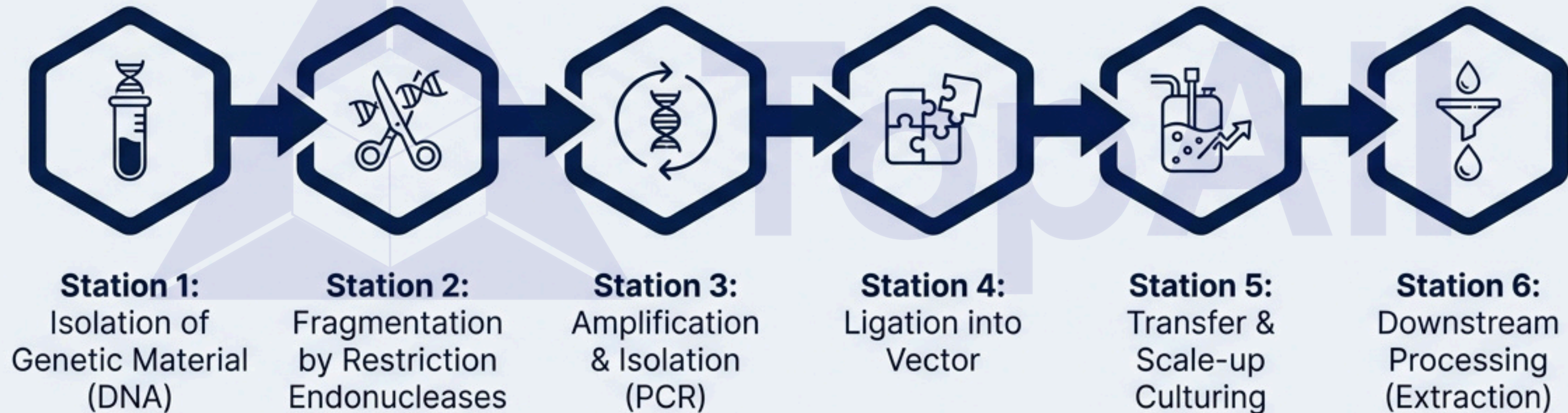


R-DNA Technology Complete Process



DNA Isolation: Breaking the Cellular Fortress

The Lysis Matrix

Bacterial Cell	→	Lysozyme
Plant Cell	→	Cellulase
Fungal Cell	→	Chitinase

Note: RNA is removed by Ribonuclease;
Proteins by Protease.

The Extraction Process



Purified DNA precipitates out as fine threads
after the addition of chilled ethanol.

DNA Fragmentation & Sorting

Molecular Scissors: Restriction Endonucleases



1. DNA is negatively charged.
2. Moves toward positive anode.
3. Smaller fragments move farther/faster.

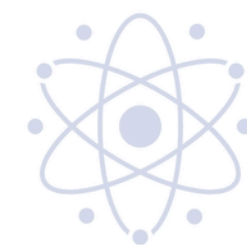
Agarose Gel Electrophoresis: Size-Based Sorting





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.**

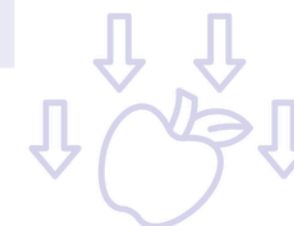
Practice Now



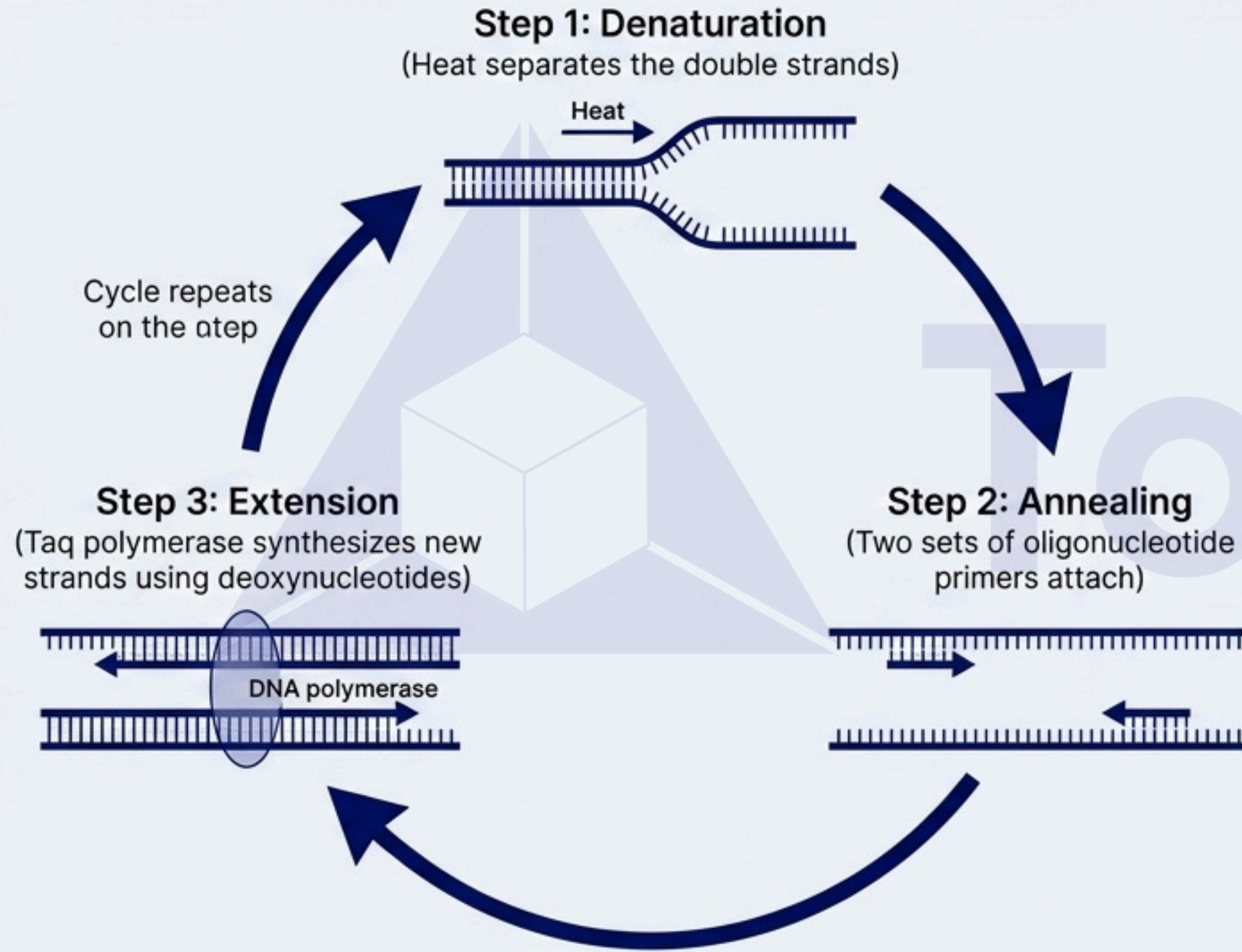
At prep.topall.app

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

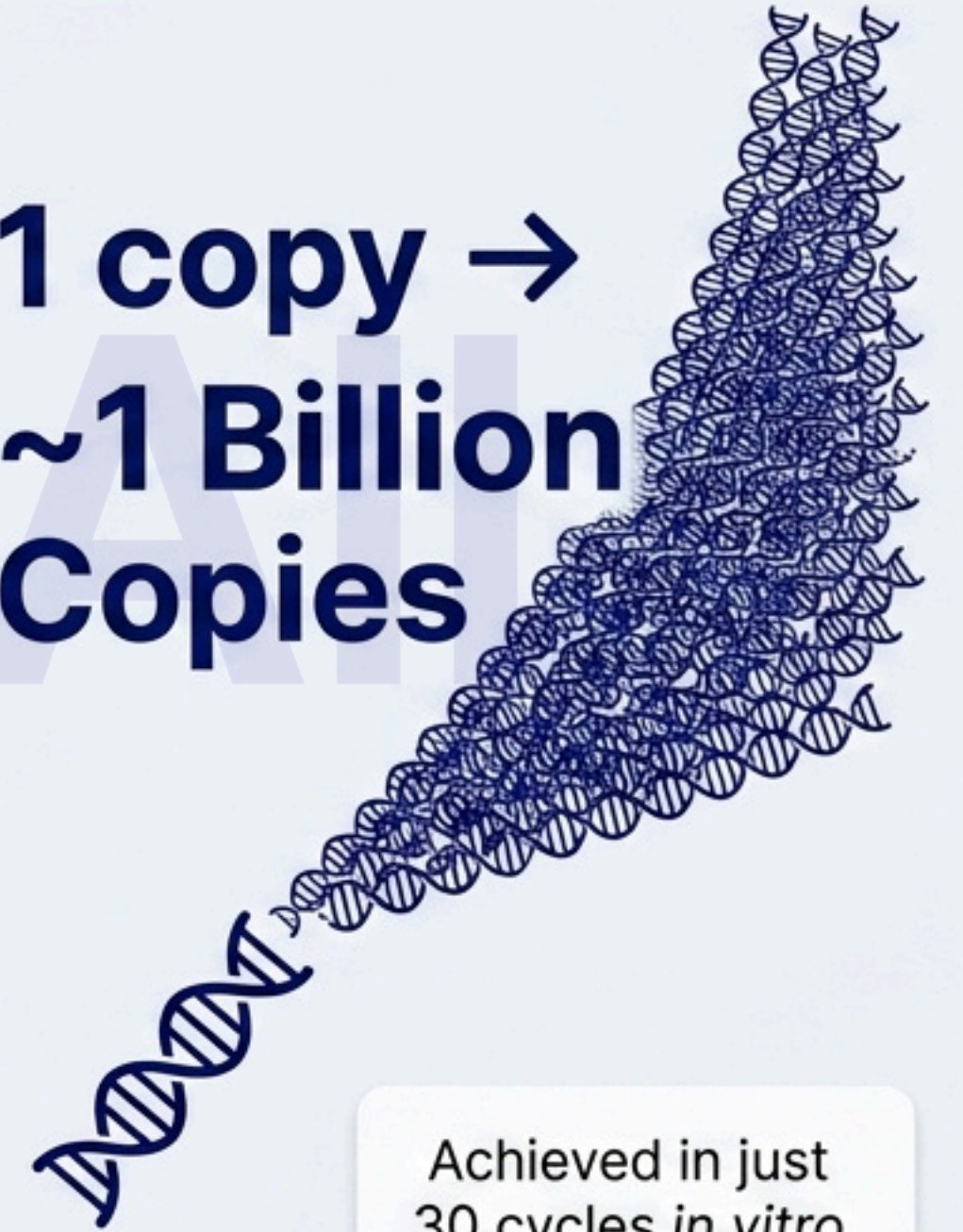


Desired Fragment Isolation via PCR



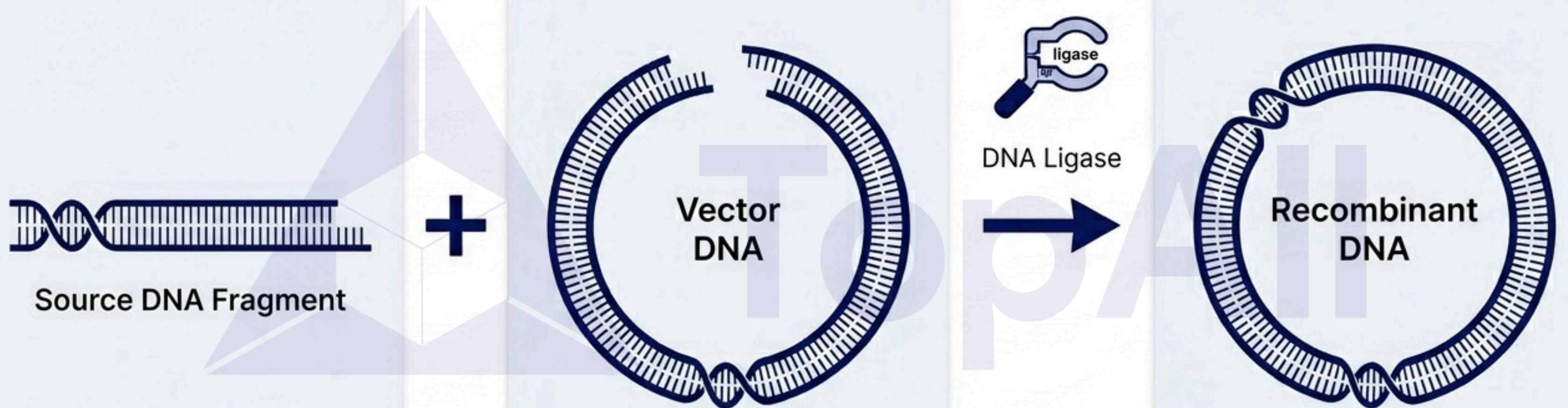
The Exponential Scale

**1 copy →
~1 Billion
Copies**



Achieved in just
30 cycles *in vitro*.

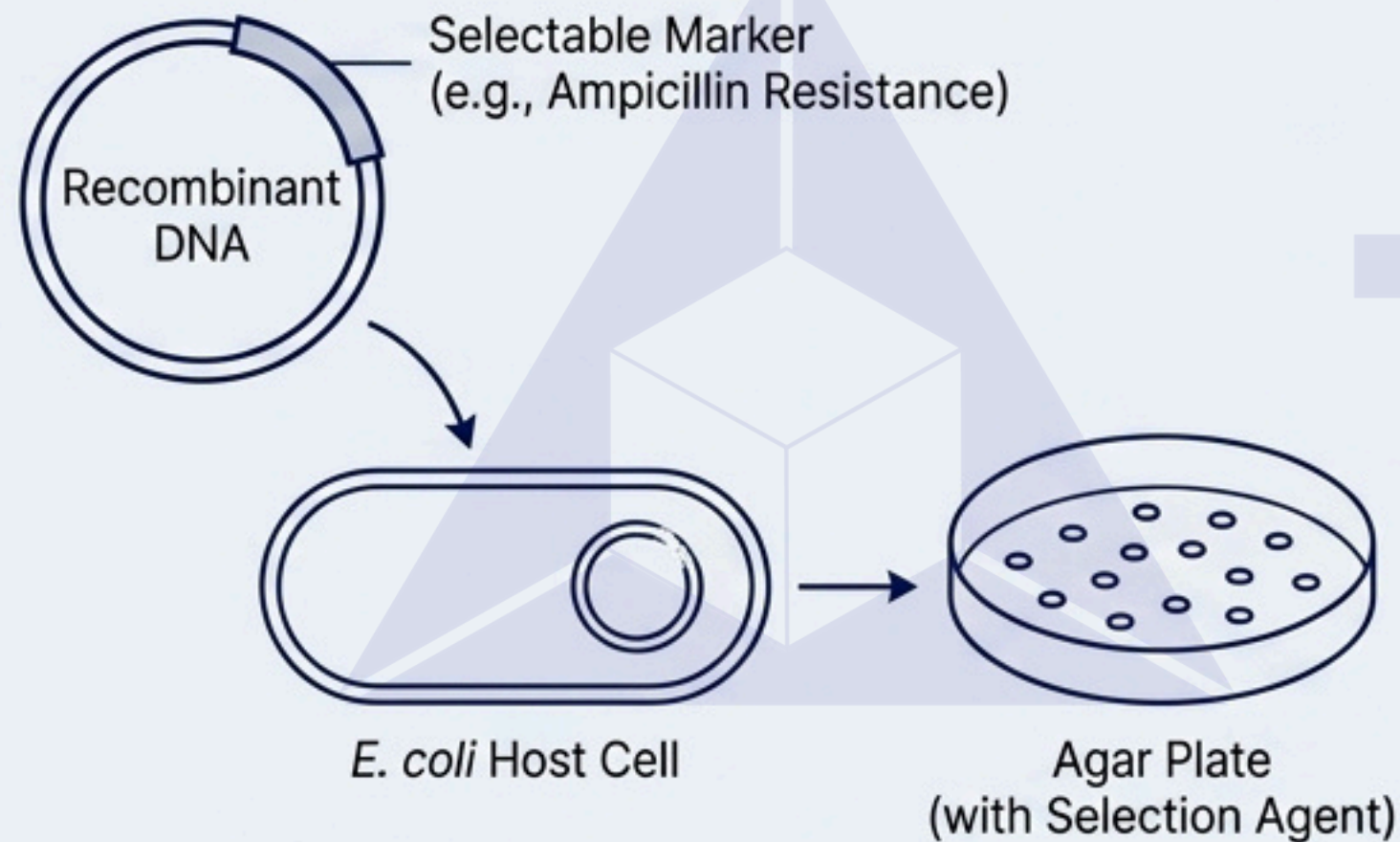
Ligation Into Vector



Critical Rule: Cutting both the source and vector with the same restriction enzyme ensures perfectly complementary sticky ends.

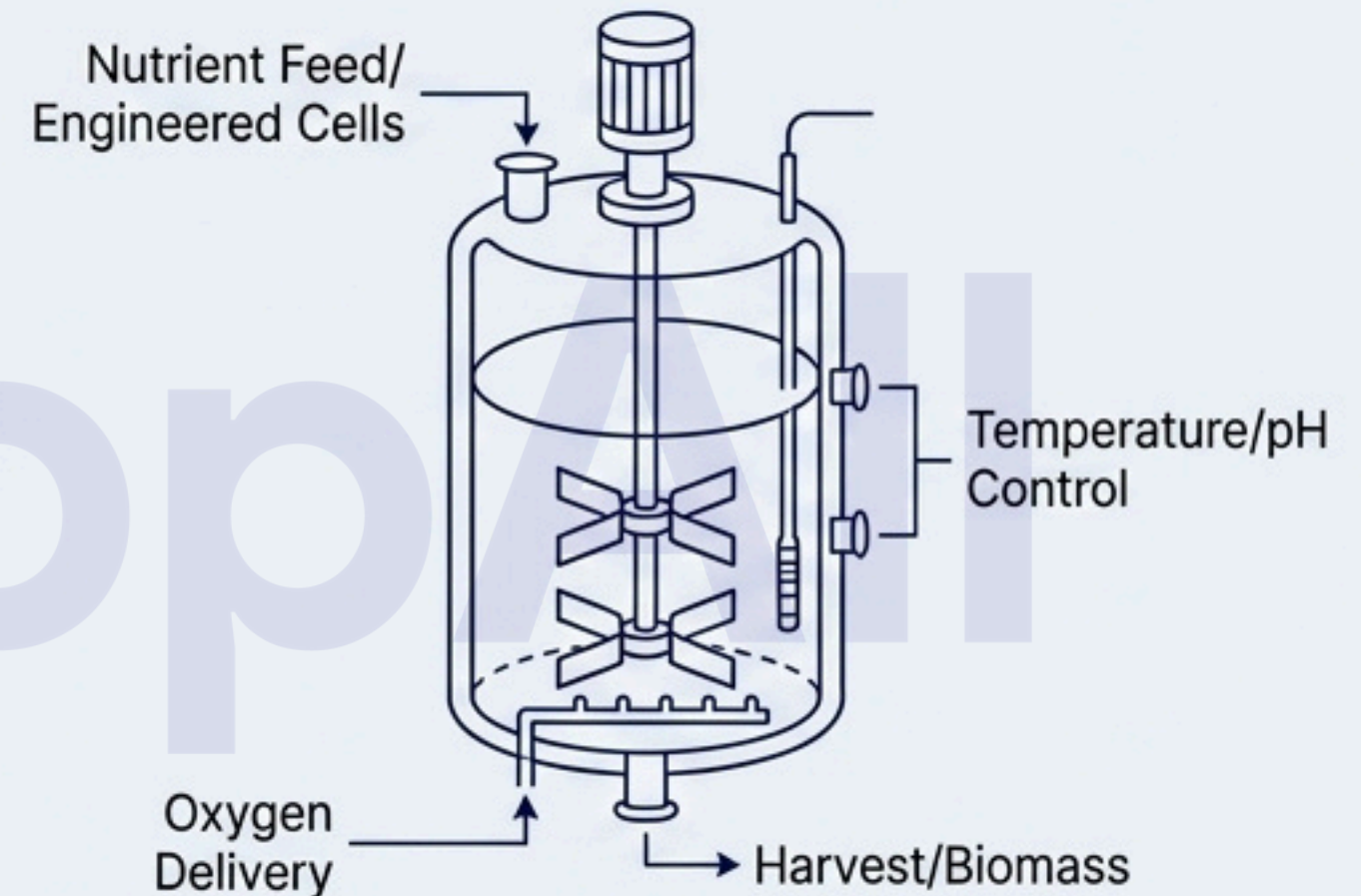
Transfer and Large-Scale Culturing

Transformation & Selection



Recombinant DNA (bearing a selectable marker like ampicillin resistance) is transferred into competent *E. coli*. Grown on agar plates, only successful transformants survive.

Industrial Scale-Up



Engineered cells are multiplied in continuous culture systems (100–1000 liters) to yield large quantities of the desired protein biomass. Systems feature precise agitators, oxygen delivery, and temperature control.

Extraction & Downstream Processing



NEET Key Takeaway: High-Yield Enzyme Summary



Lysis →	Lysozyme / Cellulase / Chitinase (Cell wall breakdown)
Cutting →	Restriction Endonucleases (Molecular scissors)
Amplification →	Taq Polymerase (High-temp DNA synthesis)
Joining →	DNA Ligase (Pasting sticky ends)



You've Learned the Theory.

Now Let's Test It.

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