

BGLAP Protein, Rat (GST)

Cat. No.:	HY-P72104
Synonyms:	Bglap; Bglap2; Osteocalcin; Bone Gla protein; BGP; Gamma-carboxyglutamic acid-containing protein
Species:	Rat
Source:	E. coli
Accession:	P04640 (Y50-V99)
Gene ID:	25295
Molecular Weight:	Approximately 32.6 kDa

PROPERTIES

AA Sequence	Y L N N G L G A P A P Y P D P L E P H R E V C E L N P N C D E L A D H I G F Q D A Y K R I Y G T T V
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 µm sterile filtered PBS, 6% Trehalose, pH 7.4
Endotoxin Level	<1 EU/µg, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH ₂ O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	<p>BGLAP protein, in its carboxylated form, plays a crucial role in the bone matrix by acting as a negative regulator of bone formation while maintaining bone resorption and mineralization. This form exhibits strong binding affinity to apatite and calcium. On the other hand, the uncarboxylated form functions as a hormone secreted by osteoblasts and regulates various cellular processes including energy metabolism, male fertility, and brain development. In terms of energy metabolism, it promotes pancreatic beta-cell proliferation, insulin secretion, insulin sensitivity, and energy expenditure. Additionally, the uncarboxylated osteocalcin hormone stimulates testosterone production in the testes by acting as a ligand for G protein-coupled receptor GPRC6A on Leydig cells, resulting in the activation of CREB-dependent pathways required for testosterone synthesis. Furthermore, this hormone serves as a regulator of brain development by crossing the blood-brain barrier and binding to GPR158 on neurons. This interaction prevents neuronal apoptosis in the hippocampus, promotes the synthesis of monoamine neurotransmitters, and inhibits the synthesis of gamma-aminobutyric acid (GABA). Notably, osteocalcin also crosses the placenta during pregnancy, and maternal osteocalcin is necessary for fetal brain development.</p>
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Caution: Product has not been fully validated for medical applications. For research use only.

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