

Harnessing Neuromodulatory GPCRs for Targeted Therapeutic Approaches

April 30

Wednesday, 12:30 pm

Billings Building—Rosedale Room

SPEAKER:



Joshua Levitz, Ph.D.

*Associate Professor of Biochemistry
Weill Cornell Medicine*

Host: Rajiv R. Ratan, M.D., Ph.D.

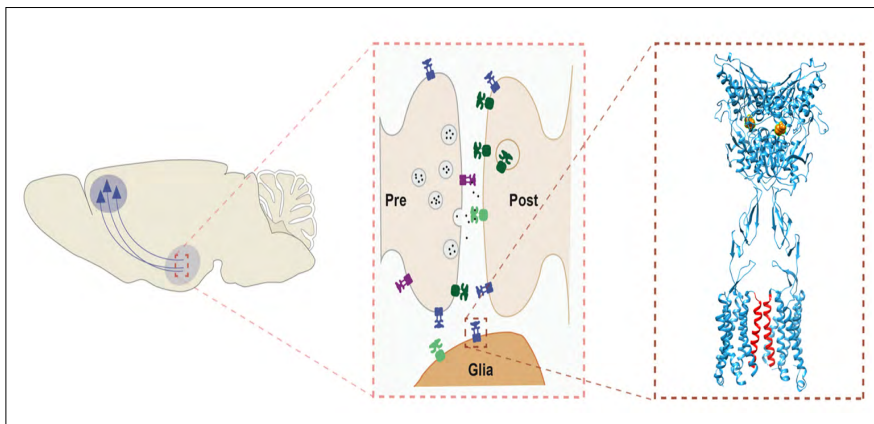
For more information contact

Darlene White

daw9085@med.cornell.edu

Abstract

The vast superfamily of G protein-coupled receptors (GPCRs) play critical roles in regulating neurophysiological and behavioral processes and, thus, serve as major drug targets for a wide range of neurological and psychiatric diseases. To this point, drug development strategies have focused primarily on traditional small molecule modulators and relatively few serendipitously identified targets. In this talk I will describe two recent projects in my lab that aim to advance the ability to spatiotemporally target drug action and to use the natural diversity of neuromodulatory GPCRs to identify new therapeutic targets. The first project is focused on development of photoswitchable opioid ligands for spatiotemporally precise control of pain processing. The second project is focused on deciphering the mechanism of the opioid-dependent antidepressant action of ketamine and using this to identify novel GPCR targets for antidepressant development.



Publications:

1. Posa et al, bioRxiv (<https://www.biorxiv.org/content/10.1101/2024.12.16.628735v3.abstract>).
2. Munguba et al, Neuron, 2025 ([https://www.cell.com/neuron/abstract/S0896-6273\(25\)00006-6](https://www.cell.com/neuron/abstract/S0896-6273(25)00006-6)).
2. Strauss et al, Nat Comm, 2024 (<https://www.nature.com/articles/s41467-024-50548-x>).