

DNA origami as Building Blocks for Nanoparticle Synthesis in Biological Nanorobots

Dr.Afshin Rashid , Assistant Professor

Faculty member Islamic Azad University of Science and Research Branch, Tehran

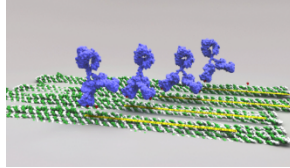
- **Abstract:**

- DNA origami is one of the newest techniques for using DNA as building blocks for the synthesis of nanoparticles in biological nanobots (Nano bio Robots) . This is one of the newest methods in the field of nanoelectronics technology, which has its own limitations and opportunities. "Origami" is a Japanese word that means folding a simple sheet of paper into a desired shape and with a specific dimension.

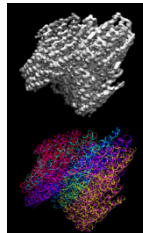
- **Keywords:** Nanostructures ,Nanoelectronic , DNA origami , Nano Particle

Introduction •

Although DNA is a natural choice for building active structures for DNA origami nanorobots, it is not for nanorobotic applications, but due to its lack of structural and catalytic diversity, it is possible to build molecular walkers and switches on origami. Nanorobots made from DNA origami exhibit computational capabilities and perform a pre-programmed task within a living organism. In the DNA nanorobot structure they created, there is an open DNA tube that has a hinge on one end and can be closed. The drug-laden DNA tube is closed by a DNA aptamer and configured to recognize and seek out a disease-associated protein. When the DNA origami nanorobots encounter infected cells, the aptamers dissociate and release the drug.



DNA origami takes a completely different approach than multi-stranded design. Typically, single-stranded circular genomic DNA of the Nanobots (Nano bio Robot) is used as a scaffold, and hundreds of short auxiliary strands called staples are used to assemble the longer scaffold into a specific structure. In the folding process, the scaffold DNA acts as a guide or a seed, which increases the folding efficiency and resists the stoichiometry of the strands in the Nano bio Robot.



DNA origami is one of the latest techniques for using DNA as building blocks for the synthesis of nanoparticles in biological nanobots (Nano bio Robots). This is one of the newest methods in the field of nanoelectronics technology, which has its own limitations and opportunities. "Origami" is a Japanese word that means folding a simple sheet of paper into a desired shape and with a specific dimension.

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