PURDUE INNOVATES | Office of Technology Commercialization

Selective Delivery of DNA Origami Nanostructures to Cancer Cells

DNA origami nanostructures selectively enter pancreatic cancer cells for imaging and therapeutic delivery.

Pancreatic ductal adenocarcinoma (PDAC) poses a significant clinical challenge as shown by five-year survival rates of 13%. Researchers at Purdue University have developed a method by utilizing DNA Origami for selective imaging and targeted delivery of a therapeutic payload regarding KRAS-mutant pancreatic cancer cells. With this invention, anti-cancer agents can be included in the therapeutic payload via DNA Origami which can be selectively delivered to pancreatic cancer cells. This technology can also enable selective imaging such as carrying fluorescent species to the cancer cells in order to aid in medical diagnostics. With this invention, imaging and therapeutics regarding cancer cells can now have another great option.

Technology Validation:

This technology has been validated in the lab to demonstrate the ability of the DNA origami nanostructures enter pancreatic cancer cells without any functionalization of targeting ligands.

Advantages:

-Able to specifically target cancer cells

-Deliver nanoparticles selective to pancreatic cancer cells

Applications:

-Pancreatic cancer

-Potential other cancer cells

Publications:

DNA Walker-Regulated Cancer Cell Growth Inhibition

Technology ID

2022-CHOI-69914

Authors

Cih Cheng

George Tsu-Chih Chiu

Jong Hyun Choi

Yancheng Du

Bumsoo Han

Kevin Solomon

View online page

Chembiochem. 2016 Jun 16;17(12):1138-41. doi: 10.1002/cbic.201600052. Epub 2016 Apr 28. https://pubmed.ncbi.nlm.nih.gov/27059426/

Conformational Control of DNA Origami by DNA Oligomers, Intercalators and UV Light - PubMed (nih.gov)

https://pubmed.ncbi.nlm.nih.gov/34067324/

TRL: Pharmaceuticals

Intellectual Property:

Provisional-Gov. Funding, 2024-07-12, United States

PCT-Gov. Funding, 2025-07-11, WO

Keywords: Cancer Cells, DNA Origami, Micro & Nanotechnologies, Nanostructure, Pharmaceuticals, Selective Delivery

Explore other available products test at The Office of Technology Commercialization Online Licensing Store