Carbon Fixation 2

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Calvin cycle (C3)** | **C4** | **CAM** |
| # carbon atoms after C fixing |  |  |  |
| Separation of carbon fixation and carbohydrate synthesis |  |  |  |
| Example Organisms |  | CRABGRASS,  Corn | Cacti, Pineapple |

Attack of the Crabgrass: Only \_\_\_% of plants are C4, but they do \_\_\_\_% of the photosynthesis!

The problem with RuBisCO:

Explain:

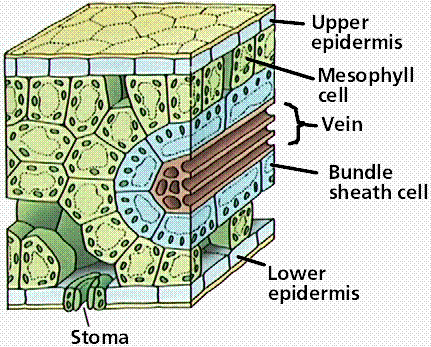
What does this quote have to do with C4?

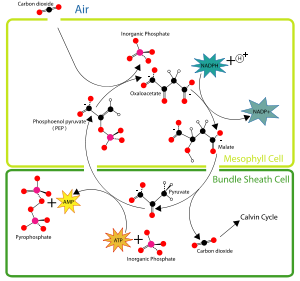
* **“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”**

Charles Darwin

Explain:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* The C4 pathway separates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the carbohydrate building process of the Calvin Cycle.
  + By doing these two processes in different locations, the Calvin Cycle can occur in a cell with little O2
    - RuBisCO can react with CO2 or O2
    - The reaction with O2 is only 50% effective
    - By using the C4 pathway to capture carbon, RuBisCO can operate in a lower O2 environment

CAM: What is it?

What plants use CAM?

Why is CAM useful?

Other Factors Influencing Photosynthesis Rates:

Draw a sketch of a graph showing the effect of all 3.