

Engineering DNA-Nanostructure-Based Molecular Tools for Structural Biology.

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Biological systems create very complex machines with nanometer-scale dimensions and precisely controlled three-dimensional architectures. Structural Biology can help us to access the detailed characterization of biomolecules, which is a key step towards the understanding of biological processes on a molecular level and the design of new drugs. This requires pushing forward the technological frontiers of established Structural Biology methods. The last decades have witnessed the rapid development of DNA as a molecular engineering material to create nano-structures with controlled geometries, topologies and periodicities of increasing complexity. In Montpellier, we focus on building artificial DNA nano-systems called “DNA origami” that help solve the problems of Biophysical and Structural Biology studies. I will present a new method for imaging supra-molecular structures at isotropic 3D super-resolution by single-particle reconstruction and perspectives in Electron Microscopy.