

Special Issue

Expanding Opioid Receptor Pharmacology: From Pain Control to Novel Therapeutic Applications in Neurobiology, Immunology, and Psychiatry

Message from the Guest Editor

Opioid receptors, long studied for their role in pain modulation, are now recognized as key players in a broad range of physiological and behavioral processes. Despite extensive research, the neural circuits, cell types, and dynamics underlying endogenous opioidergic modulation remain incompletely understood. Recent findings suggest that opioid signaling can drive both adaptive and maladaptive behaviors, influencing outcomes in addiction, mood disorders, and chronic stress.

Advances in target-guided drug design and AI-enabled discovery are yielding novel ligands, including biased agonists, partial agonists, peripherally acting agonists, and allosteric modulators with improved safety profiles. Concurrently, research into dynorphin-KOP and N/OFQ-NOP systems is expanding the landscape of potential analgesics that avoid the liabilities of traditional opioids.

Together, these advances are reshaping our view of the opioid system—from a narrow focus on analgesia to a multifaceted therapeutic target spanning pain, mood, addiction, and beyond.

Guest Editor

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