

## Small Molecules

**LDN193189**

Activin/BMP/TGF $\beta$  pathway inhibitor;  
Inhibits ALK1, ALK2, ALK3, and ALK6

Catalog # 72142  
72144

1 mg  
10 mg



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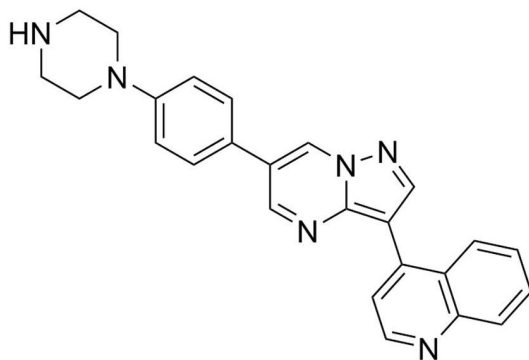
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## Product Description

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 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:            | $\geq 95\%$                                                            |
| 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 $-20^{\circ}\text{C}$ as supplied. Protect from prolonged exposure to light. For product expiry date, please contact <a href="mailto:techsupport@stemcell.com">techsupport@stemcell.com</a> .                     |
| Solubility:          | <ul style="list-style-type: none"><li>· DMSO <math>\leq 2.5</math> mM</li><li>· Absolute ethanol <math>\leq 2.5</math> mM</li></ul> For example, to prepare a 1 mM stock solution in DMSO, resuspend 1 mg in 2.46 mL of fresh DMSO. |

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  $-20^{\circ}\text{C}$ . 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.).

## 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): 1003–1012.
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- 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): 119–131.
- Kriks S et al. (2011) Dopamine neurons derived from human ES cells efficiently engraft in animal models of Parkinson's disease. *Nature* 480(7378): 547–551.
- 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 TGF $\beta$  and BMP pathways. *Cell Signal* 23(11): 1831–42.

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