Tel Aviv University , Biological and Soft Matter Seminar

Roy Bar-Ziv

WIS

Shenkar-Physics 222

Programmable on-chip DNA compartments as artificial cells

Programmable on-chip DNA compartments as artificial cells We report assembly of silicon-fabricated, two-dimensional DNA compartments capable of metabolism, programmable protein synthesis, and communication. Metabolism is maintained by continuous diffusion of nutrients and products through a thin capillary, connecting protein synthesis in the DNA compartment with the environment. We programmed fundamental cellular functions including the self-regulation and periodic cycles of protein levels. Gene expression in the DNA compartment reveals a rich dynamical system that is highly controlled by geometry.