Small Molecules

ISX-9

Inducer of neural differentiation

Catalog # 73202

10 mg

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Scientists Helping Scientists™ | WWW.STEMCELL.COM
TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM
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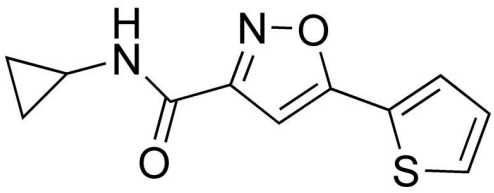
Product Description

ISX-9 is a small molecule inducer of adult neural stem cell differentiation both in vitro and in vivo (Schneider et al.). It has been shown to act through a calcium-activated signaling pathway dependent on myocyte-enhancer factor 2 (MEF2)-dependent gene expression (Petrik et al.; Schneider et al.).

Molecular Name:	ISX-9
Alternative Names:	ISX-1; Isoxazole 9; Neuronal Differentiation Inducer III
CAS Number:	832115-62-5
Chemical Formula:	$C_{11}H_{10}N_2O_2S$
Molecular Weight:	234.3 g/mol
Purity:	≥ 95%
Chemical Name:	N-cyclopropyl-5-thiophen-2-yl-1,2-oxazole-3-carboxamide
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.
Solubility:	· DMSO ≤ 85 mM · Absolute ethanol ≤ 4 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 4.27 mL of 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

REPROGRAMMING
· Direct lineage reprogramming of fibroblasts to mature neurons, in combination with CHIR99021 (Catalog #72052), Forskolin (Catalog #72112), SB431542 (Catalog #72232), and I-BET151 (Catalog #73712) (Li et al.).
DIFFERENTIATION
· Induces neuronal differentiation in the HCN hippocampal neural stem/progenitor cell line from adult rat, in whole brain or subventricular zone neural progenitor cells from adult mice, and in P19 embryonic carcinoma cells (Schneider et al.).
· Improves hippocampal neurogenesis and function in mice (Petrik et al.).
· Stimulates cardiac muscle gene expression and cell cycle activity in adult mouse myocardium (Russell et al.).
· Blocks tumor cell proliferation and induces neuronal gene expression in malignant astrocytes (Zhang et al.).
· Improves β-cell function, increases expression of transcription factors that enhance β-cell differentiation and increases intracellular insulin content in primary human islet cultures (Dioum et al.).

References

Dioum EM et al. (2011) A small molecule differentiation inducer increases insulin production by pancreatic β cells. Proc Natl Acad Sci USA 108(51): 20713–8.
Li X et al. (2015) Small-molecule-driven direct reprogramming of mouse fibroblasts into functional neurons. Cell Stem Cell 17(2): 195–203.
Petrik D et al. (2012) Functional and mechanistic exploration of an adult neurogenesis-promoting small molecule. FASEB J 26(8): 3148–62.
Russell JL et al. (2012) Targeting native adult heart progenitors with cardiogenic small molecules. ACS Chem Biol 7(6): 1067–76.
Schneider JW et al. (2008) Small-molecule activation of neuronal cell fate. Nat Chem Biol 4(7): 408–10.
Zhang L et al. (2011) Small-molecule blocks malignant astrocyte proliferation and induces neuronal gene expression. Differentiation 81(4): 233–42.

Related Small Molecules

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