הפקולטה לרפואה
FACULTY OF MEDICINE
كلية الطب

Institute for Medical Research
Israel-Canada
INNOVATIONS TOUCHING LIVES

SPECIAL SEMINAR

OF A CANDIDATE FOR AN ACADEMIC POSITION

FROM CHROMOSOMES TO SINGLE GENES: DESIGNING DNA MOLECULES FOR AUTONOMOUS CELL-FREE SYSTEMS

FEBRUARY 18, 2026| AT 09:00
LEVY HALL | BOTNAR BUILDING

DR. FERDINAND GREISS, PHD
WEIZMANN INSTITUTE OF SCIENCE
ISRAEL

ABSTRACT

The bottom-up approach to building artificial cells can help us better understand living systems and enable next-generation biotechnologies. During my postdoctoral period, I used cell-free gene expression and microfluidic chips to transplant bacterial chromosomes, study tradeoffs in genetic decision-making, and build the first gene circuit on a single DNA molecule. The three projects spanned orders of magnitude and, for the first time, revealed the rich dynamics of molecular biomachinery at the whole-genome and single-gene levels outside a cell: Slow dynamics of bacterial condensins maintain chromosome organization, whereas coupled gene expression machinery produces nascent proteins that transiently drive gene regulation on the same DNA. Together, these steps demonstrate diverse cell-free DNA transactions, leading the way toward autonomous DNA-based systems with great potential for on-chip genome technology in biomedicine.

LIGHT REFRESHMENTS WILL BE SERVED BEFORE THE LECTURE

FOR FURTHER INFORMATION PLEASE CONTACT: KATHIAS@SAVION.HUJI.AC.IL