

Westlake Symposium for **AI Virtual Cell**

AIVC Series 3

Host: School of Medicine, Westlake University
Location: Westlake University in Hangzhou, China
Date: 7-8 June, 2025

Supported by:

AGENDA (DAY 1)

9:30-9:35 ● Opening
Kai Lei (Westlake University)

Session 1 Biology

- 9:35-10:05 ● The genetic landscape of a human cell reveals conserved topology and principles of genetic networks
Charles Boone (University of Toronto)
- 10:05-10:35 ● Elucidating, tracking, and targeting the evolution of genome instability through the lens of the budding yeast
Jia-Xing Yue (Sun Yat-sen University Cancer Center)
- 10:35-11:05 ● Metabolic control of DNA replication in budding yeast
Huiqiang Lou (Shenzhen University Medical School)
- Lunch
- 11:05-11:35 ● Building AI Virtual Cells (AIVC) with active learning
Tiannan Guo (Westlake University)
- 11:35-12:05 ● Distinct Genetic Control of Transcriptome and Proteome Variation in Natural Populations
Joseph Schacherer (University of Strasbourg)
- 12:05-12:35 ● Case studies on roles of lipids and proteins in yeast organelle dynamics
Zhiping Xie (Shanghai Jiao Tong University)
- 12:35-13:05 ● Single cell imaging and quantitative image analysis for deep phenotyping in budding yeast
Brenda Andrews (University of Toronto)
- 13:05-13:15 ● De novo Design of Proteases Based on AI: Helping Break Through the Functional Limitations of Natural Enzymes
Xuan Liu (YINJIA Bioscience)
- 13:15-13:30 ● Refreshment Break

Session 2 Data

- 13:30-14:00 ● The combination of super-resolution imaging with omics: our trial
Liangyi Chen (Peking University)
- 14:00-14:30 ● Towards Understanding the Principles of Cellular Organization: A Cell-Type-Resolved Proteomic Atlas
Xiaowen Wang (National Center for Protein Sciences (Beijing))
- 14:30-14:50 ● Unravel the Mechanism of Whole-Body Regeneration
Kai Lei (Westlake University)
- 14:50-15:20 ● Discussion
- 15:20-15:30 ● Closing & Group Photo

AGENDA (DAY 2)

9:30-9:50 ● Opening

Session 3 AI

- 9:50-10:20 ● From the mechanism-driven model towards the digital cell and digital human
Feiran Li (Tsinghua Shenzhen International Graduate School)
- 10:20-10:50 ● Efficient Biomedical multi-modal multi-omics Data Analysis
Hui Lv (Shanghai Jiao Tong University)
- 10:50-11:20 ● Knowledge exploitation and exploration with AI models
Linhai Xie (National Center for Protein Sciences (Beijing))
- Lunch
- 11:20-11:50 ● Whole-Worm Simulation of *C. elegans*: A Data-Driven Step Towards Simulating Life
Lei Ma (Future Technology Institute & National Biomedical Imaging Center, Peking University)
- 11:50-12:20 ● AIVC enabled by multimodal and dynamical foundation model
Han Wen (Beijing AI for Science Institute and RNA center, Peking University)
- 12:20-12:50 ● Towards AI Virtual Cell Through Dynamical Generative Modeling of Single-cell Omics Data
Peijie Zhou (Center for Machine Learning Research, Peking University)
- 12:50-13:10 ● Decoding Biological Complexity: AI Strategies in Vector Space and Scalable Design
Siqi Sun (Fudan University)
- 13:10-13:35 ● Refreshment Break

Session 4 Data 2

- 13:35-14:05 ● Creating AIVC via next-generation structural biology
Huaizong Shen (Westlake University)
- 14:05-14:35 ● Fluorescent protein-based ticker tapes for multiplexed recordings of transcriptional histories in single cells in culture and in vivo
Kiry D. Piatkevich (Westlake University)
- 14:35-15:00 ● Discussion
- 15:00-15:10 ● Closing & Group Photo