

## PDE3B, Active

Human recombinant protein expressed in Sf9 cells

**Catalog # P91-31BG**

Lot # M333-1

### Product Description

Recombinant human PDE3B (654-end) was expressed by baculovirus in Sf9 insect cells using an N-terminal GST tag. The gene accession number is [NM\\_000922](#).

### Gene Aliases

HcGIP1; cGIPDE1

### Formulation

Recombinant protein stored in 50mM Tris-HCl, pH 7.5, 150mM NaCl, 0.25mM DTT, 0.1mM PMSF, 25% glycerol.

### Storage and Stability

Store product at  $-70^{\circ}\text{C}$ . For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, avoid repeated handling and multiple freeze/thaw cycles.

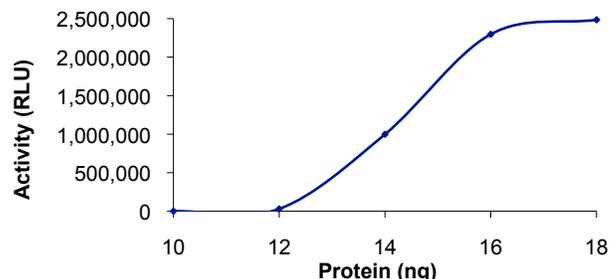
### Scientific Background

PDE3B is a member of the phosphodiesterase family of proteins that play a critical role in regulating intracellular levels of cAMP and cGMP. PDE3B has high affinity for cAMP and is inhibited by cGMP as well as specific inhibitors such as cilostamide and milrinone. PDE3B is phosphorylated and activated in response to insulin and agents that increase cAMP. Leptin can increase the activity of PDE3B in the hypothalamus leading to a decrease in cAMP concentration (1). PDE3B-knockout mice exhibited multiple alterations in regulation of lipolysis, lipogenesis, and insulin secretion, as well as signs of peripheral insulin resistance (2).

### References

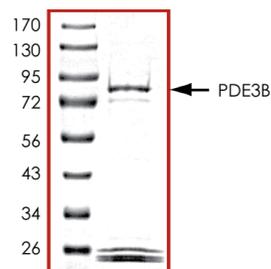
- Zhao A Z, et al: A phosphatidylinositol 3-kinase-phosphodiesterase 3B-cyclic AMP pathway in hypothalamic action of leptin on feeding. *Nature Neurosci.* 5: 727-728, 2002.
- Choi Y H, et al: Alterations in regulation of energy homeostasis in cyclic nucleotide phosphodiesterase 3B-null mice. *J. Clin. Invest.* 116: 3240-3251, 2006.

### Specific Activity



The specific activity of PDE3B was determined to be **156 nmol/min/mg** as per activity assay protocol.

### Purity



The purity was determined to be **>70%** by densitometry. Approx. MW **85kDa**.

## PDE3B, Active

Human recombinant protein expressed in Sf9 cells

Catalog Number	P91-31BG
Specific Activity	156 nmol/min/mg
Specific Lot Number	M333-1

Purity	>70%
Concentration	0.1µg/µl
Stability	1 yr at $-70^{\circ}\text{C}$ from date of shipment
Storage & Shipping	Store product at $-70^{\circ}\text{C}$ . For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, avoid repeated handling and multiple freeze/thaw cycles. Product shipped on dry ice.

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# Activity Assay Protocol

## Reaction Components

### Active PDE3B (Catalog #: P91-31BG)

Active PDE3B (0.1µg/µl) diluted with 1X PDE-Glo™ Reaction Buffer and assayed as outlined in sample activity plot. (Note: these are suggested working dilutions and it is recommended that the researcher perform a serial dilution of Active PDE3B for optimal results).

### 100 mM IBMX Solution

Prepare 100 mM of 3-isobutyl-1-methylxanthine (IBMX) in 100% DMSO. Store aliquots at -20°C.

### PDE-Glo™ Phosphodiesterase Assay Kit (Promega, Cat # V1361)

cAMP and cGMP solution, 1 mM  
PDE-Glo™ Reaction Buffer, 5X  
PDE-Glo™ Termination Buffer, 5X  
PDE-Glo™ Detection Buffer, 5X  
Protein Kinase A (PKA)  
Kinase-Glo™ Substrate  
Kinase-Glo™ Buffer

## Assay Protocol

The PDE3B assay is performed using the PDE-Glo™ Phosphodiesterase Assay kit (Promega; Cat# V1361). The assay involves first a PDE3B reaction between an active PDE3B preparation and a cyclic nucleotide substrate (cAMP). Then PDE-Glo™ Termination Buffer and PDE-Glo™ Detection Buffer (which contains ATP, inactive PKA and PKA substrate) are added to the reaction. The cyclic nucleotide substrate remaining after the PDE3B reaction can bind to the inactive PKA regulatory subunit thereby releasing the active catalytic subunit of PKA. The active catalytic subunit of PKA then catalyzes phosphorylation of the PKA substrate in the presence of ATP which leads to a reduction in ATP level. In the final step, Kinase-Glo™ reagent is added to measure the Luciferase activity towards Luciferin and the luminescent signal produced is related to the amount of ATP remaining which is indirectly related to the activity of PDE3B.

**Step 1.** Thaw the Active PDE3B and PDE-Glo™ Phosphodiesterase Assay Kit reagents on ice.

**Step 2.** Prepare the following working solutions:

- o Diluted active PDE3B with 1X PDE-Glo™ Reaction Buffer on ice
- o 2µM cAMP substrate solution in 1X PDE-Glo™ Reaction Buffer at ambient temperature
- o 1X PDE-Glo™ Termination Buffer in 10 mM IBMX solution at ambient temperature
- o 1X PDE-Glo™ detection solution (mix 8µl PKA with 792µl water and 200µl 5X PDE-Glo™ Detection Buffer). Prepare immediately before use
- o Kinase-Glo™ reagent by adding Kinase-Glo™ Buffer to Kinase-Glo™ Substrate at ambient temperature

**Step 3.** In a polystyrene 96-well plate, add the following components bringing the initial reaction volume up to 25µl:

**Component 1.** 12.5µl of diluted Active PDE3B (Catalog #P91-31BG)

**Component 2.** 12.5µl of 2µM cAMP solution (0.025 nmol cAMP used per assay)

**Step 4.** Set up a blank control as outlined in step 3 by excluding the addition of the diluted PDE preparation. Replace the PDE preparation with an equal volume of 1X PDE-Glo™ Reaction Buffer.

**Step 5.** Initiate the reaction by adding cAMP substrate solution and incubate the mixture at 30°C for 10 minutes on a plate shaker.

**Step 6.** Terminate the PDE reaction by adding 12.5µl of 1X PDE-Glo™ Termination Buffer. Mix well.

**Step 7.** Add 12.5µl of 1X PDE-Glo™ detection solution. Mix well and then incubate at ambient temperature for 20 minutes.

**Step 8.** After the incubation period, add 50µl of Kinase-Glo™ reagent mix and then incubate at ambient temperature for 10 min.

**Step 9.** Read the polystyrene 96-well reaction plate using the KinaseGlo Luminescence Protocol on a GloMax plate reader (Promega; Cat# E7031).

**Step 10.** Perform a cAMP standard curve. Determine RLU at each concentration. Then calculate the corresponding nmol cAMP remaining after the PDE reaction from the standard curve.

**Step 11.** Calculate the PDE specific activity as outlined below.

### PDE Specific Activity (SA) (nmol/min/mg)

$$[\text{cAMP total (nmol)} - \text{cAMP remaining (nmol)}] / (\text{Reaction time in min}) * (\text{Enzyme amount in mg})$$

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