## Postdoc: Bioinformatics, Deep Learning and Digital Medicine


*We are recruiting an ambitious **computational postdoc** who wants to pursue groundbreaking research at the interface of computational biology and digital medicine, including deep neural networks and bioinformatic methods development. The scope of potential projects comprises machine learning in medicine (genomics, imaging, etc.), development and application of new methods for multimodal time series analysis, or massive-scale single-cell sequencing analysis.*

*Our group at the **CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences in Vienna** combines wet-lab biology/medicine (cancer, immunology, epigenetics etc.) with advanced bioinformatics including deep learning. We work closely with physicians at the Vienna General Hospital & Medical University of Vienna to advance precision medicine.*

**The Project**
The successful candidate will develop and apply advanced machine learning technology (e.g., deep neural networks, kernel methods, time series analysis, causal modeling) to discover fundamental mechanisms of biology and to advance personalized medicine. Potential applications include single-cell sequencing in cancer, 3D reconstruction of tumors, epigenetic landscapes, mobile health technology, and pattern discovery in heterogeneous biomedical data. Our location on one of the largest medical campuses in Europe ensures direct relevance to medicine, while close ties with the Max Planck Institute for Informatics (Germany) provide first-hand access to a top-notch computer science environment.

**The Candidate**
We are looking for ambitious candidates who want to build a scientific career in bioinformatics and/or artificial intelligence research and its applications in biology and medicine. A strong candidate would 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 biology or medicine who have strong quantitative skills and a keen interest in pursuing computational projects (a combination with wet-lab research is possible).

**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 Human Cell Atlas and the International Human Epigenome Consortium, we use epigenome sequencing to dissect the epigenetic basis of cancer and immunity.
- *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=9qSsTcIAAAAJ)
Christoph Bock is a principal investigator at CeMM. His research focuses on epigenetics, bioinformatics, and high-throughput technology (single-cell sequencing, CRISPR) in the context of personalized medicine. He is also a guest professor at the Medical University of Vienna, scientific coordinator of the Biomedical Sequencing Facility at CeMM, and adjunct group leader for bioinformatics at the Max Planck Institute for Informatics. He has been a principal investigator of the BLUEPRINT project (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 is a member of the Young Academy of the Austrian Academy of Sciences (since 2017) and recipient of 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 few 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. CeMM promotes equal opportunity and harbors a mix of different talents, backgrounds, competences, and interests. Postdocs at CeMM are paid according to the Austrian Science Fund's salary scheme, which amounts to an annual gross salary slightly above EUR 50,000.

*Please apply online (https://goo.gl/sehjTG) with cover letter, CV, academic transcripts, and contact details of three referees. Applications will be reviewed on a rolling basis. Any application received by 3 November 2018 will be considered. Start dates are flexible.*