PRODUCT INFORMATION

Glucagon Receptor Extracellular Domain (human, recombinant)

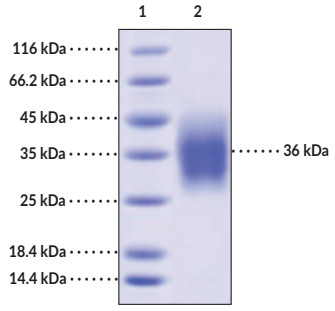
Item No. 42231

Overview and Properties

Synonyms:	GCGR Extracellular domain, MVAH
Source:	Active recombinant human C-terminal His-tagged GCGR extracellular domain expressed in HEK293 cells
Amino Acids:	26-136
Uniprot No.:	P47871
Molecular Weight:	14.5 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥95% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.4, with 5% trehalose, 5% mannitol, and 0.01% Tween-80
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Bioactivity:	See figures for details

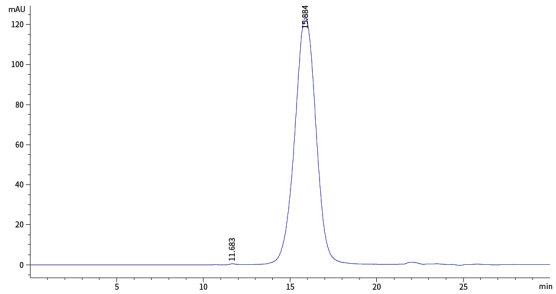
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

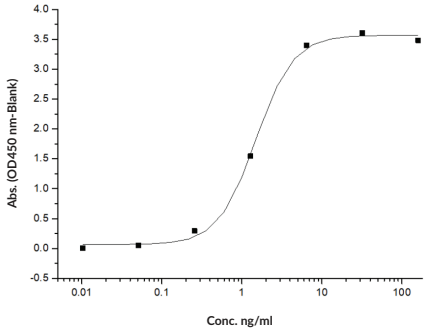
Images



Lane 1: MW Markers
Lane 2: Glucagon Receptor Extracellular Domain

SDS-PAGE Analysis of Glucagon Receptor Extracellular Domain. This protein has a calculated molecular weight of 14.5 kDa. It has an apparent molecular weight of approximately 36 kDa by SDS-PAGE under reducing conditions due to glycosylation.





Measured by its binding ability in a binding assay.
Immobilized Human Anti-GCGR (Volagidemab), Human IgG2 at 2 µg/ml (100 µl/well) can bind Glucagon Receptor Extracellular Domain (human, recombinant), the EC_{50} is 1.2-4 ng/ml.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

Glucagon receptor (GCGR) is a transmembrane glycoprotein and class B G protein-coupled receptor (GPCR).[1,2] It is composed of an N-terminal extracellular domain required for ligand binding, seven transmembrane domains, and a C-terminal intracellular domain.[3] It is expressed primarily in the liver and kidney but is also found in a variety of other areas, including adipose tissue and the pancreas, heart, gastrointestinal tract, and brain.[1-3] Under hypoglycemic conditions, GCGR is activated by increased levels of glucagon and induces $G\alpha_s$ signaling, which initiates the transcription of enzymes involved in gluconeogenesis and the activation of enzymes involved in glycogenolysis to increase blood levels of glucose.[1] A glycine-to-serine mutation at position 40 of GCGR ($GCGR^{G40S}$) decreases its affinity to glucagon and is associated with type 2 diabetes.[4] Inactivating mutations in *GCGR* are associated with pancreatic α-cell hyperplasia, hyperaminoacidemia, and hyperglucagonemia but not hypoglycemia.[1,5,6] Cayman's Glucagon Receptor Extracellular Domain (human, recombinant) protein can be used for binding assays. This protein consists of 122 amino acids, has a calculated molecular weight of 14.5 kDa, and a predicted N-terminus of Ala26 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is approximately 36 kDa due to glycosylation.

References

1. Janah, L., Kjeldsen, S., Galsgaard, K.D., *et al*. Glucagon receptor signaling and glucagon resistance. *Int. J. Mol. Sci.* **20(13)**, 3314 (2019).
2. Authier, F. and Desbuquois, B. Glucagon receptors. *Cell Mol. Life Sci*. **65(12)**, 1880-1899 (2008).
3. Mayo, K.E., Miller, L.J., Bataille, D., *et al*. International Union of Pharmacology. XXXV. The glucagon receptor family. *Pharmacol. Rev*. **55(1)**, 167-194 (2033).
4. Hager, J., Hansen, L., Vaisse, C., *et al*. A missense mutation in the glucagon receptor gene is associated with non-insulin-dependent diabetes mellitus. *Nat. Genet*. **9(3)**, 299-304 (1995).
5. Larger, E., Wewer Albrechtsen, N.J., Hansen, L.H., *et al*. Pancreatic α-cell hyperplasia and hyperglucagonemia due to a glucagon receptor splice mutation. *Endocrinol. Diabetes Metab. Case Rep*. (2016).
6. Zhou, C., Dhall, D., Missen, N.N., *et al*. Homozygous P86S mutation of the human glucagon receptor is associated with hyperglucagonemia, α cell hyperplasia, and islet cell tumor. *Pancreas* **38(8)**, 941-946 (2009).

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