Dopamine Receptor D1 (DRD1) Antibody

Cat. No. CG1111

Applications:	**IHC, IF**
Detected MW:	**49 kDa**
Species & Reactivity:	**Human, Mouse, Rat**
Isotype:	**Rabbit IgG**

BACKGROUND

Dopamine receptors are a class of metabotropic G protein-coupled receptors that are prominent in the vertebrate central nervous system (CNS). The neurotransmitter dopamine is the primary endogenous ligand for dopamine receptors. There are at least five subtypes of dopamine receptors, D1, D2, D3, D4, and D5. The D1 and D5 receptors are members of the D1-like family of dopamine receptors, whereas the D2, D3 and D4 receptors are members of the D2-like family.[1] D1 and D5 are highly homologous and very few ligands have been identified that are selective between the D1 and D5 subtypes. D1 receptors are widely expressed throughout the brain, whereas D5 receptors show a restricted distribution (mainly limbic areas). D1 receptors regulate neuronal growth and development, mediate some behavioral responses, and modulate dopamine receptor D2-mediated events.[2]

The D1-like and D2-like classes of dopamine receptors each have shared signaling properties. D1-like receptor signaling is mediated chiefly by the heterotrimeric G proteins Gα_s and Gα_{olf}, which cause sequential activation of adenylate cyclase, cylic AMP-dependent protein kinase, and the protein phosphatase-1 inhibitor DARPP-32. The increased phosphorylation that results from the combined effects of activating cyclic AMP-dependent protein kinase and inhibiting protein phosphatase 1 regulates the activity of many receptors, enzymes, ion channels, and transcription factors. D1 or a novel D1-like receptor also signals via phospholipase C-dependent and cyclic AMP-independent mobilization of intracellular calcium.[3] D2-like receptor signaling is mediated by the heterotrimeric G proteins Galpha$_i$ and Galpha$_o$. These pertussis toxin-sensitive G proteins regulate some effectors, such as adenylate cyclase, via their Gα subunits, but regulate many more effectors such as ion channels, phospholipases, protein kinases, and receptor tyrosine kinases as a result of the receptor-induced liberation of Gbetagamma subunits. In addition to interactions between dopamine receptors and G proteins, other protein:protein interactions such as receptor oligomerization or receptor interactions with scaffolding and signal-switching proteins are critical for regulation of dopamine receptor signaling.[4]

References:

1. Loos, M. et al: Cerebral Cortex 20:1064-1070, 2010
2. Foll, B.L. et al: Behav. Pharmacol. 20:1-17, 2009
3. Neve, K.A. et al: J. Receptor Signal Transduct. 24:165-205, 2004
4. Ahlgren-Beckendorf, J.A & Levant, B: J. Receptor Signal Transduct. 24:117-130, 2004

TECHNICAL INFORMATION

Source:
DRD1 Antibody is a rabbit antibody raised against a short peptide from carboxyl-terminal sequence of human DRD1.

Specificity and Sensitivity:
This antibody detects endogenous DRD1 proteins without cross-reactivity with other family members.

Storage Buffer: Rabbit IgG in phosphate buffered saline (without Mg2+ and Ca2+), pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.

Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	n/d
IP	n/d
IHC	1:50-1:100
ICC	n/d
IF	1:100-1:500

**Optimal dilutions must be determined by end user.*

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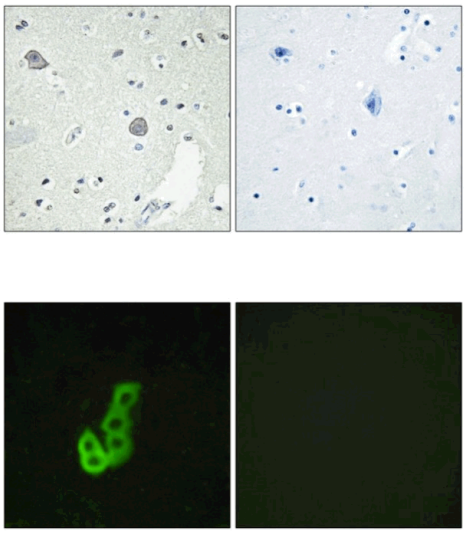
QUALITY CONTROL DATA



Top: Immunohistochemistry analysis of paraffin-embedded human brain tissue using Anti-DRD1 antibody. Cells on the left were treated with the Anti-DRD1 antibody. Cells on the right (negative control) were treated with both Anti-DRD1 antibody and the synthesized immunogen peptide.
Bottom: Immunofluorescence of MCF7 cells using Anti-DRD1 antibody. Cells on the left were treated with the Anti-DRD1 antibody. Cells on the right (negative control) were treated with both Anti-DRD1 antibody and the synthesized immunogen peptide.