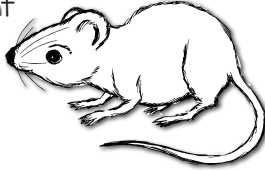


The Cell's Genetic Information

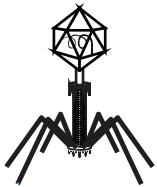
Answer the questions below.

Match each scientist's name below with the conclusion from their important experiment or study.

____ 1. Hereditary material can be passed from bacteria to bacteria; the hereditary material in this study caused pneumonia in mice.



____ 2. Nucleic acids and not proteins are responsible for transmitting between bacteria the ability to cause pneumonia in mice.



____ 3. Nucleic acids and not proteins are transmitted from bacteriophage to bacteria when they infect bacteria and passed to new bacteriophage that grow in the infected bacteria.

____ 4. In all known samples of DNA, the proportion of adenine nucleotides is always equal to the proportion of thymine nucleotides.

____ 5. DNA's structure is made of two complementary, anti-parallel strands. Where one strand contains an adenine nucleotide, right across from it, the other strand contains a thymine nucleotide.



- A. Oswald Avery
- B. Frederick Griffith
- C. Alfred Hershey and Martha Chase
- D. James Watson, Francis Crick, Maurice Wilkins, and Rosalind Franklin
- E. Erwin Chargaff

For many years, scientists thought that proteins and not nucleic acids were responsible for passing information from cell to cell.

6. How many monomers (amino acids) are found in combinations in polypeptides?

7. How many monomers (nucleotides) are found in combinations in DNA polymers?

8. Given the number of different amino acids, how many different combinations could form a sequence of 3 amino acids?

9. Given the number of different DNA nucleotides, how many different combinations could form a sequence of 3 DNA nucleotides?

When cells are heated, the structure of protein strands "warp" and shift and denature. This means that the strand changes shape and often is unable to return to its original, useful shape.

When cells are heated, the structure of DNA strands also "warp"; the two strands in the double strand break apart and the hydrogen bonds are broken. But the key difference between DNA and proteins is that when the DNA strands are cooled again, they "re-anneal"!

13. Use the internet to discover what "annealing" means. What happens to the DNA strands as they anneal?

You are studying the genomes of deep sea organisms when you come across a brand new species of lantern fish. In the lab, you measure the percent of nucleotides in the nucleus that contain adenine as their base and that percent is 30%.

10. Calculate the percent of thymine nucleotides: _____

11. Calculate the percent of guanine nucleotides: _____

12. Calculate the percent of cytosine nucleotides: _____