LONG WAVELENGTH VOLTAGE SENSITIVE DYES

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PATENT STATUS

Country	Type	Number	Dated	Case
Germany	Issued Patent	602016080095.0	06/07/2023	2015-186
European Patent Office	Issued Patent	EP3311136	06/07/2023	2015-186
United Kingdom	Issued Patent	EP3311136	06/07/2023	2015-186
United States Of America	Issued Patent	11,169,156	11/09/2021	2015-186
Japan	Issued Patent	6898301	06/14/2021	2015-186

BRIEF DESCRIPTION

Rapid changes in the membrane potential of neurons and cardiomyocytes define the unique physiology of these cells. The classical means to monitor membrane potentials is patch clamp electrophysiology, a low-throughput and highly invasive technique. One current alternative is to use calcium imaging, as the agents are robust and sensitive, come in a variety of colors, and can be used in a wide range of biological contexts. Calcium imaging, however, allows only an imperfect approximation of membrane potential changes, and fast-spiking neuronal events are difficult to resolve.

Fluorescent voltage sensors can achieve fast, sensitive, and non-disruptive direct readouts of membrane potentials. UC Berkeley researchers have designed and synthesized a new fluorophore called ‘Berkeley Red’ that can be used in the context of voltage-sensing scaffolds to generate fluorescent voltage sensors.

SUGGESTED USES

- Optically track action potentials in neurons
- Screen drug interactions and complications with heart ion channels

ADVANTAGES

- Can be interfaced with a wide variety of optical tools
- Can be used in a wide range of biological contexts
- High spatial resolution, high throughput, minimally invasive
- Excellent photostability

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

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

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OTHER INFORMATION

KEYWORDS

dye, fluorophore, neuron, cardiomyocyte, membrane potential, action potential, optical, voltage, sensor

CATEGORIZED AS

- **Materials & Chemicals**
  - Chemicals
- **Medical**
  - Imaging
- **Research Tools**
  - Reagents

RELATED CASES

2015-186-0

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