Small Molecules

LDN193189

BMP pathway inhibitor; Inhibits ALK1, ALK2, ALK3, and ALK6

Catalog #	72147	10 mg
	72149	50 mg

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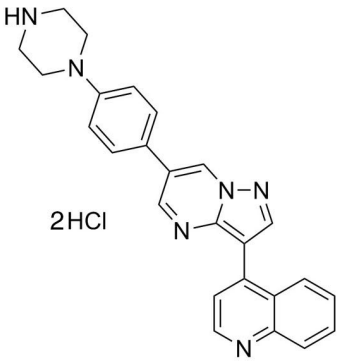
Product Description

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

Molecular Name:	LDN193189 (Dihydrochloride)
Alternative Names:	DM-3189
CAS Number:	1435934-00-1
Chemical Formula:	$C_{25}H_{22}N_6 \cdot 2HCl$
Molecular Weight:	479.4 g/mol
Purity:	> 98%
Chemical Name:	4-[6-[4-(1-piperazinyl)phenyl]pyrazolo[1,5-a]pyrimidin-3-yl]-quinoline dihydrochloride
Structure:	

Properties

Physical Appearance:	Orange solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. For long-term storage store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:	· DMSO ≤ 20 mM For example, to prepare a 1 mM stock solution in DMSO, resuspend 1 mg in 2.09 mL of DMSO. NOTE: This is based on a molecular weight (MW) of 479.4 g/mol. MW may vary due to water content of the molecule. For batch-specific MW, request a Certificate of Analysis at techsupport@stemcell.com. 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 DMSO 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 DMSO 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.).
CANCER RESEARCH
· Inhibits prostate and breast cancer tumor growth (Balboni et al.; Lee et al.).
· Prevents ovarian cancer cell proliferation (Tsai et al.).

References

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Lee Y-C et al. (2011) BMP4 promotes prostate tumor growth in bone through osteogenesis. Cancer Res 71(15): 5194–203.
Sanvitale CE et al. (2013) A new class of small molecule inhibitor of BMP signaling. PLoS One 8(4): e62721.
Tsai C-L et al. (2012) Secreted stress-induced phosphoprotein 1 activates the ALK2-SMAD signaling pathways and promotes cell proliferation of ovarian cancer cells. Cell Rep 2(2): 283–93.
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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