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**Name of Journal:** *World Journal of Biological Chemistry*

**Manuscript NO:** 55540

**Manuscript Type:** REVIEW

**Current understanding of glucose transporter 4 expression and functional mechanisms**

Tiannan Wang, Jing Wang, Xinge Hu, Xinaju Huang, Guo-Xun Chen

### Abstract

Glucose is used aerobically and anaerobically to generate energy for cells. Glucose transporters (GLUTs) are transmembrane proteins that transport glucose across the cell membrane. Insulin promotes glucose utilization in part through promoting glucose



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Insulin-stimulated glucose transporter 4 (GLUT4) translocation promoting glucose uptake is vital to glucose homeostasis and is a defined target of antidiabetic drug research. **Existing functional assays to detect the process of GLUT4 translocation are hampered due to assay variability and low sensitivity, thus slowing down the progress towards the development of preferred alternative to insulin.**

## [Glucose transporter 4: cycling, compartments and ...](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1369215)

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Insulin promotes **glucose** uptake into muscle and adipose tissues through **glucose transporter 4** (GLUT4). In unstimulated cells, rapid endocytosis, slow exocytosis and dynamic or static retention cause GLUT4 to concentrate in early recycling endosomes, the trans-Golgi network and vesicle-associated protein 2-containing vesicles. The coordinated action of phosphatidylinositol 3-kinase effectors ...

**Cited by:** 278

**Author:** Chandrasagar B Dugani, Amira Klip

**Publish Year:** 2005

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**Insulin-stimulated glucose transporter 4 (GLUT4) translocation** promoting **glucose uptake** is vital to **glucose homeostasis** and is a defined target of antidiabetic drug research. Existing **functional assays** to detect the process of **GLUT4 translocation** are hampered due to assay variability and low sensitivity, thus slowing down the progress towards the development of preferred alternative to insulin.

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**Glucose transporter 4 (Glut4)** is an important regulator of cellular **glucose uptake** in adipose tissue and skeletal muscle. The estrogen receptors  $\alpha$  and  $\beta$  (ER $\alpha$  and ER $\beta$ ) have been shown to regulate Glut4. However, the regulatory **mechanisms** are unclear, and there are conflicting results about the effects of the two ER isoforms on Glut4 activity.

**Cited by:** 34 **Author:** Joëlle Rüegg, Wen Cai, Mohsen Karimi, ...

**Publish Year:** 2011

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