High throughput GPCR assay platform for drug discovery

Technology #cu15098

G-protein coupled receptors (GPCRs) are some of the most common drug targets in modern medicine. It has been estimated that up to 40% of all drug targets are GPCRs, and the majority of highly effective drugs developed in the past decades directly target GPCRs. Due to their history as effective drug targets and their diversity and ubiquity in human cells, the next generation of blockbuster drugs is expected to target GPCRs as well, but high throughput methods for rapid GPCR-targeting drug development have yet to be optimized, slowing the pace of drug discovery and therapeutic development. This technology provides a fluorescence-based platform for rapidly screening across both chemical libraries and GPCR collections.

Faster, higher quality screens for GPCR drug targets

This technology uses a highly sensitive bioluminescence resonance energy transfer (BRET) assay to detect the translocation of arrestin to the cellular membrane in response to GPCR stimulation. While other BRET-based screening platforms exist, they make use of direct GPCR-reporter fusions, which may alter the function of the GPCR and bias the results of drug screens. This technology significantly improves on the BRET-based screening methodology by fusing the required fluorophores to associated molecules in the membrane and GPCR response pathway while leaving the receptor unmodified. This allows the GPCR and its critical partners to function normally, providing more accurate and reliable screening results while preserving the high sensitivity of a BRET assay.

This technology has been validated in human cells with GPCR ligands.

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Applications:
- Screening tool for drug discovery
- Screening tool for GPCR ligands
- Pharmacokinetic assays for binding coefficients, other properties
- High-precision assay for determining specificity of GPCR-binding compounds
Advantages:

- High throughput for rapid screening
- Does not interfere directly modify and thereby alter the GPCR being studies, , providing a more accurate readout for native receptor function.

Patent Information:

Patent Pending
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Related Publications:


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