

Dark Reaction/ Blackman's reaction

Cycle \rightarrow Malvin Calvin

↳ Calvin cycle → Chloroplast
→ Stroma

Radioisotope of C \rightarrow ^{14}C \rightarrow $^{14}\text{CO}_2$

CO₂ - fix → 3 Carbon acidic
Compound

3-Phosphoglyceric acid (3-PGA)

{ Cycle is also called C_3 cycle \rightarrow Plants. C_3 plants

There are some plants whose
1st product in dark reaction
is a 4 carbon acid.

↓
Oxalic acid (GTA)
↓
Dicarboxylic acid

These plants are called C_4 plants
Cycle $\rightarrow C_4$ cycle / DCA cycle

C₃ Cycle → C₃ plants → mesophyll cells
Chloroplast
stroma

Main Enzyme — RuBisCO

[Ribulose 1,5-bisphosphate
carboxylase oxygenase]

Rubisco - most abundant

402
- slow working
→ affinity to words case ↑ than 02
Rabbit

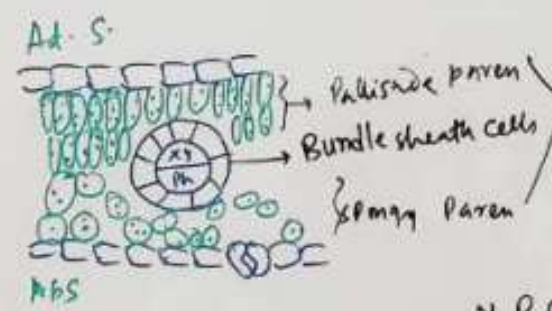
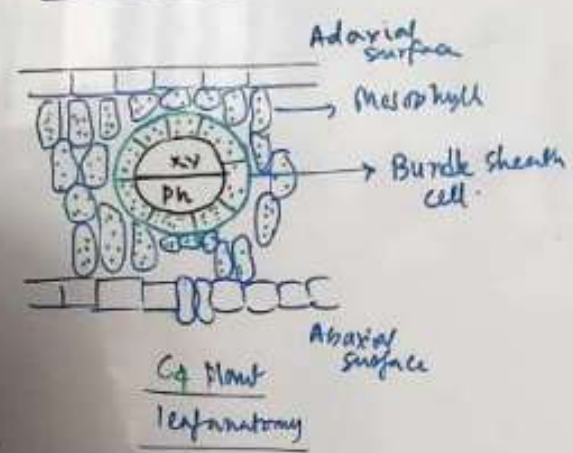
- m. higher or conc. Rubisco shift its function from carboxylase activity instead of oxygenase activity

C₄ Cycle

Hatch & Slack (1967) → Sugarcane & Maize

C₄ plants → Sugarcane, maize, Sorghum [Family Poaceae & Cyperaceae], ^{monocots}
 * Rice, wheat, Barley → C₃

Anatomy of C₄ plants



Bundle sheath cells of C₄ plant

- ① Closely placed (intercellular space abs.)
- ② Cells have thick cell wall → Gaseous exchange very low
- ③ Large, agranular Chloroplast
- ④ Contain RuBis Co [** Mesophyll cells do not contain RuBis Co]

* BSC form a ring around V.B

Anatomy → Kranz anatomy

German word → means - wreath / male / garland

Bundle sheath cells of C₃ plants

- ① Spongy layer has large intercellular space
- ② B.S.C → Apha Lophophyllous → Multicelled (many) gas exchange
- ③ Mesophyll cells have RuBis Co

Bundle sheath cells of C₄ plant

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③ Large, agranal chloroplast **

④ Contain RuBis CO
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Anatomy → Kranz anatomy

↓
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** Mesophyll cells
have smaller,
granal chloroplast

Dimorphic
Chloroplast

Bun
C₃

① Sp

②

③