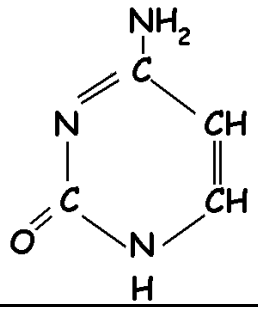
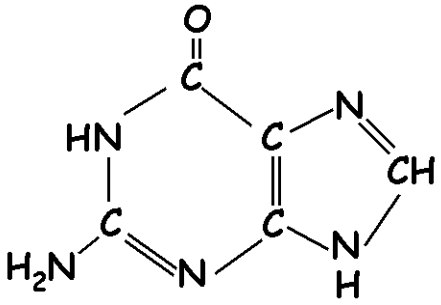
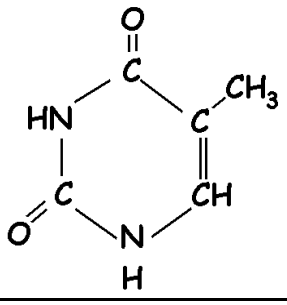
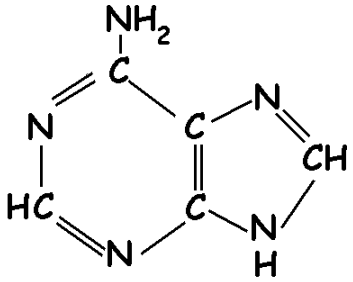
NAME_____

MOLECULAR GENETICS
ACTIVITY #1

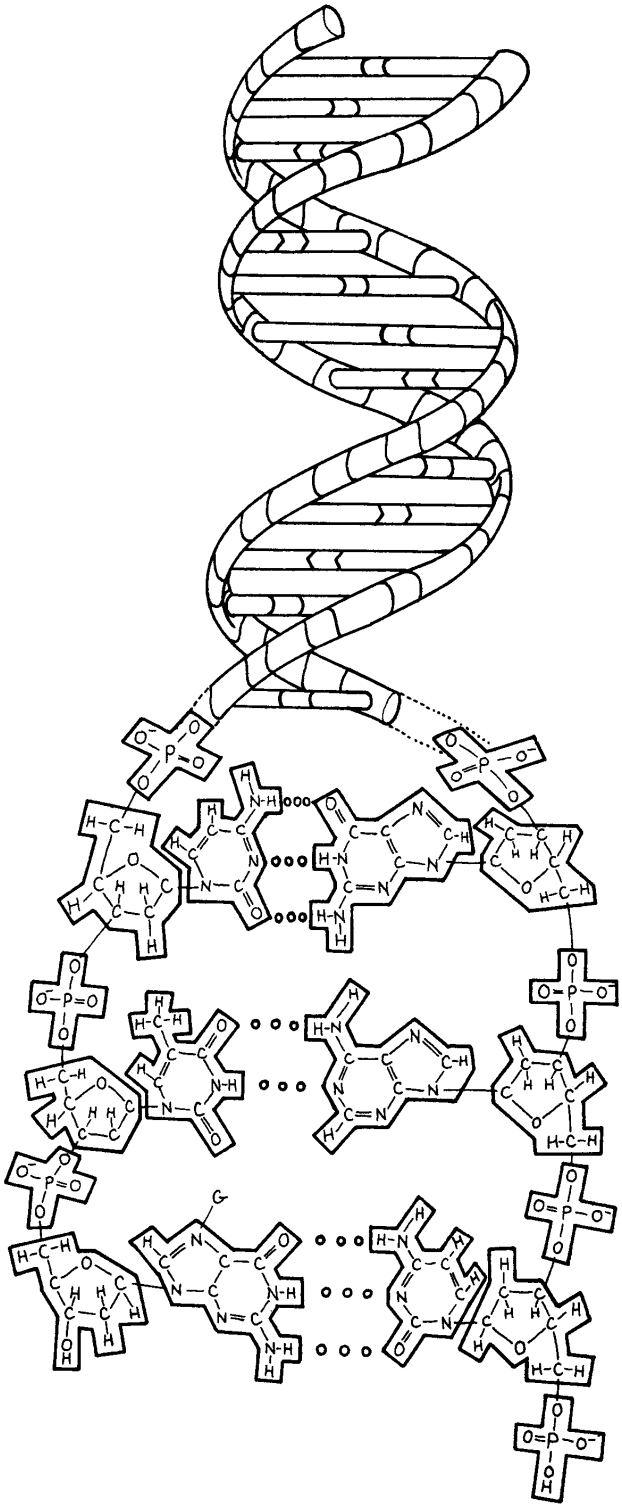
DATE_____HOUR_____

DNA STRUCTURE AND REPLICATION

BUILDING BLOCKS OF DNA:

NITROGENOUS BASES	
PYRIMIDINES	**PURINES**
	
	

DNA STRUCTURE



QUESTIONS

1. The following questions refer to the experiments performed by Griffith.

   a. What organism(s) did he use in his experimentation?_____

   b. What are the two strains of pneumococcus and the distinguishing characteristics of each strain?

STRAIN	Distinguishing Characteristics

   c. How did Griffith determine that the S strain and not the R strain was pathogenic?

_____

_____

_____

   d. In one experiment, Griffith injected heat-killed S strain bacteria into mice.

   What was he trying to determine by conducting this experiment?

_____

   What were the results of this experiment?

_____

   What conclusion did he reach based on these results?

_____

   e. In another experiment, he mixed heat-killed S strain with live R strain bacteria and injected the mixture into mice.

   What were the results of this experiment?

_____

What strain of the bacteria was found in blood samples from the experiment mice?

_____

What conclusion did he reach based on the results of this experiment?

_____

_____

2. The following questions refer to the experiments performed by Avery, McCarty, and MacLeod.

   a. Avery, McCarty, & MacLeod continued the experimentation begun by Griffith. Their experimentation tried to identify what substance in the heat-killed S strain transformed the R strain into S strain bacteria. They isolated protein, carbohydrates, RNA, and DNA from samples of heat-killed S strain bacteria. They then mixed each of the isolates with R strain bacteria and looked for transformation.

      Only one isolate, when mixed with the live R strain bacteria, resulted in transformation. What was that isolate?

      _____

   b. What conclusion did they reach based on the results of their experiments?

      _____

3. The following questions refer to the experiments of Hershey & Chase (Blender Experiment).

   a. What are bacteriophages?_____

   b. Describe the composition of the T2 bacteriophage.

      _____

   c. What effect does the T2 phage have one E. coli?

      _____

d. In one experiment, they grew T2 phages and E. coli in media with radioactive sulfur (^{35}S).

Into what phage component was the ^{35}S incorporated?_____

The phages with the ^{35}S were then allowed to infect E. coli free of ^{35}S. After a period of time, the culture was blended, centrifuged, and analyzed to determine where the location of the ^{35}S in the mixture.

Where was the ^{35}S located in the centrifuged mixture?_____

What conclusion did they reach based on these results?

_____

e. In another experiment, they grew T2 phages and E. coli in media with radioactive phosphorus (^{32}P). After a period of time, the culture was blended, centrifuged, and analyzed to determine where the location of the ^{32}P in the mixture.

Where was the ^{32}P located in the centrifuged mixture?_____

What conclusion did they reach based on these results?

_____

f. Hershey's & Chase's experimentation provided evidence that:

_____

4. State Chargaff's rule.

_____

_____

5. What two scientists worked out the structure of the DNA molecule?

_____

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