

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! You can also find the links in chalmersbiology.weebly.com. Go to first semester then click on resources and you will find the links on that page.

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://vcell.ndsu.nodak.edu/animations/atpgradient/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? _____

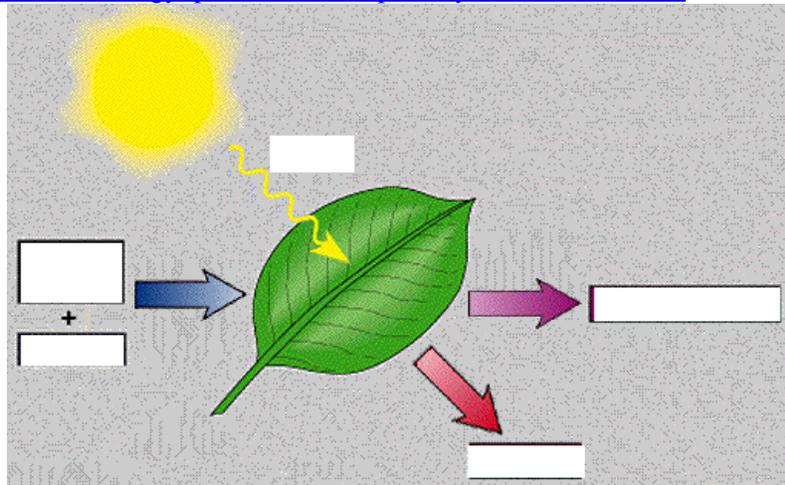
The Light reaction of Photosynthesis: <http://highered.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::535::535::/sites/dl/free/0072437316/120072/bio13.swf::Photosynthetic%20Electron%20Transport%20and%20ATP%20Synthesis>

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: 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 & 28
http://www.phschool.com/science/biology_place/biocoach/photosynth/overview.html

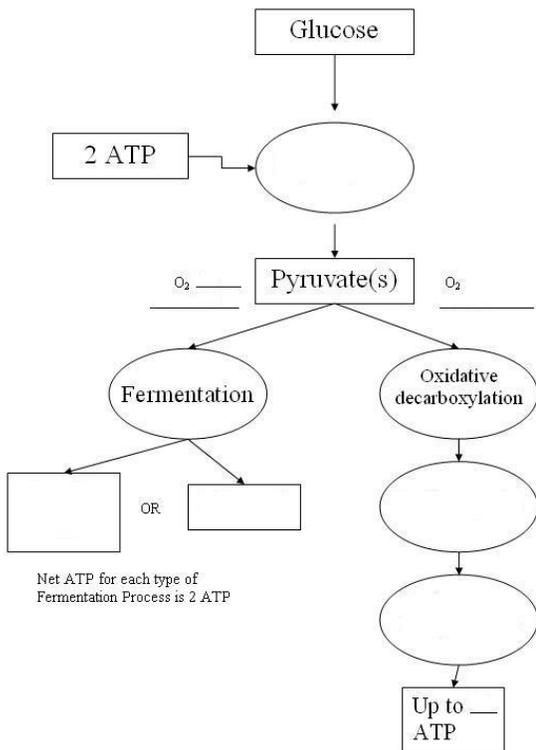


What is Cellular Respiration? <http://www.qcc.cuny.edu/BiologicalSciences/Faculty/DMeyer/respiration.html>

29. What molecule enters Glycolysis?
30. What gas (in white) is released during the Krebs Cycle?
31. What molecule (in purple) is released from the Krebs cycle and enters the Electron transport chain?
32. What molecule (in dark blue) is released as a product from the Electron transport chain?
33. What energy molecule in Teal is restored as a product of cellular respiration?

What is Glycolysis? 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 ATP 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!)



Alcoholic Fermentation in Yeast:

<http://www.indiana.edu/~oso/animations/glycolysis%20simplified.html>

In this animation, use the enzymes to convert glucose into ATP.

40. When you add the fifth enzyme (dark purple) to pyruvate, what did you have to add? _____
41. When you added the sixth enzyme to pyruvate with Phosphate and ADP, what did it make? _____
42. When you add the final enzyme, what were the products of the reaction? _____

Overview of Cellular Respiration Labeling. Label the following

picture to the left. 43-45.

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