

ATP, Photosynthesis and Cellular Respiration Webquest

Name: _____

Objective: In this web quest investigation, you will use the internet to research topics related to ATP, Photosynthesis and Cellular Respiration. Use the web links provided to answer the following questions. Happy searching!

What is ATP? <http://www.biologyinmotion.com/atp/index.html>

1. How does energy get converted from food molecules to muscles?

2. According to the webpage, the analogy for ATP is that ATP works like a rechargeable _____.

3. Click on the arrow to the next page. Pull apart the ice cream. What happens when food is broken down in the body?

4. Pull a Phosphate from the recharged ATP, what happened?

ATP Synthase the Movie:

<http://www.ncsu.edu/animations/atpsynthase/movie.htm>

Watch the following movie, you can pause if needed. Answer the following questions.

5. What is a gradient?

6. What is the enzyme that restores ADP back to ATP?

7. In which organelle is ATP synthesized or made?

8. What type of ion is built into a gradient so ATP synthase can work?

9. What does the top part of ATP synthase do when hydrogen ions enter?

10. How many ions have to enter in order for ATP synthase to have enough energy to make ATP?

11. How is the gradient of ions maintained in the mitochondria?

What is Photosynthesis?

<http://www.biology.ualberta.ca/facilities/multimedia/uploads/alberta/Photo.html>

12. Where on the plant does photosynthesis take place? _____
13. The energy from the sun enters into what organelle in the plant?

14. How does the plant get water for photosynthesis? _____
15. What gas enters the plant for photosynthesis? _____
16. Where does it enter the plant? _____
17. What gas exits the plant during photosynthesis? _____
18. Where does it exit the plant? _____
19. What is the overall equation for photosynthesis?

The Light reaction of Photosynthesis: <http://highered.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::535::535::/sites/dl/free/0072437316/120072/bio13.swf::Photosynthetic%20Electron%20Transport%20and%20ATP%20Synthesis>

20. What is split to replenish the electrons (that also makes Oxygen gas)?

21. The excited electrons pump what ion to create a gradient?

22. The ATP synthase uses this gradient to restore ADP back to ATP.

What is this process called? _____

The Dark reaction of Photosynthesis: use your notes!! http://highered.mcgraw-hill.com/sites/0070960526/student_view0/chapter5/animation_quiz_1.html

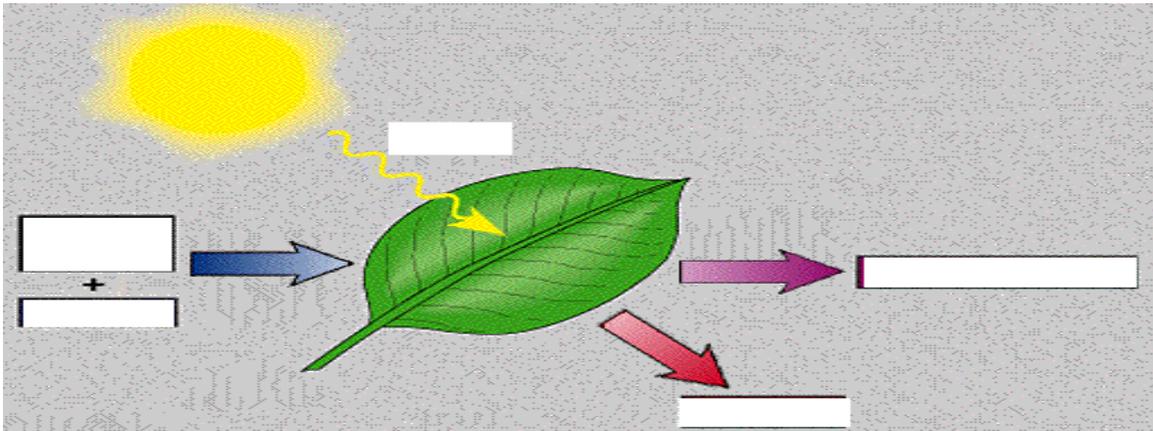
23. In what part of the chloroplast does the dark reaction take place?

24. What gas is taken in to start the Calvin Cycle? _____

25. What are the 2 products of the light reaction used in the Calvin Cycle? _____

26. What is the final product of the Calvin Cycle? _____

Overview of Photosynthesis Labeling. Label the following picture below. 27 & 31
http://www.phschool.com/science/biology_place/biocoach/photosynth/overview.html



What is Cellular Respiration?

<http://www.qcc.cuny.edu/BiologicalSciences/Faculty/UGolebiewska/respiration.html>

<http://www.qcc.cuny.edu/BiologicalSciences/Faculty/DMeyer/respiration.html>

32. What molecule enters Glycolysis? _____

33. What gas (in white) is released during the Krebs Cycle? _____

34. What molecule (in purple) is released from the Krebs cycle and enters the Electron transport chain? _____

35. What molecule (in dark blue) is released as a product from the Electron transport chain? _____

36. What energy molecule in RED is restored as a product of cellular respiration? _____

What is Glycolysis? [http://highered.mcgraw-](http://highered.mcgraw-hill.com/sites/0072507470/student_view0/chapter25/animation_how_glycolysis_works.html)

[hill.com/sites/0072507470/student_view0/chapter25/animation_how_glycolysis_works.html](http://highered.mcgraw-hill.com/sites/0072507470/student_view0/chapter25/animation_how_glycolysis_works.html)

34. What is the main reactant for glycolysis? _____

35. What is the product of glycolysis? _____

36. How many molecules of ATP are used to start glycolysis? _____

37. What are the 3 carbon molecules called? _____

38. What molecule is required for aerobic conditions? (Not on slide, think!)

39. What happens if there are anaerobic conditions, what is pyruvate converted into? _____ (AKA the source of sore muscles!)

Overview of Cellular Respiration Labeling. Label the following picture.

<http://upload.wikimedia.org/wikipedia/commons/1/1d/Cellularrespiration.JPG>

