

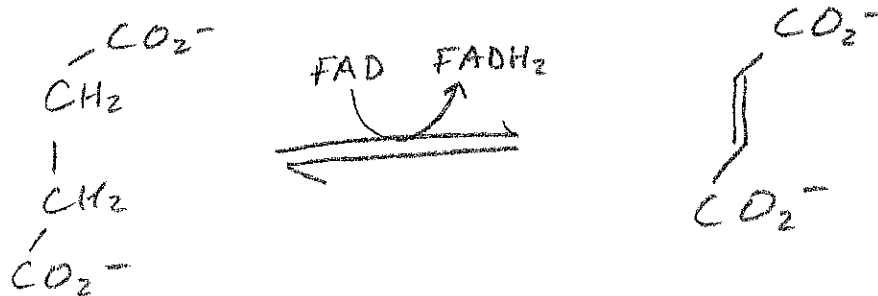
2. In the presence of intense sunlight, proplastids can be converted into chloroplasts in plant cells. + |

3. In which compartment in plants do the following reactions take place?

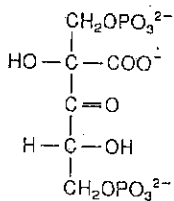
A. peroxisome + |



B. mitochondria + |



4. The following is an intermediate in the reaction catalyzed by which enzyme (please give the full name)



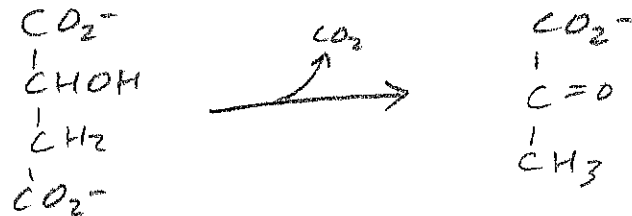
Ribulose-1,5-Bisphosphate
Carboxylase/ oxygenase + |

5. It takes 2 ATPs and NADPHs for a plant cell to "fix" one carbon. + |

"0" is also ok, if only Rubisco is assumed to fix the carbon. + |

6. What is the name of the enzyme that performs the following reaction?

Malic enzyme +1



In which plant cell-type that we discussed is this enzyme found?

Bundle sheath cells +1

7. If a plant contained a mutant form of phosphofructokinase-2 that was unable to bind to Pi, what effect would this have on hexose utilization in the cell? Why?

Pi normally activates PFK2, so in the absence of Fructose-2,6-Bisphosphate, glycolysis would not be activated and gluconeogenesis would be favored. +1

8. What are the names of the two antiporters that work together and are critical for ultimately delivering reducing equivalents and ATP into the cytosol from the chloroplast stroma? (you can just give the names of the relevant molecules)

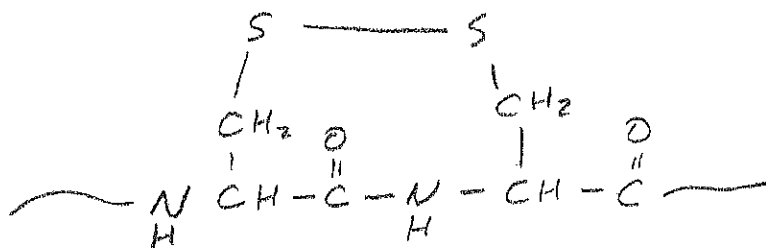
A.

dihydroxy acetone / phosphate +1

B.

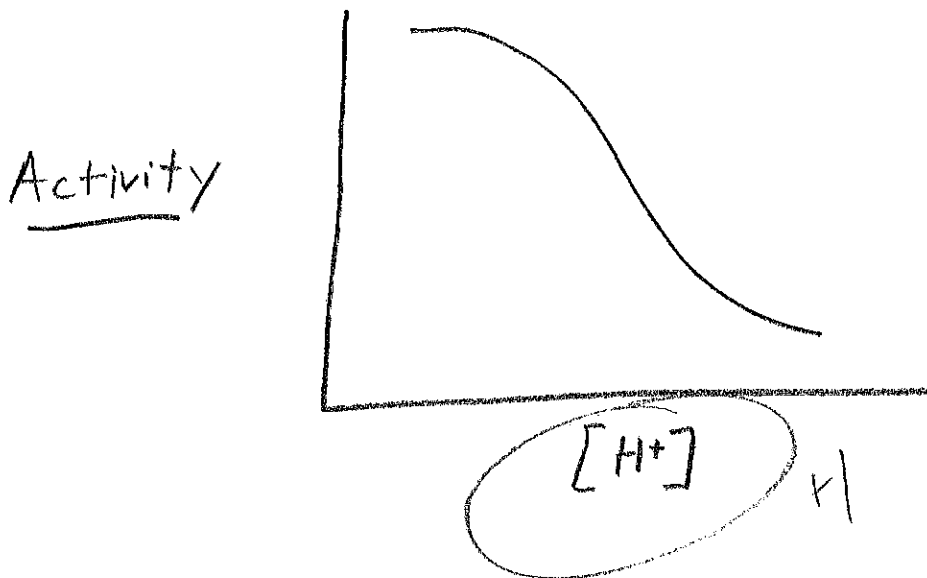
3-phosphoglycerate / phosphate +1

9. The indicated amino acids in a Calvin Cycle enzyme were found to be in the state depicted below. Do you think the enzyme is (A) activated or (B) inactivate?



B
NOT
assumed

10. The following plot shows an activity relationship for RUBISCO. Label the X-axis to indicate whether the proton concentration (“[H+]”) or “pH” is increasing along this axis:



/15