

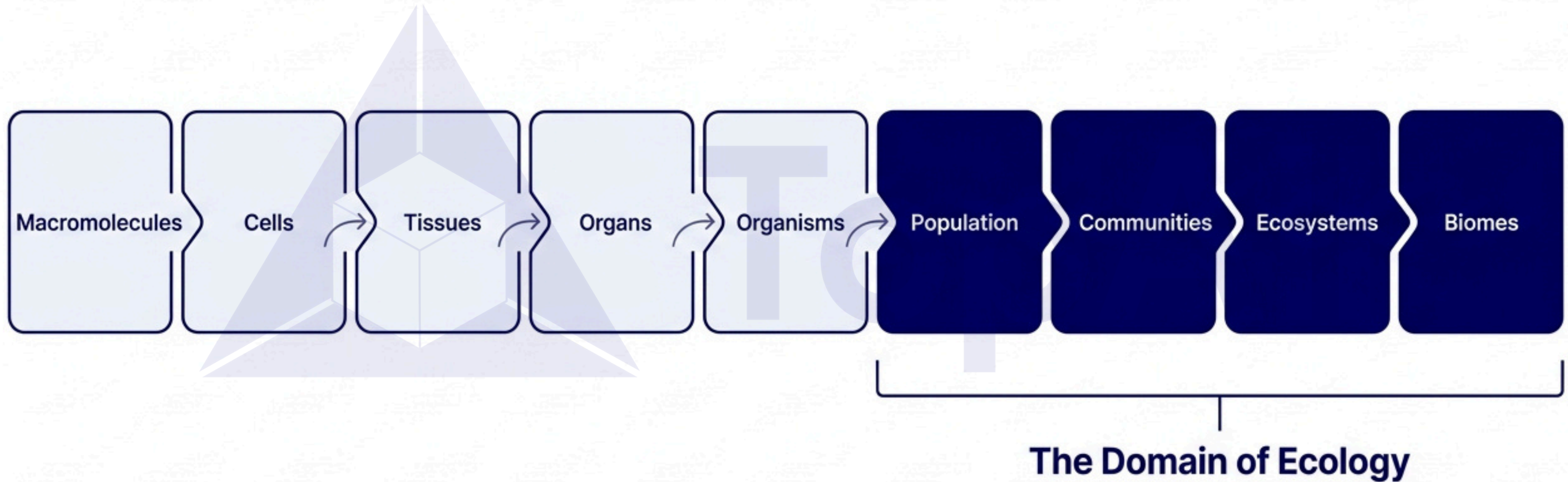
Organisms and Populations

Chapter Introduction



The Scope of Biological Organisation

From microscopic mechanisms to planetary systems



Two Dimensions of Scientific Inquiry

Analyzing biological processes at any level of organization



How-Type Questions

Seeking the Mechanism

Investigates the physical, chemical, or biological operation behind a process.



Why-Type Questions

Seeking the Significance

Investigates the evolutionary purpose, need, or ultimate benefit of the process.



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

$$E=mc^2$$



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Key Highlights

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- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



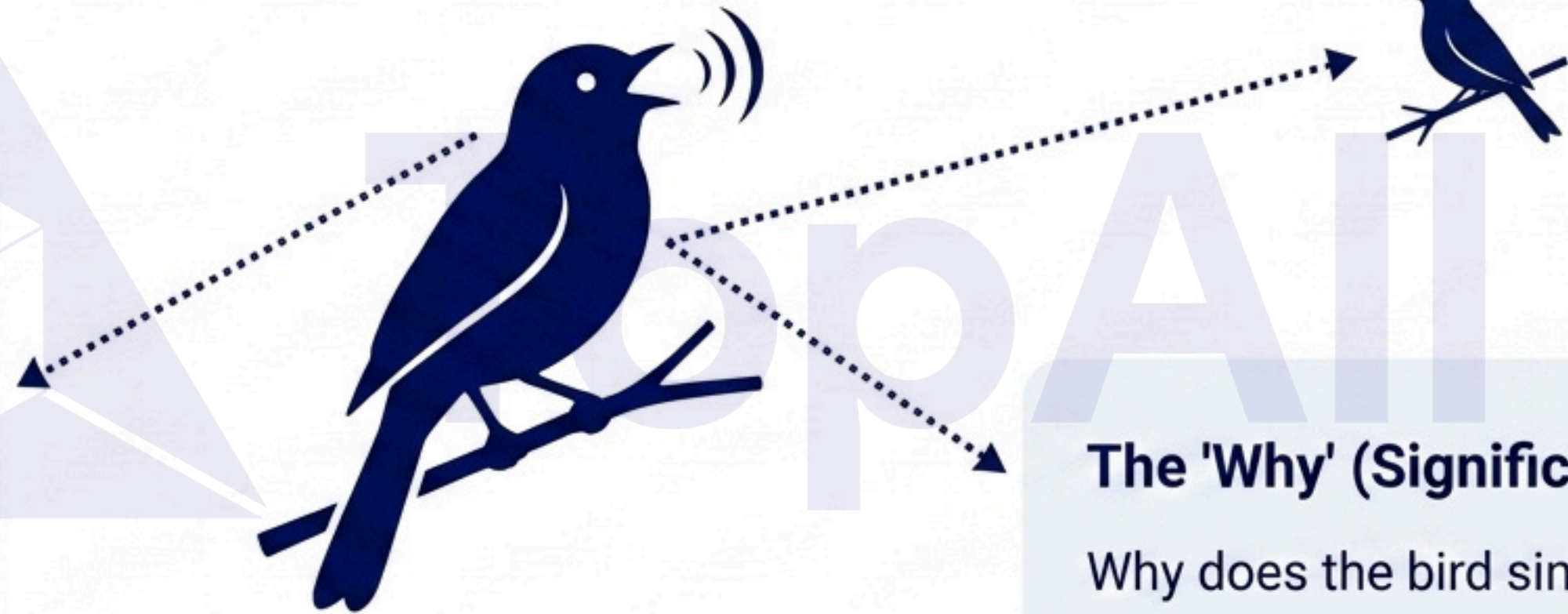
Applying the Framework: The Bulbul's Song

"When we hear the bulbul singing early morning in the garden..."

The 'How' (Mechanism)

How does the bird sing?

- By the operation of the voice box and the vibrating bone.



The 'Why' (Significance)

Why does the bird sing?

- The need to communicate with a mate during breeding season.

Cultivating a Scientific Frame of Mind

Observing nature triggers questions of mechanism and significance.



Why are night-blooming flowers generally white?



How does the bee know which flower has nectar?



Why does the cactus have so many thorns?



How does the chick recognise her own mother?

While an **individual organism** is the one
its **selection level organis** is the one that
has to cope with a changed environment...

...it is at the **population level** that natural
selection operates to evolve the desired traits.

**Population Ecology is the critical link between
ecology, population genetics, and evolution.**



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