Self-Actuated Synthetic Biosystems: From Biomedicine to Nanomaterials

Urartu Şeker
Bilkent University UNAM - Institute of Materials Science and Nanotechnology,
Ankara, Turkey

Abstract:
Programming cellular devices to deliver proteins or small molecules using synthetic genetic regulation can be employed in many areas such as biomedicine, living therapeutics, living materials and many others. A biological device composed of a cellular sensor coupled with a programmed protein delivery system can lead the formation of a synthetic system that can sense the environmental inputs, carry out calculations and create an output. Using this approach, we have built cellular devices those can sense environmental signals and creates an output in the form of protein secretion. In this talk I will mention about a self-actuated cellular protein delivery system which utilizes logic gate based, and state-machine based operations for sequential protein delivery. Also, I will mention about our recent studies to create synthetic genetic circuits those rely on a sense-response approach. These will include a cellular device for a whole cell biocatalyst and another device for nanomaterial templating.

Friday, May 3rd, 2019, 13:00
Room PH 127

Contact: Friedrich Simmel, simmel@tum.de, phone: 089-289-11611