

Two-Armed Nanorobot Manipulates Molecules Within a DNA Device

Researchers have created a two-armed nanorobotic device that can manipulate molecules within a device made of DNA. Nadrian Seeman of New York University and colleagues have found that the programmable unit provides an unprecedented ability to capture and maneuver DNA components. The creation builds on the single nanorobotic arm Seeman completed in 2006—the first time researchers had used a functional nanotechnology device within a DNA array. The new nanorobotic device uses its two arms to practice DNA origami, a method where short DNA components direct a very long DNA strand to form structures in a desired shape. These shapes can be larger and more complex than those possible within a simple crystalline DNA array. Atomic force microscopy has shown that the nanorobotic device captures targeted molecules with 100 percent accuracy. Such nanorobotic devices may one day act as a factory for synthesizing chemicals. They also have the potential to advance the encryption of information and the assembly of computer devices using DNA scaffolds.

Gu, H., J. Chao, S.-J. Xiao, N. C. Seeman. Dynamic patterning programmed by DNA tiles captured on a DNA origami substrate. *Nature Nanotechnology*, 15 February, 2009; advance online publication, DOI: [10.1038/nnano.2009.5](https://doi.org/10.1038/nnano.2009.5)

Patents and other steps toward commercialization:

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