ALKYNE-ACTIVATED FLUOROGENIC AZIDE PROBES

Tech ID: 24000 / UC Case 2014-147-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,410,958	08/09/2016	2014-147

BRIEF DESCRIPTION

Significant progress has been made in the discovery of fluorogenic probes activated by various bioorthogonal chemistries, including the Staudinger ligation as well as azide-alkyne, tetrazine-alkene, tetrazine-alkyne, and photoactivated tetrazole-alkene cycloadditions. However, the dyes employed have emission maxima below 600 nm. The identification of activatable near infrared (NIR) fluorogenic probes with emission maxima greater than 600 nm has proven much more challenging. There is a clear need in the art for methods of labeling biomolecules in vitro or in vivo.

Scientists at UC Berkeley have developed NIR fluorogenic azide probes and the methods for labeling a target biomolecule using these compounds based on Si-rhodamine scaffold that undergo a fluorescence enhancement of up to 48-fold upon reaction with terminal or strained alkynes. These xanthene fluorogenic azide probes consist of xanthene fluorophores containing functionalized pendant aryl rings. This azide switch quenches fluorescence via photo induced electronic transfer. As the probes leverage the inherent emission properties of the xanthane fluorophore, these fluorogenic azide probes fluoresce from the green through the NIR at commonly used excitation and emission wavelengths. They used the probes for mammalian cell surface imaging and, in conjunction with a new class of cyclooctyne D-amino acids, for visualization of bacterial peptidoglycan without the need to wash away unreacted probe.

SUGGESTED USES

- Detection of biomolecules.
- Detection of alkynes *in vitro*.
- Detection of binding interactions via proximity-accelerated click reactions.
- Ideal for imaging studies.

ADVANTAGES

- No need to wash away unreacted probe.
- Can help develop probes for *in vivo* studies.
- No need of using cytotoxic copper catalyst.

RELATED MATERIALS

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- **Biotechnology**
  - Genomics
  - Proteomics
- **Medical**
  - Diagnostics
  - Imaging
  - Research Tools
  - Screening

RELATED CASES

2014-147-0

» Peyton Shieha, M. Sloan Siegrista, Andrew J. Cullena, and Carolyn R. Bertozzi: Imaging bacterial peptidoglycan with near-infrared fluorogenic azide probes; PNAS April 15, 2014 vol. 111 no. 15, 5456-5461

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Synthetic compound for quadricyclane labeling of multiple biomolecules without disrupting living systems
- Isotope Targeted Glycoproteomics For Nontemplated Glycan And Peptide Isoform Discovery

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