PFK27 and PFK26 encode two isozymes of 6-phosphofructo-2-kinase, which catalyzes synthesis of fructose-2,6-bisphosphatefrom fructose-6-phosphate and ATP. F2,6bP is a strong positive allosteric effector of the glycolytic enzyme phosphofructokinase, and thus is important for regulation of glycolysis. F2,6bP is also an inhibitor of the gluconeogenic enzyme fructose-1,6-bisphosphatase, although the physiological significance of this inhibition is not yet clear.PFK27 synthesis is induced by fermentable carbon sources, while Pfk26p is activated by protein kinase A phosphorylation. Deletion of either PFK26 or PFK27 does not confer a detectable growth phenotype. Moreover, although pfk26 pfk27 double mutant cells do not synthesize F2,6bP, they grow normally on fermentable sugars and exhibit normal flux rates for glucose utilization and production of ethanol. Metabolic studies of glycolytic intermediates in exponential phase cells reveal elevated levels of fructose-6-phosphate and decreased ATP/ADP ratios in pfk26 and pfk27 single mutants relative to wild type.In mammals, 6-phosphofructo-2-kinase is synthesized with fructose-2,6-bisphosphatase as single bifunctional polypeptide. Isozymes of this protein are found in different tissues and are encoded by four genes: PFKFB1, PFKFB2, PFKFB3, and PFKFB4. This bifunctional enzyme structure has been found in many other eukaryotes, including Arabidopsis and Drosophila, and in the prokaryote Desulfovibrio desulfuricans. The S. cerevisiae PFK26 gene also would appear to encode a bifunctional enzyme, however the fructose-2,6-bisphosphatase moiety is inactive.