

The Center for Physics and
Chemistry of Living Systems
Tel Aviv University

TAU BioSoft Day #5

June 27, 2024

Steinhardt Museum of Natural History
Tel Aviv University

09:00–10:00 Registration

10:00–10:30 **Roiy Sayag** (Ben-Gurion University of the Negev)

Fracture Dynamics in Radially Spreading Flows

10:30–11:00 Poster Soundbites

11:00–11:20 Coffee

11:20–11:50 **Mor Nitzan** (The Hebrew University of Jerusalem)

Decoding Layers of Organization in Multicellular Systems

11:50–12:20 Poster Soundbites

12:20–13:00 Lunch

13:00–14:20 Poster Presentations

14:20–14:50 **Daniel Hexner** (Technion)

Mechanical Regularization

14:50–15:20 **Alexandra Tayar** (Weizmann Institute of Science)

Cytoskeleton Dynamics Controls Liquid-Liquid Phase Separation

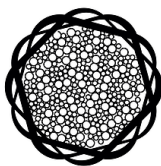
15:20–15:50 **David Kessler** (Bar-Ilan University)

Avoiding Frustration in Cell-Fate Regulatory Networks

15:50–16:20 **Ronen Zaidel-Bar** (Tel-Aviv University)

*Pushing, Grabbing, and Squeezing: The Mechanics of Morphogenesis
in the Worm Reproductive System*

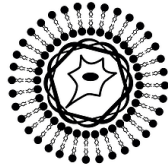
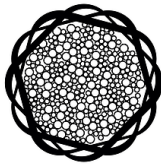
16:20–16:30 Poster Prizes and Concluding Discussion



The Center for Physics and
Chemistry of Living Systems
Tel Aviv University

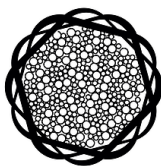
Poster session - Ardi Gallery

Poster no.	Presenter	Poster title
1	Ajesh Jose	Temporal Immobility of Cells in Active Swarm
2	Lee Halevi	Modelling the Dynamics of Repressors and Activators in the Notch Signaling Pathway
3	Oren Gozlan	Neutralized-like proteins differentially activate Notch ligands
4	Shahar Kasirer	Inhomogeneous lateral inhibition sensitivity accounts for vestibular HC differentiation and regeneration patterns
5	Shirel Davidyan	Line tension control of scar patterns on spherical crystal shells
6	Orr Simon Lusky	Probing Dynamics of an Intact Virus Using Pseudo 3D REDOR-based MAS Experiments
7	Sinwook Park	ion concentration-polarization based analyte preconcentration on-chip electrochemical sensing for enhancing biosensing detection
8	Donggang Cao	Dielectrophoretic response and electro-deformation of soft bioparticles in interaction with a Janus particle
9	Victor Yashunsky	Investigating Topological Defects in Active Nematic Multicellular Systems
10	Dana Cohen-Gerassi	Conductive Peptide-Based MXene Hydrogel as a Piezoresistive Sensor
11	Laura Hoek	Macroscopic Piston-Like Active Matter Information Engine
12	Dima Boriskovsky	The fluctuation-dissipation relation holds for a macroscopic tracer in an active bath
13	Zoe Talya Yagil	Thermodynamic uncertainty relation in driven colloidal system
14	Ron Vatash	The benefit of many stochastic searchers
15	Galor Geva	Rolling rebels: Counteractive Locomotion of a Microroller in an Obstacle Lattice
16	Amit Kumar	Size and shape fluctuations of mesoscale domains in non-equilibrium liquid-liquid phase separation
17	Arie Pyasik	Effects of Inter-molecular and Intra-molecular crosslinks on the creation and stability of chromosome territories
18	Ido Fanto	Dynamical spreading under power law potential
19	Osher Arbib	Effective Viscosity of Hot Particles in a Viscous Suspension
20	Mattan Gelvan	Self-assembly of binary rotors
21	Ariel Dvir	Shape transitions of sedimenting confined drops



The Center for Physics and
Chemistry of Living Systems
Tel Aviv University

22	Sada Nand	Transition to unstable Front Evolution in Lubricated Gravity Current
23	Gal Finkelstein-Zuta	A self-healing multispectral transparent adhesive peptide glass
24	Hui Yuan	The engineering of Hydrogen Bond Networks Induces Diverse Physical Properties of Biological Crystals
25	Omri Cohen	Locomotion of Active Sheets Driven by Curvature Modulation
26	Jonathan Church	Accelerating Molecular Dynamics Simulations through Informed Resetting
27	Ofir Blumer	Informed resetting: from accelerating search processes to engineering non-equilibrium steady states
28	Roi Holtzman	Mpemba Effect Through Phase Transitions in Landau Theory
29	Dror Kobo	Improving gecko-inspired adhesion for robotic climbers and grippers with artificial intelligence
30	Camilla Sammartino	Liquid Z-Diodes
31	Shai Sonnenreich	A Female-Locust Inspired Hybrid Soft-Stiff Autonomous Digger
32	Shira Kutchinsky	Programmable Electrospun Polymeric Systems of Controlled Release via a Series of Mesophase Transitions
33	David N. Azulay	Multiscale X-ray study of Bacillus subtilis biofilms reveals interlinked structural hierarchy and elemental heterogeneity
34	Shiran Ziv Sharabani	Directional actuation and phase transition-like behavior in anisotropic networks of responsive microfibers
35	Amit Jangid	Phase transition and evolutionary emergence of self-incompatibility in the non-self recognition system in plants
36	Eden Arbel	A Mechanical Origin of Cooperative Transport in a Swarm of Force Aligning Robots
37	Priyanka Priyanka	Sequence dependence response in Shakti artificial spin ice dynamics
38	Chaviva Sirote-Katz	Mechanical Holography in Combinatorial Metamaterials
39	Inbar Shmuelly	The effect of TasA fibers on the precipitation of calcium salts.
40	Yoni Koren	Analysis of root-soil interactions reveals mechanical advantages of growth-driven penetration of roots
41	Ran Glinowiecki	Percolation in fibrous gels by active contraction of particles dominates tissue mechanical behavior
42	Petr Shendrik	Membrane Tension Inhibits Lipid Mixing by Increasing the Hemifusion Stalk Energy
43	Shahar Goren	Pnipaam spheres as temperature microsensors in an optical tweezers setup
44	Nir Zaharoni	Engineering culture systems with controlled mechanical properties for exploring milk protein secretion
45	Bara Levit	Equation of State: Proteins
46	Itamar Shitrit	Sokoban random walk on the Bethe lattice



**The Center for Physics and
Chemistry of Living Systems**
Tel Aviv University

47	Neta Carmon	Protein stabilization in carbohydrate solution.
48	Shubhadeep Nag	Dissipative Self-assembly of Patchy Particles under Nonequilibrium Drive
49	Michael Faran	Protein State Classification by the Stochastic Landscape Approach
50	Srestha Basu	Rationally Designed Functionalization of Single-Walled Carbon Nanotubes for Real-Time Monitoring of Cholinesterase Activity and Inhibition in Plasma
51	Shirel Kleiner	Single-walled carbon nanotubes as near-infrared fluorescent probes for bio-inspired supramolecular self-assembled hydrogels
52	Adi Hendler Neumark	Single-Walled Carbon Nanotubes Sensors Selection for the Detection of Micro-RNA Biomarkers for Acute Myocardial Infarction as a Case Study
53	Sheng Huang	Disordered bistable materials under periodic drive
54	Simran Dewan	Designer multicomponent condensates formed by liquid-liquid phase separation of peptide and glycosaminoglycans
55	Tlalit Massarano	Spatiotemporal Control of Melanin Synthesis in Liquid Droplets
56	Itai Katzir	Viral Inspired Regulation of Multicomponent Peptide-DNA/RNA Liquid-liquid Phase Separation
57	Manu Mannattil	A Linear Model for Elastic Phase Separation
58	Yanyan Zhu	Formation of Block Copolymer Particles: Theoretical Aspects
59	Cheng-Tai Lee	Odd elasticity in disordered chiral active materials