Machine Learning in BioMedicine (ERC-funded postdoc position)

We are recruiting a computational postdoc who wants to pursue groundbreaking research on digital medicine, combining a strong background in machine learning with cutting-edge technologies such as single-cell sequencing, wearable devices, ubiquitous sensors, and augmented reality, and a keen interest in biomedical applications.

Our group is based at the CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences in Vienna, on the campus of one of the world’s largest hospitals and medical schools. We combine a strong background in computational methods with the expertise, collaborations, and funding to pioneer the use of advanced digital technology in biotechnology and personalized medicine.

The Project
The successful candidate will develop and apply advanced machine learning technology (e.g., deep neural networks, kernel methods, non-linear regression, and/or causal modeling) in order to discover fundamental mechanisms of biology and medicine and to advance personalized medicine. Potential applications may include (but are not limited to) single-cell sequencing of cancer, 3D reconstruction of tumors and epigenetic landscapes, mobile health technology for patients with brain cancer, and pattern discovery in heterogeneous biomedical datasets. Our location on one of the largest medical campuses in Europe ensures direct relevance to medicine, while our close collaboration with the Max Planck Institute for Informatics (Germany) provides first-hand access to a cutting-edge computer science environment.

The Candidate
We are looking for highly motivated and academically outstanding candidates who want to pursue a career in machine learning research and its applications in biology and medicine. Candidate should have a strong background in the quantitative sciences (computer science, bioinformatics, statistics, mathematics physics, engineering, etc.). We will also consider applicants with a background in medicine or in biology (e.g., functional genomics, chemical biology, human genetics, molecular medicine, etc.) who have strong quantitative skills and a keen interest in pursuing computational projects with a major machine learning component.

The Lab (http://epigenomics.cemm.oeaw.ac.at/)
The Medical Epigenomics Lab at CeMM pursues an interdisciplinary and highly collaborative research program aimed at understanding the cancer epigenome and establishing its utility for precision medicine. The lab is internationally well-connected and active in several fields:

- **Epigenomics.** Many diseases show widespread deregulation of epigenetic cell states. As members of the International Human Epigenome Consortium, we use epigenome sequencing to dissect the epigenetic basis of cancer and immune disorders.
- **Technology.** Groundbreaking biomedical research is often driven by new technologies. Our lab is therefore heavily invested into technology development, including single-cell sequencing, CRISPR screens, and epigenome editing.
- **Bioinformatics.** New algorithms and advanced computational methods allow us to infer epigenetic cell states from large datasets, in order to reconstruct the epigenetic landscape of cellular differentiation and complex diseases.
- **Diagnostics.** New technologies (genome sequencing, mobile devices, etc.) provide important information for personalized medicine. We develop and validate assays and algorithms for translating the value of digital medicine into routine clinical practice.

The Principal Investigator (https://scholar.google.com/citations?user=9q6StclAAAAJ)
Christoph Bock is a computational biologist and principal investigator at CeMM. He is also a guest professor at the Medical University of Vienna’s Department for Laboratory Medicine, scientific coordinator of the Biomedical Sequencing Facility at CeMM, and an adjunct group leader for bioinformatics at the Max Planck Institute for Informatics. Christoph Bock obtained his PhD summa cum laude from Saarland University and the Max Planck Institute for Informatics in 2008, followed by three years of postdoctoral research at the Broad Institute of MIT and Harvard, where he contributed to the NIH Roadmap Epigenomics project. He has been a principal investigator of BLUEPRINT (in the International Human Epigenome Consortium), and he co-founded Genom Austria, a citizen science project that is the Austrian partner in the International Network of Personal Genome Projects. He has received several major research awards, including the Max Planck Society’s Otto Hahn Medal (2009), a New Frontier Group grant by the Austrian Academy of Sciences (2015-2020), an ERC Starting Grant (2016-2021), and the Overton Prize of the International Society of Computational Biology (2017).

The Institute (http://www.cemm.at/)
CeMM is an international research institute of the Austrian Academy of Sciences and a founding member of EU-LIFE. It has an outstanding track record of top-notch science (last five years: >10 papers in Nature/Cell/Science/NEJM, >25 papers in Nature/Cell sister journals) and medical translation. With just over a hundred researchers, CeMM provides a truly collaborative and personal environment, while maintaining critical mass and all relevant technologies. Research at CeMM focuses on cancer, inflammation, and immune disorders. CeMM is located at the center of one of the largest medical campuses in Europe, within walking distance of Vienna's historical city center. A study by "The Scientist" placed CeMM among the top-5 best places to work in academia world-wide (http://the-scientist.com/2012/08/01/best-places-to-work-academia-2012). Vienna is frequently ranked the world’s best city to live. It is a United Nations city with a large English-speaking community. The official language at CeMM is English, and more than 40 different nationalities are represented at the institute.

Please apply online (https://goo.gl/kKIGSG) with cover letter, CV, academic transcripts, and contact details of three referees. Applications will be reviewed on a rolling basis. Any application received by 31 July 2017 will be considered. Start dates are very flexible.