

# Small Molecules

LDN193189

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

Catalog # 72142  
72144

1 mg  
10 mg



Scientists Helping Scientists™ | [WWW.STEMCELL.COM](http://WWW.STEMCELL.COM)

TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

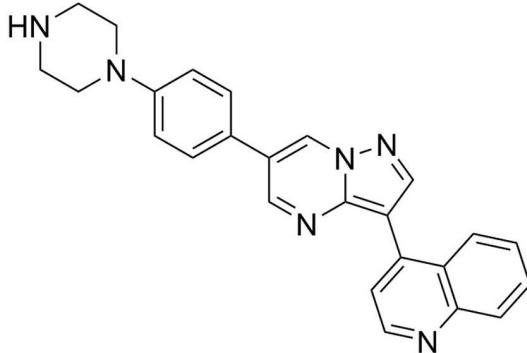
[INFO@STEMCELL.COM](mailto:INFO@STEMCELL.COM) • [TECHSUPPORT@STEMCELL.COM](mailto:TECHSUPPORT@STEMCELL.COM)

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

## 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 yellow-orange 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](mailto:techsupport@stemcell.com).  
Solubility:

- DMSO  $\leq 2.5$  mM
- Absolute ethanol  $\leq 2.5$  mM

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°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.

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): 119–131.

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.

## Related Small Molecules

For a complete list of small molecules available from STEMCELL Technologies, please visit our website at [www.stemcell.com/smallmolecules](http://www.stemcell.com/smallmolecules) or contact us at [techsupport@stemcell.com](mailto:techsupport@stemcell.com).

STEMCELL TECHNOLOGIES INC.'S QUALITY MANAGEMENT SYSTEM IS CERTIFIED TO ISO 13485. PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.

Copyright © 2015 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design and Scientists Helping Scientists are trademarks of STEMCELL Technologies Inc. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.