

Fighting Cancer with DNA Origami

Scientific Achievement

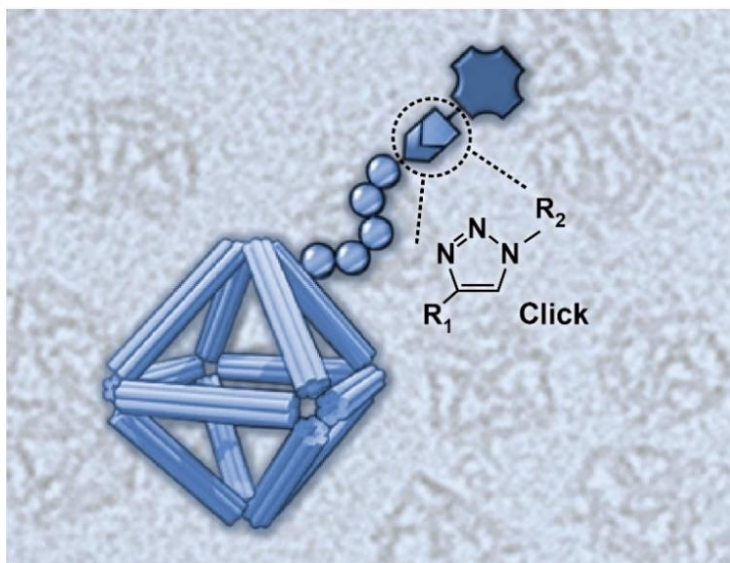
Scientists showed that designed nanomaterials are capable of carrying an anticancer drug and delivering it with a controllable release.

Significance and Impact

DNA nanotechnology has the potential for biomedical applications but has limited structural integrity in complex biological fluids. The molecular coatings developed in this work solve this challenge, paving the way for this approach to be used in drug delivery, bioimaging, and cellular targeting.

Research Details

- Developed a class of biocompatible molecular coatings to stabilize wireframed DNA origami cages.
- Coatings give the structure multifunctionality and environmental stability.
- CFN facilities were used to create the DNA origami.
- CFN Electron Microscopy Facilities and the LiX beamline at NSLS-II were used for characterization.



Schematic of a DNA origami stabilized by a peptoid coating and equipped with imaging and cell-targeting capabilities.. Click chemistry was used to conjugate functional molecules on the peptoid/origami surface.

S.-T. Wang, M. A. Gray, S. Xuan, Y. Lin, J. Byrnes, A. I. Nguyen, N. Todorova, M. M. Stevens, C. R. Bertozzi, R. N. Zuckermann, O. Gang. *PNAS* **117** (12) 6339-6348 (2020)

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