

## AMPK gamma 1/beta 2/alpha 1 Heterotrimer Protein, Human (sf9, His-GST)

<b>Cat. No.:</b>	HY-P76143
<b>Synonyms:</b>	5'-AMP-activated protein kinase; AMPK; AMPK ( $\alpha$ 1, $\beta$ 2, $\gamma$ 1) Protein
<b>Species:</b>	Human
<b>Source:</b>	Sf9 insect cells
<b>Accession:</b>	P54619 (M1-P331)&O43741 (M1-I272)&Q13131 (M1-Q559)
<b>Gene ID:</b>	5571&5565&5562
<b>Molecular Weight:</b>	Approximately 35&37&95 kDa.

### PROPERTIES

<b>Biological Activity</b>	The specific activity was determined to be 6 nmol/min/mg using synthetic SAMS peptide (HMRSAMSGHLHLVKRR) as substrate. The specific activity is >6 pmol/min/ $\mu$ g.
<b>Appearance</b>	Solution.
<b>Formulation</b>	Supplied as a 0.2 $\mu$ m filtered solution of 50 mM Tris, 200 mM NaCl, 2 mM GSH, 1 mM EDTA, 1 mM DTT, 10% gly, pH 7.4.
<b>Endotoxin Level</b>	<1 EU/ $\mu$ g, determined by LAL method.
<b>Reconstitution</b>	N/A.
<b>Storage &amp; Stability</b>	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
<b>Shipping</b>	Shipping with dry ice

### DESCRIPTION

#### Background

The AMPK gamma 1 serves as the AMP/ATP-binding subunit of AMP-activated protein kinase (AMPK), a pivotal regulator of cellular energy metabolism. When intracellular ATP levels decrease, AMPK is activated, initiating a cascade of events that enhance energy production while suppressing energy-consuming processes such as protein, carbohydrate, and lipid biosynthesis, as well as cell growth and proliferation. The gamma non-catalytic subunit of AMPK mediates binding to AMP, ADP, and ATP, influencing the activation or inhibition of AMPK. AMP binding allosterically activates the alpha catalytic subunit by inducing phosphorylation and preventing dephosphorylation. ADP stimulates phosphorylation, while ATP promotes dephosphorylation, rendering the AMPK enzyme inactive. Beyond its role in energy regulation, AMPK acts as a modulator of cellular polarity by remodeling the actin cytoskeleton, potentially through the indirect activation of myosin. The heterotrimeric composition of AMPK including an alpha catalytic subunit (PRKAA1 or PRKAA2), a beta subunit (PRKAB1 or PRKAB2), and a gamma non-catalytic subunit (PRKAG1, PRKAG2, or PRKAG3), highlighting its intricate regulatory mechanisms. AMPK further interacts with FNIP1 and FNIP2 to modulate its cellular functions.

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**Caution: Product has not been fully validated for medical applications. For research use only.**

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