Glucose is fundamental to the metabolism of mammalian cells. Its passage across cell membranes is mediated by a family of transporters termed glucose transporters or Gluts. In adipose and muscle tissue, Insulin stimulates a rapid and dramatic increase in glucose uptake, which is largely due to the redistribution of the Insulin-inducible glucose transporter, Glut4. In response to Insulin, Glut4 is quickly shuttled from an intracellular storage site to the plasma membrane, where it binds glucose. In contrast, the ubiquitously expressed glucose transporter Glut1 is constitutively targeted to the plasma membrane, and shows a much less dramatic translocation in response to Insulin. Glut1 and Glut4 are 12-pass transmembrane proteins (12TM) whose carboxy-termini may dictate their cellular localization. Ablation of Glut4 has been suggested to contribute to such maladies as obesity and diabetes. Glut4 null mice have shown that while functional Glut4 protein is not required for maintaining normal glucose levels, it is necessary for sustained growth, normal cellular glucose, fat metabolism and prolonged longevity.

CHROMOSOMAL LOCATION
Genetic locus: SLC2A1 (human) mapping to 1p34.2.

SOURCE
Glut1 (A-4) is a mouse monoclonal antibody raised against amino acids 218-260 of Glut1 of human origin.

PRODUCT
Each vial contains 200 µg IgG, kappa light chain in 1.0 ml of PBS with <0.1% sodium azide and 0.1% gelatin.

Glut1 (A-4) is available conjugated to agarose (sc-377228 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-377228 HRP), 200 µg/ml, for WB, IHCP and ELISA; to either phycoerythrin (sc-377228 PE), fluorescein (sc-377228 FITC), Alexa Fluor® 488 (sc-377228 AF488), Alexa Fluor® 546 (sc-377228 AF546), Alexa Fluor® 594 (sc-377228 AF594) or Alexa Fluor® 647 (sc-377228 AF647), 200 µg/ml, for WB (RGB), IF, IHCP and FCM; and to either Alexa Fluor® 680 (sc-377228 AF680) or Alexa Fluor® 790 (sc-377228 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS
Glut1 (A-4) is recommended for detection of Glut1 of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:3000).

Suitable for use as control antibody for Glut1 siRNA (h): sc-35493, Glut1 shRNA Plasmid (h): sc-35493-SH and Glut1 shRNA (h) Lentiviral Particles: sc-35493-V.

Molecular Weight of Glut1: 55 kDa.

Positive Controls: H4 cell lysate: sc-2408 or MDA-MB-231 cell lysate: sc-2232.

BACKGROUND

Glucose is a key nutrient that drives the metabolic activity of cells. Its uptake into cells is facilitated by glucose transporters, which are integral membrane proteins. These transporters are most often found in specialized regions of the plasma membrane, such as the insulin-responsive glucose transporter, Glut4, which is rapidly relocated to the cell surface upon insulin stimulation. In contrast, the constitutively expressed Glut1 is present in the plasma membrane of virtually all cell types, allowing for a steady uptake of glucose under normal physiological conditions. Upon the ingestion of a meal, insulin levels rise, promoting the translocation of Glut4 from intracellular vesicles to the plasma membrane, thereby increasing glucose uptake. This process is crucial for maintaining glucose homeostasis and is dysregulated in conditions such as obesity and diabetes. The targeted regulation of Glut1 and Glut4 expression and function is an area of active research, aiming to understand their role in various metabolic disorders and to develop therapeutic strategies.

DATA

Store at 4°C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

SELECT PRODUCT CITATIONS

RESEARCH USE

For research use only, not for use in diagnostic procedures.