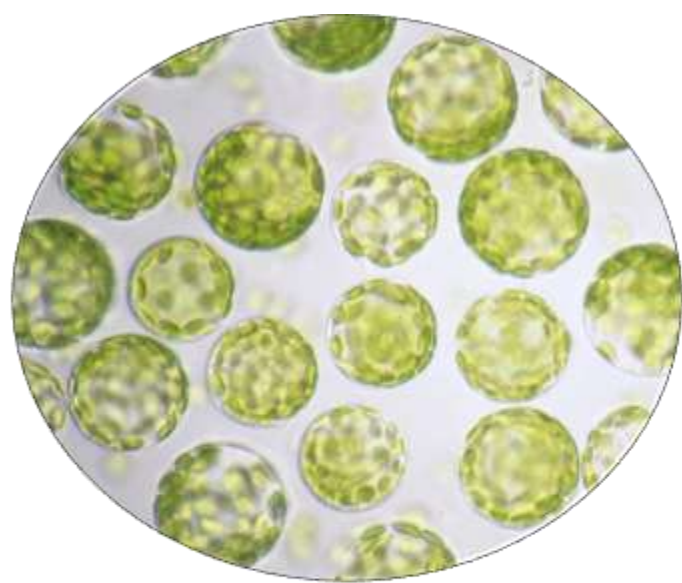
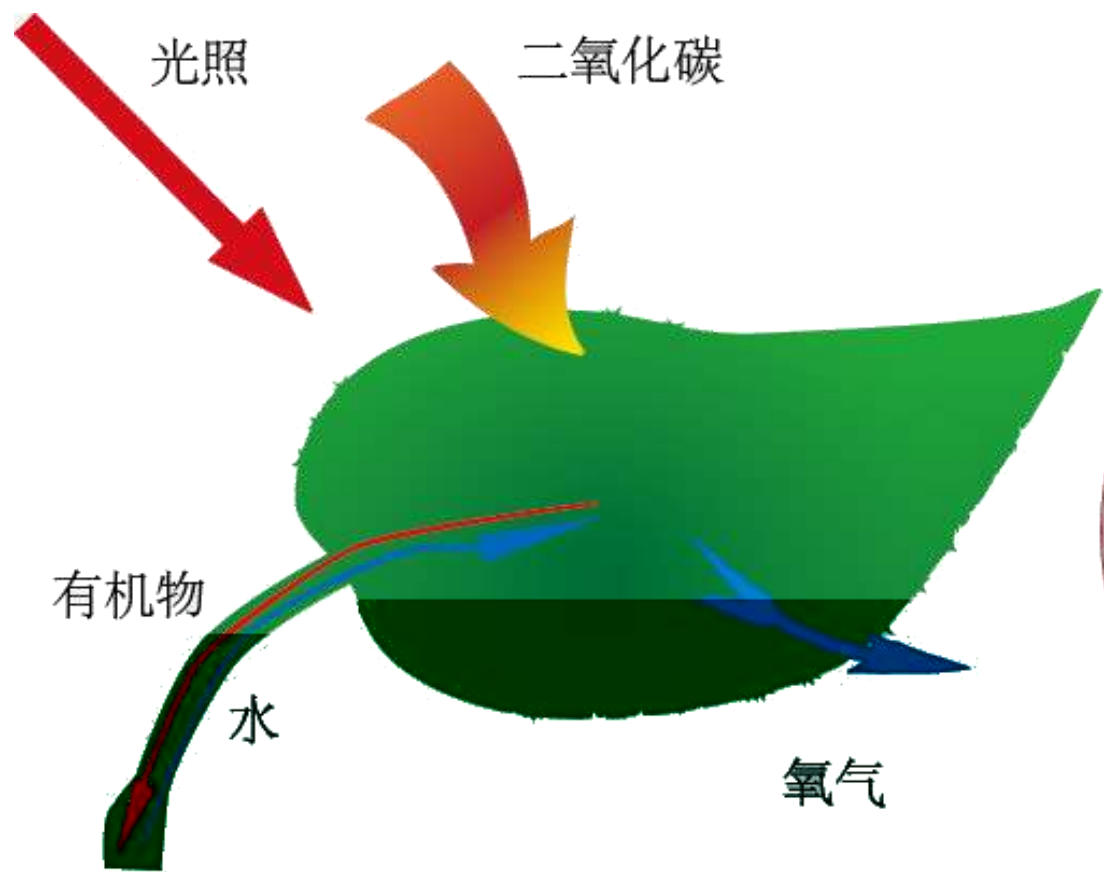
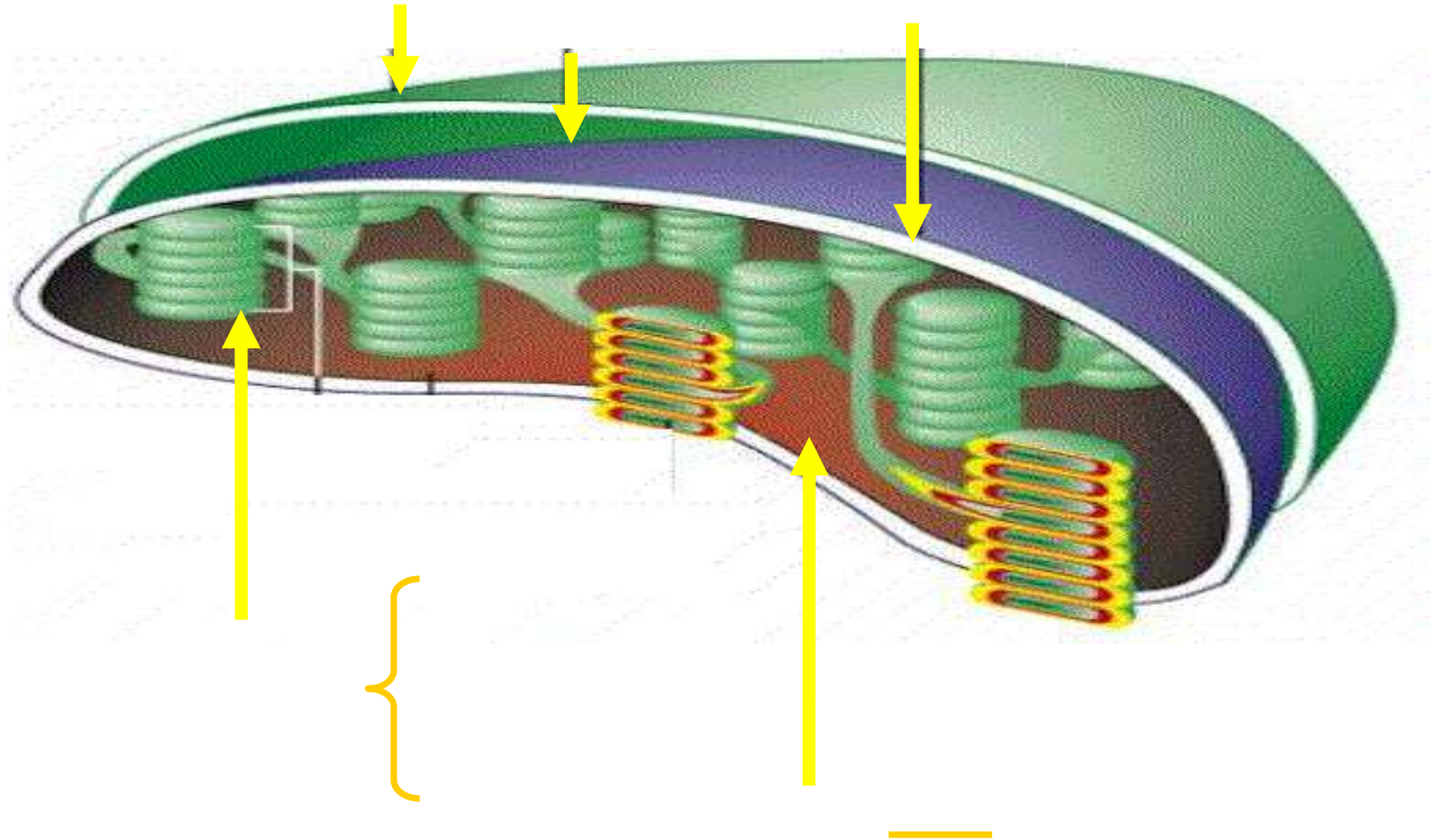


光合作用的本质是什么？

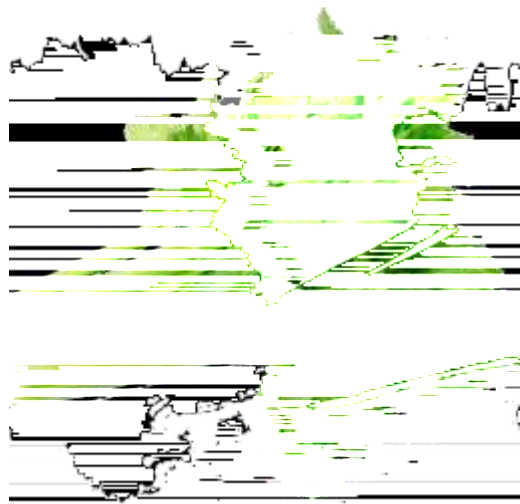


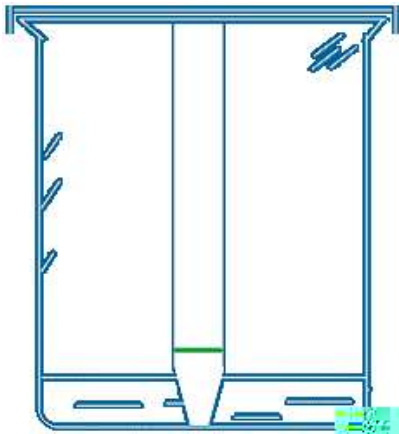




光合色素易溶于有机溶剂（无水乙醇）；

不同色素在层析液中溶解度不同，纸层析时扩散速度不同，得以分离；







剪碎



材料+无水乙醇+
碳酸钙+二氧化硅



研磨



分离



滤液



过滤







胡萝卜素（橙黄色）

叶黄素（黄色）

叶绿素a（蓝绿色）

叶绿素b（黄绿色）

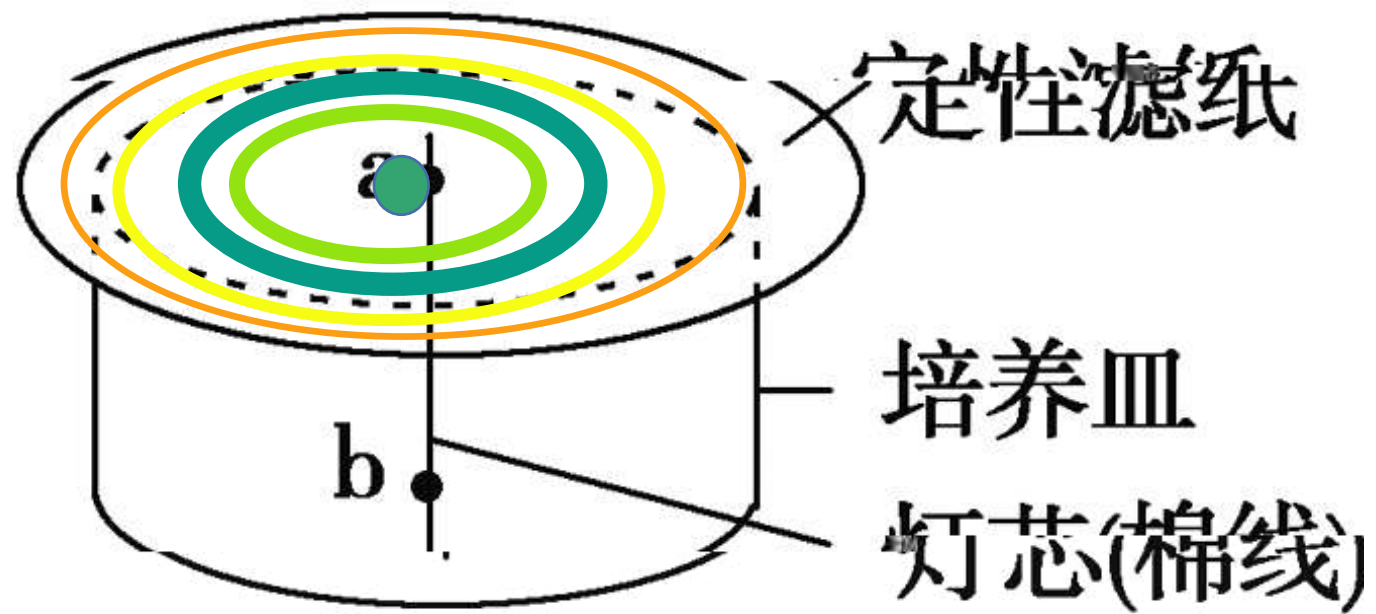
类胡萝卜素

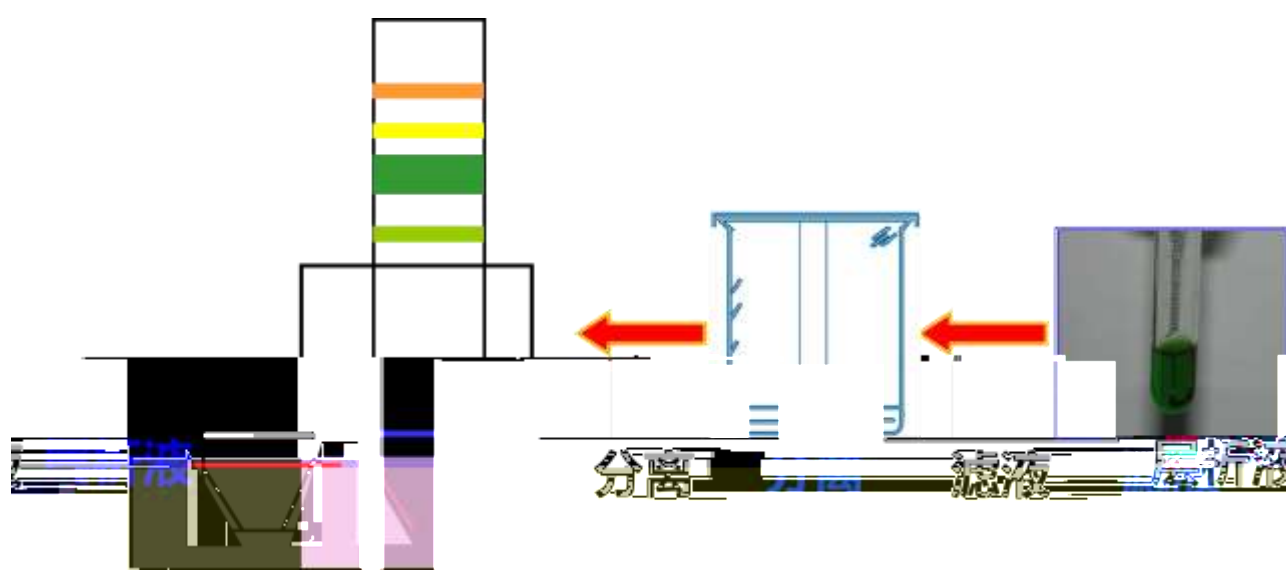
（含量约1/4）

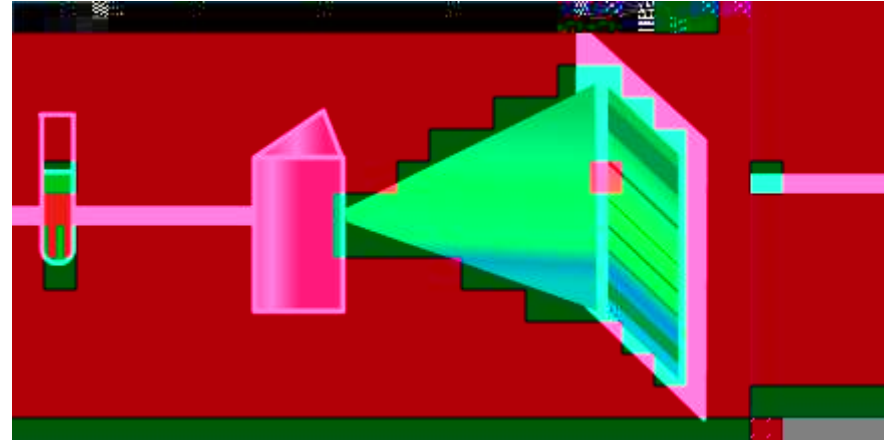
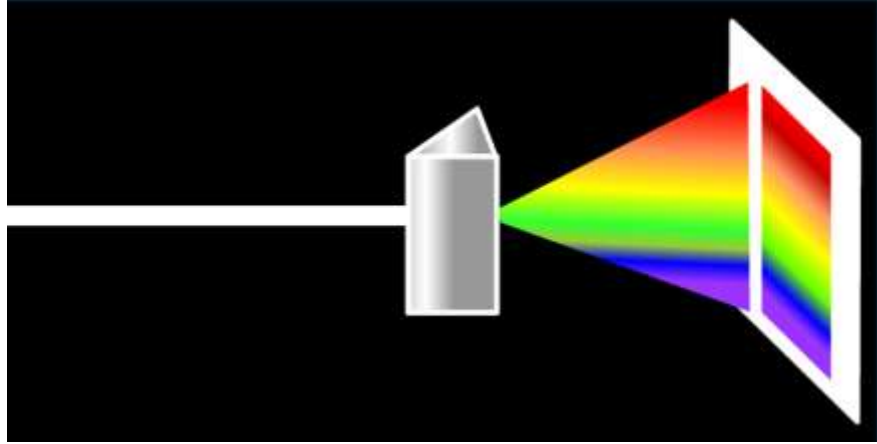
叶绿素

（含量约3/4）

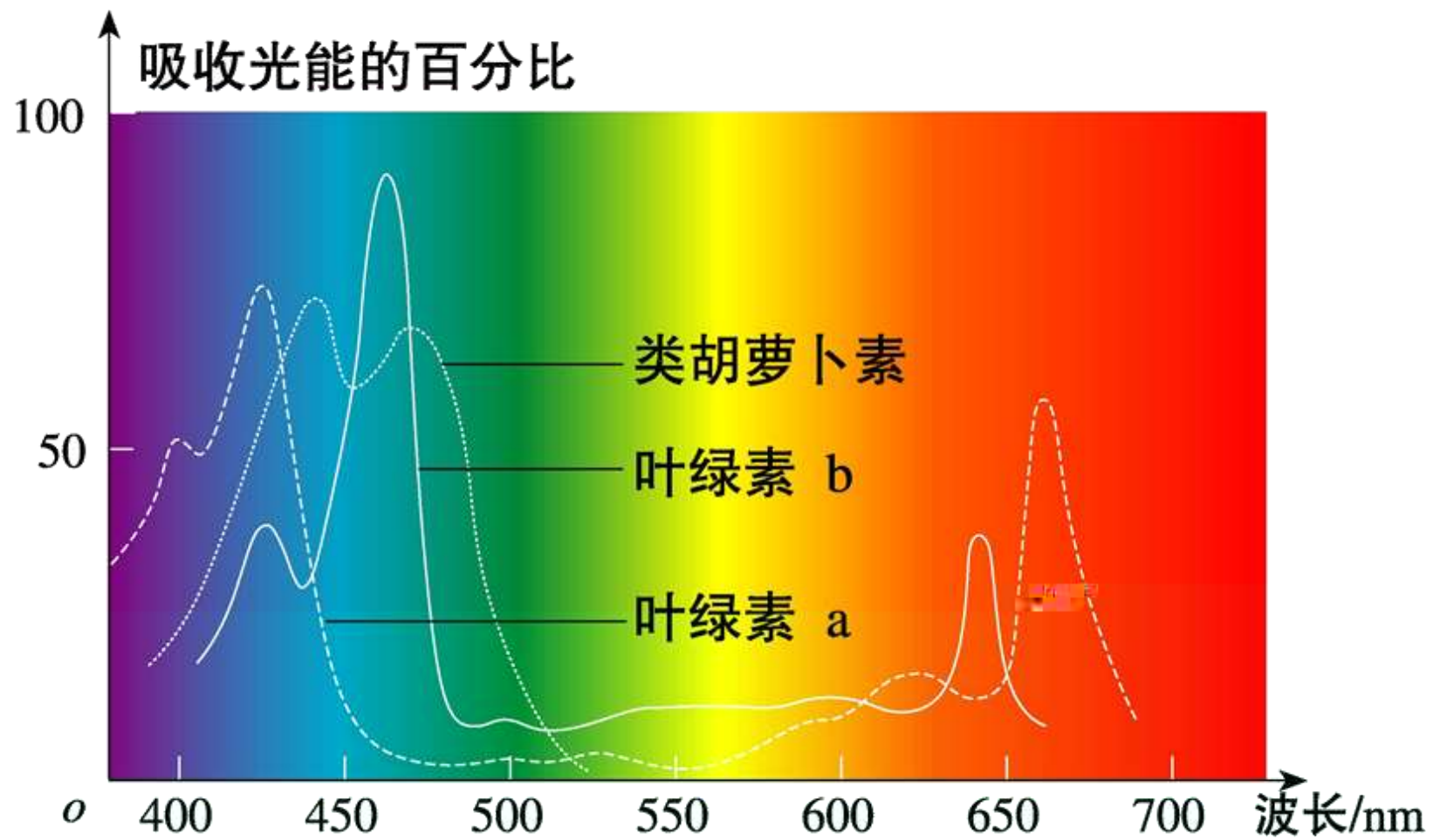
绿叶中的色素

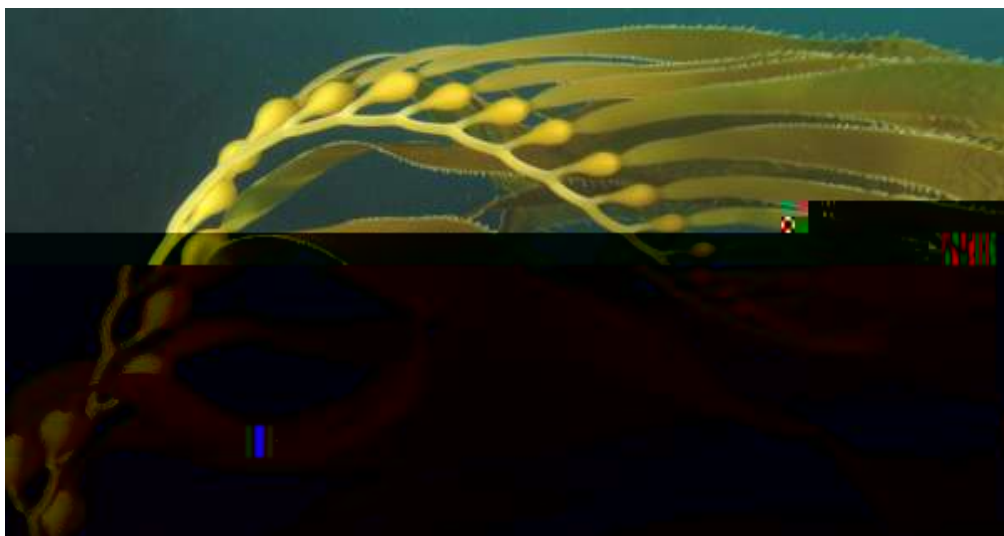


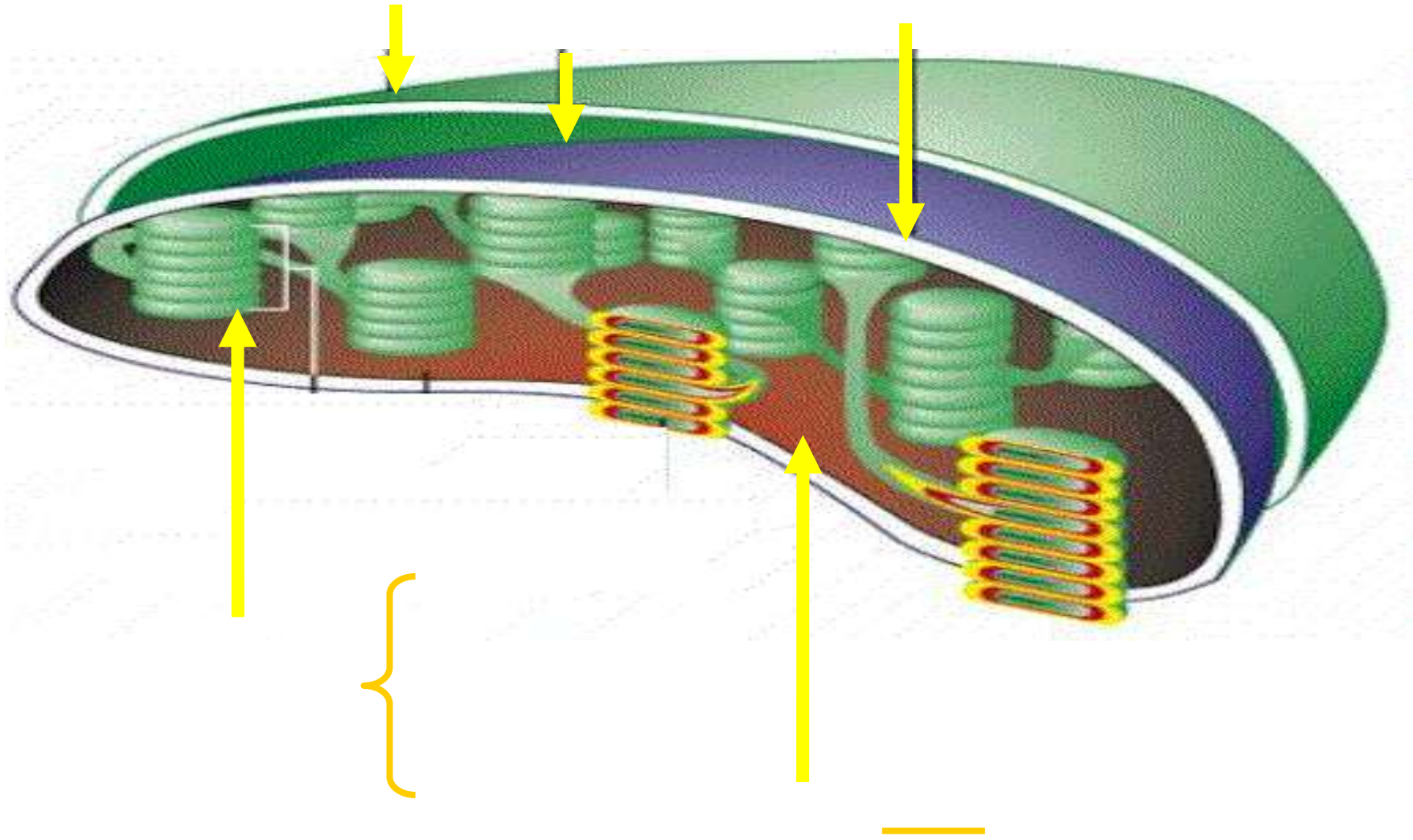


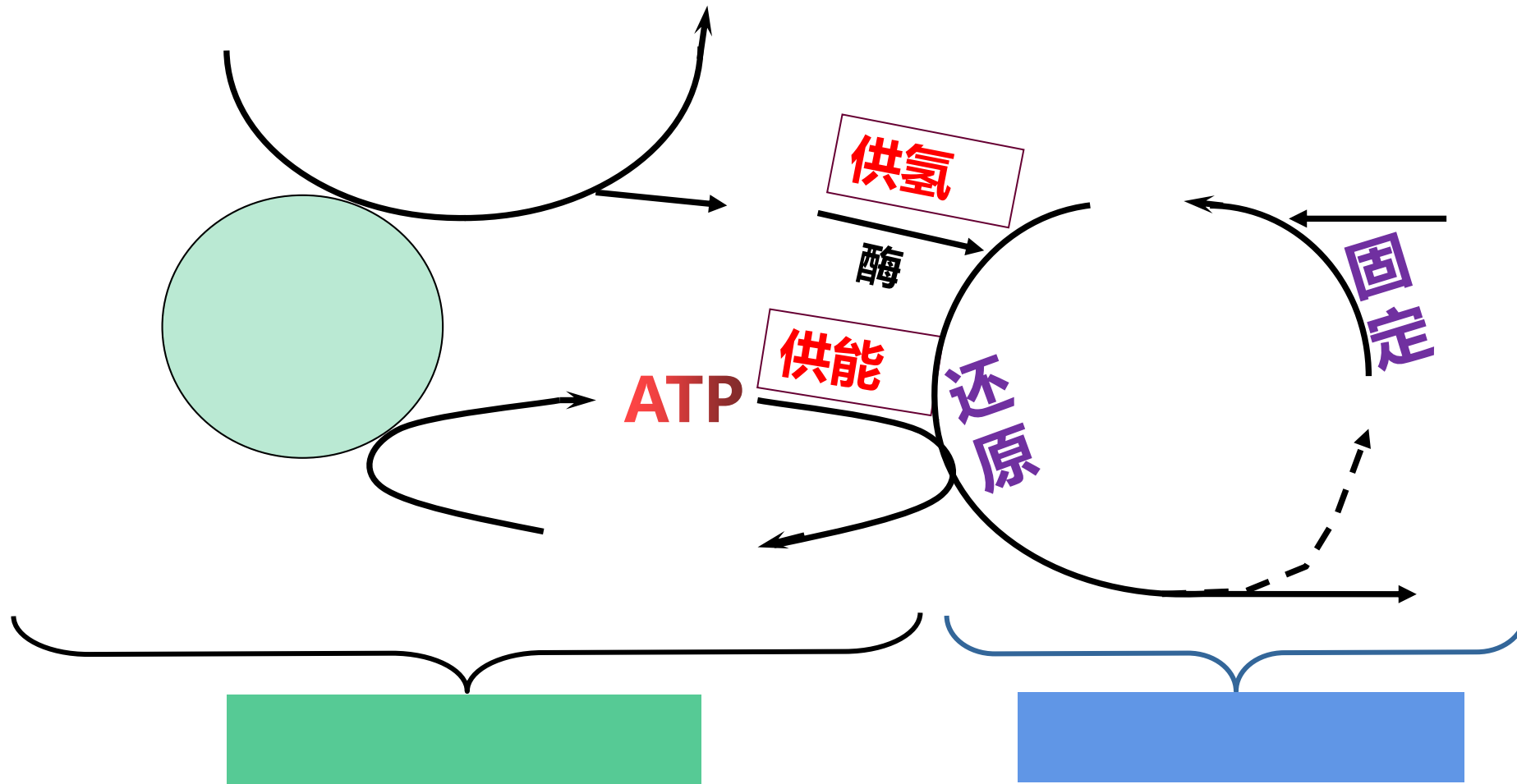


吸收、传递、转化光能。



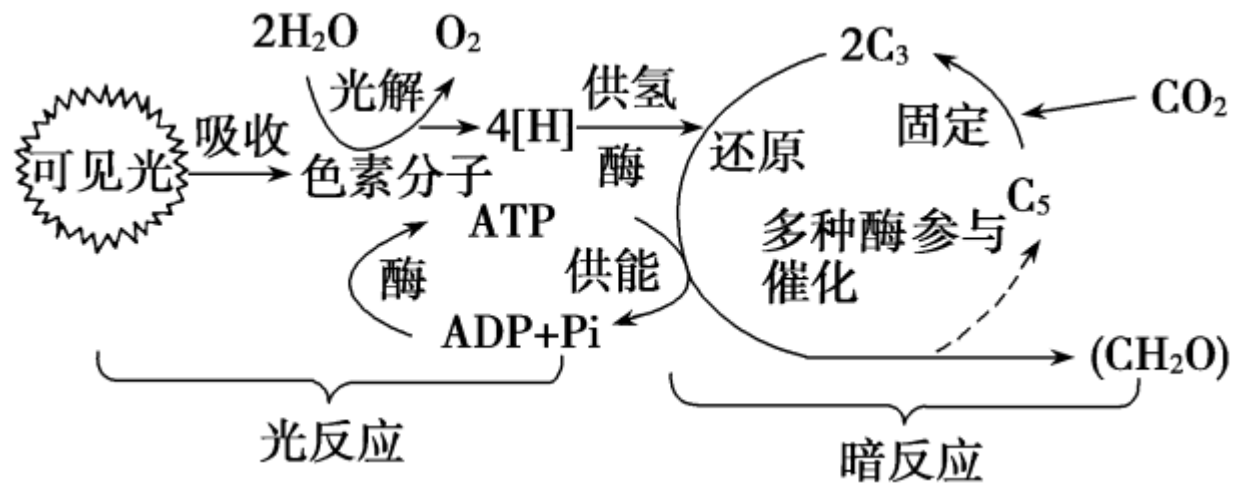






2、光反应阶段与暗反应阶段的比较

		光反应阶段	暗反应阶段
			;
		$2\text{H}_2\text{O} \rightarrow 4[\text{H}] + \text{O}_2$ $\text{ADP} + \text{P}_i \rightarrow \text{ATP}$	$\text{CO}_2 + \text{C}_5 \rightarrow 2\text{C}_3$ $2\text{C}_3 \xrightarrow[\text{ATP}]{[\text{H}]} \text{CH}_2\text{O}$ $\text{ATP} \rightarrow \text{ADP} + \text{P}_i$
	ATP NADPH	ATP NADPH	
	1	NADPH ATP	
	2	ATP NADPH	
	3	ADP Pi NADP ⁺	



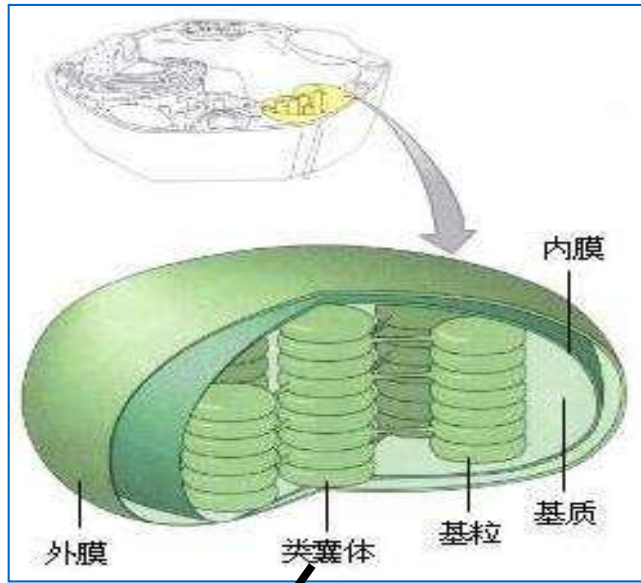
					<p>This graph shows the change in the amount of substances over time as light intensity increases from weak to strong. The y-axis represents the amount of substances, and the x-axis represents time. At the start (0), the levels of C_3, C_5, $[\text{H}]$, ATP, and (CH_2O) synthesis are constant. When light intensity increases (光照强), the amount of C_3 increases, while the amounts of C_5, $[\text{H}]$, ATP, and (CH_2O) synthesis decrease.</p>
					<p>This graph shows the change in the amount of substances over time as light intensity decreases from strong to weak. The y-axis represents the amount of substances, and the x-axis represents time. At the start (0), the levels of C_3, C_5, $[\text{H}]$, ATP, and (CH_2O) synthesis are constant. When light intensity decreases (光照弱), the amount of C_3 decreases, while the amounts of C_5, $[\text{H}]$, ATP, and (CH_2O) synthesis increase.</p>

3、光合作用的过程分析

二、光合作用的过程

	<p> 绿 叶 几 小时 黑暗 → 曝光 → 碘蒸气 → 深蓝色 遮光 → 碘蒸气 → 无颜色变化 </p>	
	向植物提供 $\begin{cases} \text{H}_2^{18}\text{O}、\text{CO}_2 \text{— 释放 } ^{18}\text{O}_2 \\ \text{H}_2\text{O}、\text{C}^{18}\text{O}_2 \text{— 释放 } \text{O}_2 \end{cases}$	H_2O
		$^{14}\text{CO}_2$ $^{14}\text{C}_3$ ($^{14}\text{CH}_2\text{O}$)

(二) 光合作用的场所---叶绿体



分布： 主要分布在绿色植物的叶肉细胞

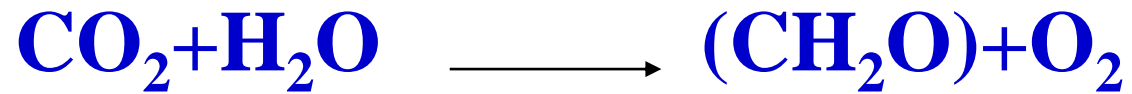
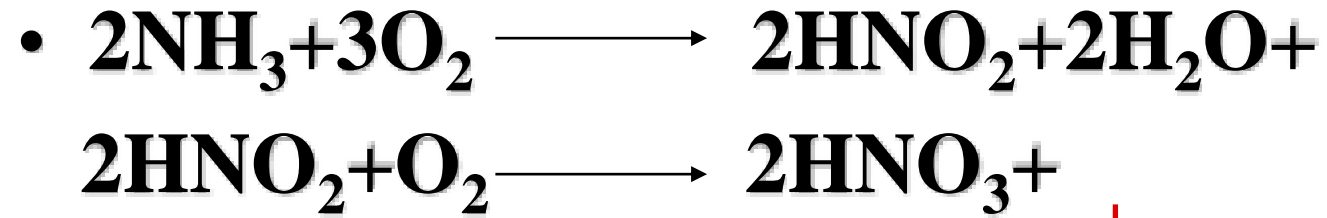
形态： 一般呈扁平的椭球形或球形

结构：

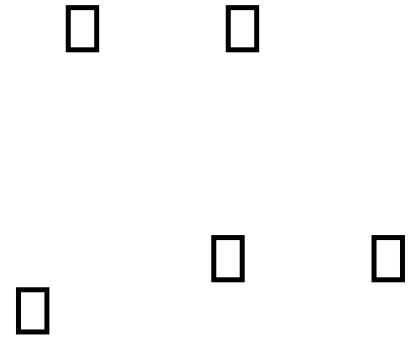
- 外膜 } 透明，有利于光线的透过
- 内膜 }
- 基粒 } 由两个以上的类囊体堆叠而成，
~~类囊体薄膜上含色素和酶~~
- 基质 } 含多种光合作用所必需的酶

功能： 光合作用的场所。

4、化能合成作用



"

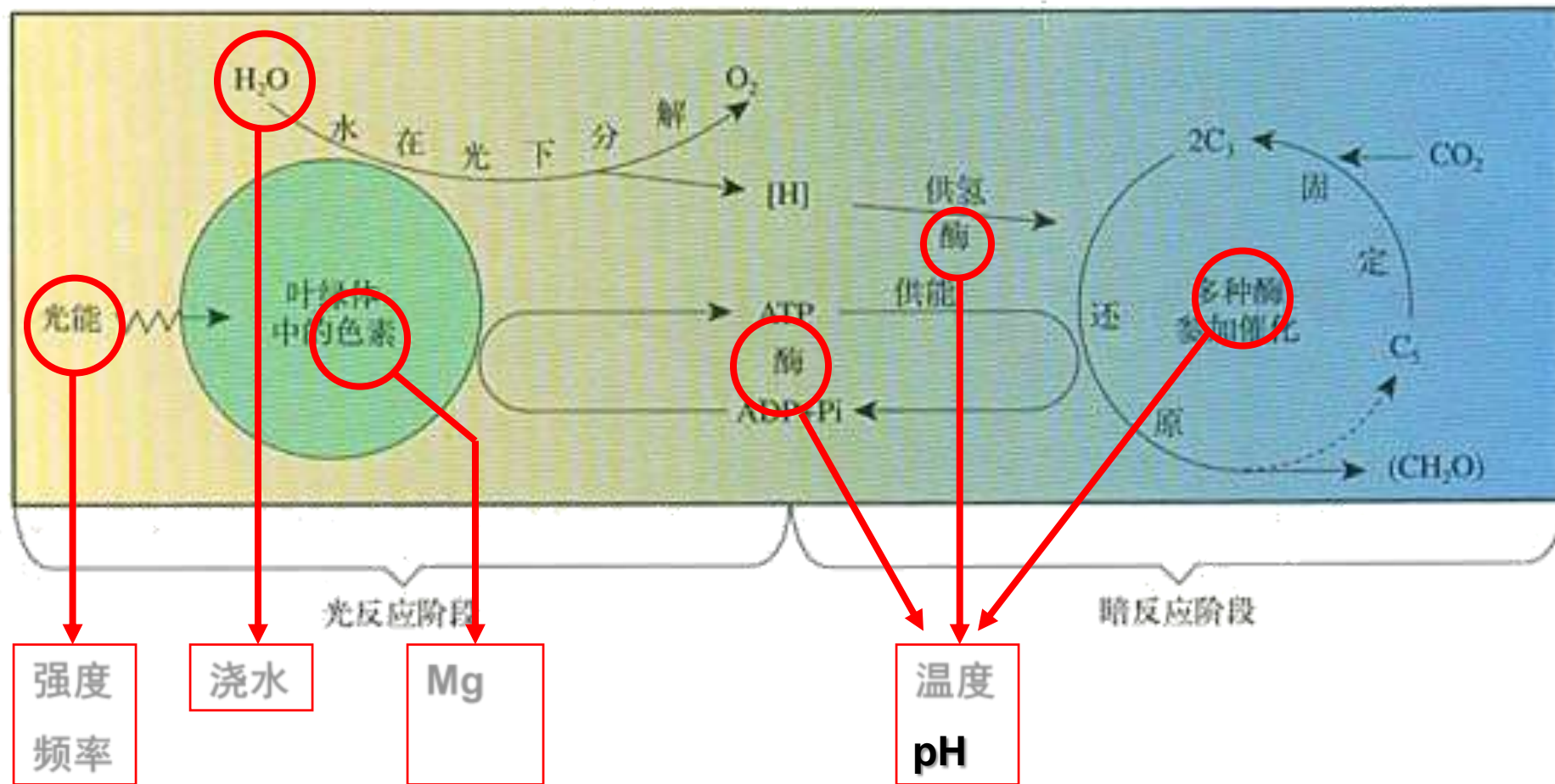


三、环境因素对光合作用的影响及在农业生产上的应用

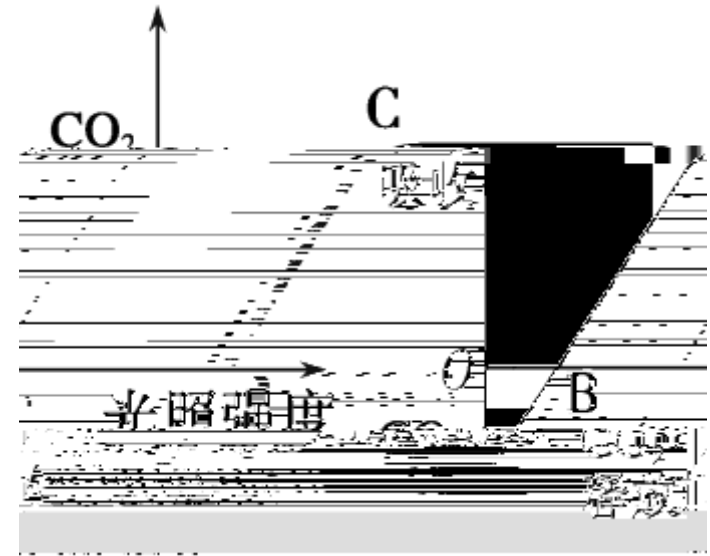
(1) 光照强度

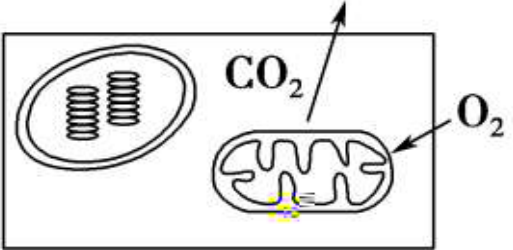
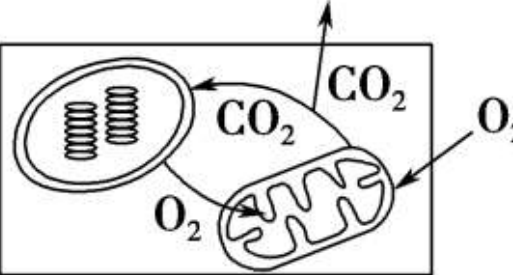
(4) 水或无机盐

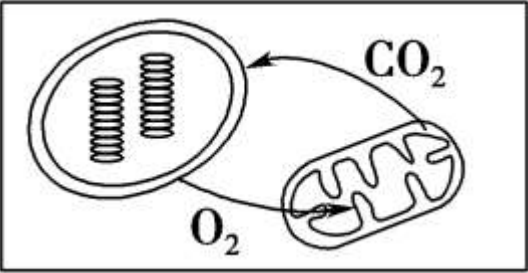
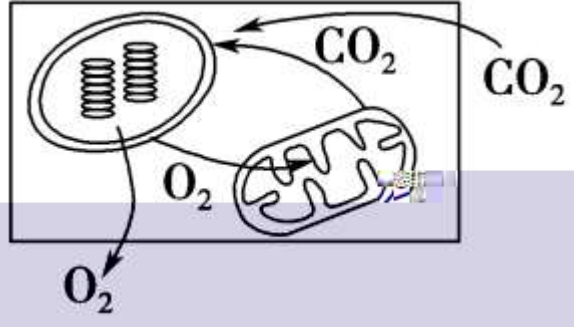
2. 多种因子对光合作用的综合影响



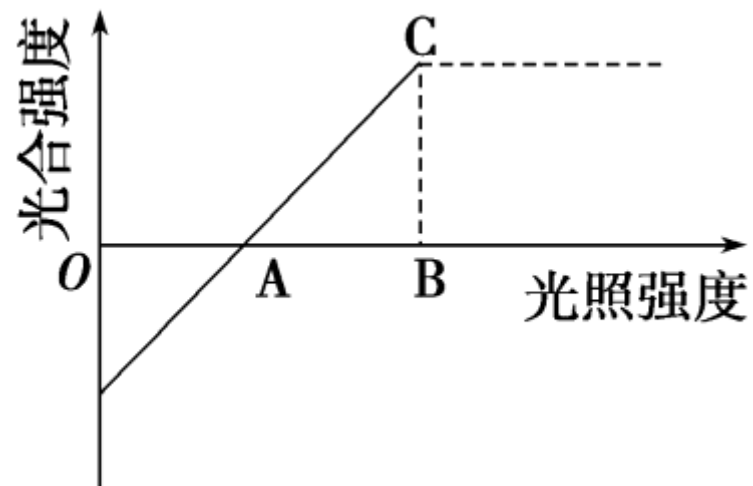
(1)

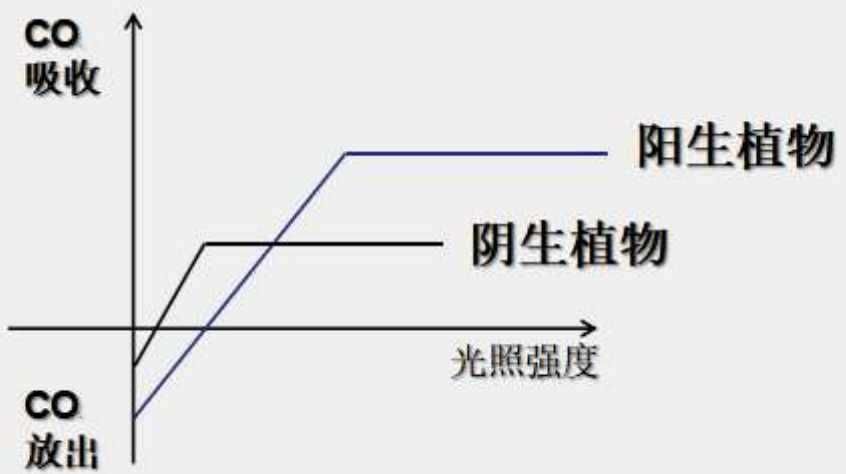


A		O CO	
		O CO	

			
		<p>O CO</p>	

归纳---坐标图中关键点移动规律





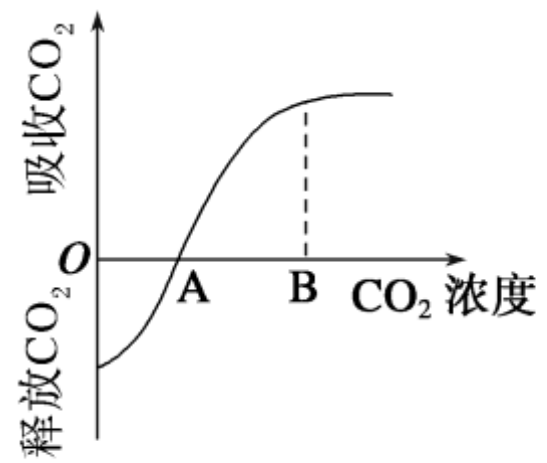


图 1

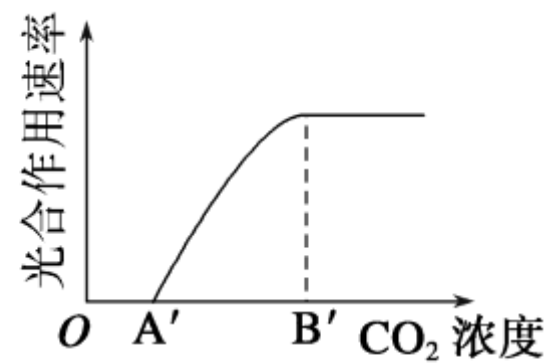
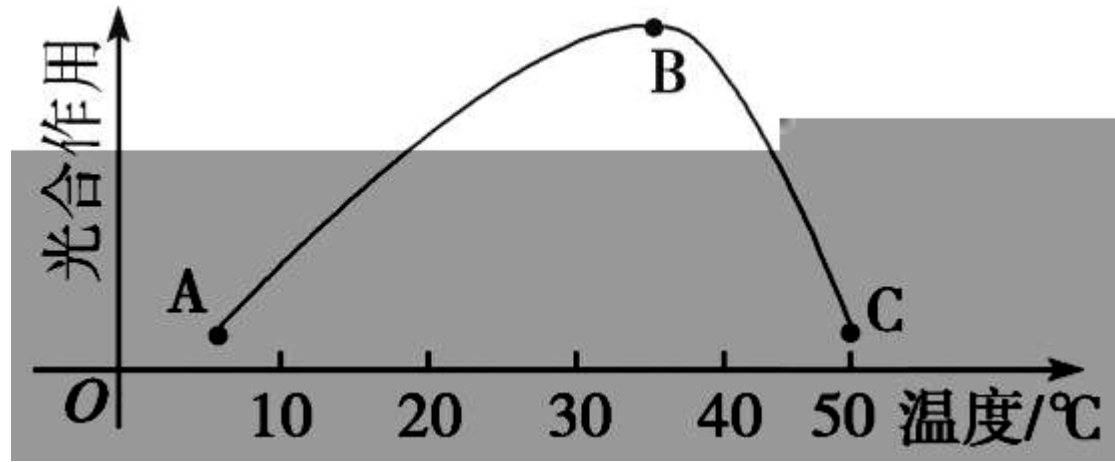


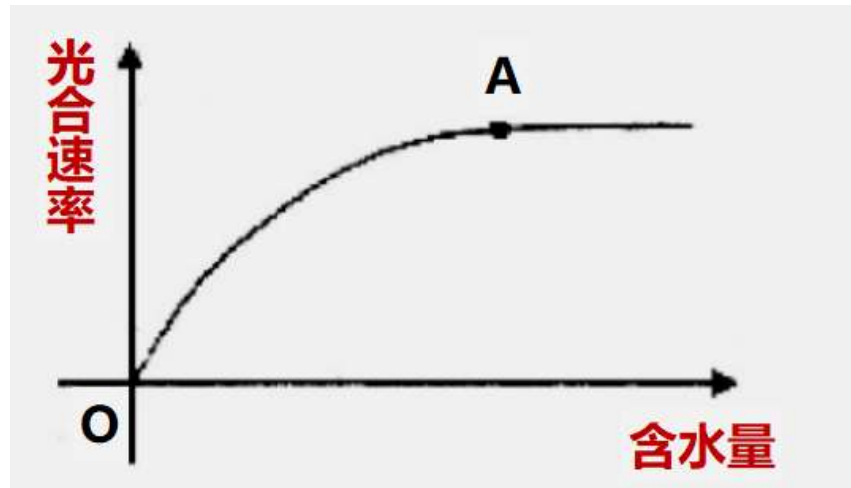
图 2

}

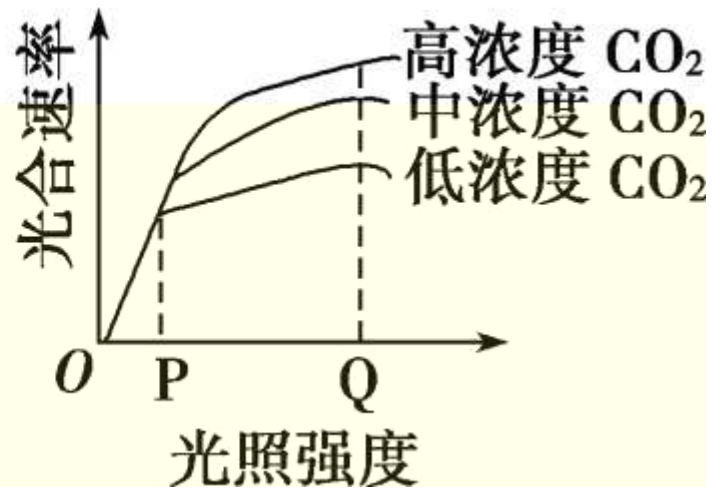
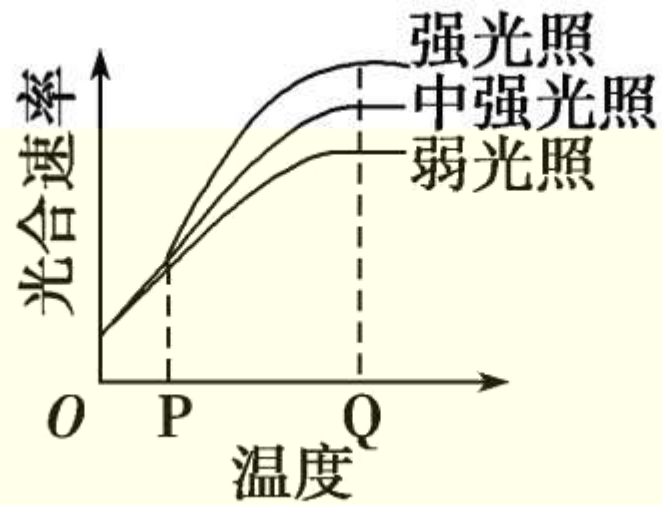
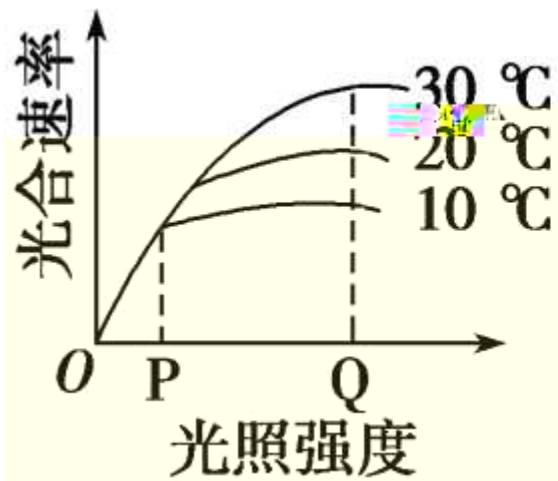
}



(4) 水或无机盐



水



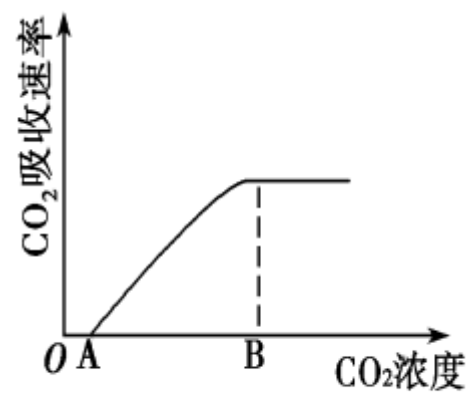


图1

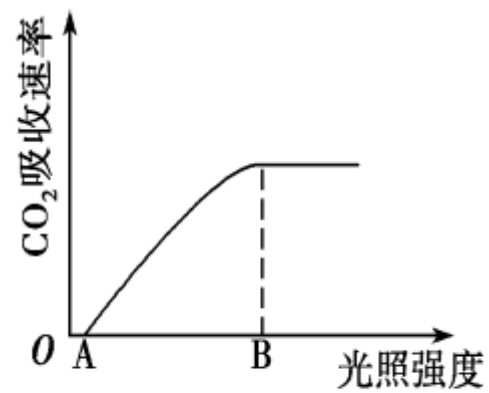


图2

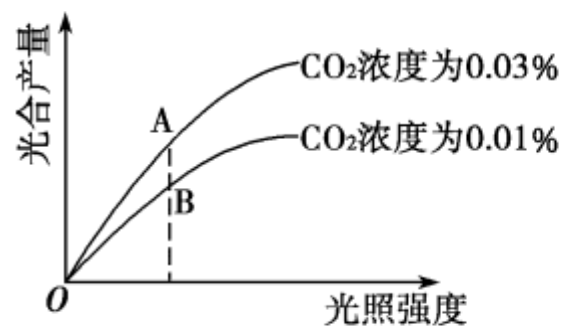


图3

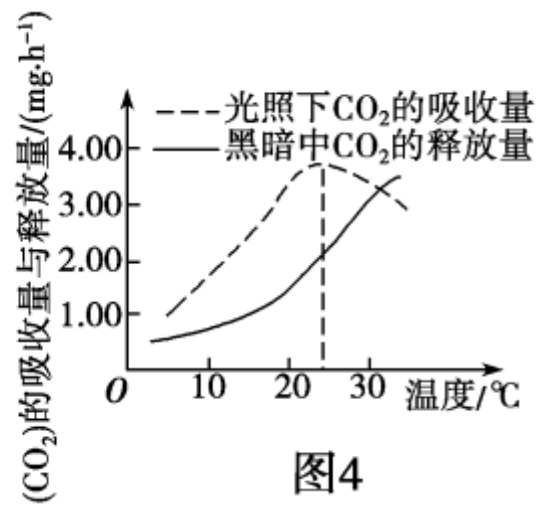


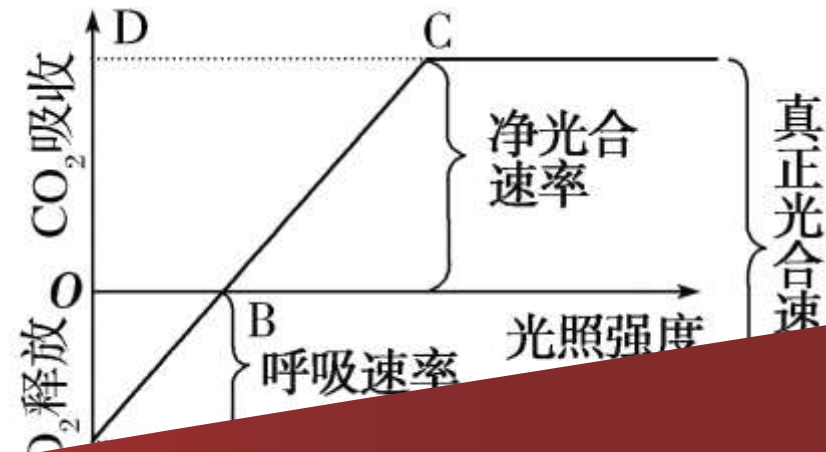
图4

四、 光合作用和呼吸作用的综合应用

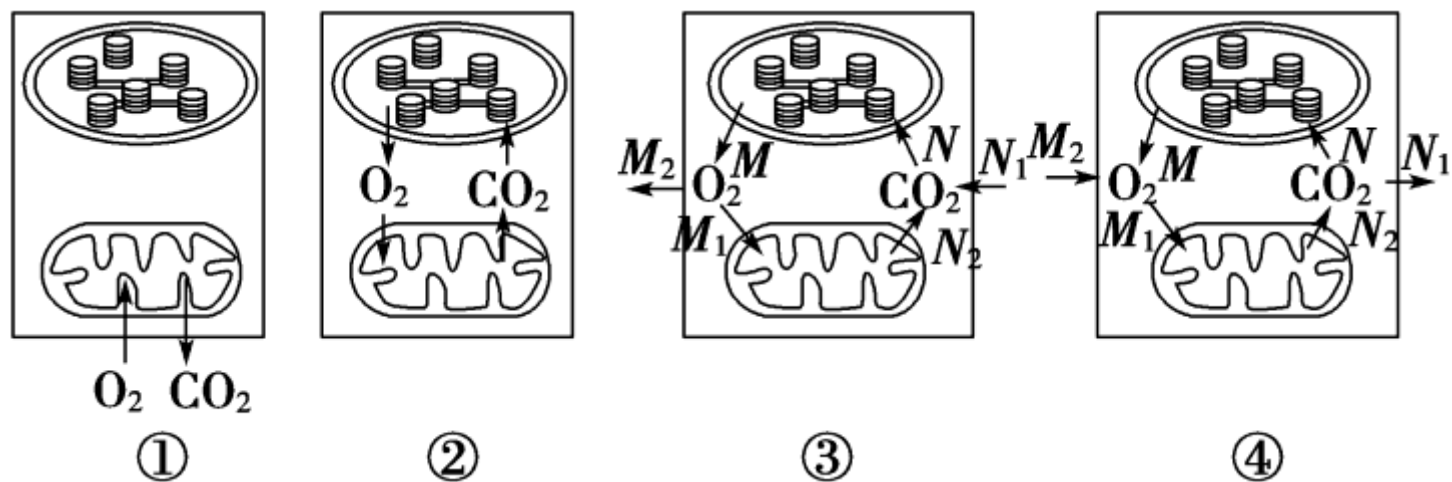


	H_2O CO_2	O_2 H_2O $\text{C}_6\text{H}_{12}\text{O}_6$
	\rightarrow ATP	$\text{C}_6\text{H}_{12}\text{O}_6$ \rightarrow ATP
		CO_2 O_2

光合速率的表示方法



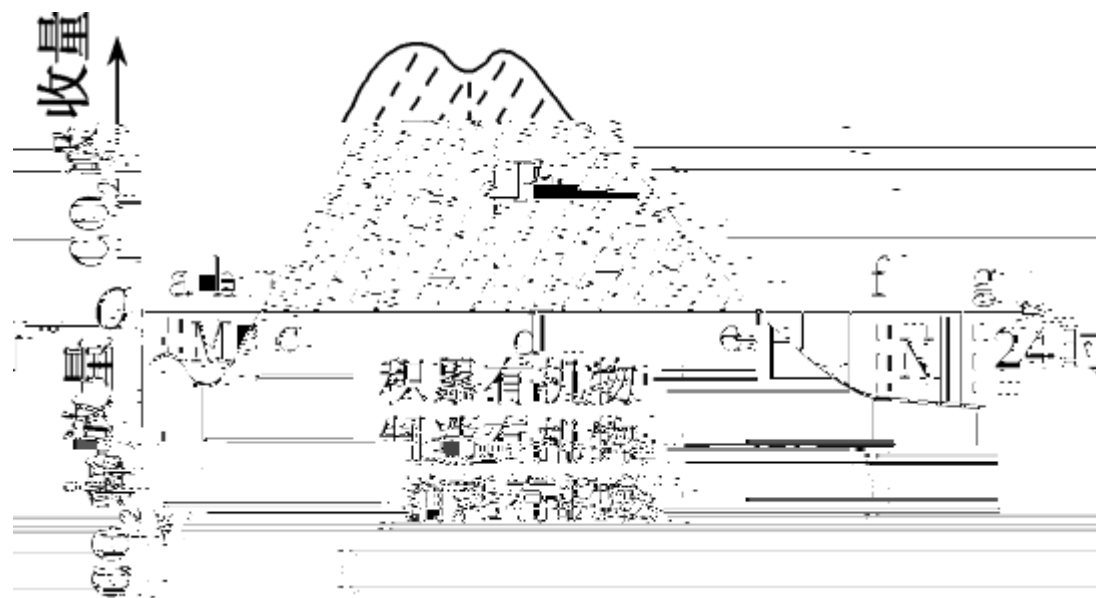
⇒ 净光合速率 + 呼吸速率。



光合作用固定 CO_2 量 = 细胞呼吸释放 CO_2 量 + CO_2 吸收量。

“消耗”与“积累”

“制造”



$$S_P - S_M - S_N$$

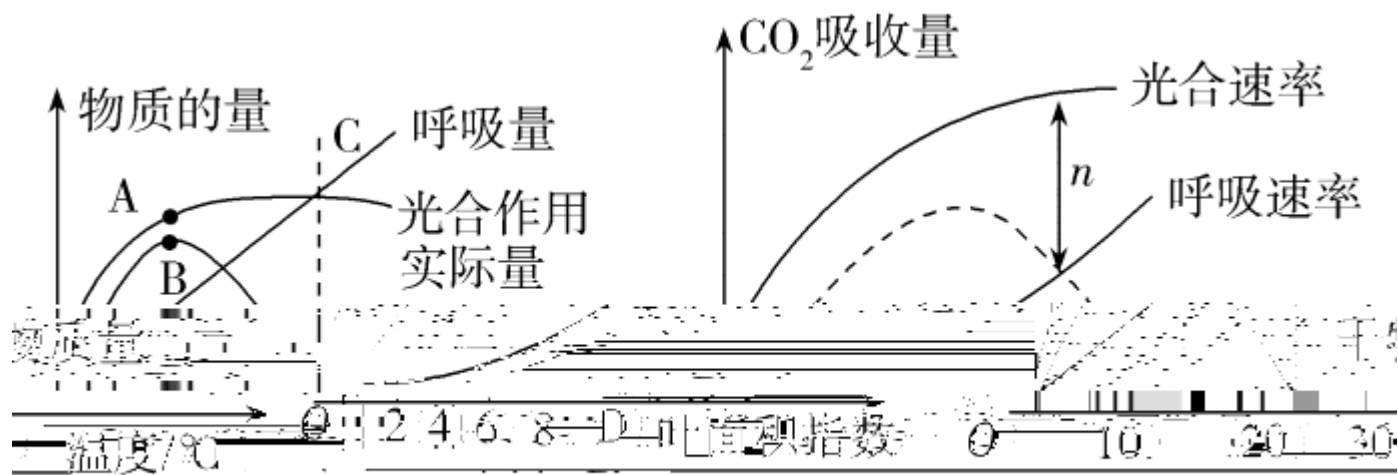
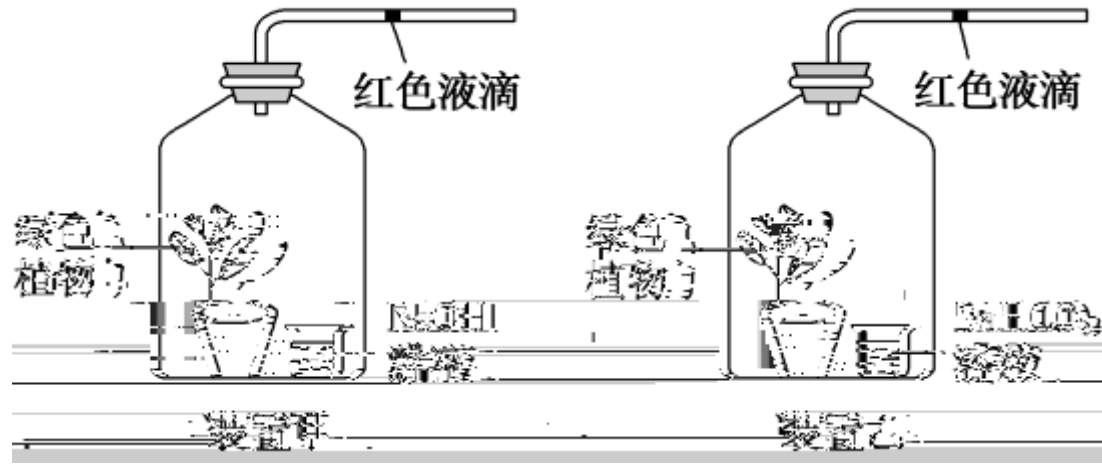


图1

图2

4

(1)



(2)

()

a
b
c
d

NaOH

CO₂

()

a

CO₂

CO₂

5

CO₂

CO₂

CO₂

CO₂

CO₂

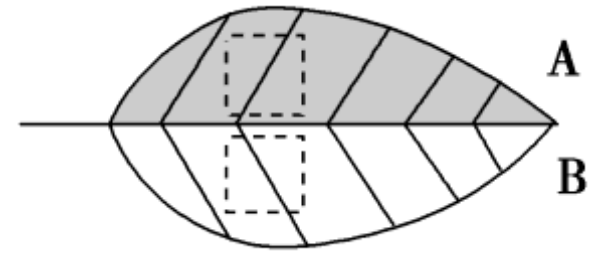
CO₂

6

()

:

7



(A)

(B)

(

)

6

A B

M_A M_B

mg/(dm² h)

M

M_B

M_A

M

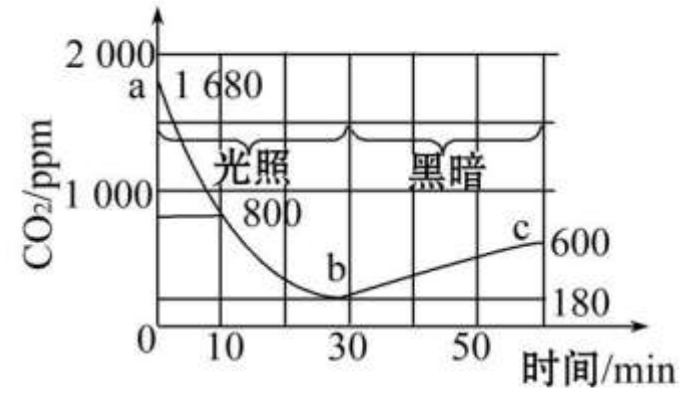
B

6

B



甲



乙

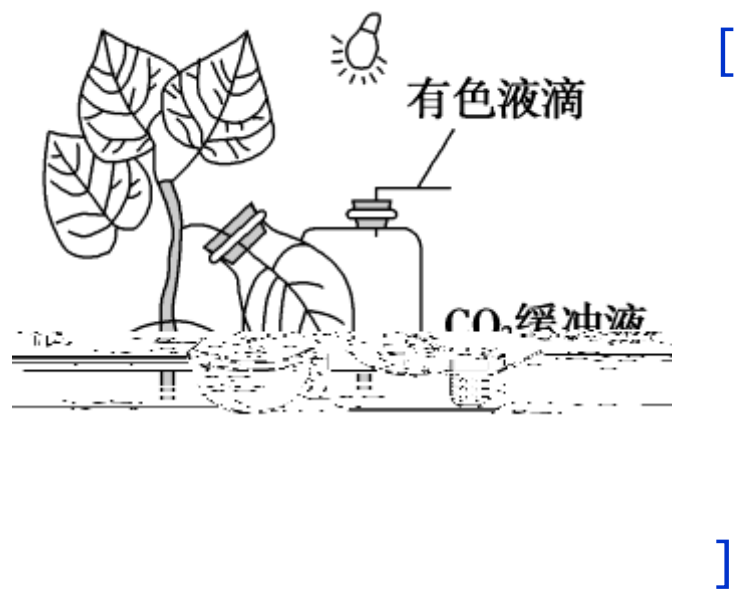
$$\frac{30}{(600-180) \div 30=14 \text{ ppm CO}_2/\text{min}}$$
$$\frac{30}{(1680-180) \div 30=50 \text{ ppm CO}_2/\text{min}}$$
$$50+14=64 \text{ ppm CO}_2/\text{min}$$

4

(B)

A CO_2
B CO_2
C
D

CO_2



CO_2

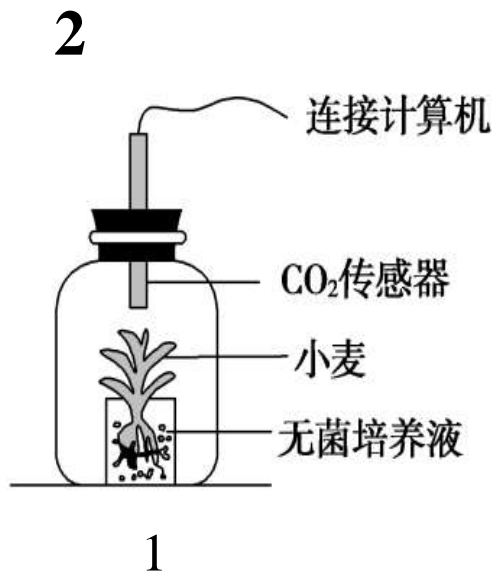
O_2

CO_2
 CO_2

5

60 min

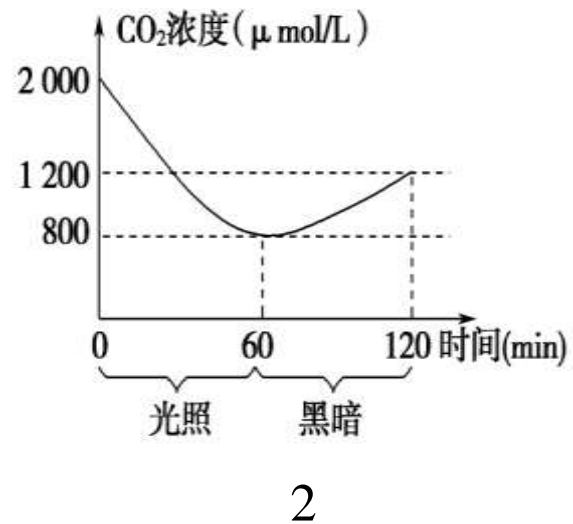
60 min



25

CO₂

CO₂



(1)

0 60 min

_____ (_____)

(2)

10 min

1 600 μmol CO₂/(L h)

CO₂

C₃

6

10 mg/L

24

(klx)	0()	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
(mg/L)	3	10	16	24	30	30
(mg/L)	3	3	3	3	3	3

(1)

3 mg/L

(2)

c klx

O₂ 7 mg/(L 24 h)

21 mg/(L 24 h)

(3)

a ()klx

7

(A)

(B)

6 h

A B

M_A M_B

mg/(dm² h)

(1) M_A 6 h

M_B 6 h

(_____) (_____)

(2) M M_B M_A

M

B

6 h

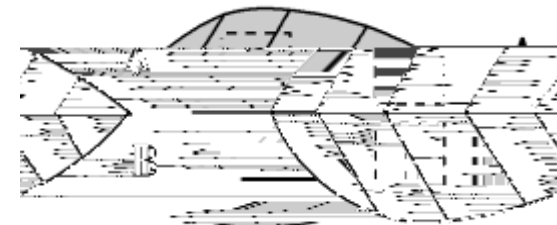
(3)

M

$M/($

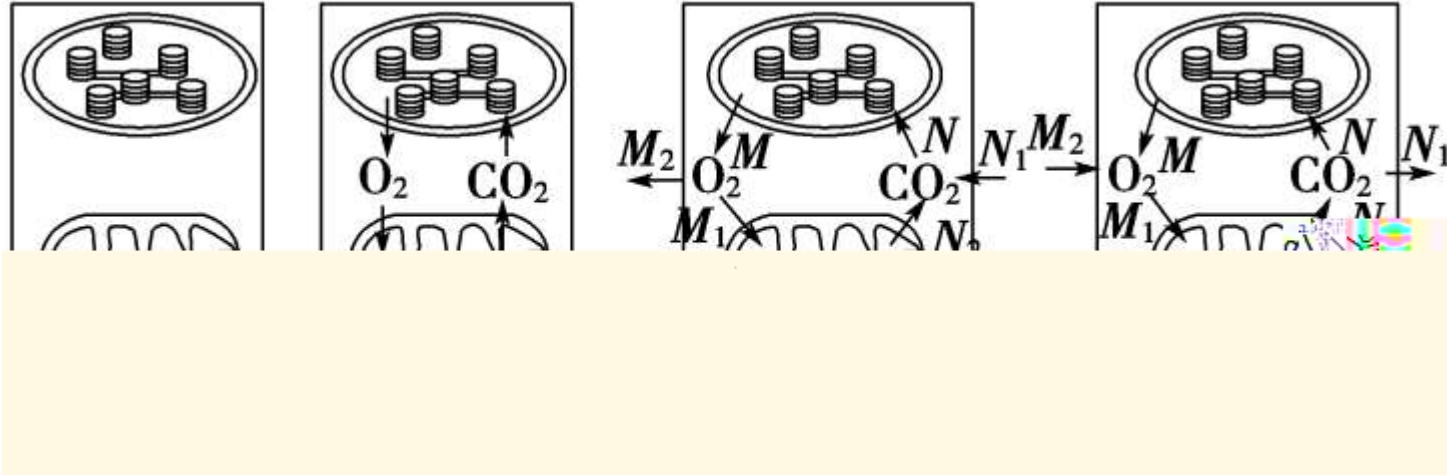
)

(4)



8

(D)



A
B
C
D

O_2 CO_2

CO_2

CO_2

N_1

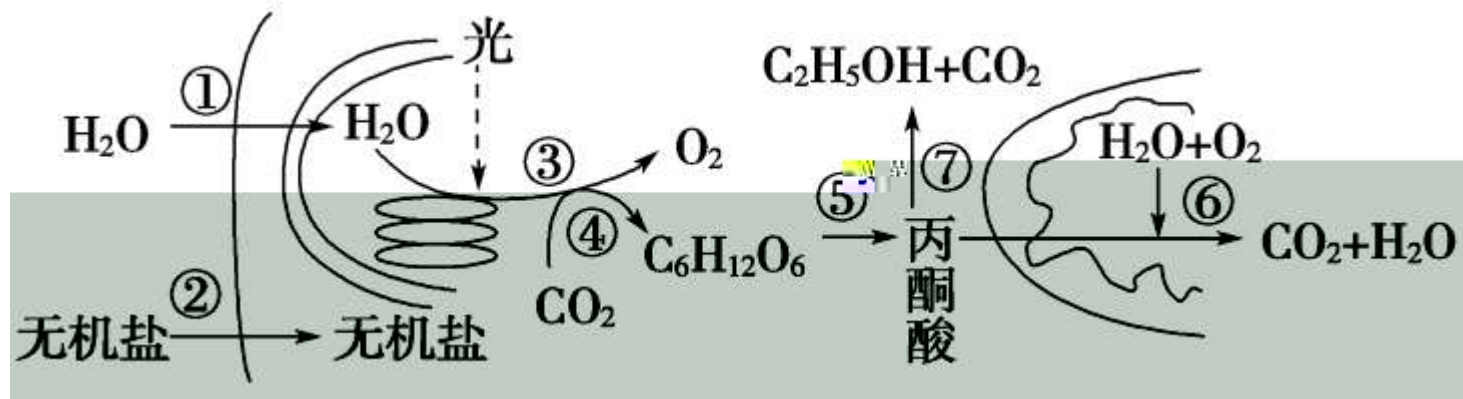
N_2

N_1

M_2

9

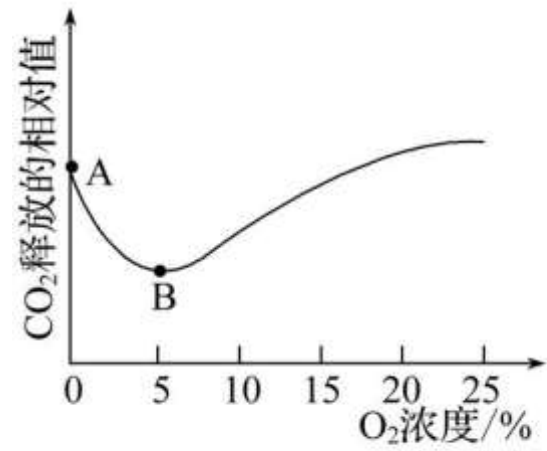
(C)



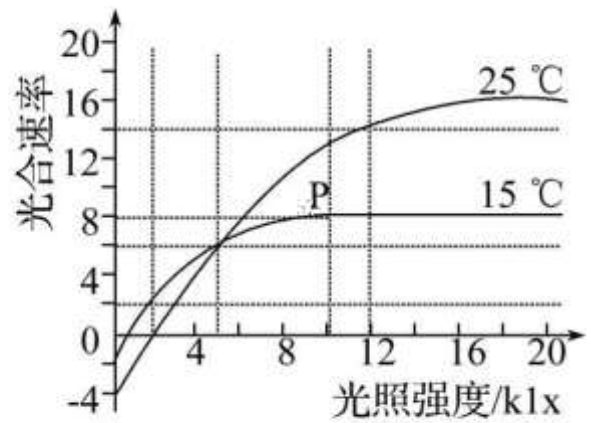
A
B
C
D

O₂

O₂



甲



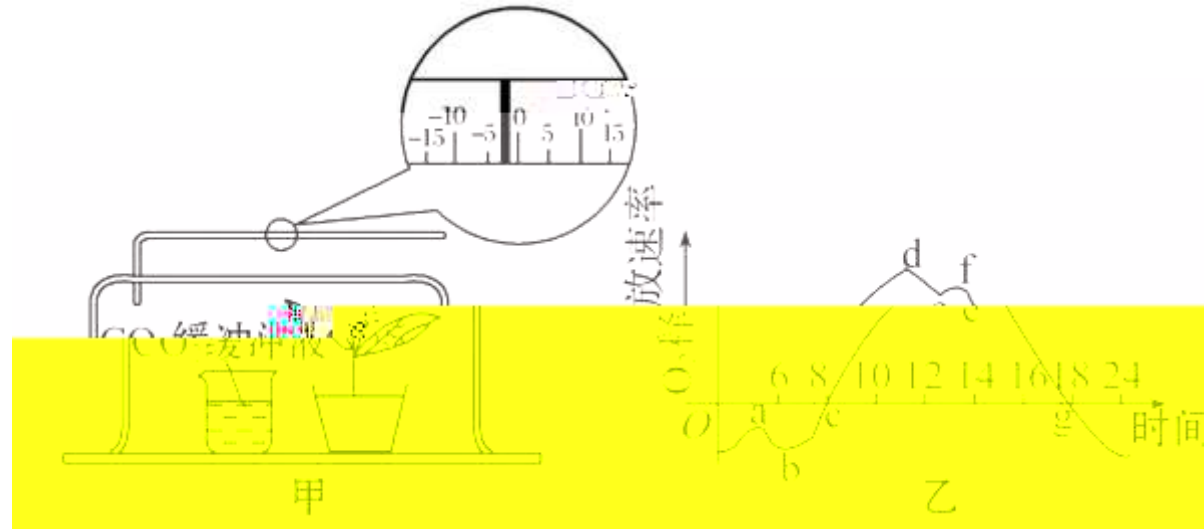
乙

k

k

k





k

