

Background

Glucose transporter 1 (or GLUT1), also known as solute carrier family 2, facilitated glucose transporter member 1 (SLC2A1), is a uniporter protein that in humans is encoded by the *SLC2A1* gene.^[2] GLUT1 facilitates the transport of glucose across the plasma membranes of mammalian cells.^[3] Energy-yielding metabolism in erythrocytes depends on a constant supply of glucose from the blood plasma, where the glucose concentration is maintained at about 5mM. Glucose enters the erythrocyte by facilitated diffusion via a specific glucose transporter, at a rate about 50,000 times greater than uncatalyzed transmembrane diffusion. GLUT1 is responsible for the low-level of basal glucose uptake required to sustain respiration in all cells. Expression levels of GLUT1 in cell membranes are increased by reduced glucose levels and decreased by increased glucose levels. GLUT1 is also a major receptor for uptake of Vitamin C as well as glucose, especially in non vitamin C producing mammals as part of an adaptation to compensate by participating in a Vitamin C recycling process. In mammals that do produce Vitamin C, GLUT4 is often expressed instead of GLUT1.^[5] It is widely distributed in fetal tissues. In the adult it is expressed at highest levels in erythrocytes and also in the endothelial cells of barrier tissues such as the blood–brain barrier. GLUT1 behaves as a Michaelis-Menten enzyme and contains 12 membrane-spanning alpha helices, each containing 20 amino acid residues. Mutations in the GLUT1 gene are responsible for GLUT1 deficiency or De Vivo disease, which is a rare autosomal dominant disorder.^[6] This disease is characterized by a low cerebrospinal fluid glucose concentration (hypoglycorrachia), a type of neuroglycopenia, which results from impaired glucose transport across the blood–brain barrier. GLUT1 is also a receptor used by the HTLV virus to gain entry into target cells.^[7] Glut1 has also been demonstrated as a powerful histochemical marker for haemangioma of infancy^[8]

References

1. Mueckler M, et al. (1985). *Science* 229 (4717): 941–5.
2. Olson AL, Pessin JE (1996). *Annu. Rev. Nutr.* 16: 235–56.
3. Montel-hagen A, et al. (2008). *Cell* 132 (6): 1039–1048.
4. Seidner G, et al. (1998). *Nat. Genet.* 18 (2): 188–91.
5. Manel N, et al. (2003). *Cell* 115 (4): 449–59.
6. North PE, et al. (2000). *Hum. Pathol.* 31 (1): 11–22.



Genorise® Recombinant Human GLUT1

Catalog #: GR119003

Description

Size: 10 µg

Source: *E coli* derived

Component: Leu176 –Pro271

Accession # P11166

Predicted Molecular Mass: 11 kDa (monomer)

Specifications

SDS-PAGE: 11 kDa, reducing conditions

Purity: >97%, by SDSPAGE under reducing conditions and visualized by silver stain.

Formulation: Lyophilized from a 0.2 µm filtered PBS with BSA as carrier protein at 5 µg/ µg.

Preparation and Storage

Reconstitution: Reconstitute at 100 µg/mL in sterile PBS.

Shipping: The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage: Use a manual defrost freezer and avoid repeated freeze thaw cycles.

- 6 months from date of receipt, -20 to -70°C as supplied.
- 3 months, -20 to -70°C under sterile conditions after reconstitution.

DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

**FOR LABORATORY RESEARCH USE ONLY
NOT FOR USE IN HUMANS AND ANIMALS**