

# Small Molecules

PD0325901

MEK/ERK pathway inhibitor; Inhibits MEK

Catalog # 72182 1 mg  
72184 10 mg  
100-0248 25 mg



Scientists Helping Scientists™ | WWW.STEMCELL.COM

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

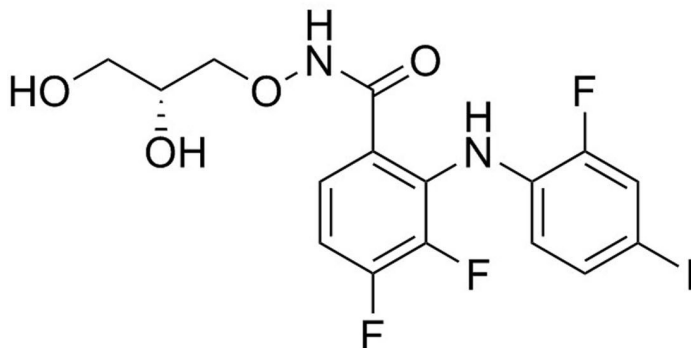
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

## Product Description

PD0325901 is a selective, cell permeable inhibitor of the MEK/ERK pathway that inhibits the activation and downstream signaling of MEK. It is an extremely potent inhibitor, suppressing the phosphorylation of ERK in C26 cells at very low concentrations ( $IC_{50} = 0.33$  nM; Bain et al.; Barrett et al.).

**Molecular Name:** PD0325901  
**Alternative Names:** Not applicable  
**CAS Number:** 391210-10-9  
**Chemical Formula:**  $C_{16}H_{14}F_3IN_2O_4$   
**Molecular Weight:** 482.2 g/mol  
**Purity:**  $\geq 98\%$   
**Chemical Name:** N-[(2R)-2,3-dihydroxypropoxy]-3,4-difluoro-2-[(2-fluoro-4-iodophenyl)amino]-benzamide  
**Structure:**



## Properties

**Physical Appearance:** A crystalline solid  
**Storage:** Product stable at  $-20^{\circ}C$  as supplied. Protect from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.  
**Solubility:** · DMSO  $\leq 50$  mM  
· Absolute ethanol  $\leq 40$  mM  
For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 207  $\mu$ L 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  $-20^{\circ}C$ . 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

### MAINTENANCE AND SELF-RENEWAL

- Maintains undifferentiated mouse embryonic stem (ES) cells, in combination with CHIR99021 (Catalog #72052), in the absence of LIF (Ying et al.).
- Allows derivation and maintenance of rat ES cells (Buehr et al.; Li P et al.).

### REPROGRAMMING

- Add at the later stages of reprogramming to select for and expand fully reprogrammed mouse induced pluripotent stem (iPS) cells (Shi et al.; Silva et al.).
- Increases the efficiency of reprogramming human somatic cells to iPS cells, in combination with SB431542 (Catalog #72232) and Thiazovivin (Catalog #72252) (Lin et al.).
- Promotes reprogramming of human somatic cells to iPS cells using only a single factor, OCT4 (Zhu et al.).
- Generates mouse-like or “ground state” iPS cells from human and rat somatic cells, in combination with CHIR99021 and A 83-01 (Catalog #72202) (Li W et al.).

## References

- Bain J et al. (2007) The selectivity of protein kinase inhibitors: a further update. *Biochem J* 408(3): 297–315.
- Barrett SD et al. (2008) The discovery of the benzhydroxamate MEK inhibitors CI-1040 and PD 0325901. *Bioorg Med Chem Lett* 18(24): 6501–4.
- Buehr M et al. (2008) Capture of authentic embryonic stem cells from rat blastocysts. *Cell* 135(7): 1287–98.
- Li P et al. (2008) Germline competent embryonic stem cells derived from rat blastocysts. *Cell* 135(7): 1299–310.
- Li W et al. (2009) Generation of rat and human induced pluripotent stem cells by combining genetic reprogramming and chemical inhibitors. *Cell Stem Cell* 4(1): 16–9.
- Lin T et al. (2009) A chemical platform for improved induction of human iPSCs. *Nat Methods* 6(11): 805–8.
- Shi Y et al. (2008) A combined chemical and genetic approach for the generation of induced pluripotent stem cells. *Cell Stem Cell* 2(6): 525–8.
- Silva J et al. (2008) Promotion of reprogramming to ground state pluripotency by signal inhibition. *PLoS Biol* 6(10): e253.
- Ying Q-L et al. (2008) The ground state of embryonic stem cell self-renewal. *Nature* 453(7194): 519–23.
- Zhu S et al. (2010) Reprogramming of human primary somatic cells by OCT4 and chemical compounds. *Cell Stem Cell* 7(6): 651–5.

## Related Small Molecules

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

**This product is hazardous. Please refer to the Safety Data Sheet (SDS).**

PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.

Copyright © 2020 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 Canada Inc. All other trademarks are the property of their respective holders. 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.