Rolipram is a cell-permeable, selective inhibitor of Type 4 cyclic nucleotide phosphodiesterases (PDE4), which mediate cyclic AMP (cAMP) degradation. Rolipram preferably inhibits PDE4 isoform A ($IC_{50} = 3$ nM) over other isoforms such as B and D ($IC_{50} = 130$ and 240 nM, respectively; MacKenzie & Houslay). It inhibits interferon (IFN)-$\gamma$-stimulated phosphorylation of p38 mitogen-activated protein (MAP) kinase through PDE4B and/or PDE4D isoform inhibition (MacKenzie & Houslay).

**Structure:**

```
        O
      /    |
     /  O  |
   /  /   |
  O---|---O
      /    |
     /  O  |
   /  /   |
  O---|---NH
```

**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 $\leq$ 35 mM
- Absolute ethanol $\leq$ 15 mM

For example, to prepare a 10 mM stock solution in DMSO, resuspend 5 mg in 1.82 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
- Induces reprogramming of adult human dermal fibroblasts (AHDFs) into induced neuronal stem cells, in combination with A 83-01 (Catalog #72022), CHIR99021 (Catalog #72052), Sodium Butyrate (Catalog #72242), LPA, SP600125 (Catalog #72642), and exogenous OCT4 expression (Zhu et al.).

DIFFERENTIATION
- Enhances osteoblastic differentiation of mouse mesenchymal stem cells (MSCs) induced by BMP-2 (Munisso et al.).
- Induces neural differentiation of human bone marrow-derived MSCs (Alexanian et al.).

IMMUNOLOGY
- Inhibits inflammation by suppressing leukocyte function, inhibiting C5a-stimulated leukotriene C4 (LTC4) synthesis in human eosinophils (Tenor et al.).
- Inhibits lipopolysaccharide-induced tumor necrosis factor synthesis in human monocytes (Souness et al.).

DISEASE MODELING
- Promotes survival of newly formed mouse hippocampal neurons in a mouse model of ischemia (Sasaki et al.).
- Reverses amphetamine-induced reductions in auditory-evoked potentials in a C57BL/6J mouse model of schizophrenia (Maxwell et al.).

References

Related Small Molecules
For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules or contact us at techsupport@stemcell.com.

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