COMPUTATIONAL BIOLOGY OF REGULATION OF TRANSCRIPTION INITIATION

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/computational-biology-of-regulation-of-transcription-initiation/

Programme curator: **Denis Ustyuzhaninov**
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Research supervisor:
Vsevolod Makeev
PhD, DSc, Corr. member of RAS

Supervisor's research interests:

- Algorithms.
- Optimization.
- Gene expression.
- Transcription factors.
- DNA-protein interactions.
- Big data.

Research highlights:
Analysis of large datasets of transcriptomics (bulk and single cell), genomics (including DNA modifications) and DNA-protein interaction. Interaction with data providers (experimentalists) in principal research centers within international consortia.

Supervisor's specific requirements:

- Computational programming (R and Python).
- Statistics, Data analysis.
- Understanding of biology of transcription regulation.

Main publications:

- Vorontsov IE, Fedorova AD, Yevshin IS, Sharipov RN, Kolpakov FA, Makeev VJ, et al. Genome-wide map of human and mouse transcription factor binding sites aggregated from ChIP-Seq data. BMC Research Notes 2018;11:756. https://doi.org/10.1186/s13104-018-3856-x
- Kulakovskiy IV, Vorontsov IE, Yevshin IS, Sharipov RN, Fedorova AD, Rumynskiy EI, et al. HOCOMOCO: towards a complete collection of transcription factor binding models for human and mouse via large-scale ChIP-Seq analysis. Nucleic Acids Res 2018;46:D252-9. https://doi.org/10.1093/nar/gkx1106
- Afanasyeva MA, Putlyaeva LV, Demin DE, Kulakovskiy IV, Vorontsov IE, Fridman MV, et al. The single nucleotide variant rs12722489 determines differential estrogen receptor binding and enhancer properties of an IL2RA intronic region. PLoS One 2017;12:e0172681. https://doi.org/10.1371/journal.pone.0172681

Specializations within this programme