

Hard Genetics Fact-Check

Genetics · Practice Test · 25 Questions

1. In which year did Oswald Avery, Colin MacLeod, and Maclyn McCarty publish their paper proving that DNA is the substance that causes bacterial transformation?

- A) 1944
- B) 1952
- C) 1941
- D) 1953

2. How many base pairs are contained in the approximate haploid human genome length as determined by the Human Genome Project?

- A) 2.5 billion
- B) 3.2 billion
- C) 4.1 billion
- D) 1.8 billion

3. Barbara McClintock was awarded the Nobel Prize in Physiology or Medicine in 1983 for the discovery of what genetic phenomenon, first observed in the 1940s?

- A) Epigenetic imprinting
- B) Transposable elements
- C) Alternative splicing
- D) Telomere shortening

4. The Hershey-Chase experiment, which confirmed DNA as the genetic material using bacteriophages, was conducted in which year?

- A) 1950
- B) 1953
- C) 1952
- D) 1948

5. What is the exact number of chromosomes typically found in a normal human diploid somatic cell?

- A) 48
- B) 44
- C) 46
- D) 23

6. In Gregor Mendel's 1866 paper 'Experiments on Plant Hybridization', how many distinct pea plant traits did he meticulously document and cross-breed?

- A) 5
- B) 7
- C) 9
- D) 12

7. James Watson and Francis Crick published their seminal paper on the double-helix structure of DNA in the journal Nature on what specific date?

- A) April 25, 1953
- B) February 28, 1953
- C) May 15, 1953
- D) March 7, 1953

8. How many codons are there in the standard genetic code?

- A) 20
- B) 64
- C) 48
- D) 128

9. The first genetically modified organism, a bacterium resistant to antibiotics, was created by Herbert Boyer and Stanley Cohen in which year?

- A) 1971
- B) 1973
- C) 1975
- D) 1979

10. Frederick Sanger developed the chain-termination method for DNA sequencing in which year?

- A) 1977
- B) 1980
- C) 1974
- D) 1982

11. What is the total number of amino acids standardly encoded by the genetic code for protein synthesis?

- A) 22
- B) 20
- C) 18
- D) 24

12. In 1902, Walter Sutton proposed the Chromosomal Theory of Inheritance; in which year did Theodor Boveri independently arrive at similar conclusions?

- A) 1902
- B) 1904
- C) 1906
- D) 1908

13. The International Human Genome Sequencing Consortium officially announced the completion of the 'finished' version of the human genome sequence in what year?

- A) 2001
- B) 2003
- C) 2005
- D) 2007

14. How many hydrogen bonds are present between a Guanine-Cytosine base pair in DNA?

- A) 1
- B) 2
- C) 3
- D) 4

15. Marshall Nirenberg and Heinrich Matthaei identified the first codon (UUU for phenylalanine) in which year?

- A) 1961
- B) 1959
- C) 1963
- D) 1965

16. What is the approximate percentage of the human genome that consists of coding sequences (exons)?

- A) 1.5%
- B) 5%
- C) 10%
- D) 20%

17. The enzyme DNA polymerase I was first isolated by Arthur Kornberg in which year?

- A) 1955
- B) 1957
- C) 1959
- D) 1961

18. In humans, the mitochondrial genome consists of how many base pairs?

- A) 16,569
- B) 12,450
- C) 20,100
- D) 8,200

19. Which scientist discovered the 'transforming principle' in *Streptococcus pneumoniae* in 1928?

- A) Oswald Avery
- B) Frederick Griffith
- C) Alfred Hershey
- D) Martha Chase

20. The polymerase chain reaction (PCR) technique was invented by Kary Mullis in which year?

- A) 1981
- B) 1983
- C) 1985
- D) 1987

21. Thomas Hunt Morgan won the Nobel Prize in 1933 for his work on which model organism?

- A) *Caenorhabditis elegans*
- B) *Drosophila melanogaster*
- C) *Mus musculus*
- D) *Arabidopsis thaliana*

22. How many rings does a purine base have in its chemical structure?

- A) 1
- B) 2
- C) 3
- D) 4

23. In 1941, George Beadle and Edward Tatum proposed the 'one gene-one enzyme' hypothesis based on experiments with which organism?

- A) *Neurospora crassa*
- B) *Saccharomyces cerevisiae*
- C) *Escherichia coli*
- D) *Zea mays*

24. The Human Genome Project was officially launched by the U.S. government in which year?

- A) 1988
- B) 1990
- C) 1992
- D) 1994

25. How many stop codons exist in the standard genetic code?

- A) 1
- B) 2
- C) 3
- D) 4