

Mission: The Genome Secret Code

Interactive decoding activity & conceptual challenge on DNA fundamentals and the Human Genome Project.

STUDENT NAME
[Student Name]

TARGET GRADE
Grade 7 (Age 13)

TOPIC SECTION
Genetics & HGP

TOTAL SCORE
___ / 100 Points

Mission Briefing: DNA is the chemical alphabet of living organisms. Complete the 3 operational missions below to unlock the secrets mapped by the international scientific team in April 2003.

Mission 1: The Chemical Alphabet & Base Pairing (20 Pts)

Rule: In DNA molecules, **Adenine (A)** always pairs with **Thymine (T)**, and **Cytosine (C)** always pairs with **Guanine (G)**.

A Adenine Pairs with Thymine (T)	T Thymine Pairs with Adenine (A)	C Cytosine Pairs with Guanine (G)	G Guanine Pairs with Cytosine (C)
--	--	---	---

Decode the Complementary DNA Strand below:

A	T	G	C	A	A	C	T	G	T
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]

Mission 2: Conceptual Decoder (40 Pts)

1. What constitutes the biological definition of a "Genome"?

20 Pts

☐ Only the coding genes inside cell ribosomes

☐ Complete set of genetic info (nuclear + mitochondrial DNA)

☐ The proteins modified inside the Golgi apparatus

2. Sequence Length: How many chemical base pairs make up the human genome?

20 Pts

☐ Approximately 3 million pairs

☐ Roughly 3 billion base pairs

☐ Exactly 46 base pairs

Mission 3: Project Milestones & Diversity Code (40 Pts)

3. Genetic Similarity: Why are all humans so closely related biologically?

20 Pts

Complete: The genome of any two humans is roughly _____ % identical, leaving only _____ % for variations.

4. Scientific Timeline: The Human Genome Project (HGP)

20 Pts

Complete: The international project was launched in year _____ and completed in _____ of year _____.