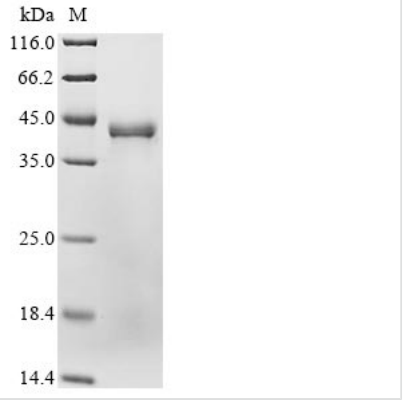
Recombinant Human Glutaminyl-peptide cyclotransferase (QPCT)

Product Code	CSB-MP019135HU
Abbreviation	Recombinant Human QPCT 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.	Q16769
Form	Liquid or Lyophilized powder
Storage Buffer	If the delivery form is liquid, the default storage buffer is Tris/PBS-based buffer, 5%-50% glycerol. If the delivery form is lyophilized powder, the buffer before lyophilization is Tris/PBS-based buffer, 6% Trehalose.
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	VSPSASAWPEEKNYHQPAILNSSALRQIAEGTSISEMWQNDLQPLLIERYPGS PGSYAARQHIMQRIQRLQADWVLEIDTFLSQTPYGYRSFSNIISTLNPTAKRHL VLACHYDSKYFSHWNNRVFVGATDSAVPCAMMLELARALDKKLLSLKTVSDS KPDLSLQLIFFDGEEAFLHWSPQDSLYGSRHLAAKMASTPHPPGARGTSQLH GMDLLVLLDLIGAPNPTFPNFFPNSARWFERLQAIEHELHELGLLKDHSLEGRY FQNYSYGGVIQDDHIPFLRRGVPVLHLIPSPFPEVWHTMDDNEENLDESTIDNL NKILQVFVLEYLHL
Research Area	Neuroscience
Source	Mammalian cell
Target Names	QPCT
Expression Region	29-361aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-tagged
Mol. Weight	41.5 kDa
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 Human Glutaminyl-peptide cyclotransferase (QPCT) is produced in a mammalian cell expression system, which appears to ensure proper folding and post-translational modifications. The protein includes the full length of the mature protein, covering amino acids 29-361, and features an N-terminal 10xHis-tag for simplified purification and detection. SDS-PAGE analysis confirms the protein purity exceeds 90%, which likely makes it suitable for various research applications.

Glutaminyl-peptide cyclotransferase (QPCT) is an enzyme that participates in post-translational modification processes. It catalyzes the formation of pyroglutamate from glutaminyl residues at the N-terminus of peptides and proteins. This modification may influence protein stability and function. QPCT holds significance in research related to protein maturation and degradation pathways, and its activity proves relevant in studies focusing on enzyme mechanics and protein biochemistry.

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. Biochemical Characterization and Enzyme Kinetics Studies

Researchers can use this recombinant QPCT protein to investigate the fundamental biochemical properties of glutaminyl-peptide cyclotransferase. These studies might examine substrate specificity, optimal reaction conditions, and kinetic parameters. The high purity (>90%) and mammalian expression system appear to ensure proper protein folding and post-translational modifications that could be critical for enzymatic function. Scientists can establish in vitro assays using various peptide substrates to determine catalytic efficiency and identify preferred substrate sequences. The N-terminal His-tag allows for easy purification and immobilization for continuous assays or biophysical studies.

2. Protein-Protein Interaction Studies

The His-tagged QPCT can work as bait protein in pull-down assays to identify novel binding partners or validate known interactions with other cellular proteins. The tag allows efficient immobilization on nickel-affinity matrices for capturing interacting proteins from cell lysates or purified protein libraries. This approach may help clarify the cellular networks and regulatory mechanisms involving QPCT in various biological processes. The mammalian expression system likely ensures native-like protein conformation that preserves physiologically relevant binding interfaces.

3. Antibody Development and Validation

This purified recombinant protein works as an ideal immunogen for generating specific antibodies against human QPCT, including both polyclonal and monoclonal antibodies. The high purity level minimizes cross-reactivity with contaminating proteins. Meanwhile, the mammalian expression system provides native protein structure for generating antibodies that recognize the natural form of QPCT. Scientists can also use the protein to validate antibody specificity through ELISA, Western blot, and competitive binding assays. The His-tag allows easy coating of ELISA plates and provides an additional epitope for detection if needed.

4. Structural Biology and Biophysical Analysis

Researchers can use the recombinant QPCT protein for structural studies including X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy to understand the three-dimensional architecture of the enzyme. The mammalian expression system increases the likelihood of obtaining properly folded protein suitable for structural analysis. Biophysical techniques such as dynamic light scattering, analytical ultracentrifugation, and thermal stability assays can provide insights into protein oligomerization state, stability, and conformational changes. The His-tag helps with protein purification to the high concentrations typically required for structural studies.

5. In Vitro Assay Development and Screening Applications

Scientists can use this QPCT protein to develop and optimize in vitro enzymatic assays for research applications, including the establishment of standardized protocols for measuring cyclotransferase activity. The consistent quality from mammalian expression makes it suitable as a positive control or reference standard in comparative studies. Researchers can use this protein to screen for potential modulators or inhibitors in compound libraries, providing a foundation for chemical biology studies. The His-tag allows easy integration into automated screening platforms through immobilization or tag-based detection methods.

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.
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