Small Molecules

LDN193189

Activin/BMP/TGFβ pathway inhibitor;
Inhibits ALK1, ALK2, ALK3, and ALK6

Catalog #	72142	1 mg
	72144	10 mg

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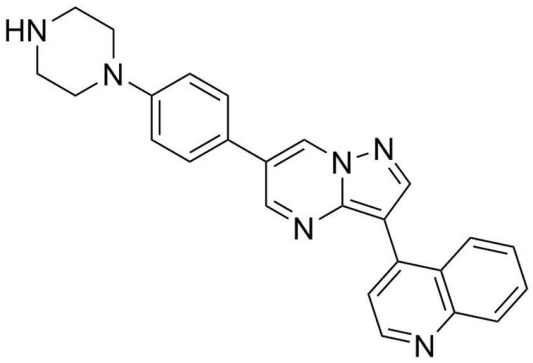
Product Description

LDN193189 is a potent inhibitor of the bone morphogenetic protein (BMP) pathway, inhibiting ALK1, ALK2, ALK3, and ALK6 (IC_{50} = 0.8, 0.8, 5.3, and 16.7 nM respectively). It is a derivative of Dorsomorphin (Catalog #72102) that is typically used at approximately 100-fold lower concentrations (Sanvitale et al.; Vogt et al.).

Molecular Name:	LDN193189
Alternative Names:	Not applicable
CAS Number:	1062368-24-4
Chemical Formula:	$C_{25}H_{22}N_6$
Molecular Weight:	406.5 g/mol
Purity:	≥ 95%
Chemical Name:	4-[6-[4-(1-piperazinyl)phenyl]pyrazolo[1,5-a]pyrimidin-3-yl]-quinoline
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. For product expiry date, please contact techsupport@stemcell.com.
Solubility:	· Absolute ethanol ≤ 2.5 mM For example, to prepare a 1 mM stock solution in absolute ethanol, resuspend 1 mg in 2.46 mL of absolute ethanol. Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in absolute ethanol at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application. Compound has low solubility in aqueous media. For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final ethanol concentration above 0.1% due to potential cell toxicity.

Published Applications

DIFFERENTIATION
· Promotes differentiation of neural progenitor cells from human pluripotent stem cells (Chambers et al.; Kriks et al.).
· Promotes differentiation of neural crest cells from human pluripotent stem cells (Kreitzer et al.).
· Promotes differentiation of anterior foregut endoderm from human and mouse pluripotent stem cell-derived definitive endoderm (Kearns et al.).
· Promotes differentiation of sensory epithelial cells of the inner ear from mouse embryonic stem cells (Koehler et al.).

References

Chambers SM et al. (2012) Combined small-molecule inhibition accelerates developmental timing and converts human pluripotent stem cells into nociceptors. Nat Biotechnol 30(7): 715–20.
Kearns NA et al. (2013) Generation of organized anterior foregut epithelia from pluripotent stem cells using small molecules. Stem Cell Res 11(3): 1003–12.
Koehler KR et al. (2013) Generation of inner ear sensory epithelia from pluripotent stem cells in 3D culture. Nature 500(7461): 217–21.
Kreitzer FR et al. (2013) A robust method to derive functional neural crest cells from human pluripotent stem cells. Am J Stem Cells 2(2): 119–31.
Kriks S et al. (2011) Dopamine neurons derived from human ES cells efficiently engraft in animal models of Parkinson's disease. Nature 480(7378): 547–51.
Sanvitale CE et al. (2013) A new class of small molecule inhibitor of BMP signaling. PLoS One 8(4): e62721.
Vogt J et al. (2011) The specificities of small molecule inhibitors of the TGFß and BMP pathways. Cell Signal 23(11): 1831–42.

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