DNA Mediated Synthesis of Novel Gold Nanoflowers with Enhanced Cell Permeability and Optical Properties Towards *In Vivo* Cancer Imaging and Drug Delivery

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Objective

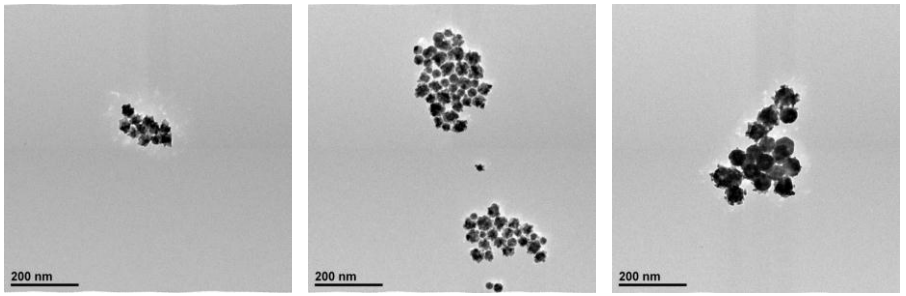
The focus of my research is to understand the DNA directed growth of gold nanoflowers. These nanoflowers have demonstrated enhanced cellular permeability and uptake and due to their novel optical properties, is a prime platform for targeted cancer diagnostic, imaging, and therapy.

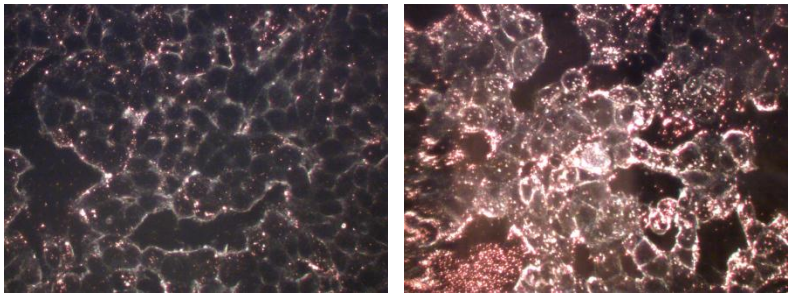
Research Highlights

- Demonstrated precise size control of nanoflowers
- Fine tuned the optical scattering and absorption profile of nanoflowers
- Successfully incorporated cancer targeting DNA aptamer onto nanoflowers in a one-pot synthesis

Future Research

- Promising early results demonstrating targeted uptake by cancer cells needs to be repeated and confirmed
- Explore the gold nanoflower as a drug delivery vehicle as well as for photothermal therapy of cancer cells
- The DNA functionalized gold nanoflower is a promising platform that could become the standard in cancer therapeutics





Top: TEM images of various nanoflowers (15, 30, and 50 nm)
Bottom: Human breast cancer cell demonstrating targeting capabilities of aptamer functionalized nanoflowers