

## Open PhD position

### Description

The assembly of autonomous self-replicating artificial cells exhibiting the essential characteristics of life is one of the great contemporary scientific challenges. In our group, we develop experimental strategies to ultimately move toward the assembly of such artificial living systems (<https://levy.net.technion.ac.il/>).

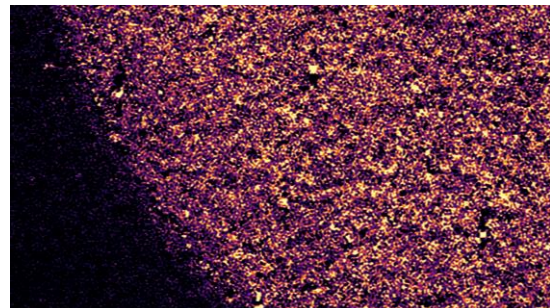
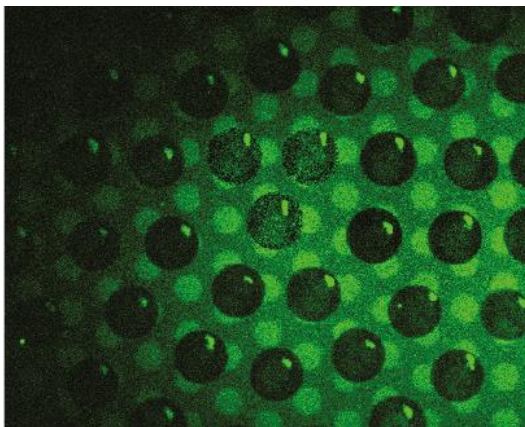
As a general approach, we design biosynthetic platforms based on DNA chips and cell-free gene expression to mimic cellular processes on artificial systems (Levy et al., Science Advances 2020). The transition from a complex three-dimensional natural cell to a two-dimensional structured chip enables us to reduce biological complexity and reach minimal reconstituted systems.

Several projects are available:

- Reconstituting an autonomous and genetically programmed membrane division mechanism.
- Investigating transcriptional condensates on DNA biochips.
- Developing a “biolab-on-chip” enabling on-site synthesis and manipulation of bioproducts.

The research is strongly multidisciplinary, at the interface between synthetic biology, soft matter physics, biochemistry, and surface science. The Lab members are trained individually and learn techniques from molecular biology, fluorescence microscopy, microfluidics, microfabrication, lithography, and optoelectronics.

The laboratory is equipped with state-of-the-art automated systems to reach experimental robustness and high-throughput. Theoretical models are developed to complete our experimental approach.



*DNA molecules immobilized and spatially organized on SiO<sub>2</sub> biochips, imaged in TIRF and super-resolution microscopy.*

### About the Technion

The Technion is a world-leading research institution for science and technology. It is located on the slopes of Mount Carmel, in front of the Mediterranean Sea, in Haifa, Israel, offering an attractive living environment. Equipped with state-of-the-art facilities, the Technion provides ideal conditions to conduct high-level multidisciplinary research.

## **Qualification**

- A MSc in Biophysics / Biochemistry / Biotechnology / Chemistry / Engineering in any related field.
- Experience in molecular biology techniques, fluorescence microscopy, microfluidics, or cleanroom work is an advantage.
- Ability to work independently, as well as part of a multidisciplinary team, strong communication skills, critical thinking, perseverance, and a high degree of motivation and creativity.

## **Application**

Apply by email to Dr. Michael Levy ([michael.levy@technion.ac.il](mailto:michael.levy@technion.ac.il)).

Please include:

- A CV.
- A cover letter.
- Contact information of at least two references.