

# Product Information



## p53 Product Pack

Item No. 10005291

### Laboratory Procedures

For long term storage, we suggest that the p53 Product Pack be stored as supplied at -20°C. It will be stable for at least one year.

The Cayman p53 Product Pack contains PRIMA-1, a p53 re-activator that restores the apoptotic activity of mutant p53 *via* conformational modulation.<sup>1</sup> Included in the p53 Product Pack is our phospho p53 (Ser<sup>392</sup>) antibody, as well as nutlin-3, a p53 activator working *via* inhibition of p53/Mdm2 binding.<sup>2</sup> Also included is caylin-2, a nutlin analog with growth enhancing properties at low concentrations that are opposite those of nutlin-3.<sup>3</sup>

The items in this kit are supplied as a crystalline solid and have a ≥95% purity, with the exception of p53 (Phospho-Ser<sup>392</sup>) polyclonal antibody which is affinity-purified and supplied in 100 µl HEPES, pH 7.5, containing 50% glycerol, 0.01% BSA, and 0.15 M sodium chloride. Please see the chart below for the amount included and solubility information for the items in this kit.

Component	Amount	Solubility
PRIMA-1	1 mg	>2.5 mg/ml in PBS (pH 7.2)
(±)-Nutlin-3	1 mg	>0.1 mg/ml in EtOH:PBS (pH 7.2) (1:10)
p53 (Phospho-Ser <sup>392</sup> ) Polyclonal Antibody	1 ea	N/A
Caylin-2	5 mg	>0.025 mg/ml in EtOH:PBS (pH 7.2) (1:3)

### References

1. Bykov, V.J.N., Issaeva, N., Shilov, A., *et al.* Restoration of the tumor suppressor function to mutant p53 by a low-molecular-weight compound. *Nature Med.* **8(3)**, 282-288 (2002).
2. Vassilev, L.T., Vu, B.T., Graves, B., *et al.* *In vivo* activation of the p53 pathway by small-molecule antagonists of MDM2. *Science* **303**, 844-848 (2004).
3. Meade, E. [Unpublished] (2004).

### Related Products

For a list of related products please visit: [www.caymanchem.com/catalog/10005291](http://www.caymanchem.com/catalog/10005291)

**WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

#### SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

#### WARRANTY AND LIMITATION OF REMEDY

Cayman Chemical Company makes **no warranty or guarantee** of any kind, whether written or oral, expressed or implied, including without limitation, any warranty of fitness for a particular purpose, suitability and merchantability, which extends beyond the description of the chemicals hereof. Cayman **warrants only** to the original customer that the material will meet our specifications at the time of delivery.

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Buyer's **exclusive remedy** and Cayman's sole liability hereunder shall be limited to a refund of the purchase price, or at Cayman's option, the replacement, at no cost to Buyer, of all material that does not meet our specifications.

Said refund or replacement is conditioned on Buyer giving written notice to Cayman within thirty (30) days after arrival of the material at its destination. Failure of Buyer to give said notice within thirty (30) days shall constitute a waiver by Buyer of all claims hereunder with respect to said material.

For further details, please refer to our Warranty and Limitation of Remedy located on our website and in our catalog.

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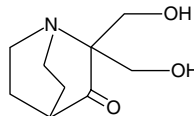
# Product Information



## PRIMA-1

Item No. 63520

**CAS Registry No.:** 5608-24-2  
**Formal Name:** 2,2-bis(hydroxymethyl)-3-quinuclidinone  
**MF:** C<sub>9</sub>H<sub>15</sub>NO<sub>3</sub>  
**FW:** 185.2  
**Purity:** ≥95%  
**Stability:** ≥1 year at -20°C  
**Supplied as:** A crystalline solid



For long term storage, we suggest that PRIMA-1 be stored as supplied at -20°C. It should be stable for at least one year.

PRIMA-1 is supplied as a crystalline solid. A stock solution may be made by dissolving the PRIMA-1 in an organic solvent purged with an inert gas. PRIMA-1 is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of PRIMA-1 in these solvents is at least 25 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of PRIMA-1 can be prepared by directly dissolving the crystalline compound in aqueous buffers. The solubility of PRIMA-1 in PBS (pH 7.2) is at least 2.5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Mutations in the p53 tumor suppressor are found in many different neoplastic cells. PRIMA-1 restores sequence-specific DNA binding and transactivational activity to mutant p53 proteins at relatively high μM to mM concentrations.<sup>1</sup> It is therefore a unique anti-oncogenic substance, working as a re-activator of the apoptotic function of mutant p53 *via* conformational modulation of function-specific epitopes. PRIMA-1 represents a novel lead compound which may be further modified to provide more potent therapeutic agents acting *via* the reactivation mechanism.

### Reference

1. Bykov, V.J.N., Issaeva, N., Shilov, A., *et al.* Restoration of the tumor suppressor function to mutant p53 by a low-molecular-weight compound. *Nature Med.* **8(3)**, 282-288 (2002).

### Related Products

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# Product Information

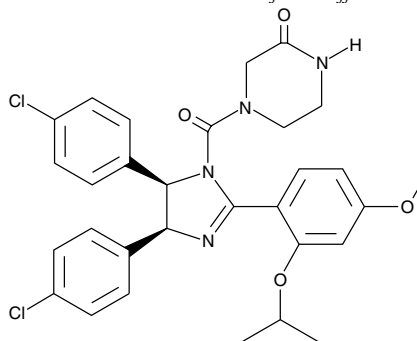


## (±)-Nutlin-3

Item No. 10004372

**CAS Registry No.:** 548472-68-0  
**Formal Name:** (±)-4-[4,5-bis-(4-chlorophenyl)-2-(2-isopropoxy-4-methoxy-phenyl)-4,5-dihydro-imidazole-1-carbonyl]-piperazin-2-one  
**MF:** C<sub>30</sub>H<sub>30</sub>Cl<sub>2</sub>N<sub>4</sub>O<sub>4</sub>  
**FW:** 581.5  
**Purity:** ≥98%  
**Stability:** ≥1 year at -20°C  
**Supplied as:** A crystalline solid

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### Laboratory Procedures

For long term storage, we suggest that nutlin-3 be stored as supplied at -20°C. It should be stable for at least one year.

(±)-Nutlin-3 is supplied as a crystalline solid. A stock solution may be made by dissolving the (±)-nutlin-3 in an organic solvent purged with an inert gas. (±)-Nutlin-3 is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of nutlin-3 in these solvents is at least 25 mg/ml.

(±)-Nutlin-3 is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, nutlin-3 should first be dissolved in ethanol and then diluted with the aqueous buffer of choice. (±)-Nutlin-3 has a solubility of 0.1 mg/ml in a 1:10 solution of ethanol:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

The protein p53, often called the “guardian of the genome,” is a transcription factor that is activated in response to cellular stress (low oxygen levels, heat shock, DNA damage, etc.) and acts to prevent further proliferation of the stressed cell by promoting cell cycle arrest or apoptosis.<sup>1,2</sup> Its role as a tumor suppressor is evident by the observation that approximately 50% of human tumors have mutated or non-functional p53. Mdm2, a key negative regulator of p53 which is overexpressed in many human tumors, functions by binding to and targeting p53 for proteosomal degradation. (±)-Nutlin-3 inhibits p53-Mdm2 interaction with a IC<sub>50</sub> of 0.09 μM.<sup>3</sup> It induces the expression of p53-regulated genes and exhibits potent antiproliferative activity in cells with functional p53, but not in cells with mutated p53. Nutlin-3 also inhibits the growth of human tumor xenografts in nude mice by 90% at a dose of 200 mg/kg.

### References

1. El-Deiry, W.S. The p53 pathway and cancer therapy. *Cancer Journal* **11**, 229-236 (1998).
2. Lane, D.P. and Hupp, T.R. Drug discovery and p53. *Drug Discovery Today* **8(8)**, 347-355 (2003).
3. Vassilev, L.T., Vu, B.T., Graves, B., *et al.* *In vivo* activation of the p53 pathway by small-molecule antagonists of MDM2. *Science Express* 1-8 (2004).

### Related Products

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# Product Information



## p53 (Phospho-Ser<sup>392</sup>) Polyclonal Antibody

Item No. 10004807

<b>Contents:</b>	This vial contains 10 µg affinity-purified IgG in 100 µl HEPES, pH 7.5, containing 50% glycerol, 0.01% BSA, and 0.15 M sodium chloride
<b>Host:</b>	Rabbit
<b>Antigen:</b>	Amino acids around phospho-Ser 392
<b>Stability:</b>	≥1 year at -20°C
<b>Application:</b>	Western blotting at 1:1,000 dilution (0.1 µg/ml); other applications not tested.

This antibody was purified by sequential peptide-affinity chromatography to select only for IgG specific for phosphorylated (phospho) p53 (Ser<sup>392</sup>).

Cellular p53, often called the “guardian of the genome”, is a transcription factor that is activated in response to cellular stress (DNA damage, hypoxia, heat shock, etc.) and acts to prevent further proliferation of the stressed cell by induction of cell cycle arrest or apoptotic mediators.<sup>1</sup> Nearly 50% of human tumors have mutated or non-functional p53. p53 amino acid residues can be modified by phosphorylation and acetylation. *In vivo* phosphorylation of p53 residues alters its signal transduction mechanism and warrants further investigation.<sup>2,3</sup>

### References

1. El-Deiry, W.S. The p53 pathway and cancer therapy. *Cancer Journal* **11**, 229-236 (1998).
2. Lane, D.P. and Hupp, T.R. Drug discovery and p53. *Drug Discovery Today* **8(8)**, 347-355 (2003).
3. Saito, S., Yamaguchi, H., Higashimoto, Y., *et al.* Phosphorylation site interdependence of human p53 post-translational modifications in response to stress. *J. Biol. Chem.* **278(39)**, 37536-37544 (2003).

### Related Products

For a list of related products please visit: [www.caymanchem.com/catalog/10004807](http://www.caymanchem.com/catalog/10004807)

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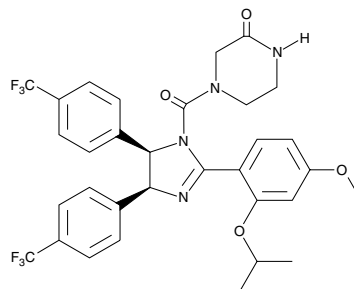
# Product Information



## Caylin-2

Item No. 10005002

**CAS Registry No.:** 1392830-09-9  
**Formal Name:** 4-[4,5-bis(4-trifluoromethyl-phenyl)-2-(2-isopropoxy-4-methoxy-phenyl)-4,5-dihydro-imidazole-1-carboxyl]-piperazin-2-one  
**MF:** C<sub>32</sub>H<sub>30</sub>F<sub>6</sub>N<sub>4</sub>O<sub>4</sub>  
**FW:** 648.6  
**Purity:** ≥98%  
**Stability:** ≥1 year at -20°C  
**Supplied as:** A crystalline solid



### Laboratory Procedures

For long term storage, we suggest that caylin-2 be stored as supplied at -20°C. It should be stable for at least one year.

Caylin-2 is supplied as a crystalline solid. A stock solution may be made by dissolving the caylin-2 in an organic solvent purged with an inert gas. Caylin-2 is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of caylin-2 in these solvents is at least 30 mg/ml.

Caylin-2 is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, caylin-2 should first be dissolved in ethanol and then diluted with the aqueous buffer of choice. Caylin-2 has a solubility of 0.025 mg/ml in a 1:3 solution of ethanol:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Nutlin-3 is an activator of p53 that functions by inhibiting the interaction of p53 with MDM2, a negative regulator of p53 activity.<sup>1</sup> Caylin-2 is a nutlin-3 analog in which trifluoromethyl groups have been substituted for chlorine on two of the phenyl rings. At high concentrations, caylin-2 inhibits the growth of HCT-116 cells with an IC<sub>50</sub> value of approximately 8 μM, making it about 10-fold less potent than nutlin-3. Interestingly, at concentrations between 5-100 nM, caylin-2 promotes the growth of HCT-116 cells approximately 40% compared to untreated cells.<sup>2</sup> The mechanism of the growth promoting properties of caylin-2 have not yet been elucidated.

### References

1. Vassilev, L.T., Vu, B.T., Graves, B., *et al.* *In vivo* activation of the p53 pathway by small-molecule antagonists of MDM2. *Science* **303**, 844-848 (2004).
2. Meade, E.A., [Unpublished] (2004).

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