

GPCR Screening Method to Identify Non-Hallucinogenic Compounds

Tech ID: 34838 / UC Case 2021-641-0

ABSTRACT

Researchers at the University of California, Davis, developed a biosensor assay to screen new small molecules for treating neurological conditions.

FULL DESCRIPTION

More than a billion people worldwide suffer from some form of neurological disorder, such as substance abuse disorder, Alzheimer's (AD), Parkinson's (PD), multiple sclerosis, epilepsy, stroke, autism, and others. These conditions result in more than 7 million deaths, with associated costs exceeding \$1.5 trillion annually. G-protein-coupled receptors (GPCRs) are the most prominent family of receptors and transmit cellular signals involved with the proper conduction of physiological processes such as vision, intercellular communication, neuronal transmission, hormonal signaling, and many other pathological processes. The serotonin 2A receptor (5-HT_{2A}R) is a GPCR implicated in mental and neurological disorders and a target of the pharmaceutical industry. Unfortunately, drug identification tools for screening and assessing 5-HT_{2A}R conformations are limited and hinder drug development for many neurological conditions.

Researchers at the University of California, Davis, have developed a drug screening assay that can be used to identify small molecules that target the 5-HT_{2A}R. The assay comprises a fluorescently labeled biosensor where the 5-HT_{2A}R emits light when a viable drug interacts with the receptor. The assay enables real-time detection of receptor activation and conformational changes, providing a powerful platform for identifying and characterizing new therapeutic candidates. In addition, it can be used within in vivo animal studies and can label cortical and subcortical serotonin in response to novel drugs.

APPLICATIONS

- ▶ Basic and translational research for real-time monitoring of GPCR signaling, receptor activation, and pharmacological mechanisms.
- ▶ Drug screening of compounds targeting 5-HT_{2A}R for treating neurological disorders.

FEATURES/BENEFITS

- ▶ An in vitro and in vivo screening tool for new drugs that target 5-HT_{2A}R for treating neurological conditions.
- ▶ Proof of concept has been established within an animal model and a prototype in vitro assay.
- ▶ Potential to lead to the identification of novel drugs for treating neurological conditions that overcome the safety and efficacy limitations of standard-of-care treatments.

PATENT STATUS

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OTHER INFORMATION

KEYWORDS

neurological conditions,
basic research, drug
screening, therapeutics,
5-HT_{2A}R, GPCR

CATEGORIZED AS

- ▶ **Medical**
 - ▶ Disease: Central Nervous System
 - ▶ Research Tools
 - ▶ Screening

RELATED CASES

2021-641-0

Country	Type	Number	Dated	Case
United States Of America	Published Application	20230384333	11/30/2023	2021-641

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