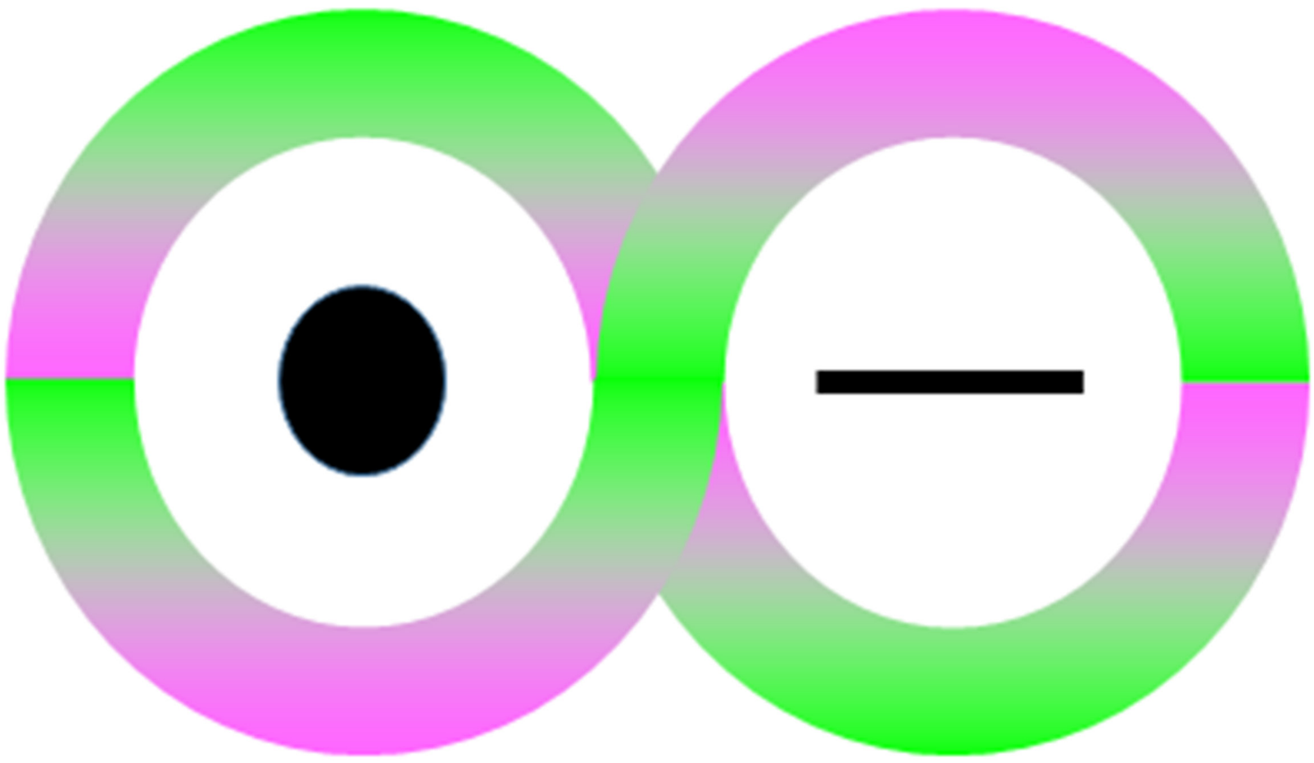

DEVELOPMENT AND MARKETING OF FLUORESCENT MICROSCOPY INTENSITY STANDARDS

SUMMARY

Convert the repetitive nanomachine in flagella into standards for quantitative fluorescent microscopy.

DESCRIPTION

Fluorescence microscopy is widely used in biomedical fields for diagnosis and research. Despite broad applications and remarkable breakthroughs, it remains challenging to convert light intensity into the molecule number, a highly valued biomatrix. Taking advantage of a ruler-like structure in flagella, we have created a prototype standard that contains a precise number of fluorescent molecules per unit length and demonstrated its utility as a standard. We will create and market a suite of standards of various color and intensity for diverse quantitative applications.

MILESTONES

Spring 2016
Apply for a patent

Spring 2017
Develop flagella emitting light of a palette of colors;
Improve advanced applications and develop product packaging

Summer 2017
Create a webpage

Fall 2017
Market products

ABOUT OUR TEAM

Dr. Yi Liu, inventor
Dr. Pinfen Yang, inventor

The Yang lab studies how a ruler-like nanomachine in flagella beat rhythmically. To determine the number of shooting star-like proteins at the flagellar tip, Yi Liu engineered green algae to compare the intensity of a fluorescent protein, NeonGreen, tagged to the protein and to a second protein of known abundance and distributed along the nanomachine. This success demonstrates that fluorescent flagella generated by GMO algae could be used as a quantitative standard in fluorescence microscopy. The lab then recruited undergraduates to expand the team.

BEYOND BOUNDARIES

This project is uniquely suited for a team with members of diverse talents. Students could learn the GMO technology, application and commercialization of GMO products, fluorescence microscopy, and statistics and computer software for quantitative imaging analysis. In addition, we take advantage of The Commons that trains students and community in marketing and entrepreneurship. The trained students then lead the marketing efforts, teaching other members the path to commercialization. Together, they will live through the real-life experience turning a basic research project into an intellectual property and business opportunity while leverage an invaluable community resource.

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Research