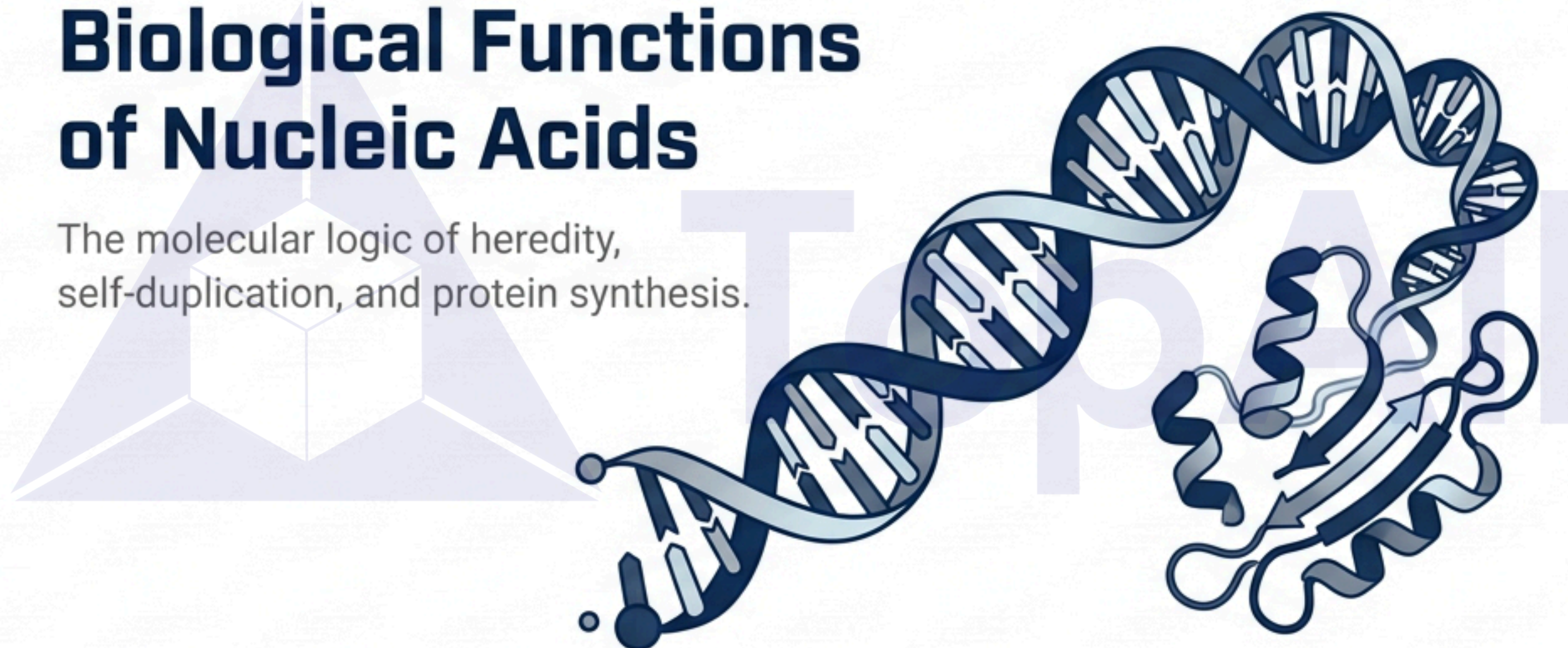


SECTION 10.5.3 • CLASS 12 CHEMISTRY

Biological Functions of Nucleic Acids

The molecular logic of heredity, self-duplication, and protein synthesis.



The Chemical Basis of Heredity



The Genetic Reserve

DNA acts as the ultimate reserve of genetic information. It stores the coded chemical message required for all cellular operations.

[SEQUENCE_STORED]

A-T | G-C

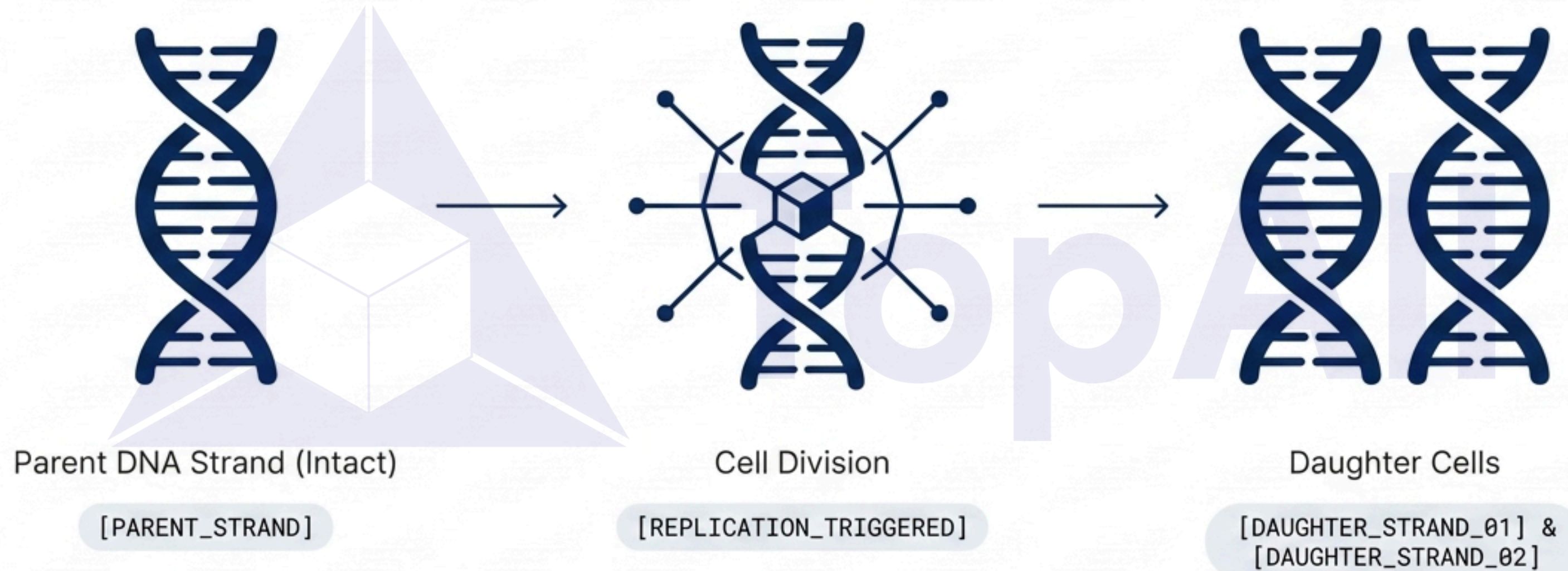


Species Identity

DNA is exclusively responsible for maintaining the unique identity of different species of organisms over millions of years of evolution.

[SPECIES_CONTINUITY]

Self-Duplication During Cell Division



A DNA molecule is capable of self-duplication, ensuring identical DNA strands are perfectly transferred to daughter cells.



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



RNA & The Mechanics of Protein Synthesis

While the master message for a particular protein is locked in the DNA, proteins are actually synthesized by various RNA molecules.

mRNA

Messenger RNA



Carries the specific genetic code from the DNA to the cellular machinery.

rRNA

Ribosomal RNA



Forms the structural framework of the ribosome where protein synthesis occurs.

tRNA

Transfer RNA



Brings the correct amino acids to the ribosome to build the polypeptide chain.

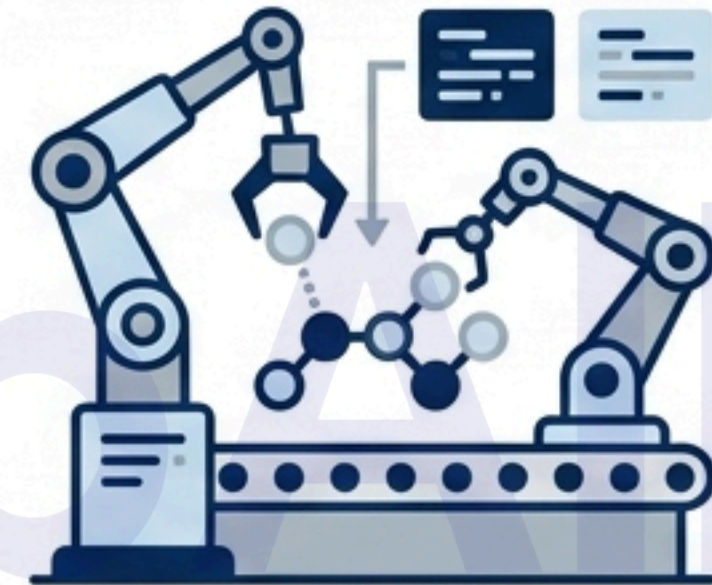
The Dual Mandate of Nucleic Acids

DNA (The Architect)



- **Primary Role:** Information Storage & Heredity.
- **Key Trait:** Capable of self-duplication to maintain species identity.

RNA (The Builder)



- **Primary Role:** Execution of Protein Synthesis.
- **Key Trait:** Translates the master message into functional biomolecules.

"DNA dictates the message; RNA synthesizes the proteins that build life."



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis