

# RADIATION BIOPHYSICS/ ONCOLOGY/ DRUG DISCOVERY

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/radiation-biophysics-oncology-drug-discovery/>

Programme curator: **Denis Ustyuzhaninov**

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**Research supervisor:**

[Sergey Leonov](#)

MD PhD

**Supervisor's research interests:**

- DNA repair and Aging.
- Mechanobiology of Cancer cells.
- Extracellular vesicles and cancer dissemination.
- New biomarkers of cancer invasiveness and radio resistance.
- Pharmacological modulation of EMT, stemness and radio resistance.
- Natural products for microbiology, oncology and aging.

**Research highlights:**

- High Content Imaging & Analysis Platform.
- Development a novel technology for the early detection of triple negative breast cancer.
- High Throughput Target Identification and Validation Platform for Drug Discovery.
- Joint projects in Oncology (Prof. Alexis GAUTREAU, CNRS, France), Biotechnology of natural compounds (UNERA Luxembourg S.A) and System Biology (Prof. Jens Schwamborn, The University of Luxembourg and Prof. Hans V. Westerhoff, VU University Amsterdam).
- In vivo aging and neurodegeneration model on *Caenorhabditis elegans*.

**Supervisor's specific requirements:**

- MS in Biology and/or Biotechnology or related disciplines.
- Hands-on experience with basic biochemical & biophysical and molecular biology methods.
- Proficient in the use of Microsoft Office packages.
- Problem-solving skills, ability to work under time pressure and get results.
- Desirable: knowledge and motivated interest in above mentioned research of our Lab.

**Main publications:**

- Brel VK, Artyushin OI, Chuprov-Netochin RN, Leonov SV, et al. Synthesis and biological evaluation of indolylglyoxylamide bisphosphonates, antimetabolic microtubule-targeting derivatives of indibulin with improved aqueous solubility. *Bioorganic & Medicinal Chemistry Letters* 2020;30(23), 127635.

<https://doi.org/10.1016/j.bmcl.2020.127635>

- Marusich E, Mohamed H, Afanasev Y, Leonov S. Fatty Acids from *Hermetia illucens* Larvae Fat Inhibit the Proliferation and Growth of Actual Phytopathogens. *Microorganisms* 2020; 8, 1423.  
<https://doi.org/10.3390/microorganisms8091423>
- Pustovalova M, Alhaddad L, Smetanina N, Chigasova A, Blokhina T, Chuprov-Netochin R, et al. The p53-53BP1-Related Survival of A549 and H1299 Human Lung Cancer Cells after Multifractionated Radiotherapy Demonstrated Different Response to Additional Acute X-ray Exposure. *Int J Mol Sci* 2020;21.  
<https://doi.org/10.3390/ijms21093342>
- Ustyantseva EI, Medvedev SP, Vetchinova AS, Illarioshkin SN, Leonov SV, Zakian SM. Generation of an induced pluripotent stem cell line, ICGi014-A, by reprogramming peripheral blood mononuclear cells from a patient with homozygous D90A mutation in SOD1 causing Amyotrophic lateral sclerosis. *Stem Cell Research* 2020;42:101675. <https://doi.org/10.1016/j.scr.2019.101675>
- Ulyanenko S, Pustovalova M, Koryakin S, Beketov E, Lychagin A, Ulyanenko L, et al. Formation of  $\gamma$ H2AX and pATM Foci in Human Mesenchymal Stem Cells Exposed to Low Dose-Rate Gamma-Radiation. *International Journal of Molecular Sciences* 2019;20:2645. <https://doi.org/10.3390/ijms20112645>
- Anumala UR, Waaler J, Nkizinkiko Y, Ignatev A, Lazarow K, Lindemann P, et al. Discovery of a Novel Series of Tankyrase Inhibitors by a Hybridization Approach. *J Med Chem* 2017;60:10013-25.  
<https://doi.org/10.1021/acs.jmedchem.7b00883>

## Specializations within this programme