

Biodegradable DNA-alginate Conjugate for Reversible Protein and Cell Labeling and Imaging

ID# 2020-5055



PennState

TECHNOLOGY READINESS LEVEL

1-3

Seeking

Licensing | Research

Keywords

- Fluorescent Sensor
- Immunostaining
- Diagnostics
- Drug Discovery
- Cell Labelling

Researchers

Yong Wang, PhD

Professor of Biomedical Engineering

[Website](#)

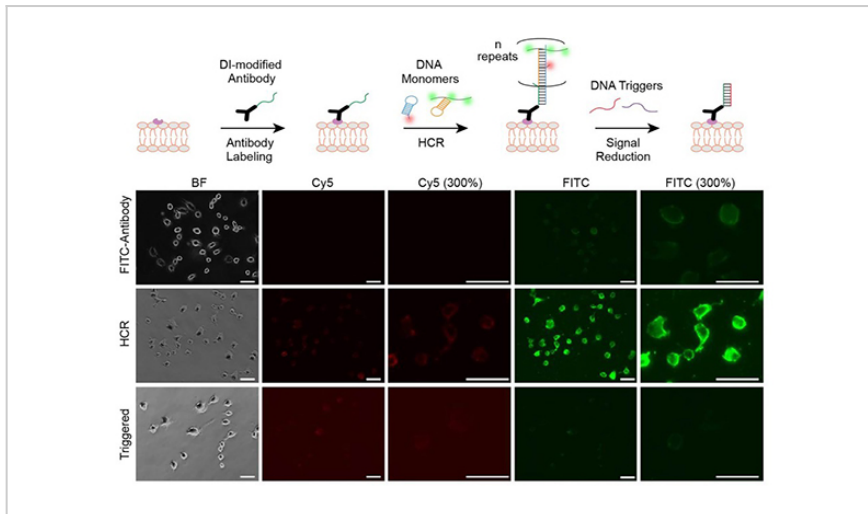
Other Researchers

Office of Technology Management Contact

Melissa Long

mkl137@psu.edu

814-207-2354



Nanoscaffold Amplification and Reversal.

Technology Summary

The current gold standard method for immunostaining and cell labelling (for FACS) is to stain a protein with an antibody that only carries a few fluorophores. Resolution is often limited due to a number of factors, particularly low abundance of the target protein. To address this, Penn State inventors have developed a buildable polymer-based signal amplification technology that 1) amplifies signal intensity by at least one order of magnitude as compared to traditional protein labelling techniques, 2) is reversible, and 3) is operatable under both physiological and non-physiological conditions. In this novel method, fluorescent nanoscaffolds, composed of linear DNA polymers and alginate branches, are targeted to specific cellular locations using conjugated primary antibodies. Both synthesis and reversibility of the fluorescent nanoscaffold chains can be controlled at the molecular level.

Application & Market Utility

This technology is expected to be broadly applicable in the biological and biomedical sciences, in both academic and commercial settings. The inventors expect the technology will have pronounced utility in applications that include small sample size or have low abundance molecular targets, including analysis of rare circulating tumor cells, forensic specimens, and prenatal testing samples. Due to reversibility of the nanoscaffold, the technology may also allow for positive selection of therapeutic cells. Samples can be made available for academic research and product evaluation.

Next Steps

The researchers seek commercialization partners for field-specific development of the technology.



Invent Penn State is a Commonwealth-wide initiative to spur economic development, job creation, and student career success. Invent Penn State blends entrepreneurship-focused academic programs, business startup training and incubation, funding for commercialization, and university-community collaborations to facilitate the challenging process of turning research discoveries into valuable products and services that can benefit Pennsylvanians and humankind. Learn more at invent.psu.edu.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability or protected veteran status.