# Recombinant Human Protein Wnt-10a (WNT10A)

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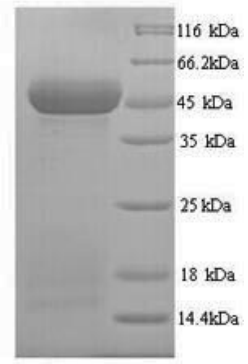
| **Product Code** | CSB-YP884424HU |
| **Relevance** | Ligand for members of the frizzled family of seven transmembrane receptors. Probable developmental protein. May be a signaling molecule important in CNS development. Is likely to signal over only few cell diameters. |
| **Abbreviation** | Recombinant Human WNT10A 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.** | Q9GZT5 |
| **Product Type** | Recombinant Protein |
| **Immunogen Species** | Homo sapiens (Human) |
| **Purity** | Greater than 90% as determined by SDS-PAGE. |
| **Sequence** | MPRSAPNDILDLRLPPEPVLNANTVCLTLPGLSRRQMEVCVRHPDVAASAIQGI QIAIHECQHQFRDQRWNCSSLETRNKIPYESPIFSRGFRESAFAYAIAAAGVVH AVSNACALGKLKACGCDASRRGDEEAFRRKLHRLQLDALQRGKGLSHGVPE HPALPTASPGLQDSWEWGGCSPDMGFGERFSKDFLDSREPHRDIHARMRLH NNRVGRQAVMENMRRKCKCHGTSGSCQLKTCWQVTPEFRTVGALLRSRFH RATLIRPHNRNGGQLEPGPAGAPSPAPGAPGPRRRASPADLVYFEKSPDFCE REPRLDSAGTVGRLCNKSSAGSDGCGSMCCGRGHNILRQTRSERCHCRFH WCCFVVCEECRITEWVSVCK |
| **Research Area** | Cancer |
| **Source** | Yeast |
| **Target Names** | WNT10A |
| **Protein Names** | Recommended name: Protein Wnt-10a |
| **Expression Region** | 36-417aa |
| **Notes** | Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week. |
| **Tag Info** | N-terminal 6xHis-tagged |
| **Mol. Weight** | 44.4kDa |
| **Protein Length** | Full Length of Mature Protein |
| **Image** | |




(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

## Description

The generation of recombinant human WNT10A begins with the isolation and cloning of the gene that corresponds to the WNT10A protein (36-417aa). This target gene is inserted into a plasmid vector along with the N-terminal 6xHis-tag gene, which is then introduced into yeast cells. These yeast cells are grown in bioreactors where the recombinant protein is produced. Following expression, the WNT10A protein is harvested from the cell lysates and purified using affinity chromatography. The SDS-PAGE is used to measure its purity, up to 90%.

WNT10A, a gene encoding a wingless pathway signaling molecule, is crucial in various developmental processes and cell cycle regulation [1]. It plays a significant role in tooth development, with defects in WNT10A being associated with tooth agenesis [2]. Studies have shown that WNT10A is essential for tooth root furcation morphogenesis and that mutations in this gene can lead to ectodermal dysplasia by affecting progenitor cell proliferation and differentiation [3][4]. Furthermore, WNT10A has been identified as a critical ligand controlling adult epithelial proliferation and differentiation, with downstream β-catenin pathway activation being a potential approach to address regenerative defects in WNT10A patients [4].

WNT10A has been linked to wound healing by regulating collagen expression and synthesis, as WNT10A-deficient mice exhibited delayed wound healing due to reduced collagen production [5]. The depletion of WNT10A has been shown to prevent tumor growth by suppressing microvessels and collagen expression [6]. WNT10A has been implicated in oncogenesis through the activation of the WNT/β-catenin signaling pathway in various cancers such as renal cell carcinoma, colorectal cancer, and ovarian cancer [7][8][9].

References:
[1] T. C, S. Jung, K. Niederreither, M. Prasad, S. Hadj-Rabia, N. Philipet al., Dental and extra?oral clinical features in 41 patients with wnt10a gene mutations: a multicentric genotype–phenotype study, Clinical Genetics, vol. 92, no. 5, p. 477-486, 2017. https://doi.org/10.1111/cge.12972
[2] J. Yang, S. Wang, M. Choi, B. Reid, Y. Hu, Y. Leeet al., Taurodontism, variations in tooth number, and misshapened crowns inwnt10anull mice and human kindreds, Molecular Genetics & Genomic Medicine, vol. 3, no. 1, p. 40-58, 2014. https://doi.org/10.1002/mgg3.111

[3] M. Yu, Y. Liu, Y. Wang, S. Wong, J. Wu, H. Liuet al., Epithelialwnt10ais essential for tooth root furcation morphogenesis, Journal of Dental Research, vol. 99, no. 3, p. 311-319, 2020. https://doi.org/10.1177/0022034519897607
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[5] K. Wang, S. Yamada, H. Izumi, M. Tsukamoto, T. Nakashima, T. Tasakiet al., Critical in vivo roles of wnt10a in wound healing by regulating collagen expression/synthesis in wnt10a-deficient mice, Plos One, vol. 13, no. 3, p. e0195156, 2018. https://doi.org/10.1371/journal.pone.0195156
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[8] P. Li, W. Liu, Q. Xu, & C. Wang, Clinical significance and biological role of wnt10a in ovarian cancer, Oncology Letters, 2017. https://doi.org/10.3892/ol.2017.7062
[9] R. Hsu, J. Ho, T. Cha, D. Yü, C. Wu, W. Huanget al., Wnt10a plays an oncogenic role in renal cell carcinoma by activating wnt/β-catenin pathway, Plos One, vol. 7, no. 10, p. e47649, 2012. https://doi.org/10.1371/journal.pone.0047649

**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.