



Department of Physics
Biophysics / DNA Nanotechnology Seminar

Monday, April 20th at 4:30 pm, SEB 110

Prototyping Dynamic DNA Nanomachines with Single-Molecule Fluorescence Microscopy

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In the past two decades, research groups have devised a plethora of unnatural DNA creations, including self-assembled nanostructures of increasing size and complexity, artificial molecular motors and robots, and DNA computers. Yet our ability to characterize these complex creations often lags behind our ability to produce them, making it difficult to obtain feedback for the optimization of their performance for real-world applications. To address this problem, we have used single-molecule fluorescence microscopy to take movies of individual DNA nanomachines in action, acquiring detailed feedback regarding their operation. I will discuss three systems we have investigated in this way: a class of transporters that pass molecular cargo back and forth in a controlled manner; dynamic molecular “barges” inspired by proteins found in cell membranes; and a set of reporter molecules that identify cancer biomarkers with very high confidence.

Please join us for light refreshments at 4:00 pm in the SEB lobby.