TTNPB is an analog of retinoic acid that potently and selectively activates retinoic acid receptors (RAR; EC$_{50}$ = 21, 4, and 2.4 nM for RAR$\alpha$, RAR$\beta$, and RAR$\gamma$, respectively; Beard et al.; Wong et al.). It does not act on retinoid X receptors and weakly agonizes farnesoid X receptor (EC$_{50}$ > 1 µM; Maloney et al.; Wong et al.). TTNPB is used to study RAR action in diverse processes, including epidermal cell proliferation, embryogenesis, and stem cell differentiation (Araoka et al.; Hou et al.; Minucci et al.; Thacher et al.).

**Product Description**

**TTNPB** is 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:**
- Absolute ethanol ≤ 280 µM
- DMSO ≤ 5.7 mM

For example, to prepare a 1 mM stock solution in DMSO, resuspend 1 mg in 2.86 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**

**REPROGRAMMING**
- Enables chemical reprogramming (without genetic factors) of mouse embryonic fibroblasts to induced pluripotent stem cells, in combination with CHIR99021 (Catalog #72052), Tranylcypromine (72272), Valproic Acid (Catalog #72292), 3-Deazaneplanocin A (Catalog #72322), and RepSox (Catalog #73792) (Hou et al.).

**DIFFERENTIATION**
- In combination with CHIR99021 or Activin A (Catalog #78001), induces intermediate mesoderm formation from human or mouse pluripotent stem cells, respectively (Araoka et al.; Oeda et al.).
- Promotes neuronal differentiation in cultured chick caudal neural plate explants (Diez del Corral et al.).

**CANCER RESEARCH**
- Induces the in vitro growth and differentiation to granulocytes of myeloid progenitor cells isolated from myelodysplastic syndrome (MDS) patients (Fabian 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.

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

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