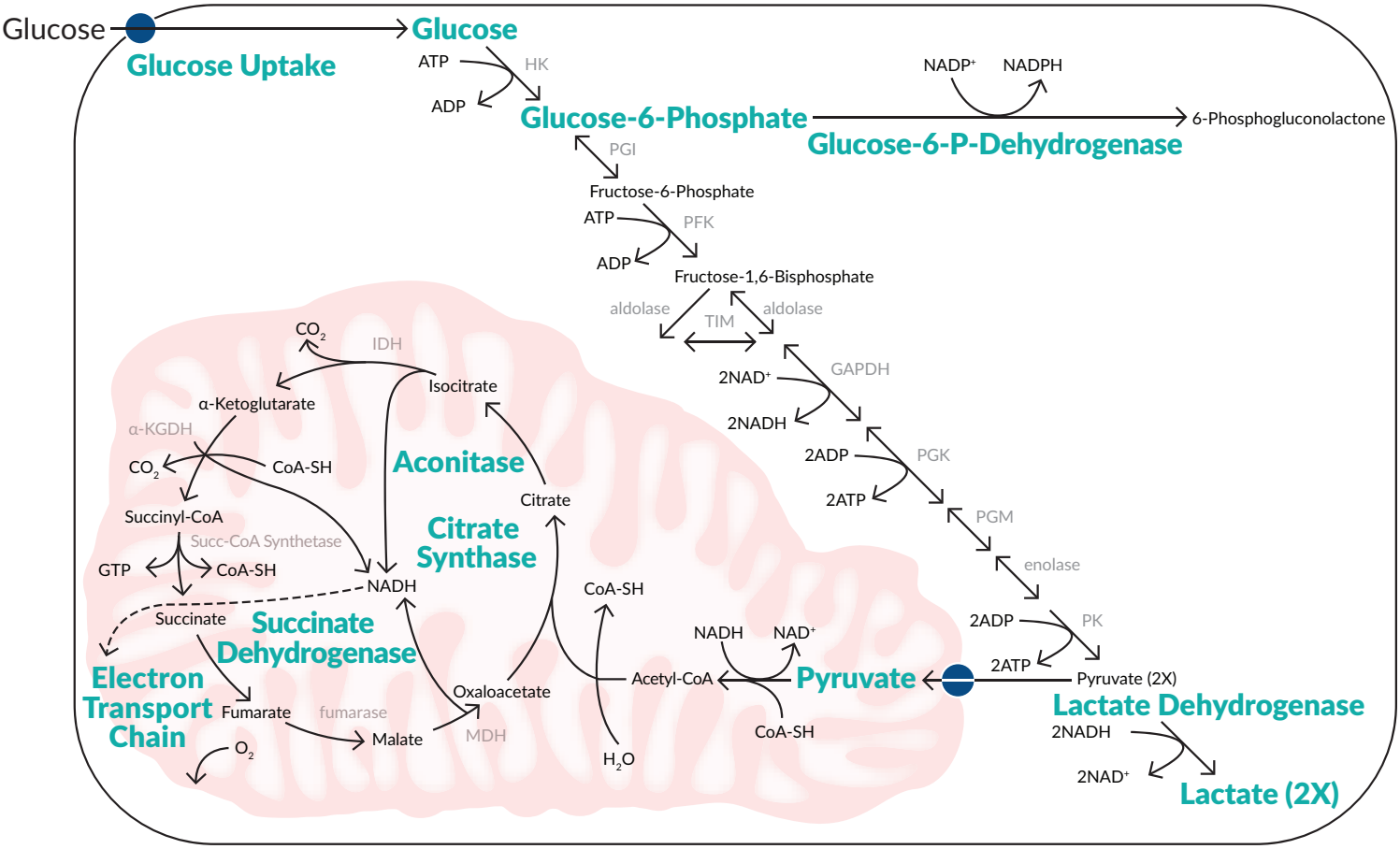
Glucose Metabolism

The metabolism of glucose is central to mammalian life. Dynamic changes in any of the steps involved in processing glucose and its derivatives contribute to a wide range of diseases. Measuring the enzymes and metabolites is pivotal to biological and medical research. Cayman offers an array of tools to make these measurements quickly, easily, and accurately.



Assay Kits

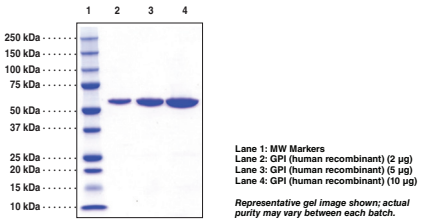
Item No.	Product Name	Measure
600470	Glucose Uptake Cell-Based Assay Kit	Glucose uptake in cultured cells
10009582	Glucose Colorimetric Assay Kit	Glucose in plasma, serum, and urine
600450	Glycolysis Cell-Based Assay Kit	Extracellular L-lactate in cultured cells
700750	Glucose-6-Phosphate Fluorometric Assay Kit	G6P in cell lysates and tissue homogenates
700300	Glucose-6-Phosphate Dehydrogenase Activity Assay Kit	G6PDH activity in cell lysates and tissue homogenates
700510	L-Lactate Assay Kit	L-Lactate in cultured cells, plasma, saliva, serum, urine, and whole blood
700470	Pyruvate Assay Kit	Pyruvate in cultured cells, plasma, saliva, serum, urine, and whole blood
700480	Glycogen Assay Kit	Glycogen content in tissue homogenates
700410	ATP Detection Assay Kit - Luminescence	Total ATP levels in a variety of sample types

Active second enzyme in the glycolytic pathway

Glucose-6-phosphate Isomerase (human recombinant)

Item No. 18279

- **Purity:** ≥95% (estimated by SDS-PAGE)
- **Source:** C-terminal, His-tagged protein expressed in *E. coli*



Glucose Metabolism Substrates

Item No.	Product Name	Activity
20516	D-Fructose-1,6-bisphosphate (sodium salt hydrate)	An intermediate in the glycolysis and gluconeogenesis pathways formed by the phosphtorylation of fructose-6-phosphate by phosphofructokinase
19588	D-Fructose-6-phosphate (sodium salt)	An intermediate of the glycolytic pathway formed by the isomerization of glucose-6-phosphate
16464	α-D-Glucose-1,6-biphosphate (cyclohexyl ammonium salt hydrate)	A derivative of glucose used to study carbohydrate metabolism
20376	D-Glucose-6-phosphate (sodium salt)	The starting molecule for the glycolysis and pentose phosphate pathways
19192	Phosphoenolpyruvic Acid (potassium salt)	An enzyme substrate for the glycolysis and gluconeogenesis pathways
21423	D-Ribulose-5-phosphate (sodium salt)	An intermediate in the pentose phosphate pathway
21344	D-Sedoheptulose-7-phosphate (barium salt)	An intermediate in the pentose phosphate pathway

Glucose Metabolism Inhibitors

Altered glucose metabolism is characteristic of neoplastic and highly proliferative cells. Inhibitors of the rate-controlling enzymes in the gluconeogenesis and glycolysis pathways have great potential in the treatment of cancer.

Item No.	Product Name	Activity
10009315	6-Aminonicotinamide	Inhibits 6-PGD (K_i = 0.46 µM); interferes with glycolysis, resulting in ATP depletion and synergizes with DNA-crosslinking chemotherapy drugs, like cisplatin, in killing cancer cells
18860	Fructose-1,6-bisphosphatase-1 Inhibitor	Blocks fructose-1,6-bisphosphatase-1 activity (IC_{50} = 3.4 µM; K_i = 1.1 µM); blocks glucose production in starved rat hepatoma cells (IC_{50} = 6.6 µM)
14079	Heptelidic Acid	Inhibits GAPDH (K_i = 1.6 µM); selectively induces apoptosis in high-glycolytic cancer cells by inhibiting the generation of ATP in the glycolytic pathway
16548	D-Mannoheptulose	A competitive inhibitor of glucokinases and hexokinases (K_i = 0.25 mM); prevents the conversion of glucose to glucose-6-phosphate
17689	PFK15	Inhibits PFKFB3 (IC_{50} = 207 nM); suppresses glucose uptake and growth of Lewis lung carcinomas in syngeneic mice
19863	Physcion	Inhibits 6-PGD (IC_{50} = 38.5 µM); decreases lipogenesis and RNA biosynthesis in cancer cells
19276	3PO	Inhibits PFKFB3 (IC_{50} = 23 µM); causes a rapid reduction in fructose-2,6-bisphosphate, glucose uptake, and lactate secretion
15352	YZ9	Inhibits PFKFB3 (IC_{50} = 183 nM *in vitro*); inhibits the growth of HeLa cells (GI_{50} = 2.7 µM)

Fluorescent Probes

Item No.	Product Name	Detects	Excitation (nm)	Emission (nm)
9002314	NBD-Fructose	Fructose uptake	472	538
11046	2-NBDG	Glucose uptake	475	550
13961	6-NBDG	Glucose update and transport	465	535