

## PhD Student Position: Machine Learning in Biology & Medicine

We are recruiting an ambitious PhD student who wants to pursue a scientific career in machine learning, with a focus on precision medicine, high-throughput biology, synthetic biology, or cell therapy. The successful candidate will be based at the Institute of Artificial Intelligence at the Medical University of Vienna, with ample opportunities to integrate into the national and European research landscape, including the European Lab for Learning and Intelligent Systems (ELLIS). This call is open to students who have recently completed or are about to complete their undergraduate degree in any field of computational sciences, as well as to candidates with a background in biology/medicine and strong quantitative skills.



### The Goal

Machine learning is transforming medicine, for example by enabling physicians to incorporate vast amounts of data and knowledge into each of their clinical decisions. Machine learning also advances our understanding of the biology that underlies human diseases, with the future perspectives of identifying the key molecular mechanisms in each individual patient and devising personalized therapies. Researchers at the Medical University of Vienna, in partnership with the CeMM Research Center for Molecular Medicine and the Austrian Academy of Sciences, are building an ambitious research program focusing on “Machine Learning in Biology & Medicine”, with three pillars: (i) methodological research in machine learning, for example focusing on interpretable deep learning, causal modeling, federated machine learning, or time series analysis; (ii) proof-of-concept applications in biomedical research, including personalized medicine and systems biology; (iii) dissemination and impact through sustainable clinical applications, contribution to international consortia, creation of startup companies, and a commitment to research-centric teaching and public outreach. The successful candidate will contribute creatively and proactively to one or more of these directions.

### The Candidate

We are seeking individuals who are interested in pursuing cutting-edge research in the wider field of “Machine Learning in [Bio]Medicine”. Candidates should have a Bachelor and/or Master degree in machine learning, computer science, statistics, bioinformatics or in another quantitative field that combines both methodological and applied research (in any field). Candidates with a background in biology, medicine, or a related field are also eligible if they possess strong quantitative skills and a keen interest in machine learning research. This fully funded four-year PhD position offers ample opportunities to kickstart a scientific career, develop academic leadership skills, engage in international collaborations, and contribute to the advancement of biology/medicine through computational research. Additionally, through the ELLIS network and other consortia, there is the option to spend part of the PhD abroad in a collaborating machine learning lab with complementary expertise.

### The Host Institution

The Medical University of Vienna is Europe’s largest medical school and one of the world’s oldest. It was established in 1365 as the medical faculty of the University of Vienna and has been an autonomous university since 2004. Physicians at the Medical University treat approximately 95,000 patients annually as inpatients and 500,000 as outpatients, creating numerous opportunities for data-driven research. The Medical University has a Center for Medical Data Science dedicated to research in statistics, medical informatics, complexity sciences, bioinformatics and more. The Institute of Artificial Intelligence (AI Institute) within this department seeks to advance biomedical research and clinical medicine with methods development, applications, and teaching in machine learning and artificial intelligence. The AI Institute is directed by Christoph Bock (<https://tinyurl.com/chrbock>), who is Professor of Medical Informatics at the Medical University of Vienna and Principal Investigator at the CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences. He is a member of the Human Cell Atlas, fellow of ELLIS, recipient of important research awards (Otto Hahn Medal, ERC Starting & Consolidator Grants, Overton Prize, Erwin Schrödinger Prize), and co-founder of two AI-powered startup companies. The AI Institute currently hosts two additional group leaders with own research groups: Georg Dorffner (<https://tinyurl.com/gdorffner>) is the vice president of the Austrian Society for Artificial Intelligence, and Matthias Samwald (<https://tinyurl.com/samwald>) coordinates a major EU project that implements computational methods in clinical practice. Moreover, the Medical University has a rapidly growing cluster of AI researchers in areas spanning radiology, dermatology, bioinformatics, and synthetic biology.

Please send your application to [sec-ai@meduniwien.ac.at](mailto:sec-ai@meduniwien.ac.at) (ideally as a single PDF document). The application materials should include a cover letter, CV, academic transcripts, and contact details of 2-3 references (if possible). The deadline is 31 March 2023. Start dates are flexible.