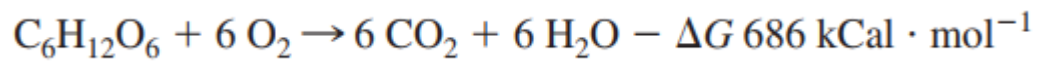
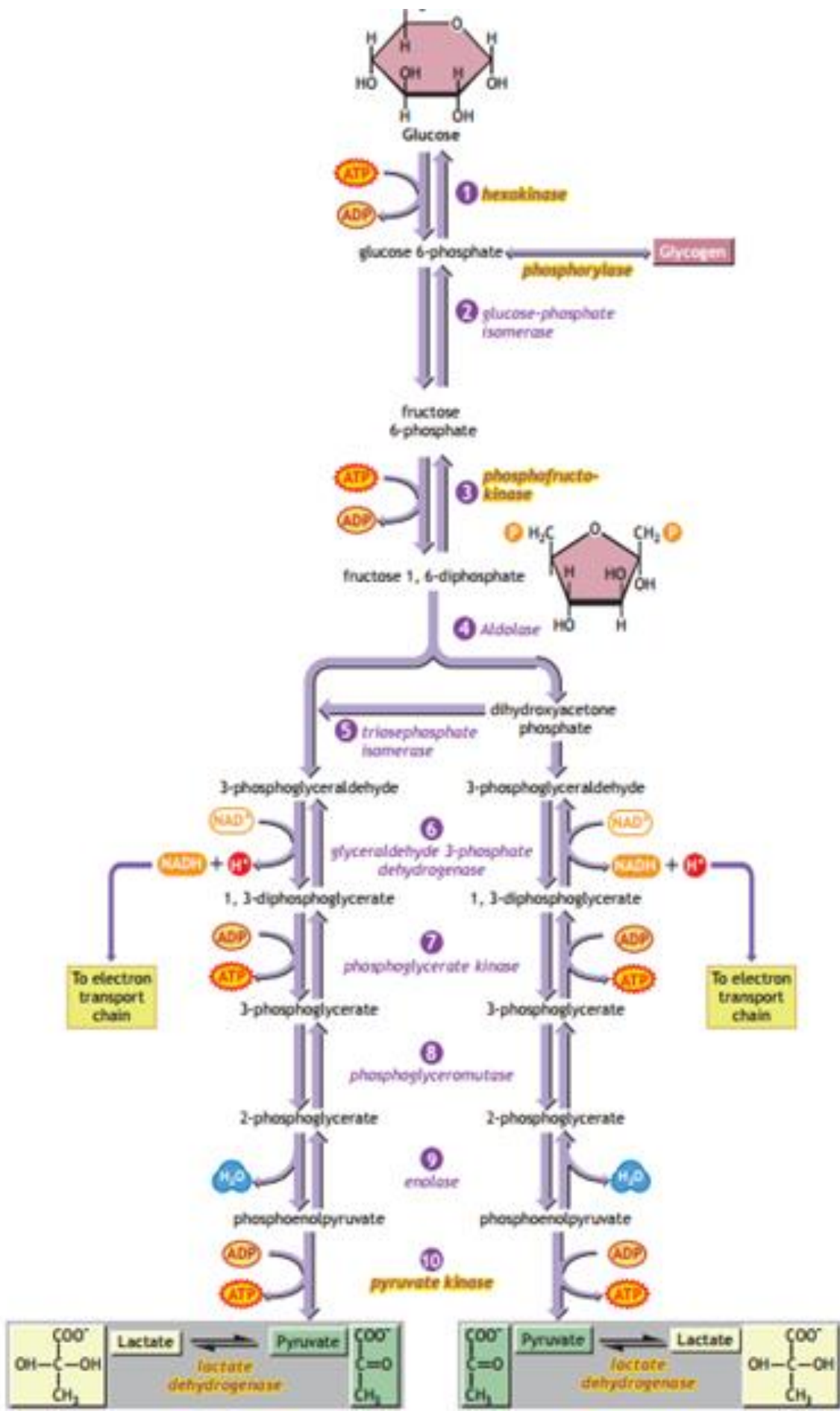


## ENERGY RELEASE FROM CARBOHYDRATE

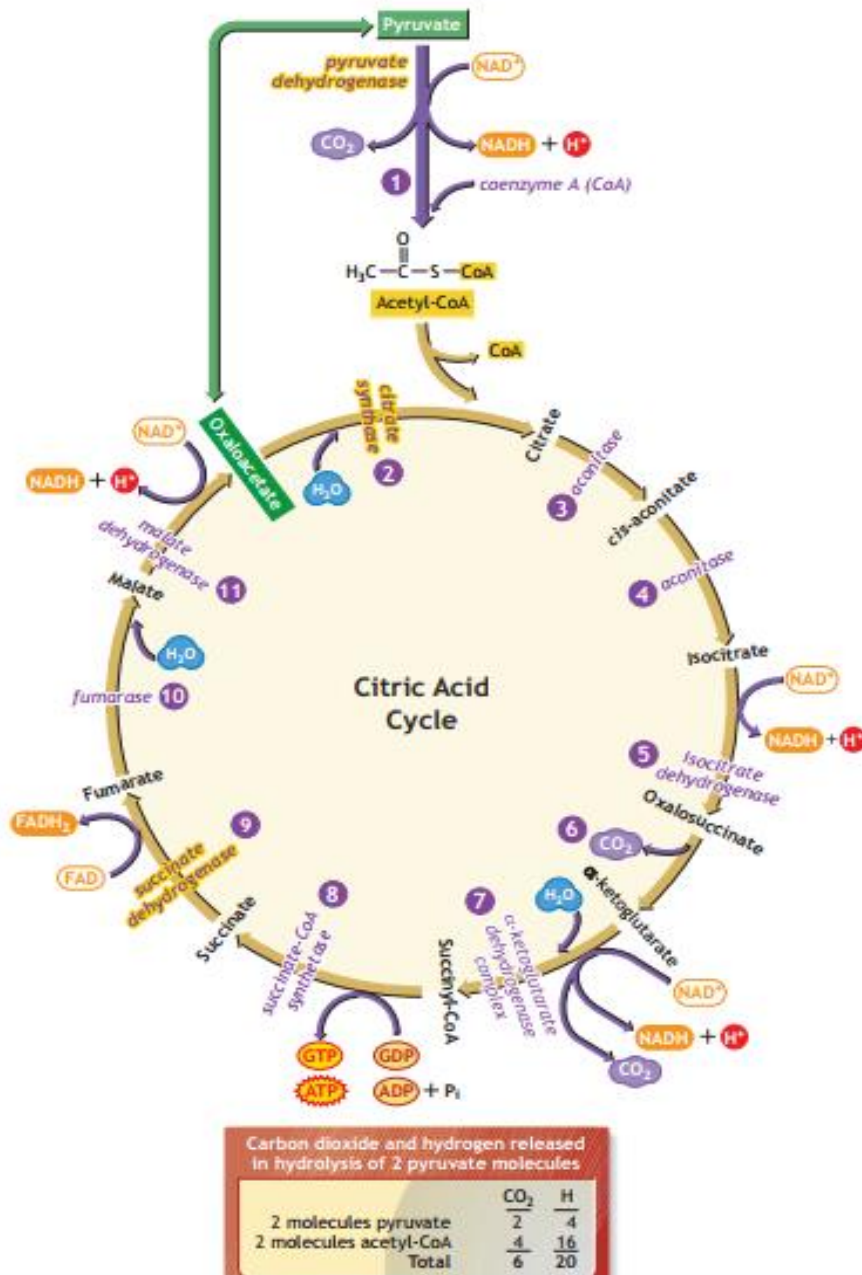
1. Carbohydrate provides the only macronutrient substrate whose stored energy generates ATP anaerobically.
2. During light and moderate aerobic exercise, carbohydrate supplies about one third of the body's energy requirements.
3. Processing a large quantity of fat for energy requires minimal carbohydrate catabolism.
4. Aerobic breakdown of carbohydrate for energy occurs more rapidly than energy generation from fatty acid breakdown. Thus, depleting glycogen reserves considerably reduces exercise power output. In prolonged aerobic exercise such as marathon running, athletes often experience nutrient-related fatigue—a state associated with muscle and liver glycogen depletion.



GLYCOLYSIS GENERATES ENERGY FROM GLUCOSE



# CITRIC ACID CYCLE



# TOTAL ENERGY TRANSFER FROM GLUCOSE CATABOLISM

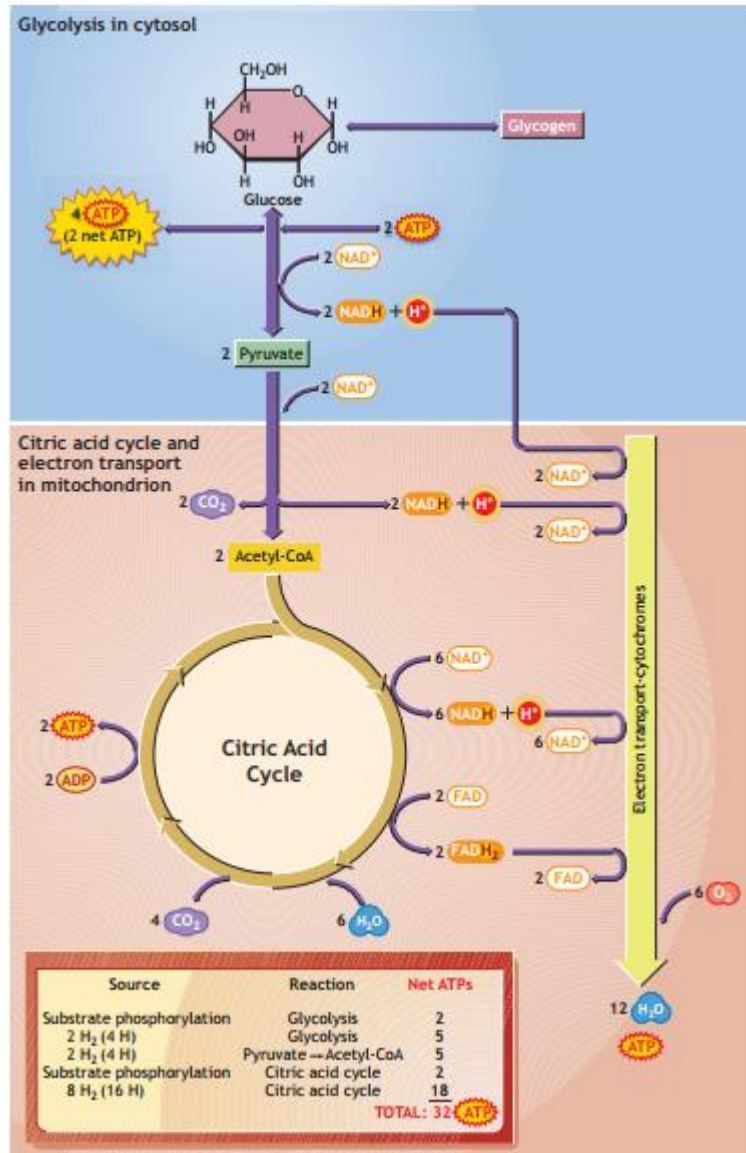


FIG: A net yield of 32 ATPs from energy transfer during the complete oxidation of one glucose molecule in glycolysis, citric acid cycle, and electron transport.