

# BIOINFORMATICS, GENETICS AND MOLECULAR BIOLOGY PROJECTS FOCUSED ON TREATMENT OF DISEASES

## 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/phd-program-in-the-genome-engineering-laboratory-on-bioinformatics-genetics-and-molecular-biology-pr/>

Programme curator: **Denis Ustyuzhaninov**

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### **Research supervisor:**

[Pavel Volchkov](#)

PhD, Head of Genome Engineering Laboratory

### **Supervisor's research interests:**

Biochemistry, Genetics and Molecular Biology, Medicine Immunology and Microbiology, Regenerative medicine, Stem cells, Bioinformatics, Gene Therapy, Cell Therapy.

### **Research highlights:**

- Research based on resolution of globally relevant issues by way of cutting edge methods. Search for permanent genetics-based resolutions for modern issues.
- High quality laboratory equipment and all necessary facilities for an outstanding world level research.
- Projects in collaboration with world leading universities and research centers, e.g. Harvard University (USA), Uppsala University (Sweden), Lions Eye Institute (Australia).

### **Supervisor's specific requirements:**

- Master degree in molecular biology, immunology, embryology, microbiology, biochemistry, genetics or bioinformatics.
- Practical skills in a methods of molecular and cell biology.
- Data analysis skills (e.g. Python programming).
- Soft skills, teamwork skills.

## **Main publications:**

- Wen L, Ley RE, Volchkov PY, Stranges PB, Avanesyan L, Stonebraker AC, et al. Innate immunity and intestinal microbiota in the development of Type 1 diabetes. *Nature* 2008;455:1109-13.  
<https://doi.org/10.1038/nature07336>
- Yurkovetskiy L, Burrows M, Khan AA, Graham L, Volchkov P, Becker L, et al. Gender bias in autoimmunity is influenced by microbiota. *Immunity* 2013;39:400-12.  
<https://doi.org/10.1016/j.immuni.2013.08.013>
- Riddell J, Gazit R, Garrison BS, Guo G, Saadatpour A, Mandal PK, et al. Reprogramming committed murine blood cells to induced hematopoietic stem cells with defined factors. *Cell* 2014;157:549-64.  
<https://doi.org/10.1016/j.cell.2014.04.006>
- Lagarkova MA, Volchkov PY, Lyakisheva AV, Philonenko ES, Kiselev SL. Diverse epigenetic profile of novel human embryonic stem cell lines. *Cell Cycle* 2006;5:416-20.  
<https://doi.org/10.4161/cc.5.4.2440>
- Buzdin A, Gogvadze E, Kovalskaya E, Volchkov P, Ustyugova S, Illarionova A, et al. The human genome contains many types of chimeric retrogenes generated through in vivo RNA recombination. *Nucleic Acids Res* 2003;31:4385-90.

## **Specializations within this programme**