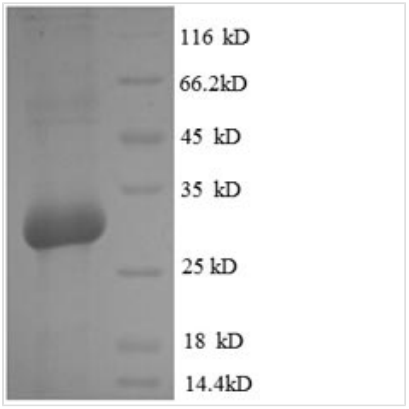
Recombinant Rat Osteocalcin (Bglap)

Product Code	CSB-EP002682RA
Relevance	Constitutes 1-2% of the total bone protein. It binds strongly to apatite and calcium.
Abbreviation	Recombinant Rat Bglap protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P04640
Alias	Bone Gla protein ;BGPGamma-carboxyglutamic acid-containing protein
Product Type	Recombinant Protein
Immunogen Species	Rattus norvegicus (Rat)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	YLNNGLGAPAPYPDPLEPHREVCELNPNCDELADHIGFQDAYKRIYGTTV
Research Area	Others
Source	E.coli
Target Names	Bglap
Expression Region	50-99aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal GST-tagged
Mol. Weight	32.6kDa
Protein Length	Full Length of Mature Protein
Image	 (Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.
Description	Recombinant Rat Osteocalcin (Bglap) is expressed in E. coli and includes an N-

terminal GST tag that makes purification more straightforward. The protein contains the full length of mature osteocalcin—specifically the 50-99 amino acid region. SDS-PAGE analysis confirms purity levels above 90%, suggesting this is a reliable reagent for research work. Endotoxin levels are kept low, which appears to make it suitable for different experimental approaches.

Osteocalcin, sometimes called bone gamma-carboxyglutamic acid-containing protein, seems to play a central role in how bones metabolize and mineralize. Osteoblasts produce this protein, and it likely helps regulate bone formation and calcium ion balance. Many researchers study osteocalcin as a marker of bone turnover, making it an attractive target for investigations into bone health and metabolic diseases.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Antibody Development and Validation

This recombinant rat osteocalcin may work well as an immunogen for creating polyclonal or monoclonal antibodies that target rat osteocalcin specifically. The N-terminal GST tag should help with purification and attachment during immunization procedures. The >90% purity probably reduces unwanted cross-reactions with other proteins when making antibodies. Researchers can then test these antibodies using the same recombinant protein in ELISA, Western blot, and similar immunoassays.

2. GST Pull-Down Assays for Protein-Protein Interactions

The N-terminal GST tag allows researchers to use this protein directly in GST pull-down experiments to find possible binding partners of rat osteocalcin. Scientists can attach the protein to glutathione-sepharose beads and mix it with cell lysates or purified protein collections. This method might reveal how osteocalcin interacts with other molecules in bone metabolism pathways. The high purity should reduce background noise from contaminating proteins.

3. Competitive Binding Studies and ELISA Development

This recombinant protein could function as a standard or competitor in enzyme-linked immunosorbent assays focused on osteocalcin research. The known concentration and high purity make it potentially useful for creating standard curves in quantitative ELISA protocols. Researchers might also use it to test how specific existing anti-osteocalcin antibodies really are through competitive inhibition experiments. If needed, the GST tag provides a way to orient the protein properly on ELISA plates.

4. Biochemical Characterization and Stability Studies

	The purified recombinant rat osteocalcin opens up possibilities for detailed biochemical analysis—things like confirming molecular weight, testing thermal stability, and checking pH tolerance. Scientists can examine how the protein behaves in different buffer conditions and storage situations. The high purity level should allow for precise spectroscopic measurements and biophysical analysis. These investigations may provide basic data that helps researchers understand osteocalcin's properties in various research settings.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.