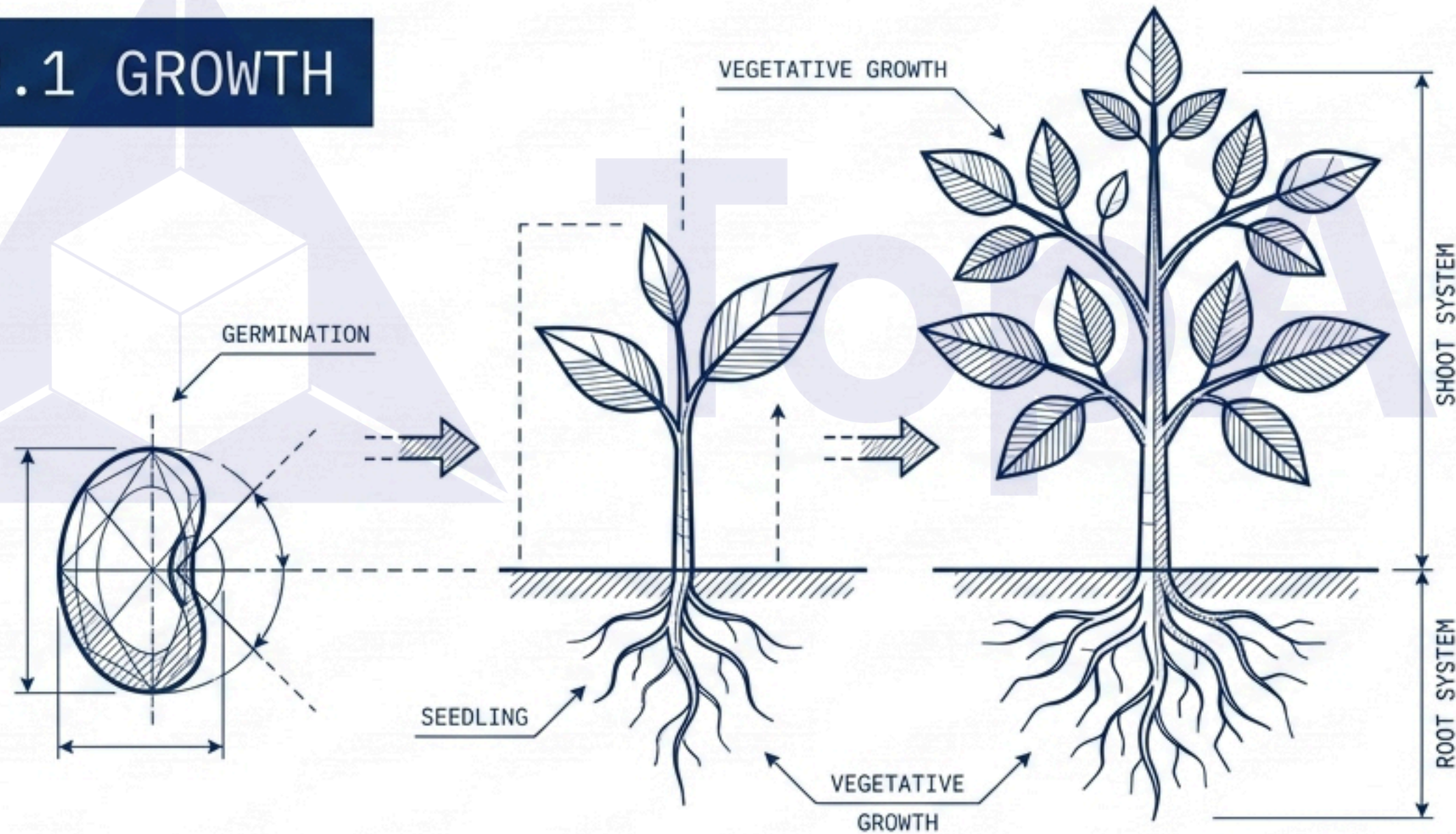


More Than Just Getting Bigger

The strict biological parameters of growth in plants.

13.1 GROWTH



The infographic features a dark blue background with glowing circuit-like lines. A large green rounded rectangle contains the title "TRUE GROWTH" in white bold letters, followed by the definition "An absolute increase in physical size." in a monospaced font. To the left, a light blue box shows a partial equation "ENT = rate is per time." and a red box at the bottom states "e or temporary eases do NOT s growth." in red text. A faint drawing of a plant seedling is visible in the lower right area.

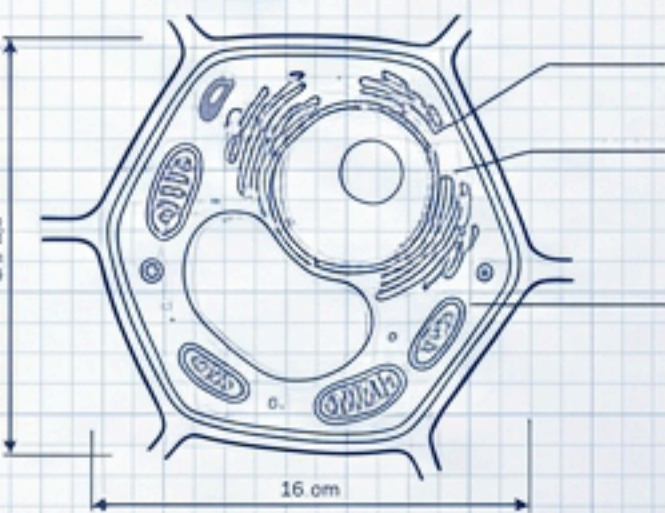
**TRUE
GROWTH**

An absolute increase
in physical size.

ENT

rate is
per time.

e or temporary
eases do NOT
s growth.





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



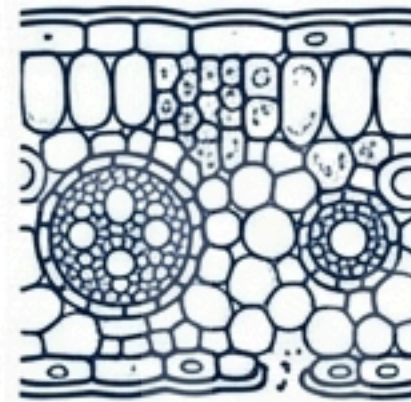
The architecture of expansion

Growth does not just happen to the whole organism; it is measurable across three distinct structural levels of the plant.



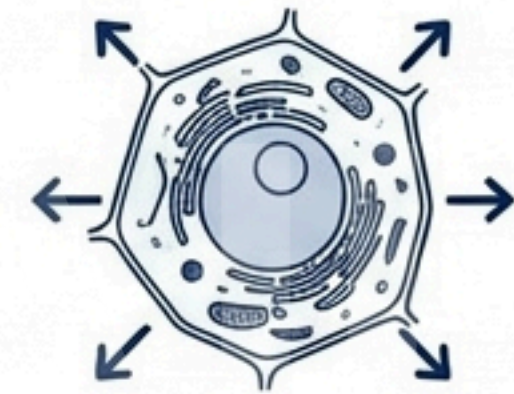
Organ Level

SCALE: MACRO



Part Level

SCALE: MESO



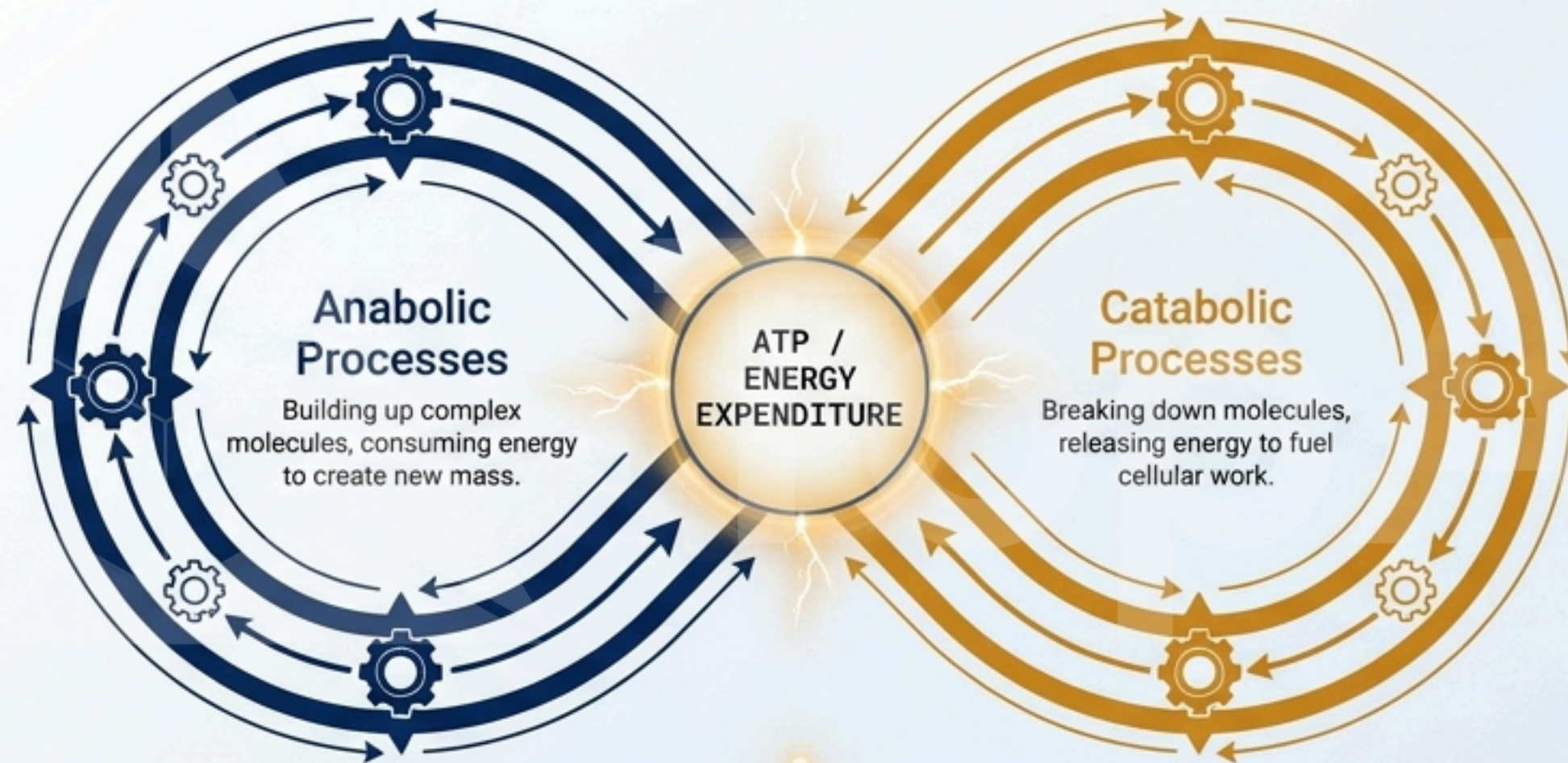
Individual Cell Level

SCALE: MICRO

Growth at the cellular level is principally a consequence of an increase in the amount of protoplasm.

The metabolic engine

True growth does not happen passively. It is an active achievement driven by simultaneous metabolic processes that occur at the expense of energy.



Both processes occur simultaneously to drive the net positive accumulation of plant material.

True growth vs. physical swelling

Leaf Expansion



Mechanism: Cellular division and active protoplasm synthesis.

Metabolism: Requires energy expenditure.

Result: Irreversible change.

TRUE GROWTH

Wood Swelling (in water)



Mechanism: Passive absorption of water by dead tissue.

Metabolism: No metabolic energy spent.

Result: Reversible when dried.

NOT GROWTH

SUMMARY

The ultimate parameter of growth

Biological growth in plants is an active, energy-driven metabolic achievement, resulting in a permanent, irreversible increase in the size of a cell, part, or organ. It is never just a passive physical expansion.



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