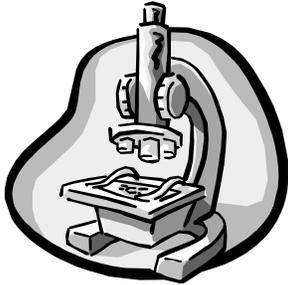


**Science 10-Biology**

**Activity 8**

**Worksheet on the Nucleus and DNA -2007**



10

Name \_\_\_\_\_

Due Date \_\_\_\_\_

Show Me       Hand In

*Correct and Hand In Again By* \_\_\_\_\_

**Use pages 344-346 of your Science Probe text to help you answer questions 1-15.**

1. The “controller” of the cell is the \_\_\_\_\_.
2. Catalysts to speed up chemical reactions in the cells are called \_\_\_\_\_.
3. Does one enzyme speed up a number of different reactions or just one type? \_\_\_\_\_.
4. The nucleus controls the cells activities by controlling the production of \_\_\_\_\_.
5. The function of the *nuclear membrane* is to \_\_\_\_\_  
\_\_\_\_\_.
6. Molecules of \_\_\_\_\_ within the nucleus control the production of enzymes.
7. Each *chromosome* in the nucleus is made up of \_\_\_\_\_ and a variety of \_\_\_\_\_.
8. Human cells normally contain \_\_\_\_\_ chromosomes.
9. A strand of DNA is a huge chain made up of smaller molecules called \_\_\_\_\_.
10. Each nucleotide in a DNA molecule has a *base* as part of it. The four types of bases found on these nucleotides are shown by the letters \_\_\_\_, \_\_\_\_, \_\_\_\_, and \_\_\_\_.
11. What is meant by a *gene*?

12. Look at Figure 15.20 on the top of page 346. On the left of this diagram, DNA is shown as a *ladder*. The right and the left side of the ladder consist of long chains made up of “P”s and “S”s. Each “P” stands for a \_\_\_\_\_ and each “S” stands for a \_\_\_\_\_. The *bases* are symbolized by the letters \_\_, \_\_, \_\_ and \_\_.
13. The actual DNA structure is not really like a ladder, but like two coils wrapped around each other. This structure is called a *double* \_\_\_\_\_. This structure was first discovered by two scientists \_\_\_\_\_ and \_\_\_\_\_.
14. The number and order (sequence) of bases on each *gene* determine the exact structure of the \_\_\_\_\_ “coded” by that gene. Each chromosome contains thousands of genes, each one controlling the structure of one protein or enzyme made by the cell.
15. What do you think could happen if a gene coding for a specific protein has a “mistake” or “incorrect arrangement of bases” in it? \_\_\_\_\_  
\_\_\_\_\_

**Next, go to the following site and use the information to answer the following questions:**

<http://www.ornl.gov/hgmis/publicat/primer2001/7.html>

16. Give 5 ways that genome research can be applied in *molecular medicine*.
- 1.
  - 2.
  - 3.
  - 4.
  - 5.
17. Give 5 ways that knowing the genomes of *microbes* (microbial genome research) can help us.
- 1.
  - 2.
  - 3.
  - 4.
  - 5.

18. Give three ways in which DNA information may be used in *fighting crime*.
- 1.
  - 2.
  - 3.
19. Give 5 ways in which genome research helps us or can help us in *agriculture*.
- 1.
  - 2.
  - 3.
  - 4.
  - 5.

Now, go to the site: <http://www.ornl.gov/hgmis/publicat/primer2001/8.html>

20. Outline some of the concerns people have about genome research.
21. What is your opinion about gene research? Should it be continued. What should and shouldn't be done with it?

Now go to the site:

<http://learn.genetics.utah.edu/units/disorders/sloozeworm/>

22. A mutation is a permanent change in the \_\_\_\_\_ sequence of a \_\_\_\_\_.
- A mutation could cause some of the instructions to the cell to be \_\_\_\_\_
23. What are the two ways in which DNA can become mutated?
1. \_\_\_\_\_
  2. \_\_\_\_\_

Now go to the site:

[http://www.kidshealth.org/teen/your\\_body/health\\_basics/genes\\_genetic\\_disorders.html](http://www.kidshealth.org/teen/your_body/health_basics/genes_genetic_disorders.html) Scroll down until you get to “What are Genetic Disorders”

24. About how many diseases are presently thought to be hereditary? \_\_\_\_\_.

Give four examples of genetic disorders:

1.

2.

3.

4.

25. What is the practice of “Gene Therapy” trying to achieve?

26. In what way will knowing a person’s genetic information help with lessening the chances of getting these genetically related diseases? (Use point form.)