

MOLECULAR NEUROBIOLOGY

Moscow Institute of Physics and Technology (National Research University)

Degree or qualification is awarded: **PhD (Candidate of Science)**

Language of study: **English**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **375 000 RUB**

Programme webpage at the university website: <https://eng.mipt.ru/programs/molecular-neurobiology/>

Programme curator: **Denis Ustyuzhaninov**

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Research supervisor:

[Alexander Vassilevski](#)

PhD

Supervisor's research interests:

- Molecular mechanisms of pain.
- Structure and modulation of ion channels.
- Ion channel ligands as drug hits and leads.
- Natural venoms and neurotoxins. My interests lie in the field of neurobiology and proteinscience. My current work is aimed at discovering novel natural modulators of neuroreceptors, utilizing them as research tools in neuroscience and providing lead structures for drug design.

Research highlights:

- Unique infrastructure of the ShemyakinOvchinnikov Institute.
- International collaborations with leading neuroscientists.
- Grant opportunities.
- Widest collection of animal venoms. My lab is involved in several cross-border collaborative projects. Together with Jan Tytgat (KU Leuven) we characterize a panel of ion channel ligands with unique selectivity. In partnership with Tim Hucho (University of Cologne) we investigate new tools to manipulate intracellular signaling cascades in sensory neurons. And with Dimitri Kullmann (UCL Institute of Neurology) we find substances that affect mutant ion channels implicated in diseases.

Supervisor's specific requirements:

- BSc or MSc.
- Major in biochemistry or molecular biology.

Main publications:

- Grishin EV, Savchenko GA, Vassilevski AA, Korolkova YV, Boychuk YA, Viatchenko-Karpinski VY, et al. Novel peptide from spider venom inhibits P2X3 receptors and inflammatory pain. *Annals of Neurology* 2010;67:680-3.
<https://doi.org/10.1002/ana.21949>
- Männikkö R, Shenkarev ZO, Thor MG, Berkut AA, Myshkin MY, Paramonov AS, et al. Spider toxin inhibits gating pore currents underlying periodic paralysis. *PNAS* 2018;115:4495-500 <https://doi.org/10.1073/pnas.1720185115>
- Twomey EC, Yelshanskaya MV, Vassilevski AA, Sobolevsky AI. Mechanisms of Channel Block in Calcium-Permeable AMPA Receptors. *Neuron* 2018;99:956-968.e4.
<https://doi.org/10.1016/j.neuron.2018.07.027>

Specializations within this programme