

CCR – IMPROMPTU

Monday, June 29th 2026, 11:00 AM

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Uncovering hidden causes in biology using mathematical physics

Understanding how genetic, cellular, and environmental perturbations propagate through tissues is a central challenge in biology. I will present new AI models of Virtual Cells and Virtual Tissues that combine causal inference, generative modeling, and ideas inspired by theoretical physics to disentangle biological mechanisms from confounding effects. These models learn from single-cell and spatial genomics data to predict cellular and tissue responses to unseen perturbations in silico. I will highlight applications ranging from cell-state discovery to causal modeling of tissue organization and spatial gene regulation. Together, these approaches aim to transform biological discovery by enabling large-scale virtual experimentation at single-cell resolution..

Venue: Lecture Hall B1, Borschkegasse 4a

Time: June 29th 2026, 11:00 AM

Host: Thomas Vogl



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