

## FRONTIERS in STEM CELL BIOLOGY & TISSUE ENGINEERING

The meeting will take place on July 26<sup>th</sup> 2022 at the Rappaport Faculty of Medicine of the Technion (Bat Galim, Haifa). The existence of stem cells (SCs) at the tip of the cellular differentiation hierarchy has fascinated the scientific community ever since their discovery in the early 1950s-60s. Recently, advanced single cell imaging, sequencing, lineage tracing and bioengineering technologies have been applied to capture the properties and regulatory mechanism of individual cells, leaving SCs much less space to “hide”. The workshop aims to provide an updated picture of advances in SC biology with emphasis on disease modeling and bioengineering. Local researchers and international speakers, part of the EU funded project [BRIGHTER](#) will present their latest research. Topics will cover pluripotent and adult SCs, the niche, mechanobiology, advanced bioengineering and genome-wide single cell analysis. We look forward to welcoming you!

Online registration is essential and free: <https://shalomfe.net.technion.ac.il/conference-registration/>

8:30 Welcoming		
9:00 Greetings		
<b>Session 1: PLURIPOTENCY &amp; REPROGRAMING</b>		
<b>Chairs: Nissim Benvenisty &amp; Yael Mandel-Gutfreund</b>		
9:10-9:30	Nissim Benvenisty	The Essentialome of Human Pluripotency and Early Development
9:30-9:40	Rachel Lasry (Buganim Lab)	The effect of complex haploinsufficiency on pluripotency induction
9:40-9:55	Omri Wurtzel	Regulation of pluripotency in planarian stem cells in homeostasis and regeneration
9:55-10:10	TBA	
<b>10:10-10:25 Coffee Break</b>		
<b>Session 2: DEVELOPMENT &amp; ADULT STEM CELL NICHES</b>		
<b>Chairs: Roi Gazit &amp; Benny Dekel</b>		
10:25-10:40	Chen Luxenburg	Apoptosis enhances non-autonomous symmetric cell division in the developing mouse epidermis
10:40-10:55	Michal Shoshkes	Telocytes constitute the hair follicle stem cell niche
10:55-11:10	David Enshell-Seijffers	Fgf signaling in the mesenchymal niche of the hair follicle regulates SC quiescence & regeneration
11:10-11:25	David Sprinzak	Precise patterning in the inner ear
11:25-11:40	Sharon Schlesinger	Heat stress alters fate decisions of bovine mesenchymal stem cells
11:40-11:55	Ruby Shalom-Feuerstein	Eye open on stem cells and their niche
<b>11:55-12:10 Coffee Break</b>		
<b>Session 3: ADVANCED MODELING WITH LIGHT SHEET SYSTEMS</b>		
<b>Chair: Haguy Wolfenson &amp; Thomas Schultheiss</b>		
12:10-12:25	Gustaf Mårtensson & Robert Eklund	Shifting focus : moving existing technology between application spaces
12:25-12:40	Helmut Wurst	Photocrosslinkable Biomimetic Hydrogels Based on the Thiol-ene Chemistry
12:40-12:55	Louise Breideband & Levin Hafa	Imaging and bio-printing of 3D cell cultures with light sheet systems
12:55-13:10	Elena Martínez Fraiz	Development of biomimetic models of tissue: guiding cellular self-organization through biofabrication techniques
<b>13:10-14:00 Lunch Break</b>		
<b>Session 4: ORGANOID &amp; DISEASE MODELING</b>		
<b>Chair: Eran Meshorer &amp; Hila Toledano</b>		
14:00-14:15	Ruthie Ashery-Padan	The LHX2-OTX2 transcriptional-complex controls human RPE differentiation & reveals cis-regulatory landscape involved in retinal diseases
14:15-14:30	Ofer Binah	Investigating inherited cardiac diseases using the patients' iPSC-derived Cardiomyocytes
14:30-14:45	Oren Caspi	Cardiovascular Organoids for modeling acquired cardiomyopathies
14:45-15:00	Benny Dekel	The kidney: bioengineering, therapeutic regeneration or both?
15:15-15:30	Eran Meshorer	PSC-derived brain organoids reveal widespread DNA de-methylation in Huntington's disease
15:30-15:40	Shlomit Edri (Levenberg Lab)	Organoid culture and 3D bioprinting of PSC-derived pancreatic progenitors
<b>15:40-16:00 Coffee Break</b>		
<b>Session 5: ADVANCED MODELING of MORPHOGENESIS &amp; PATHOGENESIS</b>		
<b>Chair: Chaya Kalchaim &amp; Ruthie Ashery-Padan</b>		
16:00-16:15	Ben Maoz	Organs-on-a-Chip: A new tool for studying human physiology
16:15-16:30	Iftach Nachman	How to make gut tubes? Controlling divergence of morphogenetic paths in embryo-like models
16:30-16:45	Gad Vatine	From BBB-on-Chip to pre-clinical BBB-targeted gene therapy
16:45-17:00	Nadav Sharon	Unravelling the combinatorial signals that direct PSC differentiation into pancreatic $\beta$ cells
17:00-17:15	Jacob Hanna	Synthetic Ex Utero Embryogenesis: From Naive Stem Cells to Organs
17:15	Closing remarks	