



181 Longwood Avenue
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Department of Medicine
Channing Division of Network Medicine

Channing Methods Meeting

September 26 (Tuesday), 2023, 11AM (ET)

MCP 5th-floor large conference room

<https://us02web.zoom.us/j/579497999?pwd=cHNIWHMzWUJFUUVJTG1EeVJmY05aQT09>

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Network medicine beyond protein-protein interactions

Virtually all processes in health and disease rely on the careful orchestration of a large number of diverse individual components ranging from molecules to cells and entire organs. Networks provide a powerful framework for describing and understanding these complex systems in a holistic fashion. They offer a unique combination of a highly intuitive, qualitative description, and a plethora of analytical, quantitative tools. In my presentation, I will first review how molecular networks can be understood as maps for elucidating the relation between molecular-level perturbations and their phenotypic manifestations. I will then sketch out a number of challenges in the areas of network biology and network medicine, as well as recent efforts of my group to address them. These efforts range from methodological work on the visualization and interpretation of large biomedical data using Virtual Reality technology, to translational efforts towards concrete clinical applications in the area of rare diseases.

Bio: Jörg Menche studied physics in Germany and Brazil and obtained a PhD at the Max Planck Institute for Colloids and Interfaces in 2010. He worked as a postdoc at Northeastern University and Harvard Medical School in Boston, before starting his own research group at the CeMM Research Center for Molecular Medicine in Vienna in 2015. In 2020 he became full professor at the University of Vienna where he holds a dual appointment at the Center for Molecular Biology (Max Perutz Labs) and the Faculty of Mathematics. His interdisciplinary team combines backgrounds ranging from biology and bioinformatics to medicine, physics, mathematics & arts. The broad ambition of his group is to use tools and concepts from network theory to elucidate the complex machinery of interacting molecules that constitutes the basis of (patho-)physiological states. Major areas of interest are network-based approaches to rare diseases, understanding the basic principles of how perturbations of biological systems influence each other and developing novel Virtual Reality (VR) based technologies for analyzing large genomic data.

Hosted by Yang-Yu Liu