**Enzymes Webquest**

Please answer the questions in “full thoughts” on your own paper. You will go to the websites given to find the information to answer the questions. Have fun learning through technology!

<http://www.chem4kids.com/files/bio_enzymes.html>

1. T or F: A “blob” of protein will simply break down, on its own, into amino acids.
2. What is an amino acid? (Hint: click on the green words “amino acid”. It will take you to a different page where you will find information about amino acids.)
3. How many amino acids are used to make proteins in your body? (still on the same page as number 2)
4. How many amino acids can be “synthesize” (meaning “made”) inside your body?
5. How many amino acids are considered “essential”?
6. How do we get essential amino acids? This is not necessarily on the webpage, but we have talked about it. THINK…(Remember essential amino acids are the ones that our bodies CANNOT synthesize, aka. make.)
7. Proteins are made from long chains of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Not necessarily on the webpages, but you know this. What are the building blocks of proteins…THINK)
8. Click on the green heading “proteins” in the side bar. Now scroll down to the bottom of this page. You will see a video titled 3D Proteins: The big picture. Watch this video and write down two things you learned from it.

**OK, back to the enzymes page. Click the green heading “enzymes” on the side bar. This will take you back to the page where you started.**

1. What is needed to break proteins down into amino acids?
2. What are enzymes?
3. T or F: Complex reactions occur with the help of enzymes.
4. Look up the word “catalyst”. What does it mean? (To the google!)
5. Will enzymes break down anything? Explain.
6. Can an enzyme that is designed to break down proteins also break down carbohydrates?
7. Can you find all enzymes everywhere in the body? Or, do they have specific areas where they hang out?
8. Explain how enzymes are similar to assembly line robots. Next, come up with another analogy for enzymes.
9. T or F: Enzymes are specific to their one job. They cannot do a job they were not designed for.
10. Draw a diagram showing how an enzymes shape is specific. (Hint: look around the webpage for ideas)
11. T or F: An enzymes structure (shape) is very important.
12. What happens if an amino acid in an enzyme changes shape (gets messed up?)
13. Create a diagram showing the 4 steps of enzyme action. Color it. Label the following parts on your diagram:
    1. Enzyme b. substrate c. active site d. enzyme/substrate complex

e. catalysis f. enzyme/products complex

22. Can enzymes be controlled? Or, will they become monsters that will convert every molecule in the world?

23. What factors can control enzymes?

**Click on the green words “next section”. It will take you to this webpage** [**http://www.chem4kids.com/files/bio\_enzymes2.html**](http://www.chem4kids.com/files/bio_enzymes2.html)

1. T or F: Enzymes sometimes need to be controlled.
2. How can enzymes be controlled?
3. What are 4 ways an enzymes activity can be affected? (Hint: look at the bold headings on the next several paragraphs…do these look familiar? They should!)
4. Let’s read about how temperature affects enzyme activity. Go ahead…read it. Now answer the question.
   1. How does temperature affect an enzymes activity?
5. Now read about Activators…go ahead, I’ll wait. OK. Now answer the question.
   1. Activators help an enzyme work (faster /slower)
   2. How can you get activators?
6. Read about pH levels. There you go…good work!
   1. Acidity can change the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an enzyme.
   2. Looking at a pH scale, what range are the acids in? (Remember pH goes from 1-14)
   3. What can happen to a protein if there is a big change in pH?
7. Last one! Read about Inhibitors…the whole thing…great job!
   1. Inhibitors are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of activators.
   2. What do inhibitors do?
   3. How do they do this?
   4. What happens to an enzyme when its shape gets changed?
   5. What are examples of inhibitors?
8. Watch the video at the bottom of this page called Enzyme Molecules as Nanomotors. Write two things you learned from it.

\*\*\*WAIT!!! You’re not done yet…\*\*\*

**Now that you know the basics about enzymes, you are going to do some additional research.**

1. Google the word “enzymes”.
2. Find two other websites and read through them to learn more about enzymes.
3. Make a T-chart on your paper. The T-Chart should have one side that says KNOW and one side that says LEARNED.
4. On your T chart list at least 10 total pieces of information. These can be a combination of things you already knew about enzymes, and things you have learned as you look through these other two websites. Try to include at least one diagram, graph or chart from the websites onto your T-chart.