

Landmarks in Biochemistry: A Historical Quiz

Biochemistry · Answer Key · 12 Questions

1. Which scientist is credited with the isolation and first crystallization of urea from urine in 1773, a significant early step in organic chemistry and the study of biomolecules?

- A) Antoine Lavoisier
- B) Carl Wilhelm Scheele
- C) Jöns Jacob Berzelius
- D) Hilaire Rouelle**

2. In 1902, Emil Fischer and Franz Hofmeister independently proposed the peptide bond theory, which correctly described the linkage between amino acids in proteins. What crucial experimental evidence supported Fischer's work on protein structure?

- A) The synthesis of small peptides like glycylglycine.**
- B) The identification of amino acids in plant tissues.
- C) The discovery of enzymes that break peptide bonds.
- D) The X-ray diffraction patterns of proteins.

3. The discovery of the first enzyme, diastase (later named amylase), and its role in starch digestion was made by whom in 1833?

- A) Louis Pasteur
- B) Justus von Liebig
- C) Anselme Payen**
- D) Eduard Buchner

4. What groundbreaking experiment in 1953, demonstrating that DNA carries genetic information, involved infecting bacteria with bacteriophages and tracking the radioactive labels of phosphorus and sulfur?

- A) The Hershey-Chase experiment**
- B) The Griffith experiment
- C) The Meselson-Stahl experiment
- D) The Avery-MacLeod-McCarty experiment

5. In 1937, Sir Hans Krebs elucidated the citric acid cycle (also known as the Krebs cycle or TCA cycle). What was the primary experimental approach that enabled him to map this metabolic pathway?

- A) Studying the oxygen consumption of pigeon breast muscle slices.**
- B) Analyzing the chemical composition of liver tissue.
- C) Measuring the rate of ATP production in yeast.
- D) Identifying the intermediates of glycolysis.

6. The concept of "metabolism" as a coordinated network of biochemical reactions was largely established through the work of:

- A) Gregor Mendel
- B) Albert Szent-Györgyi
- C) Carl Cori and Gerty Cori**
- D) Fritz Lipmann

7. Which early 20th-century discovery revolutionized the understanding of vitamin function, demonstrating they are essential organic compounds required in small amounts for normal metabolism?

- A) The identification of hormones.
- B) The isolation of nucleic acids.
- C) The proposal of the chemiosmotic theory.
- D) The recognition of vitamins as dietary essentials.**

8. The Nobel Prize in Physiology or Medicine in 1949 was awarded for the discovery of the function of hormones and the historical isolation of adrenaline. Who were the recipients?

- A) Otto Loewi and Henry Dale
- B) Frederick Banting and John Macleod
- C) Edward Kendall and Tadeus Reichstein**
- D) Carl Wiggers and Arthur Grollman

9. The "Central Dogma" of molecular biology, describing the flow of genetic information from DNA to RNA to protein, was first proposed by which scientist in 1958?

- A) James Watson
- B) Francis Crick**
- C) Maurice Wilkins
- D) Linus Pauling

10. The discovery of ATP (adenosine triphosphate) as the primary energy currency of the cell is largely attributed to the work of:

- A) Fritz Lipmann**
- B) Albert Claude
- C) George Palade
- D) Christian de Duve

11. In 1955, Arthur Kornberg and his colleagues identified and isolated DNA polymerase I, a critical enzyme for DNA replication. What was their key experimental system for this discovery?

A) Bacterial cell extracts from E. coli.

B) Isolated mitochondria.

C) Purified protein fractions from yeast.

D) Plant seedlings.

12. The initial identification and characterization of messenger RNA (mRNA) as the molecule that carries genetic information from DNA to ribosomes for protein synthesis were significantly advanced by the research of:

A) Marshall Nirenberg and Heinrich Matthaei

B) Arthur Riggs and Robert Hoagland

C) Sydney Brenner and Francis Crick

D) Sol Spiegelman and Bruce Ames