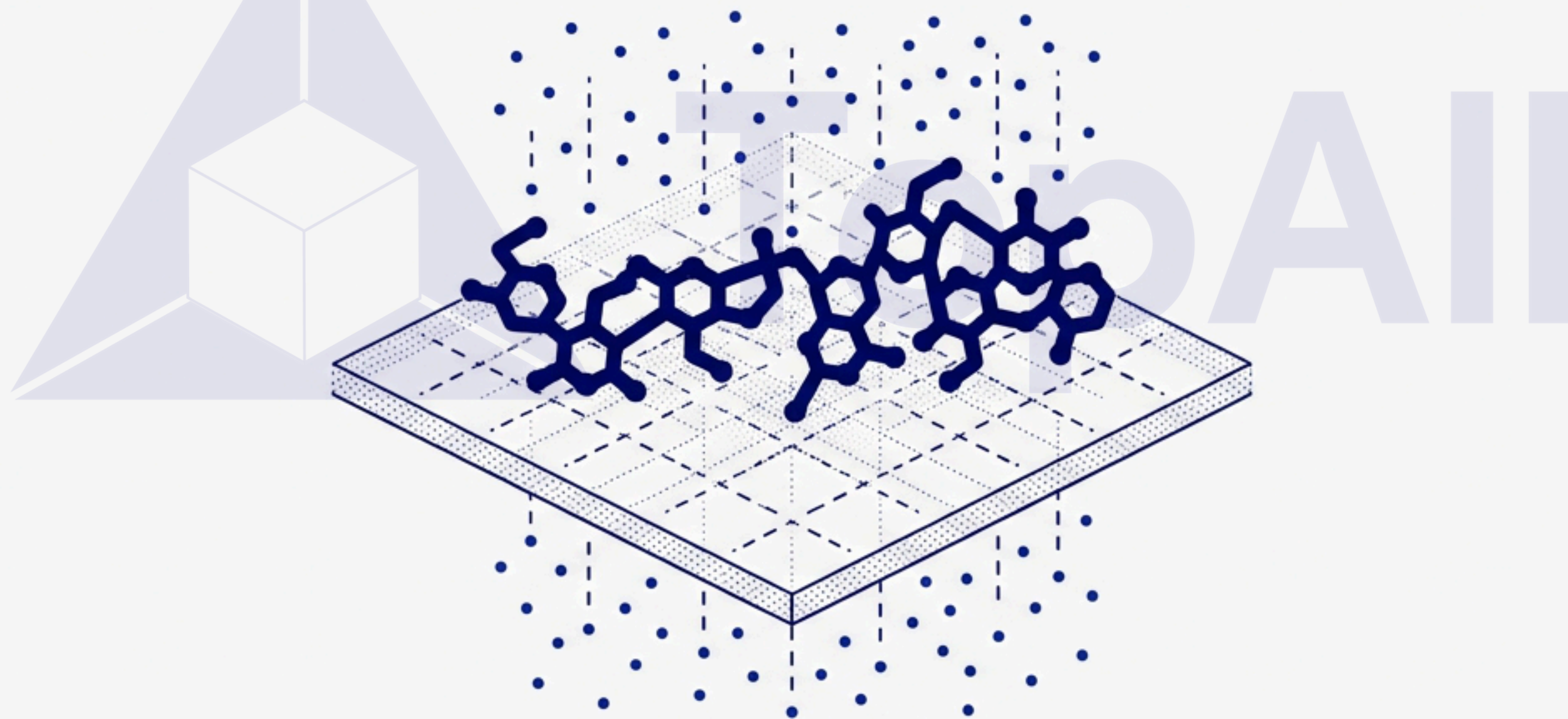


Small Molecules vs Large Molecules



Chapter 9.3: Biomacromolecules

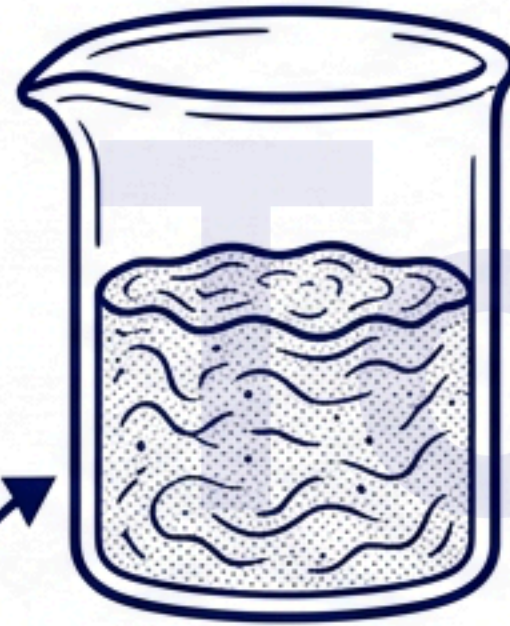


EXTRACTION



Grind living tissue
(e.g., vegetable or liver).

SOLVATION



Trichloroacetic Acid
(ClC(Cl)(Cl)C(=O)O)

FILTRATION

Retentate



Filtrate



Acid-Soluble Pool

- **Technical Name:** Filtrate
- Molecular Weight: $< 1,000$ Da
- **Cellular Origin:** Represents the cytoplasmic composition.

Acid-Insoluble Fraction

- **Technical Name:** Retentate
- Molecular Weight: $> 10,000$ Da
- **Cellular Origin:** Represents cytoplasm + organelles.

Key Takeaway: Together, these two fractions represent the entire chemical composition of living tissues.



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



Micromolecules (The Soluble Pool)



18 to ~800 Da

[Amino Acids]

[Simple Sugars]

[Nucleotides]

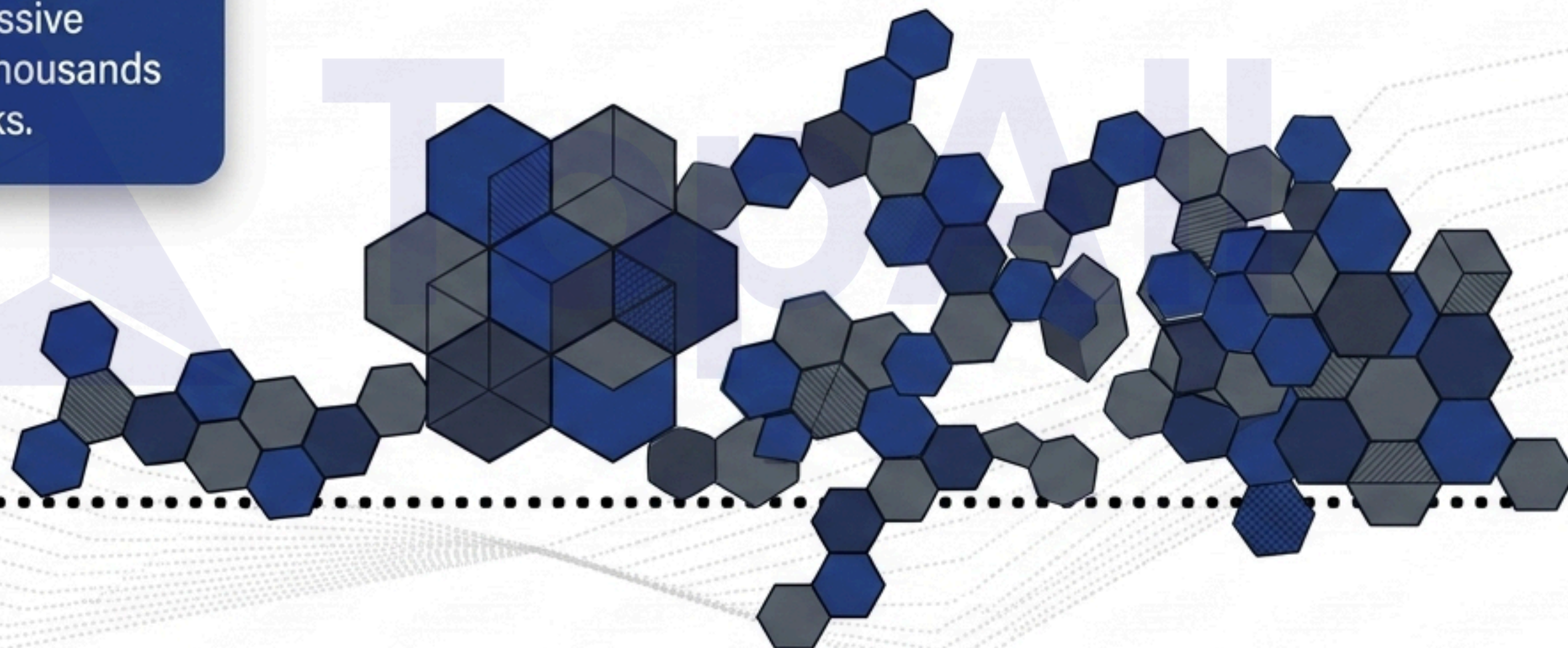
These are the fundamental building blocks—small enough to pass freely through the **cheesecloth filter**.

Biomacromolecules (The Insoluble Fraction)

Polymeric Substances

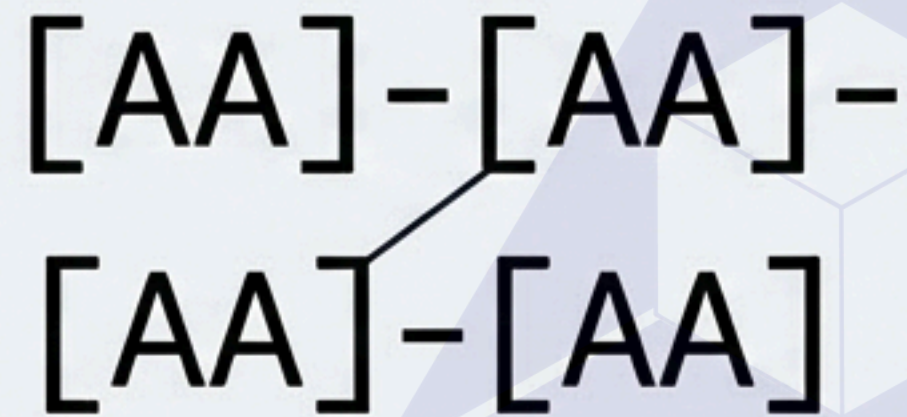
With one notable exception, molecules in the insoluble fraction are polymers—massive structures built by linking together thousands of smaller monomeric building blocks.

> 10,000 Da



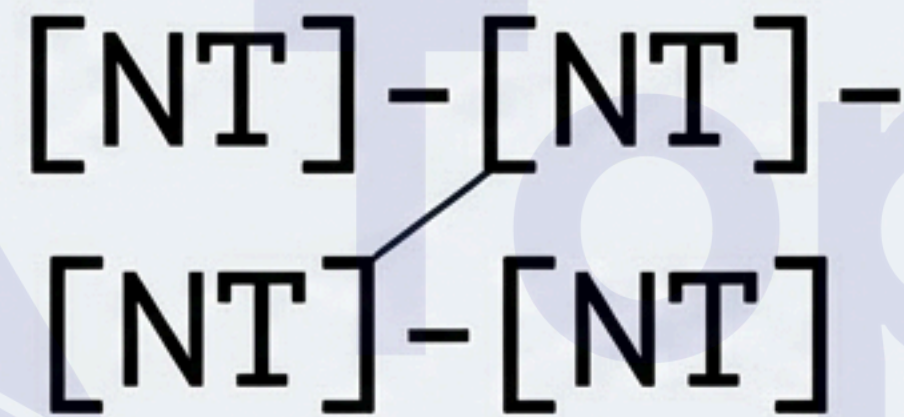
The 'Big Three' Polymeric Macromolecules

Proteins



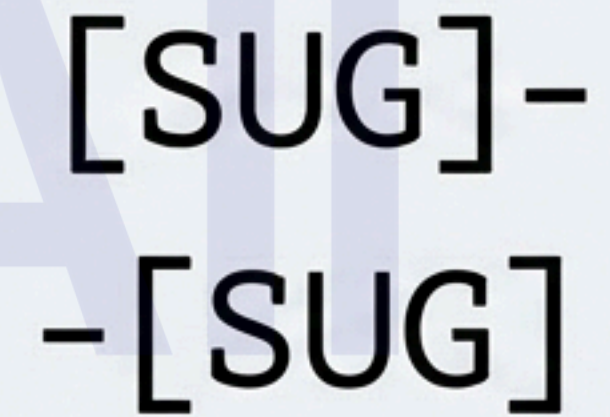
Polypeptides formed by linear chains of amino acids linked by peptide bonds.

Nucleic Acids



DNA and RNA; complex chains of nucleotides containing a heterocyclic base, a sugar, and a phosphate.

Polysaccharides



Long threads of monosaccharide sugars (e.g., cellulose, starch, glycogen).

The Lipid Paradox

DO NOT CONFUSE: Lipids are NOT strictly macromolecules. Their molecular weight does not exceed 800 Da.



Because membrane fragments clump into large, insoluble vesicles, they cannot pass through the cheesecloth—trapping them in the macromolecular retentate despite their individual small size.

The Total Cellular Mass



The Anchor

Despite the complexity of biomacromolecules, simple Water remains the most abundant chemical in living organisms.



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