

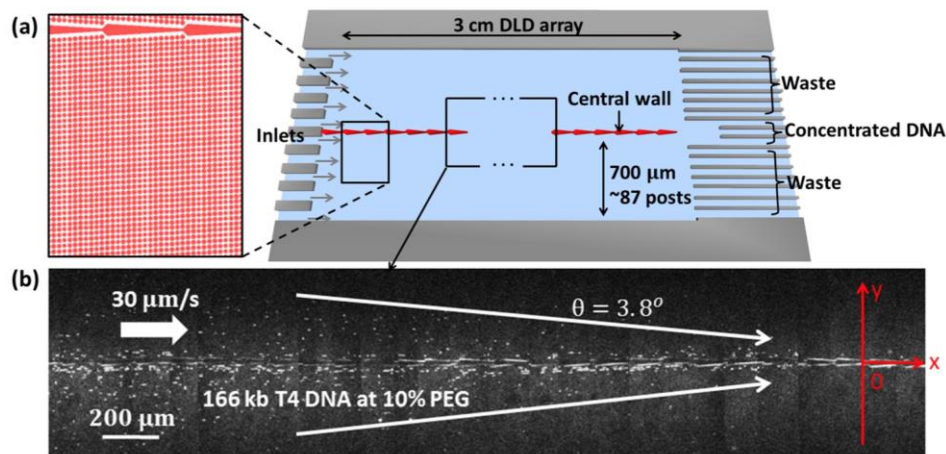
# Puzzles and Promises in Nanoscale Biology

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Biological molecules, although huge by the standard scale of organic chemistry, are still very much nanoscale objects. Understanding how they function is a task for nanotechnology and the tools of a great mix of disciplines. One of the great tasks is simply collecting them, imaging them and probing them physically using nanotechnology.

I'll go over some of the efforts we have made working with colleagues in Electrical Engineering to probe the dynamics of genomic length DNA in both ever-shrinking long nanochannels and a tilted array of posts, called a Deterministic Lateral Displacement. As we have shrunk things down, interesting new phenomena have emerged that require re-thinking how we look at both polymer dynamics and the flow of liquids at the nanoscale. This work is not just abstract, I'll mention some of the commercial spin-offs that have been launched as a consequence of this work, and try to peer forward as to what future applications and surprises may await us.



*Figure 1 Concentration of viral DNA in a nano-Deterministic Lateral Displacement Array. Courtesy of Yu Chen and James C. Sturm, Princeton University.*