FLUORESCENT PROBES AND USES THEREOF

Tech ID: 33844 / UC Case 2024-064-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Current biological and clinical imaging techniques are often hampered by probes with limited brightness, poor photostability, and an inability to penetrate deep tissue without significant background signal. This restricts high-resolution, long-duration, and *in vivo* studies of critical biological events. The innovation described herein, developed by UC Berkeley researchers, solves this challenge by providing a new class of Fluorescent Probes with superior photophysical and biochemical properties. This next-generation technology offers significantly enhanced specificity and quantum yield, particularly in the near-infrared (NIR) spectrum, enabling real-time, high-contrast visualization of molecular targets within living systems. Compared to existing alternatives like radioisotope labeling, magnetic resonance imaging (MRI), and conventional visible-light fluorophores, these novel probes enable less-invasive, highly sensitive, and dynamic monitoring of cellular processes, opening new avenues for both fundamental biological discovery and clinical translation.

SUGGESTED USES

- Real-time *in vivo* molecular imaging for tracking disease progression and therapeutic efficacy, such as identifying tumor margins during surgery.
- High-throughput screening assays to monitor drug-target interactions, enzyme activity, and cellular pathway responses in pharmaceutical development.
- Sensitive detection and quantification of disease-related biomarkers like specific nucleic acids, proteins, and metabolites in molecular diagnostics.
- Live-cell imaging to visualize cellular components and dynamics, including organelle function, membrane potential, and ion concentrations.
- Research tools for clarifying fundamental biological functions, such as protein location and activation in complex biological systems.

ADVANTAGES

- Enhanced sensitivity and specificity for low-abundance biomarkers, providing high signal-to-background ratios.
- Capability for non-invasive, real-time visualization of dynamic biological processes *in vivo* and *in situ*.

CONTACT

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Medical**
» Imaging
» **Research Tools**
» Reagents
» Screening Assays
» **Sensors & Instrumentation**
» Biosensors
» Medical
» Scientific/Research

RELATED CASES

2024-064-0

● Reduced photobleaching and increased photostability for longer-duration imaging experiments compared to conventional fluorophores.

● Potential for use in the Near-Infrared (NIR) region, allowing for deeper tissue penetration for clinical applications.

● Enables longitudinal studies of the same subject, decreasing experimental variability and the number of subjects required.

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Long Wavelength Voltage Sensitive Dyes
- Voltage-Sensitive Fluorescent (VF) Dyes For Neuronal Imaging
- Fluorescent Bis-Trifluoromethyl Carborhodamine Compounds
- PHOTO-INDUCED ELECTRON TRANSFER VOLTAGE SENSITIVE DYES

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