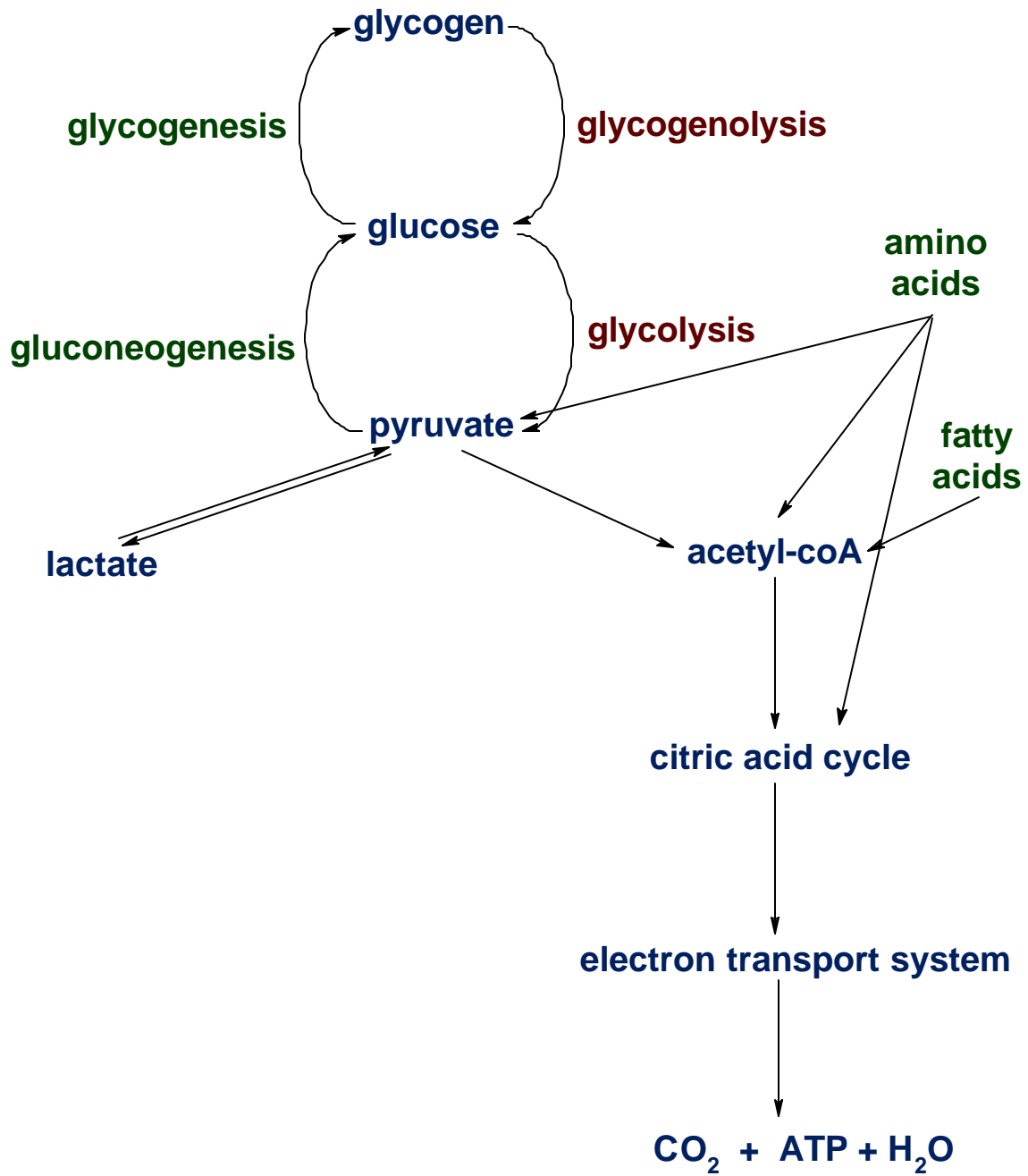
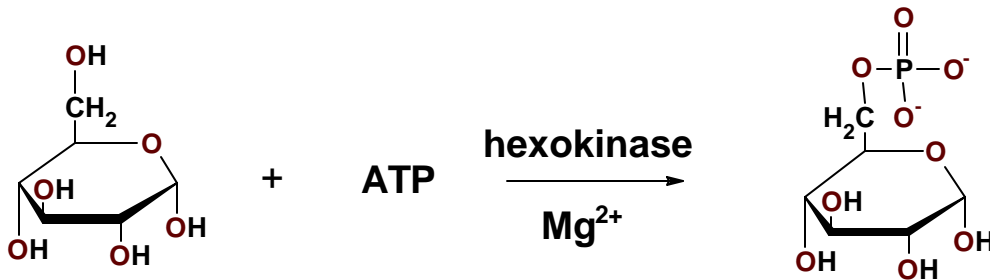


# Metabolism Overview



## Hexokinase



-phosphorylates glucose to form G6P

-phosphorylation keeps glucose from being exported out of cell (facilitated diffusion)

-feedback regulated by G6P

### Hexokinase D

- liver isozyme

-no feedback regulation

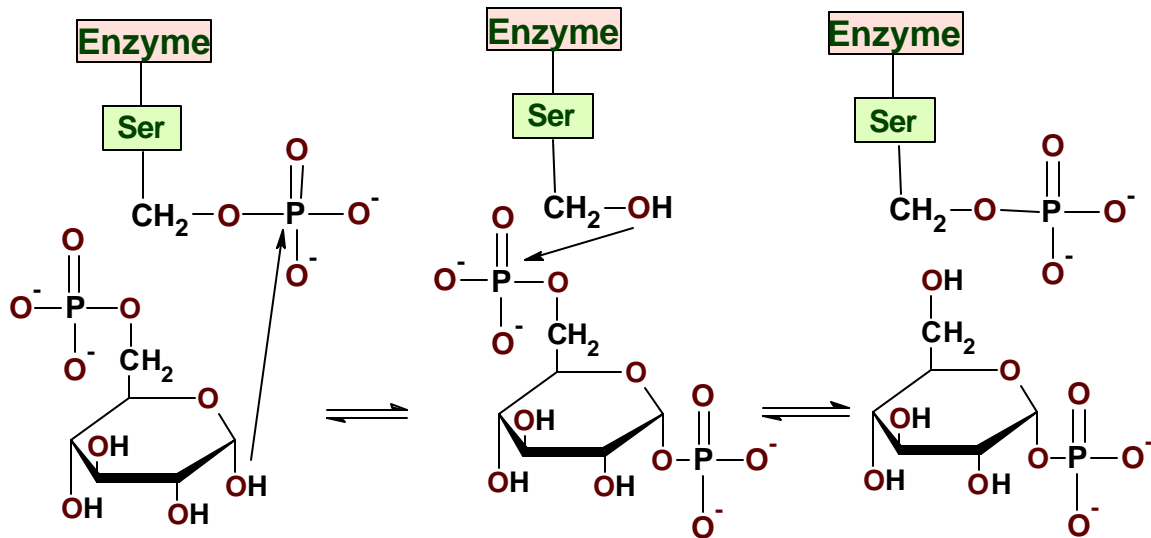
-So liver cells can absorb large amounts of glucose to store in glycogen

in cells: glucose → G6P → glycolysis

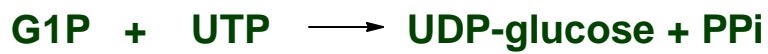
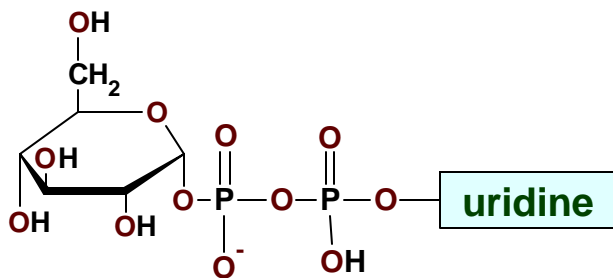
in hepatocytes: glucose → G6P → → → glycogen

# Glycogenesis Enzymes

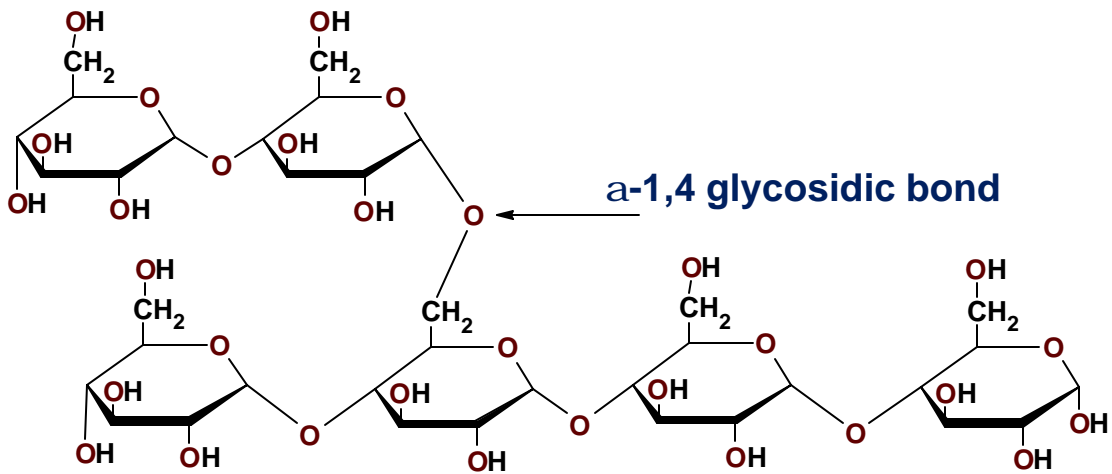
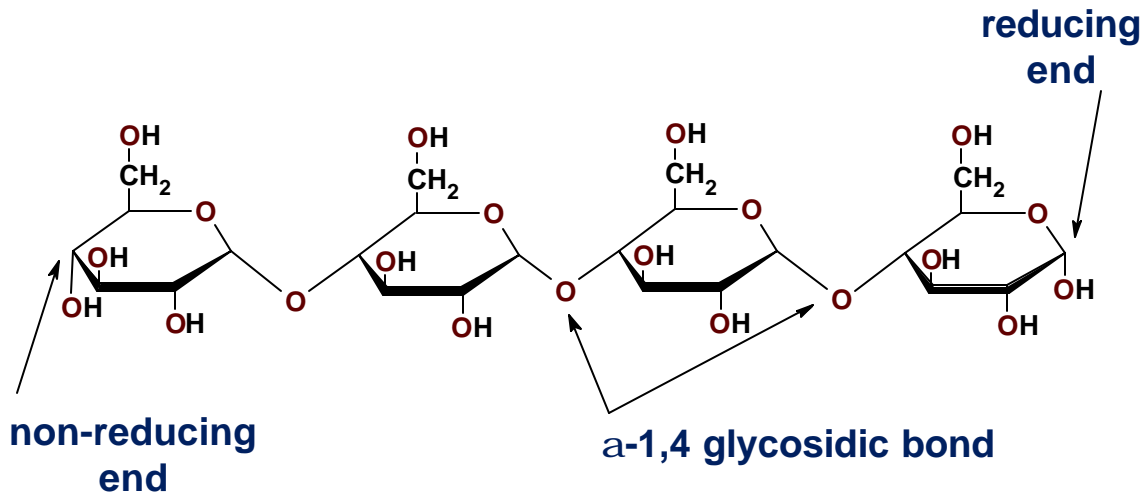
## Phosphoglucomutase



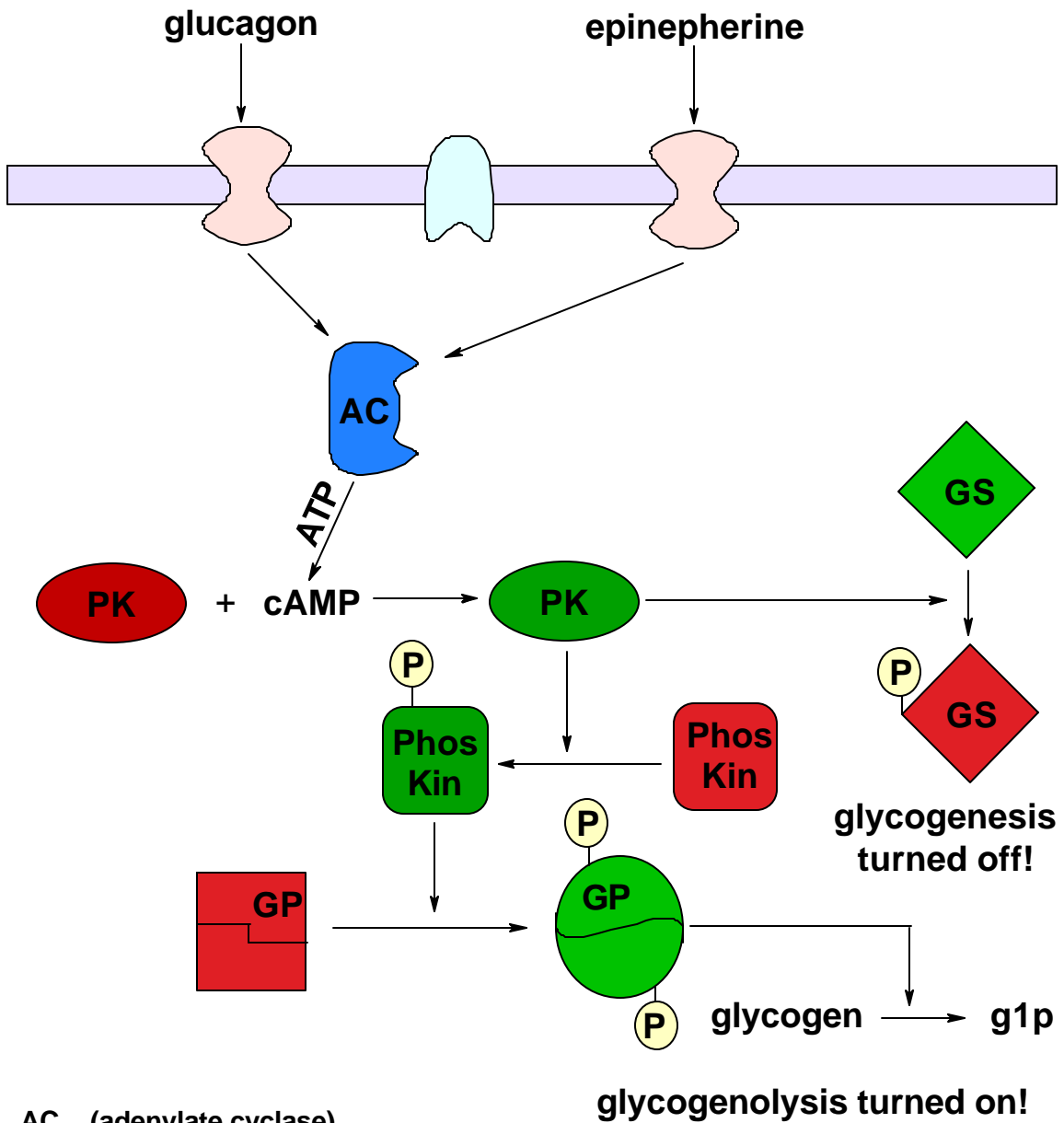
## UDP-Glucose Pyrophosphorylase



# Glycogen Structure

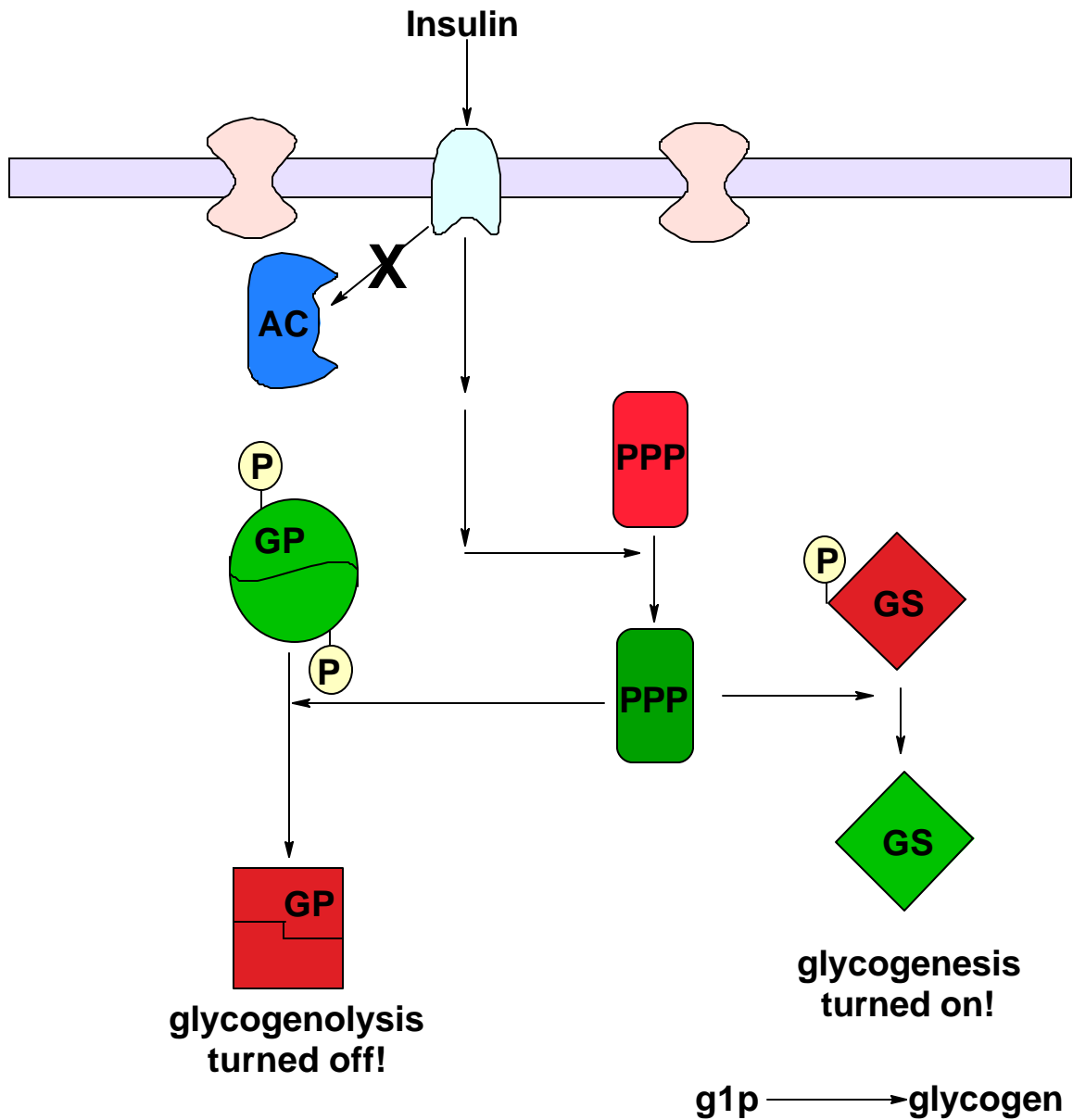


## Glycogen Regulation (Low Blood Sugar)



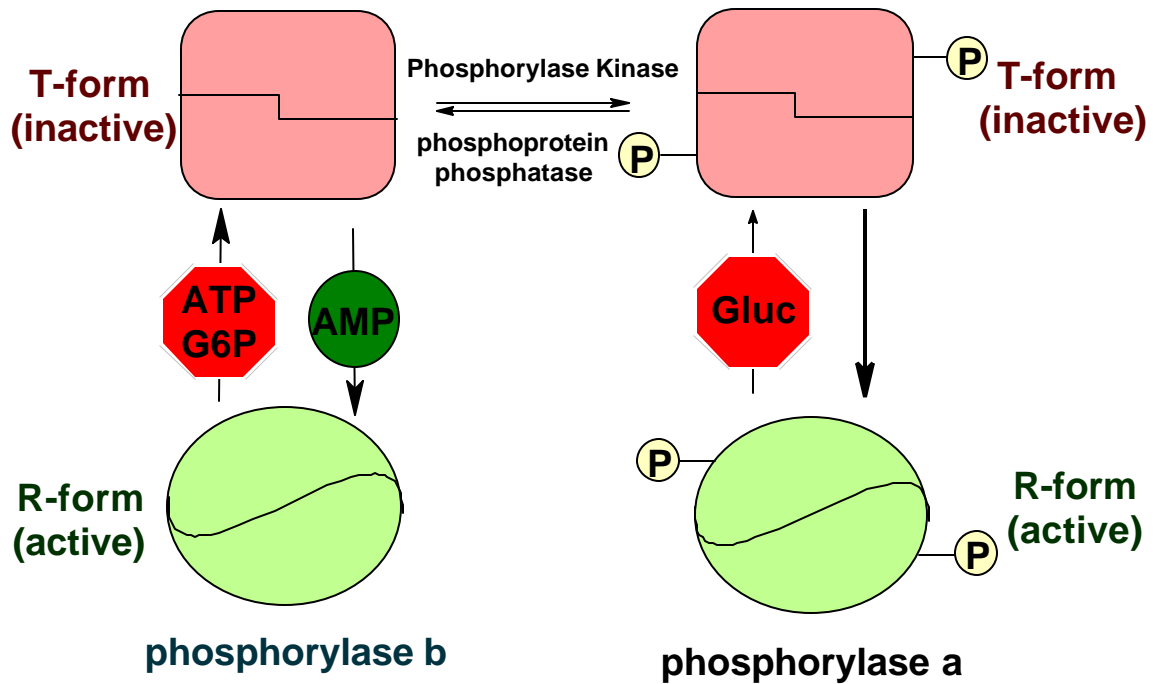
- AC (adenylate cyclase)
- PK (protein kinase)
- Phos Kin (phosphorylase kinase)
- GP (glycogen phosphorylase)
- GS (glycogen synthase)

## Glycogen Regulation (High Blood Sugar)



- AC (adenylate cyclase)
- PPP (phosphoprotein phosphatase)
- GP (glycogen phosphorylase)
- GS (glycogen synthase)

## Glycogen Phosphorylase



**phosphorylase b is under strict allosteric control**

- effectors: AMP, ATP and G6P
- unmodified (not phosphorylated)

**phosphorylase a is only under slight allosteric control**

- effectors: glucose (level must be very high)
- modified (phosphorylated)
- constantly "on" unless very high level of glucose