

# Exploring Psychedelics

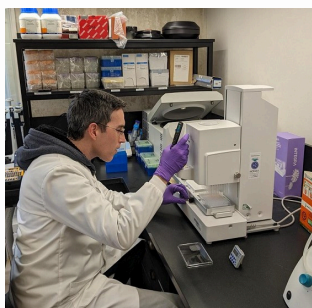
## A New Frontier in Mental Health Research

### Psychedelics and their Connection to Mental Health

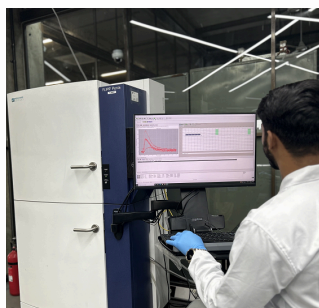
Psychedelics like psilocybin and LSD, known for their mind-altering effects, show promise in treating depression, anxiety, and PTSD. These substances act on serotonin receptors, influencing mood and perception, offering new hope against the global mental health crisis. The National Institute of Mental Health (NIMH) estimates that serious mental illness affects 6% of U.S. adults, costing over \$300 billion annually.

### The Role of Psychedelics in Drug Development

Hallucinogens like psilocybin and LSD induce profound changes in emotion and cognition, suggesting their potential in addressing mental disorders. These substances interact with serotonin receptors, particularly the 5-HT<sub>2A</sub> receptor, leading to various intracellular responses. Understanding these mechanisms is crucial for developing superior therapeutic strategies for neurological disorders.



o2h biologist @ Mill Scitech Park, Huaxton House, UK



o2h biologist operating FLIPR Penta High-Throughput Cellular Screening System @ India based research centre

### How o2h discovery Supports Psychedelics Research?

At o2h, our scientists are at the forefront of psychedelic research, developing and screening 5-HT<sub>2A</sub>-small molecules with varying potencies towards Gq and  $\beta$ -arrestin-biased signaling. Our work sheds light on the intricate dynamics of the 5-HT<sub>2A</sub> receptor, providing invaluable insights for drug discovery and pharmacological research.

### o2h Assay Setup and Cell Lines:

**Advanced Screening Systems:** Utilizing the FLIPR Penta High-Throughput Cellular Screening System, we identify compounds with differential signaling activities.

**Stable Cell Lines:** We develop cell lines over-expressing 5-HT receptors from different species (human, rat, mouse), measuring IP1 and Ca<sup>2+</sup> for Gq pathway activation.

**Custom Assays:** Leveraging PathHunter cell lines for screening 5-HT<sub>2A</sub> agonists, antagonists, and partial agonists, ensuring comprehensive analysis with a transferable license agreement with DiscoverX.

**Innovative Research Methods:** Employing HTRF-based IP1 kits for reliable IP1 and  $\beta$ -arrestin measurements, and exploring BRET-based protein-protein interactions for customized exploratory studies.

### Validated Assays

Fig. A  $\beta$ -Arrestin recruitment as a function of 5HT

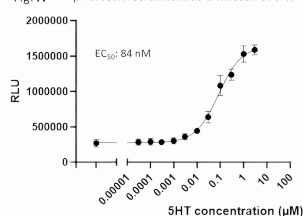


Fig A: Chemiluminescent detection of  $\beta$ -Arrestin recruitment in U2OS cells in response to 5-HT (serotonin). Increase in luminescence, indicating a dose-dependent  $\beta$ -arrestin recruitment to 5-HT<sub>2A</sub> receptor. Analysis performed using non-linear regression agonist vs response variable slope (four parameters).

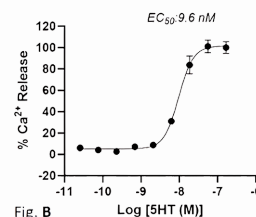


Fig (B, C): Cells stimulated with an increasing concentration of 5-HT, serotonin measuring intracellular Ca<sup>2+</sup> with FLIPR and IP1 levels detected by HTRF.

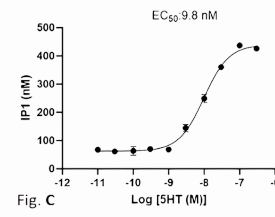
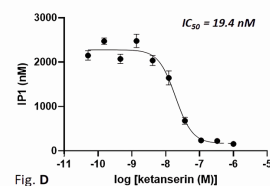


Fig (D): Cells treated with increasing concentration of the antagonist ketanserin exhibiting reduced IP1 generation upon stimulation with EC80 concentration of 5-HT (serotonin).



### Join Us in Advancing Psychedelics Research

Our commitment to innovation in drug discovery services aims to leave a lasting positive impact on human health. By pioneering research in psychedelics, we strive to develop groundbreaking treatments for mental health conditions.

### Get in Touch:

To learn more about the o2h discovery Biology and assay development capabilities, scan the QR code or email us at [discovery@o2h.com](mailto:discovery@o2h.com)

