

The 29th Advanced School in Life Sciences

Neuroscience Unleashed

20-24 July 2025

General Director:

Roger D. Kornberg (Stanford University)

Co-Directors:

Christof Koch (Allen Institute, Tiny Blue Dot Foundation)

Mickey London (The Hebrew University of Jerusalem)

Idan Segev (The Hebrew University of Jerusalem)

Israel Institute for Advanced Studies
Edmond J. Safra Campus, Givat Ram
The Hebrew University of Jerusalem

Sunday, 20 July

Consciousness and its Neural Footprints

- 10:00-10:40 Registration
- 10:40-10:45 Greetings by **Yitzhak Hen**, Director of the IIAS
- 10:45-10:50 Opening remarks by **Roger Kornberg**
- 10:50-11:00 Exposition of the program (**Koch, London, Segev**)
- 11:00-11:45 **Christof Koch** (Allen Institute) *Consciousness – Introduction*
- 11:45-13:00 *Lunch*
- 13:00-14:15 **Liad Mudrik** (Tel Aviv University) *Evaluating Neuroscientific Theories of Consciousness*
- 14:15-15:00 **Leon Deouell** (The Hebrew University of Jerusalem) *Why Are There So Many Theories of the Neural Basis of Consciousness?*
- 15:00-15:30 *Coffee break*
- 15:30-16:15 **Christof Koch** (Allen Institute) *The Integrated Information Theory of Consciousness*
- 16:30-17:30 **Speed dating**
- 17:45-18:30 Terry Sejnowski (Salk Institute and UC San Diego) *Brains and AI* (*Open Lecture in honor of Solomon Golomb*)
- 18:30-20:00 Reception at the IIAS Lobby

Monday, 21 July

NeuroAI - Bridging Brain and Machine Intelligence

- 9:30-10:30 **Gabriel Kreiman** (Harvard University) *Everything You Always Wanted to Know About NeuroAI But Were Afraid to Ask*
- 10:30-11:30 **Aran Nayebi** (Carnegie Mellon University) *Using Embodied Agents to Help Answer "Why" Questions in Systems Neuroscience*
- 11:30-12:00 *Coffee break*
- 12:00-13:00 **Haim Sompolinsky** (The Hebrew University of Jerusalem) *Large Language Models and Human Neuroscience*
- 13:00-14:00 *Lunch*
- 14:00-15:00 **Gabriel Kreiman** (Harvard University) *Generalization, the Achilles Heel of Computational Models of Ventral Visual Cortex*
- 15:00-16:00 **Daphna Weinshall** (The Hebrew University of Jerusalem) *Are Insights from Human Learning Still Needed to Drive Advances in AI Technology?*
- 16:30-18:30 *Social with Posters*
- 19:00-20:00 **Richard Andersen** (Caltech) *Brain-machine Interfaces—Reading Out Intentions, Speech, and Awareness and Writing in Perception* **(Open Lecture)**

Tuesday, 22 July

Brain-Machine Interface

- 9:30-10:30 **Richard Andersen** (Caltech) *The Emerging Field of Brain-Machine Interfaces*
- 10:30-11:30 **Hagai Bergman** (Hebrew University) *Modulating the Human Voyage Through The landscape of Consciousness by Deep Brain Stimulation*
- 11:30-12:00 *Coffee break*
- 12:00-13:00 **Xing Chen** (Pittsburgh University) *Artificial vision via high-channel-count visual cortical stimulation in primates*
- 13:00-14:00 *Lunch*
- 14:00-15:00 **Itzhak Fried** (Tel Aviv University, UCLA) *Neuroprosthetics and the Editing of the Human Mind*
- 15:00-16:00 **Nita A. Farahany** (Duke University) *The Battle for Your Brain*
- 16:30-17:00 *Coffee break*
- 17:00-18:00 Follow up conversation between Nita Farahany and students
- 18:00-19:00 **Round table: Limits and Future Directions of BMI Interventions**
- 19:30-22:00 Dinner and visit at the Israeli Museum

Wednesday, 23 July

Psychedelics & Therapies

- 9:30-10:30 **Charles Raison** (University of Wisconsin-Madison) *Promise and Perils of Psychedelics: An Update from the Frontlines of Drug Development*
- 10:30-11:30 **Ashley Mason** (UCSF) *Warming up to a New Paradigm in Mental Health Treatment*
- 11:30-12:00 *Coffee break*
- 12:00-13:00 **Aviva Berkovich** (Haifa University) *Ayahuasca and the Art of Dying: A Neurophenomenological Exploration*
- 13:00-14:00 *Lunch*
- 14:00-15:00 **Charles Raison** (University of Wisconsin-Madison) *From Ancient Practices Comes the Birth of Consciousness-Based Psychopharmacology: A Personal Scientific Journey*
- 15:00-15:30 *Coffee break*
- 15:30-16:30 **Panel Discussion - Alternative Therapies**
- 17:30-18:30 **Blue Brain Project inspired Concert** (by composer **Hana Ajiashvili**) **at ELSC**
- 19:00-20:00 **Christof Koch** (Allen Institute, Tiny Blue Dot Foundation) *Beyond Physicalism- Consciousness, Quantum Mechanics, and Mystical Experiences* **at ELSC**
(Open Lecture)

Thursday, 24 July

Organoids and Hybrid Brains

- 9:30-10:30 **Eran Meshorer** (The Hebrew University of Jerusalem) *Brain Organoids Provide a Window into Presymptomatic Molecular Phenotypes in Neurodegenerative Diseases*
- 10:30-11:30 **Guo-Li Ming** (University of Pennsylvania) *Engineering Neural Organoids for Understanding Brain Development and Disease*
- 11:30-12:00 *Coffee break*
- 12:00-13:00 **Hongjun Song** (University of Pennsylvania) *Chaos Circuitry: Connectome of Transplanted Human Glioblastoma Organoids in the Adult Mouse Brain*
- 13:00-14:00 *Lunch*
- 14:00-15:00 **Discussion:** Neuroscience Unleashed – where do we go from here? (**London, Segev, ChatGPT**)
- 15:00-18:00 Visit to the Old City of Jerusalem (Tentative)