# Small Molecules

**Prostaglandin E2**

Prostanoid pathway activator; Activates prostaglandin receptors EP1, EP2, EP3 and EP4

| | | |
|---|---|---|
| Catalog # | 72192 | 1 mg |
| | 72194 | 5 mg |

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## Product Description

Prostaglandin $E_2$ ($PGE_2$) is one of the major products of the arachadonic acid/cyclooxygenase pathway and is the most biologically active and well-studied prostaglandin. It binds with very high affinity to the prostaglandin receptors EP1, EP2, EP3, and EP4 (Ki = 9.1, 4.9, 0.33, 0.79 nM respectively; Abramovitz et al.; Bos et al.).

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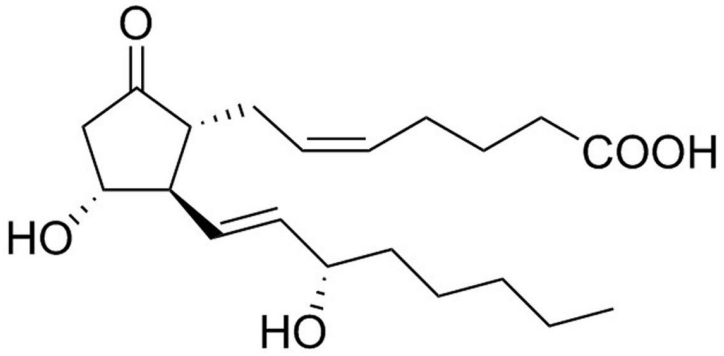
|---|---|
| Molecular Name: | Prostaglandin E2 |
| Alternative Names: | PGE2; Dinoprostone |
| CAS Number: | 363-24-6 |
| Chemical Formula: | $C_{20}H_{32}O_5$ |
| Molecular Weight: | 352.5 g/mol |
| Purity: | ≥ 98% |
| Chemical Name: | 9-oxo-11α,15S-dihydroxy-prosta-5Z,13E-dien-1-oic acid |
| Structure: | |




## Properties

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| Physical Appearance: | A 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. |
| Solubility: | · PBS (pH 7.2) ≤ 14 mM<br>· DMSO ≤ 280 mM<br>· Absolute ethanol ≤ 280 mM<br>For example, to prepare a 5 mM stock solution in PBS, resuspend 1 mg in 567 µL of PBS (pH 7.2).<br><br>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.<br><br>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
· Required for the development of hematopoietic stem cells (HSCs) in mice and zebrafish (North et al.).
· Improves engraftment of mouse HSCs, possibly through increasing homing, survival, and/or self-renewal (Hoggatt et al. 2009; Hoggatt et al. 2013, North et al.).
DIFFERENTIATION
· Promotes differentiation of hematopoietic progenitor cells from mouse, macaque, and human embryonic stem cells (Gori et al.; North et al.; Woods et al.).
· Promotes differentiation of myeloid-derived suppressor cells from hematopoietic progenitors (Sinha et al.).
· Promotes differentiation of Th17 cells from naïve T-cells (Boniface et al.).

## References

Abramovitz M et al. (2000) The utilization of recombinant prostanoid receptors to determine the affinities and selectivities of prostaglandins and related analogs. Biochim Biophys Acta 1483(2): 285–93.
Boniface K et al. (2009) Prostaglandin E2 regulates Th17 cell differentiation and function through cyclic AMP and EP2/EP4 receptor signaling. J Exp Med 206(3): 535–48.
Bos CL et al. (2004) Prostanoids and prostanoid receptors in signal transduction. Int J Biochem Cell Biol 36(7): 1187–205.
Gori JL et al. (2012) Efficient generation, purification, and expansion of CD34(+) hematopoietic progenitor cells from nonhuman primate-induced pluripotent stem cells. Blood 120(13): e35–44.
Hoggatt J et al. (2009) Prostaglandin E2 enhances hematopoietic stem cell homing, survival, and proliferation. Blood 113(22): 5444–55.
Hoggatt J et al. (2013) Prostaglandin E2 enhances long-term repopulation but does not permanently alter inherent stem cell competitiveness. Blood 122(17): 2997–3000.
North TE et al. (2007) Prostaglandin E2 regulates vertebrate haematopoietic stem cell homeostasis. Nature 447(7147): 1007–11.
Sinha P et al. (2007) Prostaglandin E2 promotes tumor progression by inducing myeloid-derived suppressor cells. Cancer Res 67(9): 4507–13.
Woods N-B et al. (2011) Brief report: efficient generation of hematopoietic precursors and progenitors from human pluripotent stem cell lines. Stem Cells 29(7): 1158–64.

## Related Small Molecules

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