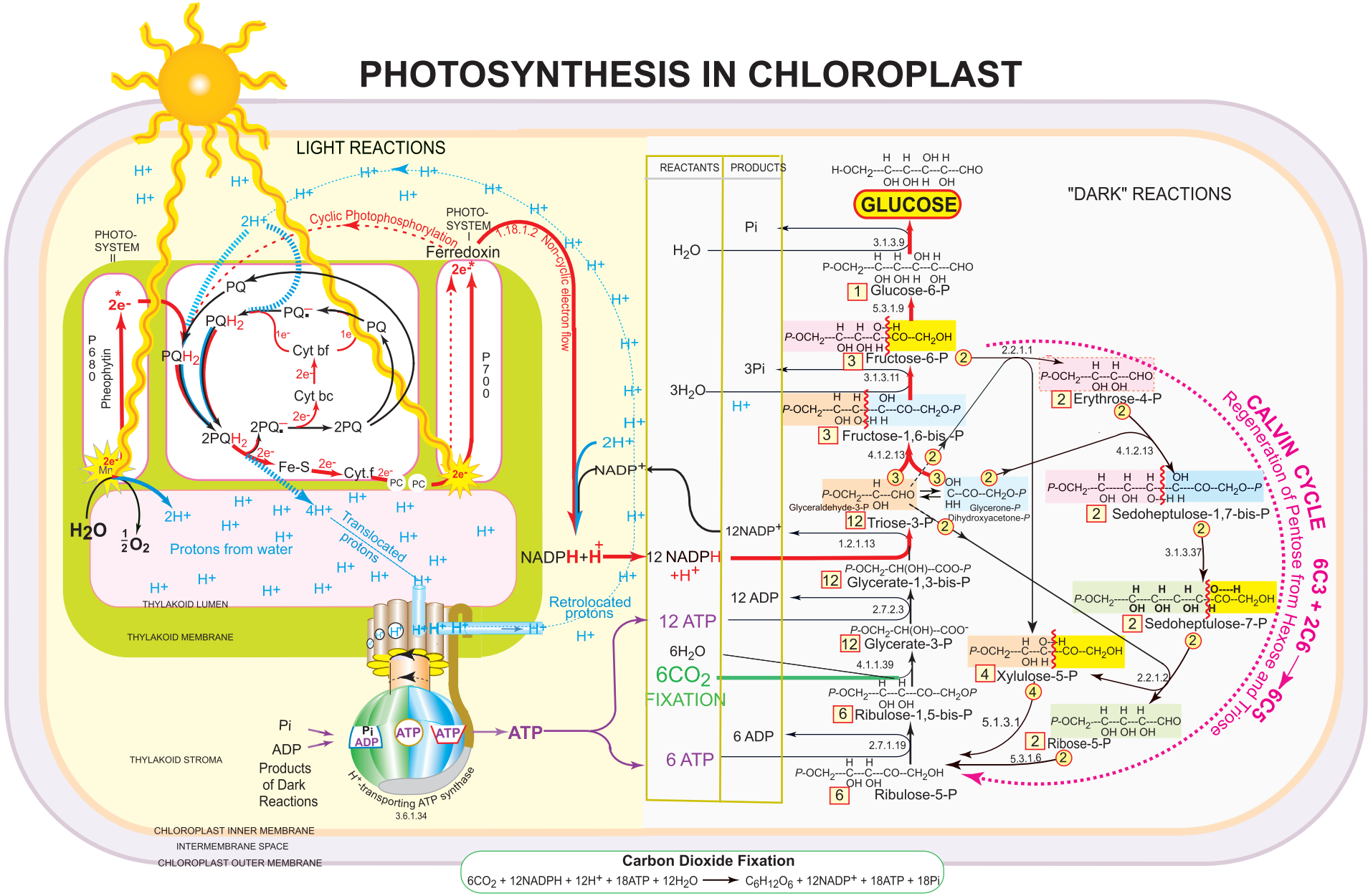
PHOTOSYNTHESIS IN CHLOROPLAST



Carbon Dioxide Fixation

$6CO_2 + 12NADPH + 12H^+ + 18ATP + 12H_2O \longrightarrow C_6H_{12}O_6 + 12NADP^+ + 18ATP + 18Pi$

LIGHT-DRIVEN ELECTRON FLOW (electric current) from H_2O to $NADP^+$ and thence to Glucose (and starch)

Reduced NADP inhibits Ferredoxin- NADPH reductase (1.18.1.2) and thus initiates

CYCLIC PHOTOPHOSPHORYLATION - a light-driven electron flow that drives

PROTON TRANSLOCATION from stroma to lumen. These protons, together with those from water produce a pH gradient that drives ATP synthase to form ATP

PQ Plastoquinone QH_2 Plastoquinol PC Plastocyanin

High-energy electrons e^*

ENZYMES

1.2.1.13	Glyceraldehyde-3-P dehydrogenase	2.7.1.19	Phosphoribulokinase	4.1.1.39	Ribulose-bis-P carboxylase
1.18.1.2	Ferredoxin-$NADPH^+$ reductase	2.7.2.3	Phosphoglycerate kinase	4.1.2. -	Aldolase
2.2.1.1	Glycolaldehydetransferase (Transketolase)	3.1.3.9	Glucose-6-phosphatase	4.1.2.13	Fructose-bis-P aldolase
2.2.1.2	Dihydroxyacetonetransferase (Transaldolase)	3.1.3.11	Fructose-bis-phosphatase	5.1.3.1	Ribulose-P epimerase
		3.1.3.37	Sedoheptulose-bis-phosphatase	5.3.1.1	Triosephosphate isomerase
		3.6.1.34	ATP synthase	5.3.1.6	Ribose-5-P isomerase
				5.3.1.9	Hexose-P isomerase

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