７月２４日小テスト

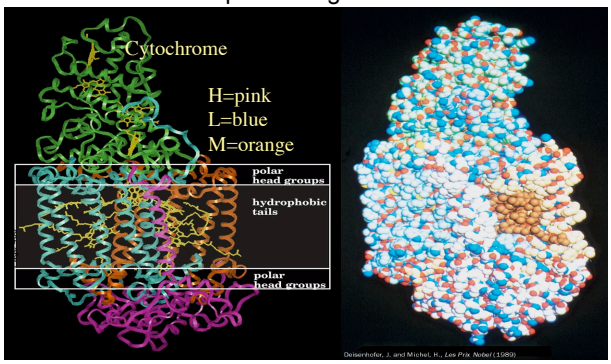
１）波長660nmの持つエネルギー（光子１モルとして）を計算しなさい。プランク定数は　6.6x10^{-34}J･s、光の速さは3x10^{8}ms^{-1}とせよ。

２）アンテナクロロフィルの役割を書け。

３）光合成細菌の電子伝達系を概説せよ。

答案用紙に名前を書くのを忘れないこと。

Figure 12-26a X-Ray structure of the photosynthetic reaction center of *Rps. viridis*. (*a*) A ribbon diagram (*b*) A space-filling model.

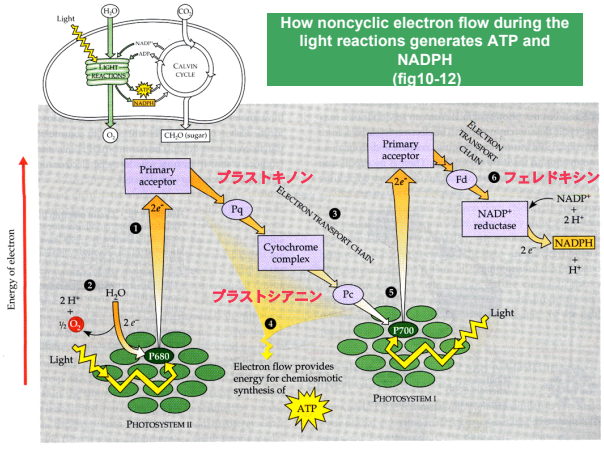


By J. Deisenhofer, R. Huber, and H. Michel (1984)

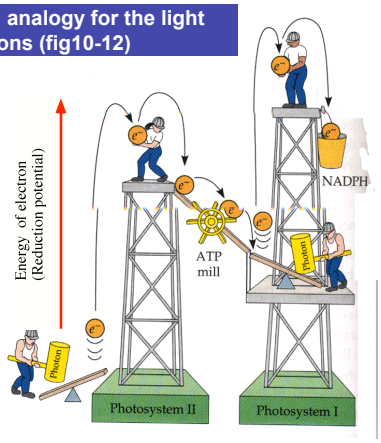
ノーベル賞講演を聞いてみよう！”

http://nobelprize.org/

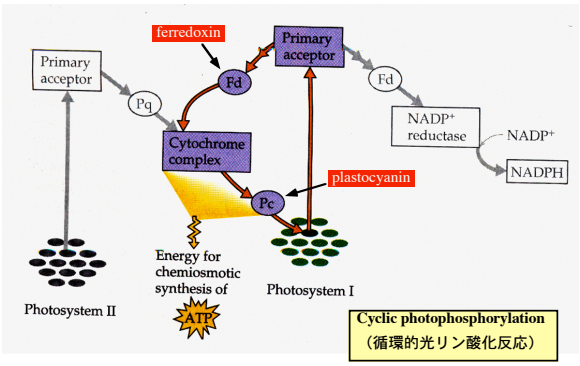
How noncyclic electron flow during the light reactions generates ATP and NADPH (fig10-12)



A mechanical analogy for the light reactions (fig10-12)



Cyclic electron flow (fig10-13)



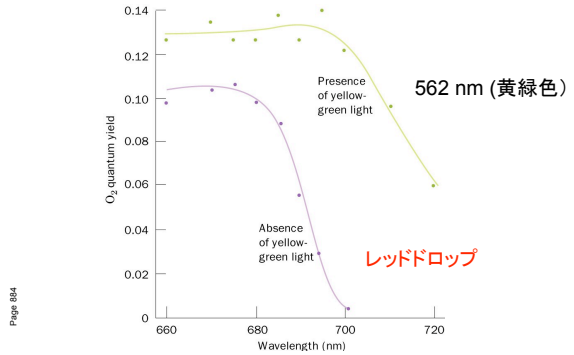


Figure 24-14 Quantum yield for O_2 production by *Chlorella* algae as a function of the wavelength of the incident light.

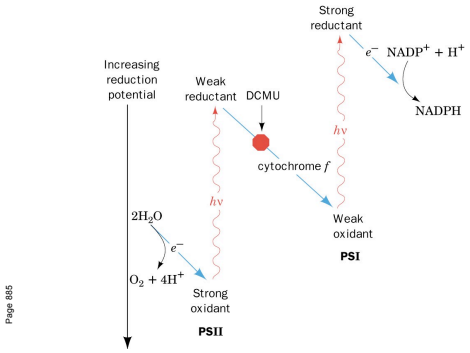


Figure 24-15 The Z-scheme for photosynthesis in plants and cyanobacteria.

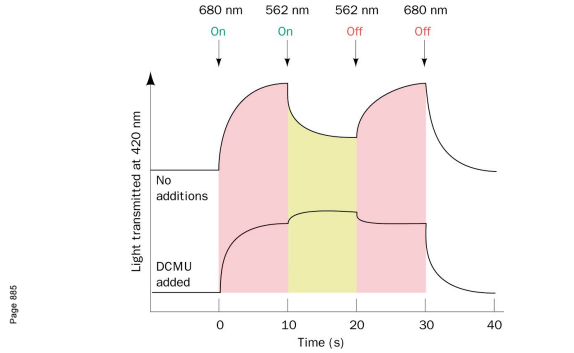


Figure 24-16 The oxidation state of cytochrome *f* in *Porphyridium cruentum* algae as monitored by a weak beam of 420-nm (blue-violet) light.

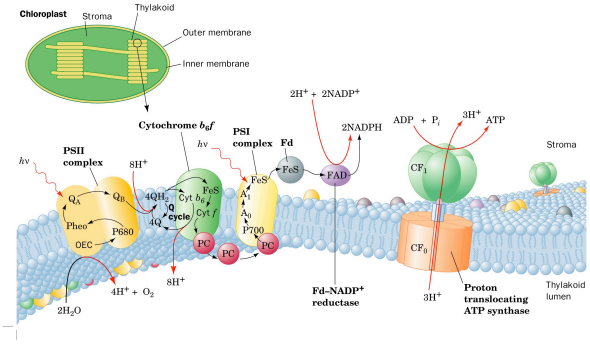


Figure 24-17 Schematic representation of the thylakoid membrane showing the components of its electron-transport chain.

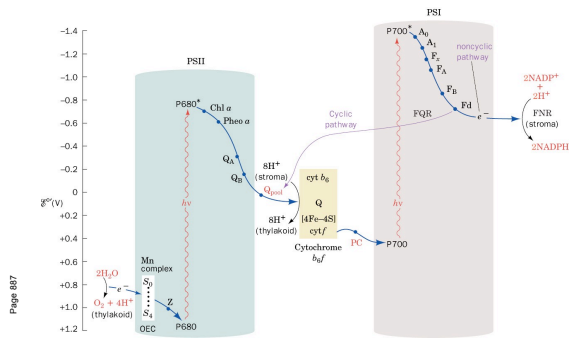


Figure 24-18 Detailed diagram of the Z-scheme of photosynthesis.

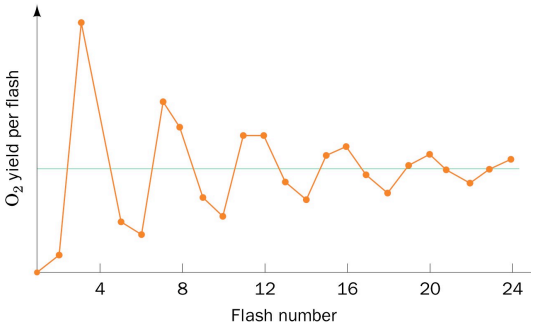


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Figure 24-21 The O_2 yield per flash in dark-adapted spinach chloroplasts.

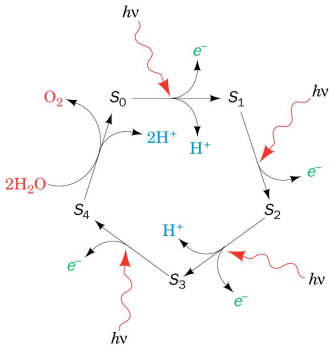

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Figure 24-22 Schematic mechanism of O_2 generation in chloroplasts.

酸素発生複合体のモデル

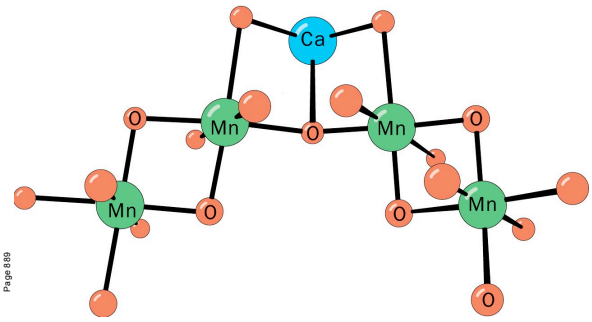

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Figure 24-23 Proposed structural model for the OEC.

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Figure 24-24
X-Ray structure of turnip cytochrome *f*.

Figure 24-25
X-Ray structure of plastocyanin (PC) from poplar leaves.

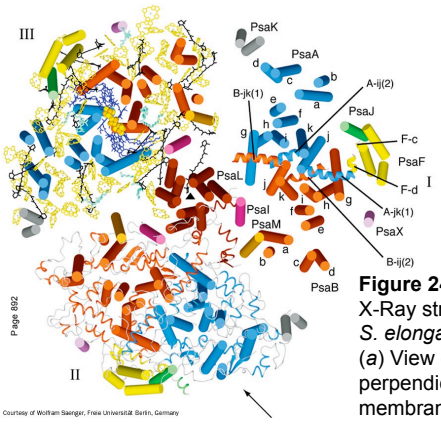

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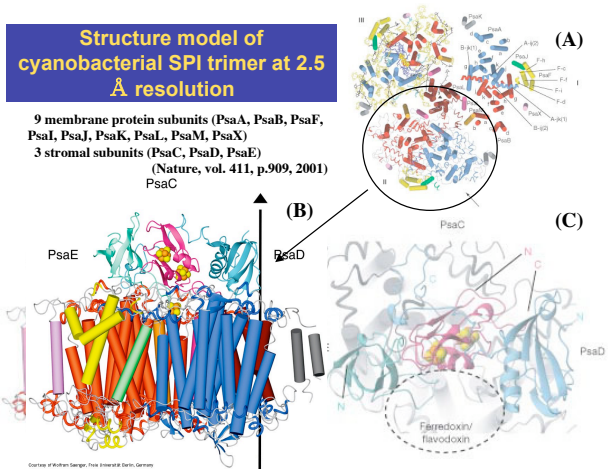
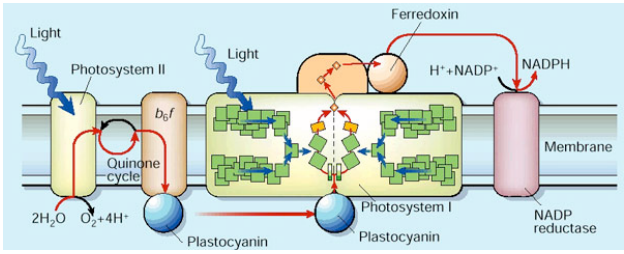
Figure 24-26a
X-Ray structure of PSI from *S. elongatus*.
(*a*) View of the trimer perpendicular to the membrane from its stromal side.

Structure model of cyanobacterial SPI trimer at 2.5 Å resolution

9 membrane protein subunits (PsaA, PsaB, PsaF, PsaI, PsaJ, PsaK, PsaL, PsaM, PsaX)
3 stromal subunits (PsaC, PsaD, PsaE)
(Nature, vol. 411, p.909, 2001)



Flow of excitation energy and electrons through PSI



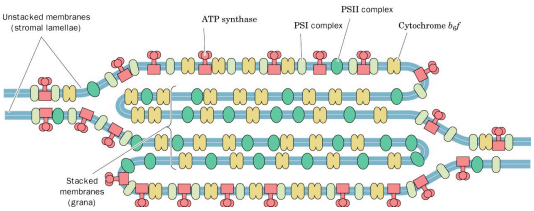


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Figure 24-29 Segregation of PSI and PSII.

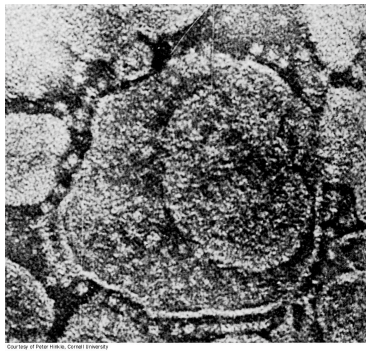

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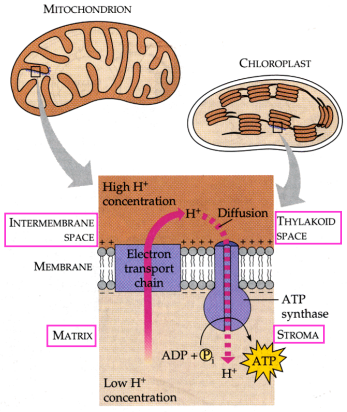
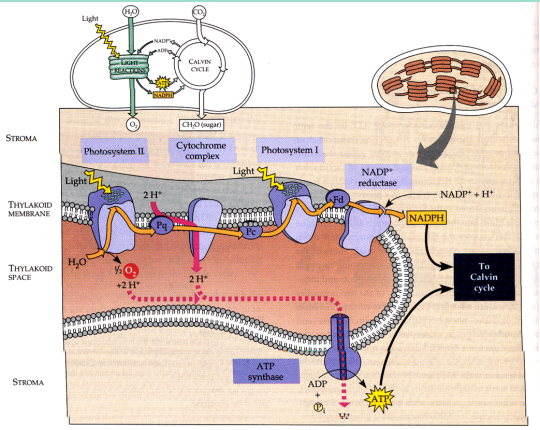
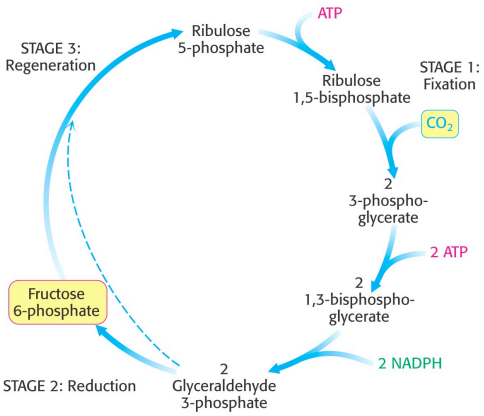
Figure 24-30 Electron micrograph of thylakoids.

The logistics of chemiosmosis in mitochondria and chloroplasts



A tentative model for the organization of the thylakoid membrane





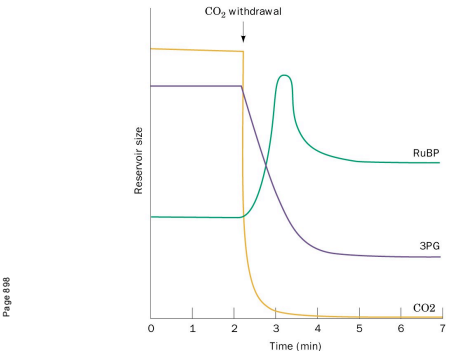


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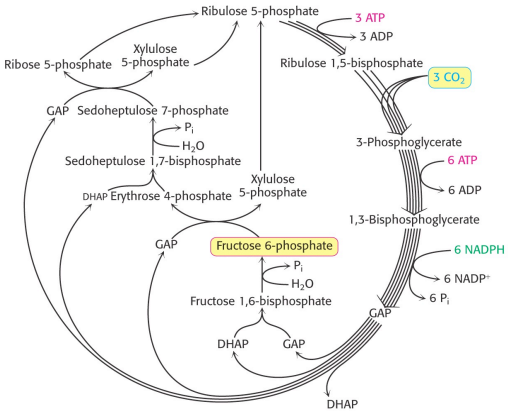
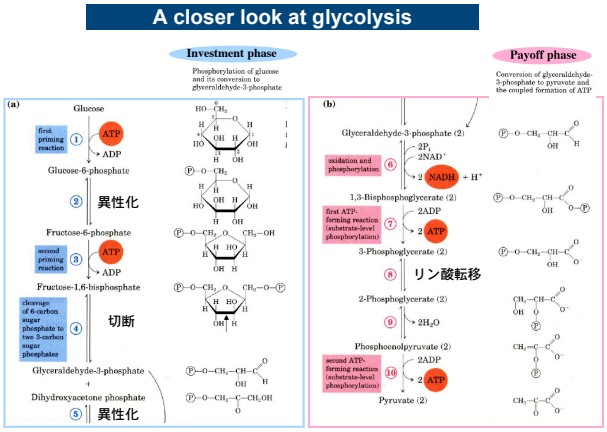
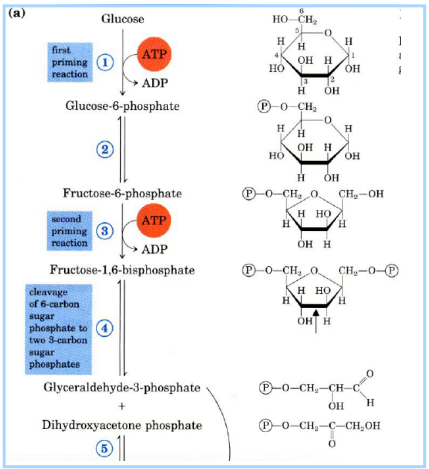
Figure 24-32 Algal 3BPG and RuBP levels on removal of CO_2.







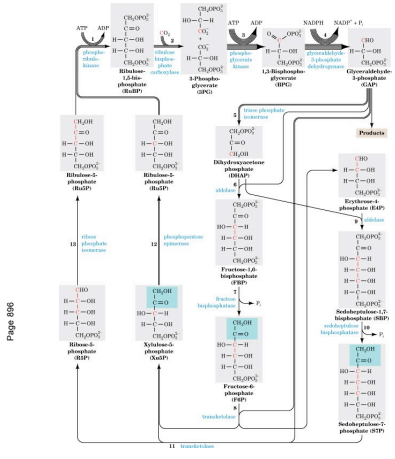


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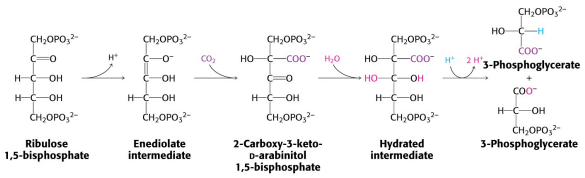
Figure 24-31 The Calvin cycle.



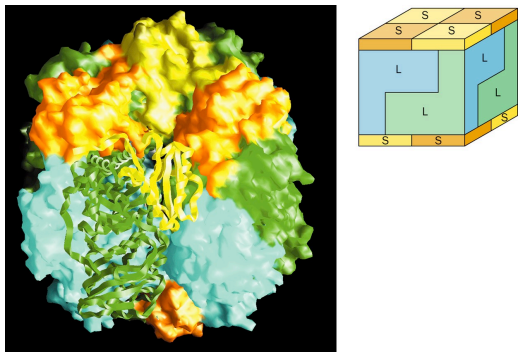


Figure 24-33a X-Ray structure of tobacco RuBP carboxylase. (*a*) The quaternary structure of the L_8S_8 protein.