phosphoenolpyruvate + ADP => pyruvate + ATP

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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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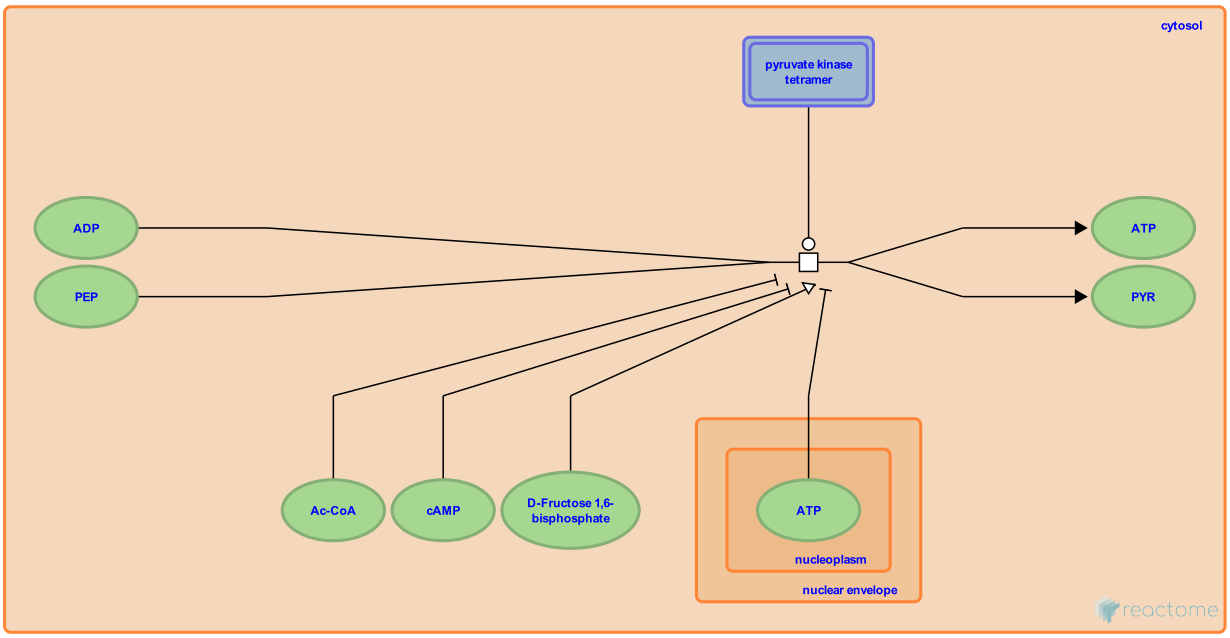
Stable identifier: R-HSA-71670

Type: transition

Compartments: cytosol



Cytosolic pyruvate kinase catalyzes the transfer of a high-energy phosphate from phosphoenolpyruvate to ADP, forming pyruvate and ATP. This reaction, an instance of substrate-level phosphorylation, is essentially irreversible under physiological conditions.

Four isozymes of human pyruvate kinase have been described, L, R, M1 and M2. Isozymes L and R are encoded by alternatively spliced transcripts of the PKLR gene; isozymes M1 and M2 are encoded by alternatively spliced transcripts of PKM2. In the body, L pyruvate kinase is found in liver (Tani et al. 1988), R in red blood cells (Kanno et al. 1991), M1 in muscle, heart and brain (Takenaka et al. 1991), and M2 in early fetal tissues and tumors (e.g., Lee et al. 2008). In all cases, the active form of the enzyme is a homotetramer, activated by fructose 1,6-bisphosphate (Valentini et al. 2002; Dombrauckas et al. 2005). Mutations in PKLR have been associated with hemolytic anemias (e.g., Zanella et al. 2005).

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Editions

2004-09-21	Authored	D'Eustachio, P.
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