

D-glyceraldehyde 3-phosphate + ortho-phosphate + NAD+ \rightleftharpoons 1,3-bisphospho-D-glycerate + NADH + H+

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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Literature references

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Reactome database release: 75

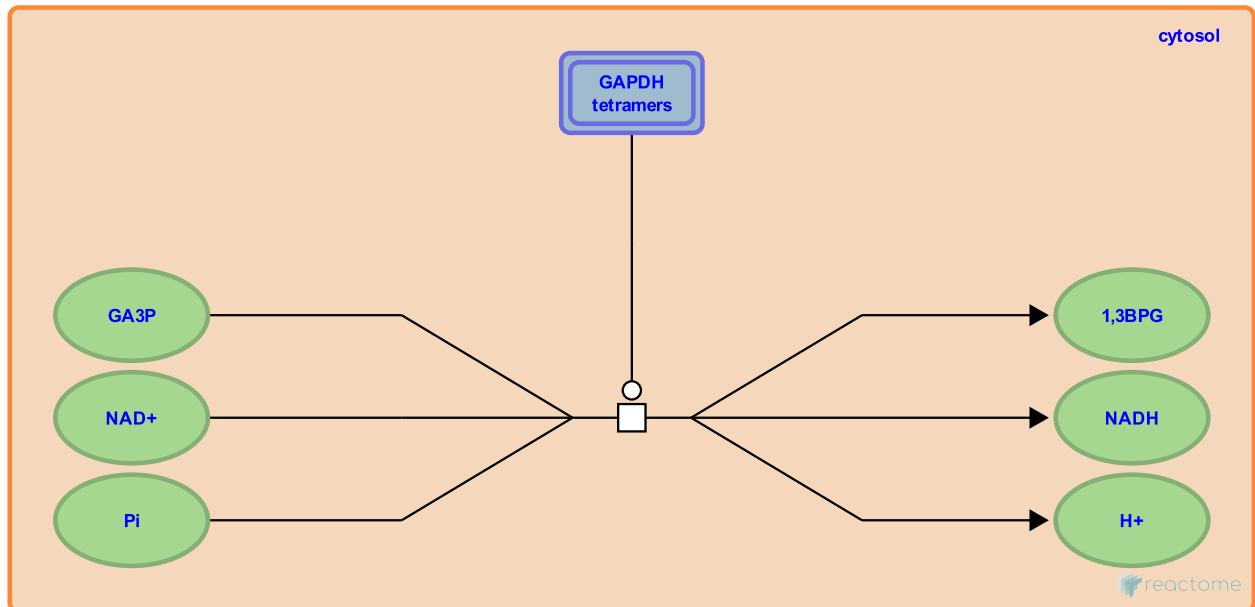
This document contains 1 reaction ([see Table of Contents](#))

D-glyceraldehyde 3-phosphate + orthophosphate + NAD+ <=> 1,3-bisphospho-D-glycerate + NADH + H+ ↗

Stable identifier: R-HSA-70449

Type: transition

Compartments: cytosol



Cytosolic glyceraldehyde 3-phosphate dehydrogenase catalyzes the reversible reaction of glyceraldehyde 3-phosphate, orthophosphate, and NAD⁺ to form NADH + H⁺ and 1,3-bisphosphoglycerate, the first energy rich intermediate of glycolysis. The biochemical details of this reaction were worked out by C and G Cori and their colleagues (Taylor et al. 1948; Cori et al. 1948).

While there are multiple human glyceraldehyde 3-phosphate dehydrogenase-like pseudogenes, there is only one glyceraldehyde 3-phosphate dehydrogenase gene expressed in somatic tissue (Benham and Povey 1989; Heinz and Freimüller 1982; Ercolani et al. 1988), and studies of aged human erythrocytes suggest that variant forms of the enzyme arise as a result of post-translational modifications (Edwards et al. 1976). There is, however, an authentic second isoform of glyceraldehyde 3-phosphate dehydrogenase whose expression is confined to spermatogenic cells of the testis (Welch et al. 2000).

Literature references

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Editions

2009-12-17

Revised

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