002. 121(2-3):89.
42. Kotov SA, *Mukhina IV*, Edeleva AN. Influence of ozonized saline on brain metabolism in hypoxic hypoxia model and rat anxious state. Nizhny Novgorod Medical J. 2002.4:.23-27.
43. Boiarinov GA, Iakovlev AIu, Teziaeva SA, *Mukhina IV*, Boiarinova LV. Use of cytochrome C in the prevention of myocardial reperfusion injury during heart valve prosthesis implantation under conditions of extracorporeal circulation Vestn Khir Im I I Grek. 2001.160(1):15-20.
44. *Mukhina IV*, Dvornikov AV, Kamaidanov NA. Variability of the rhythm of isolated rat heart. Bull Exp Biol Med. 2000. 29(5):417-9.
45. Orlov AV, Khomutov AE, *Mukhina IV*, Zimin IuV, Parin SB, Kozin DV. Effect of semax and its mixture with heparin on the activity of isolated heart after total ischemia Bull Eksp Biol Med. 1999. 128 (11):494-7.
46. Boiarinov GA, Iakovlev AIu, Teziaeva SA, *Mukhina IV*, Boiarinova LV. The effect of cytochrome C on the myocardium during reperfusion Patol Fiziol Eksp Ter. 1999. 4:20-5.
47. Malinovskaia SL, Drugova OV, Monich VA, *Mukhina IV*. Effect of the low intensity luminescent radiation on recovery of the heart functional activity in the postischemic period Biull Eksp Biol Med. 1999. 128(9):302-4.
48. Boiarinov GA, Penkovich AA, *Mukhina IV*. The metabolic effects of the neurotropic action of actovegin during hypoxia Eksp Klin Farmakol. 1999. 62(2):61-3.
49. Boiarinov GA, *Mukhina IV*, Penknovich AA, Snopova LB, Iakovleva EI, Balandina MV, Zimin IuV, Prodanets NN. The role of cytochrome C in preventing postresuscitation functional disorders of the central nervous system Eksp Klin Farmakol. 1998. 61(6):54-7.

50. Boiarinov GA, *Mukhina IV*, Penknovich AA, Snopova LB, Zimin IuV, Balandina MV, Radaev AM, Skvortsova IE, Prodanets NN. Mechanisms of actovegin effect on the central nervous system during postischemic period Bull Eksp Biol Med. 1998. 126(10):395-8.
51. Boiarinov GA, Andreeva NN, *Mukhina IV*. Effect of using gutimine in the pre-ischemic period on myocardial phospholipids during reperfusion Vopr Med Khim. 1993. 39(4):34-8.
52. Boiarinov GA, *Mukhina IV*, Smirnov VP, Iakovleva EI, Gorokh OV. Changes in myocardial contractility and the myocardial microcirculatory bed in the post-ischemic period in relation to the degree of its hypothermic protection Kardiologiia. 1992. 32(3):58-61.
53. Boiarinov GA, Kontorshchikova KN, *Mukhina IV*. Lipid peroxidation and myocardial contractile function in the post-ischemic period depending on the level of hypothermic protection of the heart Biull Eksp Biol Med. 1991.112(10):374-6.
54. Boiarinov GA, Gorokh OV, Balandina MV, *Mukhina IV*. The effect of different temperature regimens in reperfusion on the recovery of myocardial contractile function after hypothermic cardiac ischemia Biull Eksp Biol Med. 1991. 111(2):128-9.