

DR. MARIA V. VEDUNOVA

UNIVERSITY	National Research Lobachevsky State University of Nizhny Novgorod
PROFICIENCY IN ENGLISH	Upper-Intermediate
MAJOR OF PH.D. PROGRAMME	Biological Science
CODE OF PH.D. PROGRAMME	06.06.01
RESEARCH PROJECTS OF PROSPECTIVE SCIENTIFIC SUPERVISOR	<p>RESEARCH PROJECT TEAM LEADER:</p> <ul style="list-style-type: none"> • «Investigation of the core mechanisms for adaptation and activation of regeneration processes at neuron-glia networks under ischemic damage». • «Investigation of the role of representatives of neuronal kinome in the implementation of CNS adaptive mechanisms influence». RSF 18-75-10071, 2018-2020. • «Development of three-dimensional constructs with a given architectonics for neurotransplantation based on biocompatible materials». RFBR №18-315-20003, 2018-2020. <p>RESEARCH PROJECT TEAM MEMBER:</p> <ul style="list-style-type: none"> • «Cell death mechanisms in photodynamic therapy of neurooncological diseases». RSF № 18-15-00279, 2018-2020. • «Investigation of the Brain-derived neurotrophic factor (BDNF) role in synaptic plasticity processes» RFBR №17-04-01128, 2016-2019. «Digital personalized medicine healthy aging (MTC aging): network analysis of Big data multimedia to search for new diagnostic, predictive and therapeutic purposes», Mega grant № 074-02-2018-330(1), 2018-2020.
TOPICS FOR PROSPECTIVE PH.D. RESEARCH	<ul style="list-style-type: none"> • Investigation of the fundamental mechanisms of adaptation and activation of regenerative processes in neuron-glia networks of the brain in ischemic injury • Investigation of the role of representatives of neuronal kinoma in the implementation of the adaptive mechanisms of the central nervous system under the influence of ischemic factors • Development of three-dimensional constructs of a given architectonics for neuro transplantation based on biocompatible materials • Mechanisms of cell death in photodynamic therapy of neuro-oncological diseases • Study of the role of brain neurotrophic factor (BDNF) in synaptic plasticity processes <p>Digital Personalized Medicine for Healthy Aging (MDM of Aging): Network Analysis of Big Multi-Ohm Data to Find New Diagnostic, Predictive and Therapeutic Targets</p>
	<p>RESEARCH AREA: Biological aspects and treatment of pathologies of the nervous system, tumors and age-associated changes.</p> <p>SUPERVISOR'S RESEARCH INTERESTS:</p> <ul style="list-style-type: none"> • Cellular and Molecular Neurobiology • Immunogenic Cell Death



Research supervisor:

MARIA V. VEDUNOVA

Director of the Institute of Biology & Biomedicine, Professor

Biological Science,
Doctor of Science
(Institute of Theoretical & Experimental Biophysics
of Russian Academy of Science)

- Functioning of the Central Nervous System in Health and Disease
- Neuroprotection & Neuroreparation
- Endogenous Signaling Molecules
- Healthy Aging (Gerontology)

RESEARCH HIGHLIGHTS:

Highly-equipped labs & research environment:

- sterile rooms.
- laminar flow cabinets Biowizard Std-170 and Biowizard XF-170 (KOJAIR Tech Oy, Finland).
- CO₂-incubator Shellab 3552-2 with high-temperature function decontamination (Sheldon Manufacturing, USA).
- centrifuge 5424R and 5418 benchtop (Eppendorf, Germany).
- binocular stereomicroscope "Stemi" 2000-C (Carl Zeiss, Germany).
- Axio Observer.A1 inverted microscope (Carl Zeiss, Germany).
- Carl Zeiss Axiovert 200 fluorescence inverted microscope with a digital camera (Carl Zeiss, Germany).
- systems of confocal and two-photon scanning fluorescence microscopy LSM 510 NLO DuoScan (Carl Zeiss, Germany) with a titanium-sapphire femtosecond IR laser (Chameleon, USA).
- LSM 7 MP_AxioExaminer (CarlZeiss, Germany).
- Z -710 DUO NLO (Carl Zeiss, Germany).

Prospective participation in international joint research projects (UNN – University of Ghent, Belgium).

SUPERVISOR'S SPECIFIC REQUIREMENTS:

- *general knowledge of neuroscience required;*
- *work experience with cell cultures is welcomed;*
- *good proficiency in English;*
- *motivation & creativity.*

SUPERVISOR'S PUBLICATIONS (2015-2020):

- 35 research publications indexed by Scopus & Web of Science (since 2019).

LATEST PUBLICATIONS:

- Mishchenko T., Mitroshina E., Balalaeva I., Krysko O., Vedunova M. and Krysko D.V. An emerging role for nanomaterials in increasing immunogenicity of cancer cell death *Biochimica et Biophysica Acta-Review on Cancer*. 2019 1871(1) 99-10. Web of Science: IF 7.37, Q1
- Turubanova V., Balalaeva I., Mishchenko T., Alzeibak R., Peskova N., Efimova I., Bachert C., Mitroshina E., Krysko O., Vedunova M. and Krysko D. Immunogenic cell death induced by a new photodynamic therapy based on photosens and photodithazine // *Journal for ImmunoTherapy of Cancer*. - 2019. Web of Science : IF 9.91, Q1
- Mishchenko T.A., Mitroshina E.V., Usenko A.V., Voronova N.V., Astrakhanova T.A., Shirokova O.M., Kastalskiy I.A., Vedunova M.V. Features of neural network formation and their functions in primary hippocampal cultures on the background of chronic TrkB receptor system influence *Front. Physiol.* 2019.

	<p>9:1925. doi: 10.3389/fphys.2018.01925 Web of Science: IF 3.394, Q1</p> <ul style="list-style-type: none"> • Mishchenko T.A., Turubanova V.D., Mitroshina E.V., Alzeibak R., Peskova N.N., Lermontova S.A., Klapshina L.G., Balalaeva I.V., Vedunova M.V., Krysko D.V. Effect of novel porphyrazine photosensitizers on normal and tumor brain cells // Journal of Biophotonics. – 2019. Web of Science: IF 3.03, Q1. • Vedunova M.V., Mishchenko T.A., Mitroshina E.V., Mukhina I.V. TrkB-mediated neuroprotective and antihypoxic properties of Brain-derived neurotrophic factor Oxidative Medicine and Cellular Longevity. 2015, Article ID 453901, 9 pp. http://dx.doi.org/10.1155/2015/453901. Web of Science: IF 4.9, category: CELL BIOLOGY, rank: 52/190, Q2
<p>RESULTS OF INTELLECTUAL ACTIVITY</p>	<p>5 PATENTS / COPYRIGHT CERTIFICATES in the field of:</p> <ul style="list-style-type: none"> • methods for diagnosis of psychosomatic and somatic diseases. • assessment of body's stress response. • cell transplantation • restoration of functional activity of neural networks in vitro under conditions of their significant damage