ACS Chemical Neuroscience

In This Issue

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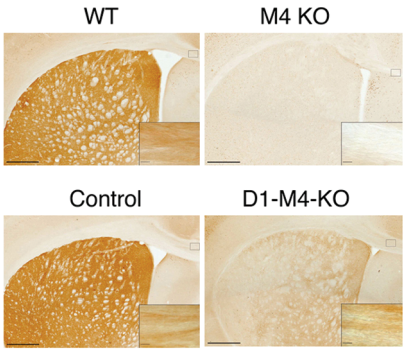
MUSCARINIC DRUGS FOR PSYCHIATRIC AND NEUROLOGICAL DISORDER THERAPY

The dysregulation of dopaminergic systems has been implicated in a host of psychiatric and neurological disorders. These systems are sensitive to muscarine, resulting in a growing interest in the development of compounds that modulate muscarinic acetylcholine receptor pathways. Dencker et al. (DOI: 10.1021/cn200110q) offer a comprehensive overview of recent studies that uncover novel allosteric ligands for muscarinic receptor subtypes.

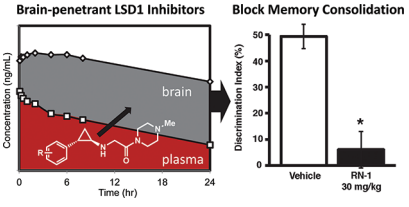
There are five known muscarinic receptor subtypes, named M_1 to M_5, whose function has been obscure until recently. Mouse models with single knock outs of a specific subtype have resulted in a better understanding of the roles of these receptors. More importantly, newly identified allosteric ligands may lead to better therapeutics against schizophrenia, Parkinson's disease, and drug abuse.



NEW TARGET FOR BRAIN DISORDER THERAPY

Post-translational modification of histones is known to control several cellular processes. Lysine methylation is an example of histone modification which modulates gene expression. Lysine specific demethylase 1 (LSD1) is a flavin-dependent enzyme that plays a role in controlling lysine methylation. In the current issue, Neelamegam et al. (DOI: 10.1021/cn200104y) describe the generation of novel inhibitors of LSD1 and their effect on memory.

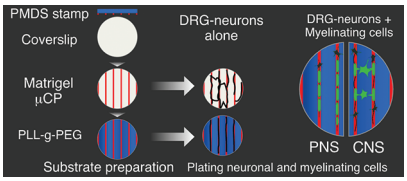
The authors identified selective, blood-brain barrier penetrating inhibitors for LSD1 and demonstrated their effect on long-term memory. The inhibitors, however, did not affect short-term memory in a mouse model. This study provides needed insight into the connections between epigenetic modifications and brain disorders.



NEW PLATFORM FOR STUDYING MYELIN FORMATION

Myelin is a specialized membrane that insulates the axon of a neuron. It functions to increase the speed of electrical impulses propagated through the axon. Myelin destruction is associated with diseases such as multiple sclerosis, Guillain-Barré syndrome, and Charcot-Marie-Tooth disease. Therefore, a sound understanding of demyelination is of utmost importance in treating these severe motor and sensory diseases. In this issue, Liazoghli et al. (DOI: 10.1021/cn2000734) report a new in vitro system for studying myelination.

The authors describe a new platform for culturing dorsal root ganglia neurons with myelinating cells in a microenvironment. The neurons survived for several weeks in this system, and the cultured axons showed evidence of myelination. This novel system holds great promise for studying early developmental events during myelin formation and possibly for generating substrates for myelin regeneration in the future.



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