Sergey Isaev

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About Me

I'm doing a PhD in neuroscience at Igor Adameyko's lab at the Medical University of Vienna. Mostly I'm focused on developing approaches for the analysis and interpretation of multimodal single-cell omics and lineage tracing experiments. Previously worked (and still am interested) in cancer immunology and evolutionary zoology.

Education

Medical University of Vienna — *Vienna, Austria*
PhD in Neuroscience — *July 2022 – present*
(supervision by Igor Adameyko and Peter Kharchenko)

- Development of methods for lineage tracing analysis based on scRNA-Seq
- Managing of lab's computational servers and research services

Moscow State University — *Moscow, Russia*
Specialist in Bioengineering and Bioinformatics — *Sept 2015 – June 2021*

- Combined BSc and MSc program for both computational and experimental expertise in biology

Professional Experience

Research Fellow — *Moscow, Russia*
Endocrinology Research Center — *Sept 2021 – June 2022*
(supervision by Peter Kharchenko)

- Developing diffusion-based methods for comparison of different single-cell embeddings
- Single-cell analysis in immunological studies

Bioinformatics Scientist — *Moscow, Russia*
BostonGene — *Nov 2019 – Dec 2021*
(supervision by Katerina Nuzhdina)

- Bulk and single-cell RNA-Seq pipelines creation and curation for tumor microenvironment research
- Managing of corporate educational courses helping to introduce best practices of NGS analysis to new employees

Undergraduate Research Fellow — *Moscow, Russia*
Institute for Information Transmission Problems of Russian Academy of Sciences — *Nov 2017 – Aug 2021*
(supervision by Yuri Panchin)

- Comparative and functional genomics of non-model animals (Dicyemids, Orthonectids)

Packages

py-fastglmpca — *2025*
PyTorch implementation of fastglmpca algorithm

scLiTr — *2023 – present*
Python package for single-cell Lineage Tracing analysis

symphonypy — *2022*
Port of Symphony algorithm of single-cell reference atlas mapping to Python

- Supervision of develoment (and co-development) of the package

Publications

Mesenchymal thymic niche cells enable regeneration of the adult thymus and T cell immunity
Karin Gustafsson, ***Sergey Isaev***, Kamdin Mirsanaye, et al.
Nature Biotechnology, 1-13, 2025

Melanocytes and photosensory organs share a common ancestry that illuminates the origins of the neural crest
Yuliia Fatieieva, Rozalina Galimullina, ***Sergey Isaev***, et al.
Communications Biology 8 (1), 1092, 2025

Positioning of sperm tail longitudinal columns depends on NSUN7, an RNA-binding protein destabilizing elongated spermatid transcripts
Ekaterina A Guseva, Olga A Averina, ***Sergey V Isaev***, et al.
RNA 31 (5), 709-723, 2025

Unbiased profiling of multipotency landscapes reveals spatial modulators of clonal fate biases
Alek G Erickson*, ***Sergey Isaev****, Jingyan He, et al. *(*equal contribution)*
bioRxiv, 2024.11. 15.623687, 2024

Multi-omic profiling of follicular lymphoma reveals changes in tissue architecture and enhanced stromal remodeling in high-risk patients
Andrea J Radtke*, Ekaterina Postovalova*, Arina Varlamova, ..., ***Sergey Isaev***, et al. *(*equal contribution)*
Cancer Cell 42 (3), 444-463. e10, 2024

Complex analysis of single-cell RNA sequencing data
Anna A Khozyainova, Anna A Valyaeva, Mikhail S Arbatsky, ***Sergey V Isaev***, et al.
Biochemistry (Moscow) 88 (2), 231-252, 2023

Follicular lymphoma microenvironment characteristics associated with tumor cell mutations and MHC class II expression
Guangchun Han, Qing Deng, Mario L Marques-Piubelli, ..., ***Sergey Isaev***, et al.
Blood Cancer Discovery 3 (5), 428-443, 2022

Multiregional single-cell proteogenomic analysis of ccRCC reveals cytokine drivers of intratumor spatial heterogeneity
Natalia Miheecheva, Ekaterina Postovalova, Yang Lyu, ..., ***Sergey Isaev***, et al.
Cell Reports 40 (7), 2022

Dicyemida and Orthonectida: two stories of body plan simplification
Oleg A Zverkov, Kirill V Mikhailov, ***Sergey V Isaev***, et al.
Frontiers in Genetics 10, 443, 2019

Conferences

Poster "Quantitative Analysis of Clonal Fate Biases" — *Girona, Spain*
EMBO Workshop "Lineage tracing: Dynamics, cellular memory, and somatic evolution" — *Sept 2025*

Oral presentation "Clonal embeddings" — *Vienna, Austria*
19th YSA PhD Symposium 2024 — *May 2024*

Oral presentation "How to deal with single-cell multi-omics? Comparison of single-cell multimodal data vertical integration methods" — *Moscow, Russia (remote)*
Computational biology and artificial intelligence for personalized medicine-2022 — *Aug 2022*

Poster "Metagenomic study of eukaryotic microbiota of meromictic lakes on the coast of Kandalaksha Bay of the White Sea" *Moscow, Russia*
VII International conference "Marine Research and Education" *Nov 2019*

Poster "Circular DNA in *Dicyema sp.* genome" *Moscow, Russia*
Information Technologies and Systems 2018 *Sept 2018*

Teaching Experience

Transcriptomics Data Analysis *Moscow, Russia (remote)*
Moscow State University *Sept 2022 – present*
Development and teaching of both theoretical and practical parts of the course at the Faculty of Bioengineering and Bioinformatics and the Faculty of Biology

NGS data analysis *(RNA-Seq part)* *Moscow, Russia*
Higher School of Economics *2021 – 2024*
Teaching of RNA-Seq analysis part of the course for bachelor's and master's students

Single cell profiling and analysis in neuroscience *Bordeaux, France*
Bordeaux School of Neuroscience *June 2022*
Assisting on practical workshops dedicated to scRNA-Seq analysis in neuroscience

Introduction to NGS analysis *(RNA-Seq part)* *Moscow, Russia*
Moscow Institute of Physics and Technology *2020*
Development and teaching of RNA-Seq analysis part of the BostonGene's course for bachelor's students

Introduction to Bioinformatics *Moscow, Russia*
Letovo *Sept 2018 – May 2021*
Development and teaching of the introductory course for high school students

Skills

Programming: proficient with Python; comfortable with R, bash, PyTorch, and Nextflow; familiar with C++, Docker, Git, nginx, and a basic server management

Mathematics and computer science: good understanding of probability theory, statistics, and linear algebra, and their applications to data analysis

Languages: English (fluent), Russian (native)

Extracurricular Activities

- In 2017–2020 I co-organized department's **cinema club** where we watched and discussed modern arthouse movies
- As much as I can I'm trying to participate in **popular science events** as a speaker (example)
- I'm an active member of the **FBB Alumni Club**