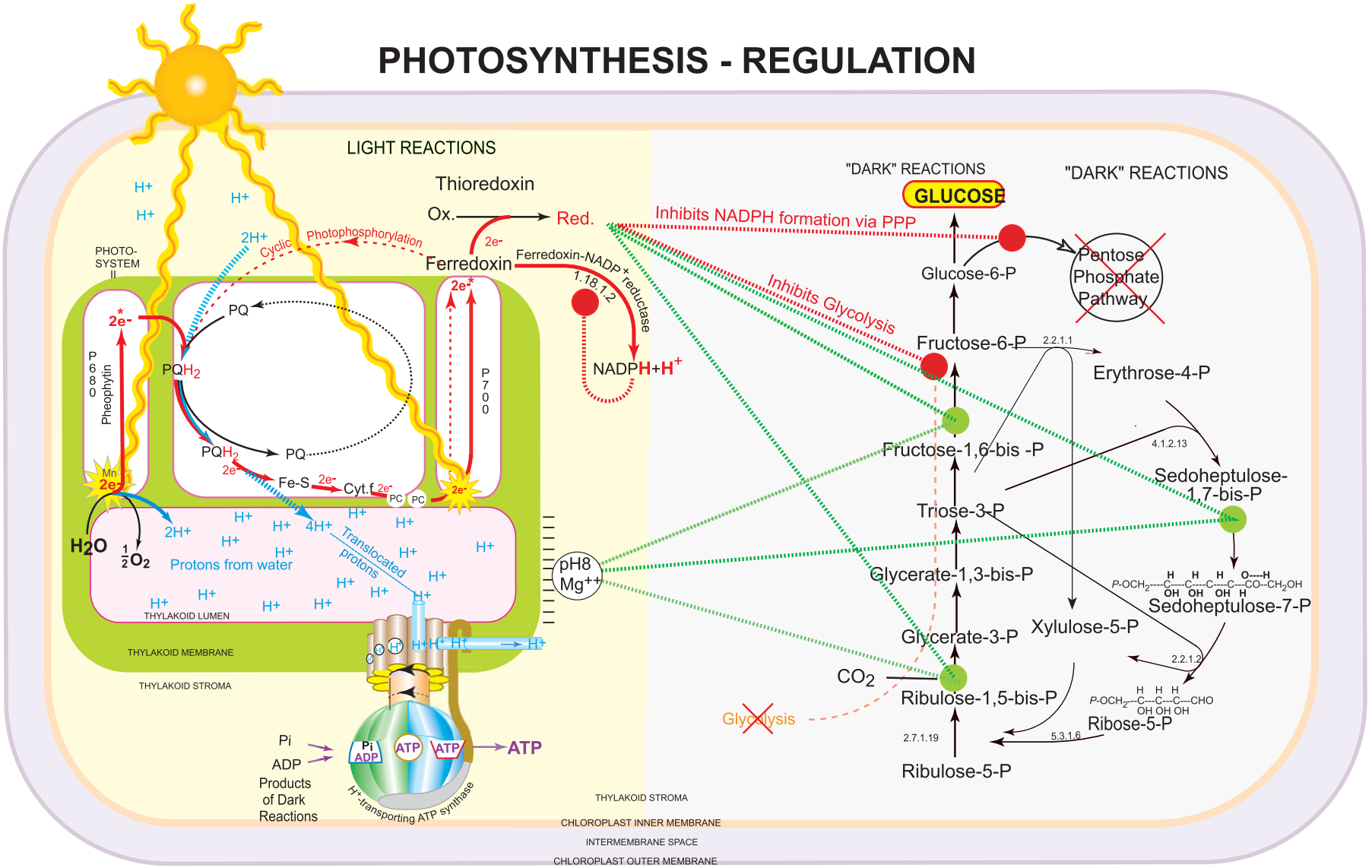
PHOTOSYNTHESIS - REGULATION



Protons translocated across the thylakoid membrane produce a low pH in the lumen and a high (8.0) pH in the chloroplast stroma - and is accompanied by magnesium ions. Each of these factors ACTIVATE 3 enzymes in the Calvin Cycle - *ribulose-1,5-bis-P carboxylase, fructosebisphosphatase and sedoheptulose bisphosphatase.* These 3 enzymes are also activated by reduced thioredoxin, the reduction of which depends on reduced ferredoxin which, in turn, is reduced by light-driven electrons.

Reduced thioredoxin also INHIBITS *phosphofructokinase* and *glucose-6-phosphate* and hence (respectively) Glycolysis and the Pentose Phosphate Pathway

Light -driven electron flow is thus responsible for all these regulatory reactions which activate the synthesis of glucose and inhibit its breakbown