

GLYCOLYSIS

Stage	Enzyme	Reaction Characteristics		Comments	Regulation		
		Substrate	Product		Irreversible?	Activators	Inhibitors
Priming	hexokinase	ATP	ADP	yes	G6P cannot leave cell	P _i	G6P
	phosphofructokinase	ATP	ADP	yes	Multiple regulation	AMP, F2,6bP	ATP, citrate
Splitting	aldolase			no	6-C sugar ↔ 2 3-C		
Energy Generating	glyceraldehyde-3-P dehydrogenase	NAD ⁺	NADH/H ⁺	no			
	phosphoglycerate kinase	ADP	ATP	no			
	pyruvate kinase	ADP	ATP	yes	Multiple regulation	AMP, F1,6bP	acetyl CoA, ATP
	lactate dehydrogenase	NADH	NAD ⁺	no	Regenerate NAD ⁺ for G3PdeH ₂ ase		

GLUCONEOGENESIS

Enzyme	Noncarbohydrates		Comments	Regulation	
	Substrate	Product		Activators	Inhibitors
pyruvate carboxylase	ATP, HCO ₃ ⁻	ADP	biotin coenzyme, fixes CO ₂ , allosteric	acetyl CoA	
phosphoenolpyruvate carboxykinase	GTP	GDP, CO ₂			
fructose-1,6-bisphosphatase		P _i	allosteric		AMP, F2,6bP
glucose-6-phosphatase		P _i			