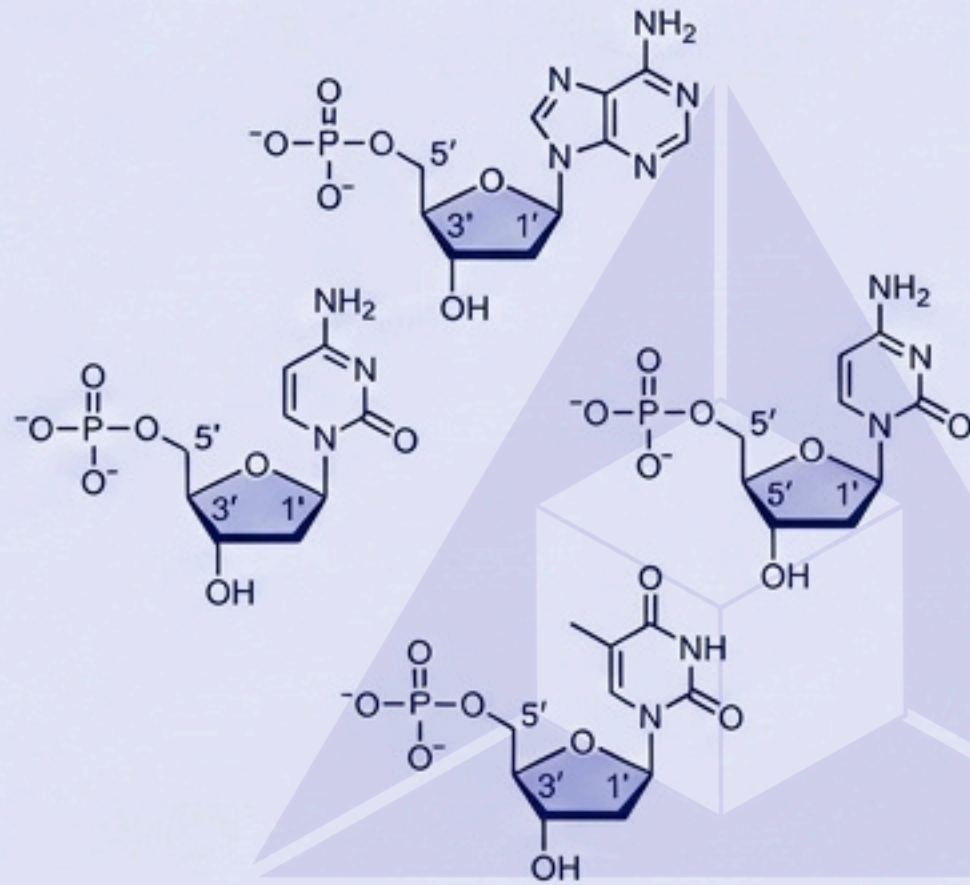


DNA: The Genetic Polymer

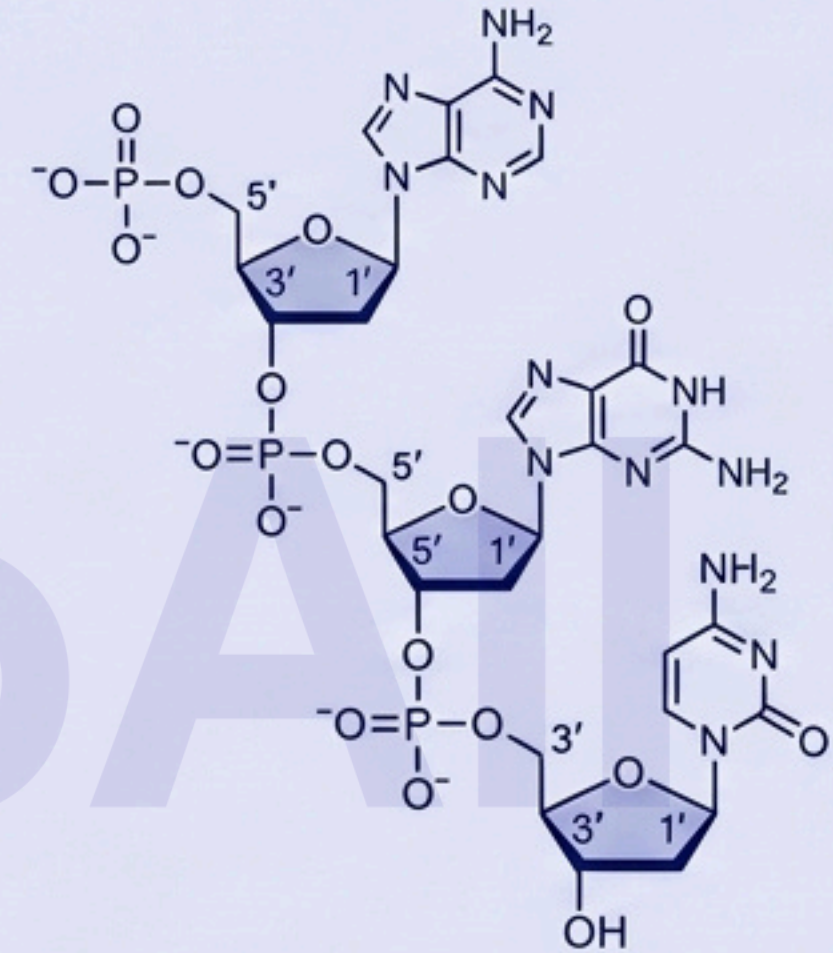
Understanding the fundamental architecture and scale of biological information storage.



The Architecture of a Polynucleotide



[Deoxyribonucleotide]



[DNA Polymer]

DNA is a long polymer of deoxyribonucleotides. Its identity is defined by the sequence of these linked monomer units.



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.**

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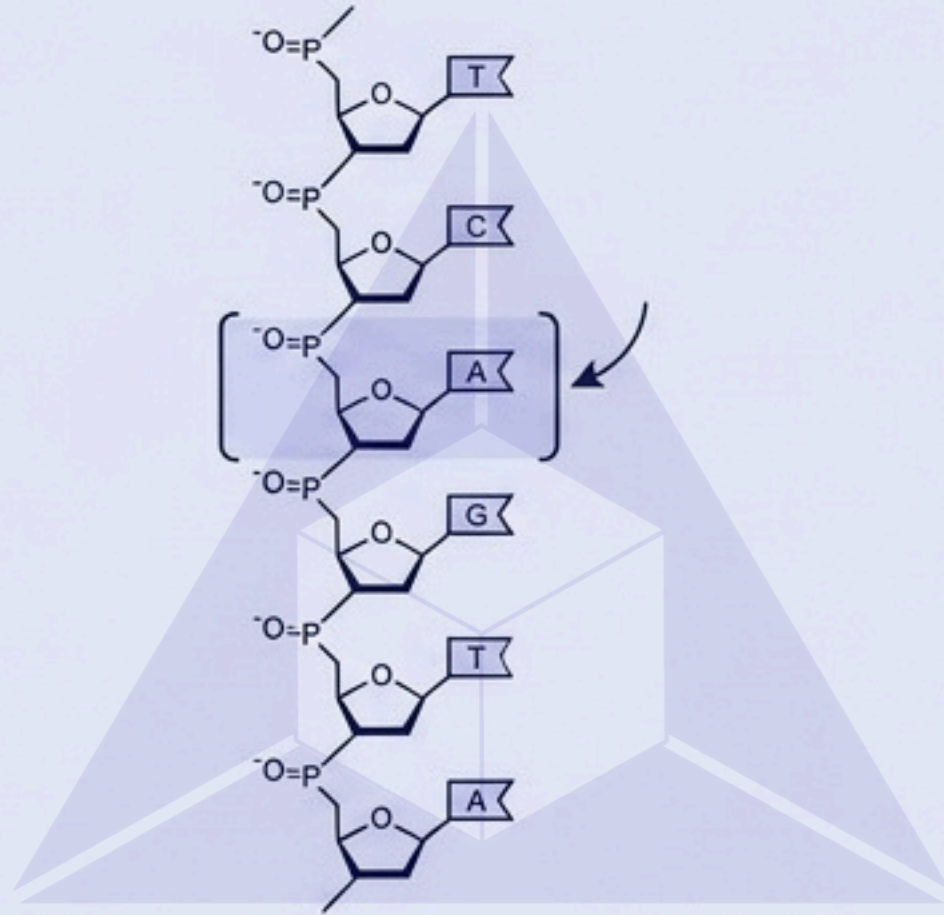
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Key Highlights

- » 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

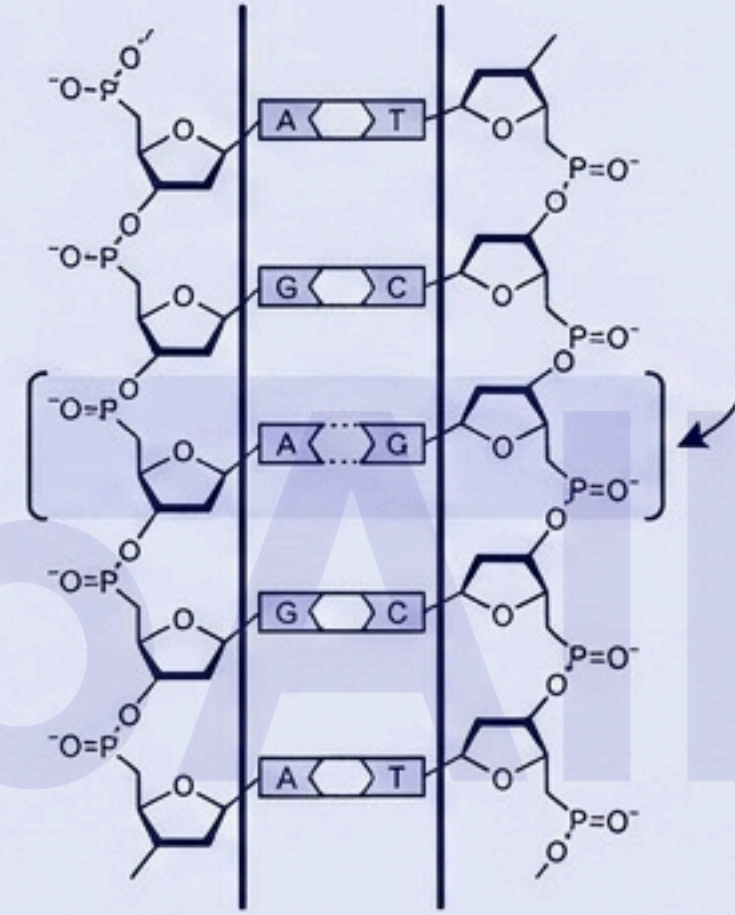


Defining the Units of Genetic Measurement



1 Nucleotide (nt)

Used to measure single-stranded genetic material.



1 Base Pair (bp)

Used to measure double-stranded genetic material.



Common Misconception: Do not use 'base pairs' to measure single-stranded genomes, as there is no pairing happening.



Because bacteriophage $\phi \times 174$ contains single-stranded DNA, its length is strictly defined in nucleotides (5386 nt), not base pairs.

The Genome Scale Comparison Matrix



Bacteriophage
 $\phi \times 174$
5,386 nt



Bacteriophage
Lambda
48,502 bp



Escherichia coli
(E. coli)
 4.6×10^6 bp



Human
(Haploid Content)
 3.3×10^9 bp

Magnitude Visualizer



Length as an Information Store

🔑 The length of DNA is a defining characteristic of an organism.



Shorter polymer = Limited viral/bacterial instruction set



Massive polymer = Highly complex mammalian instruction set.

The total number of nucleotides directly correlates to the vastness of the genetic blueprint required to build and maintain the living system.



You've Learned the Theory.

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