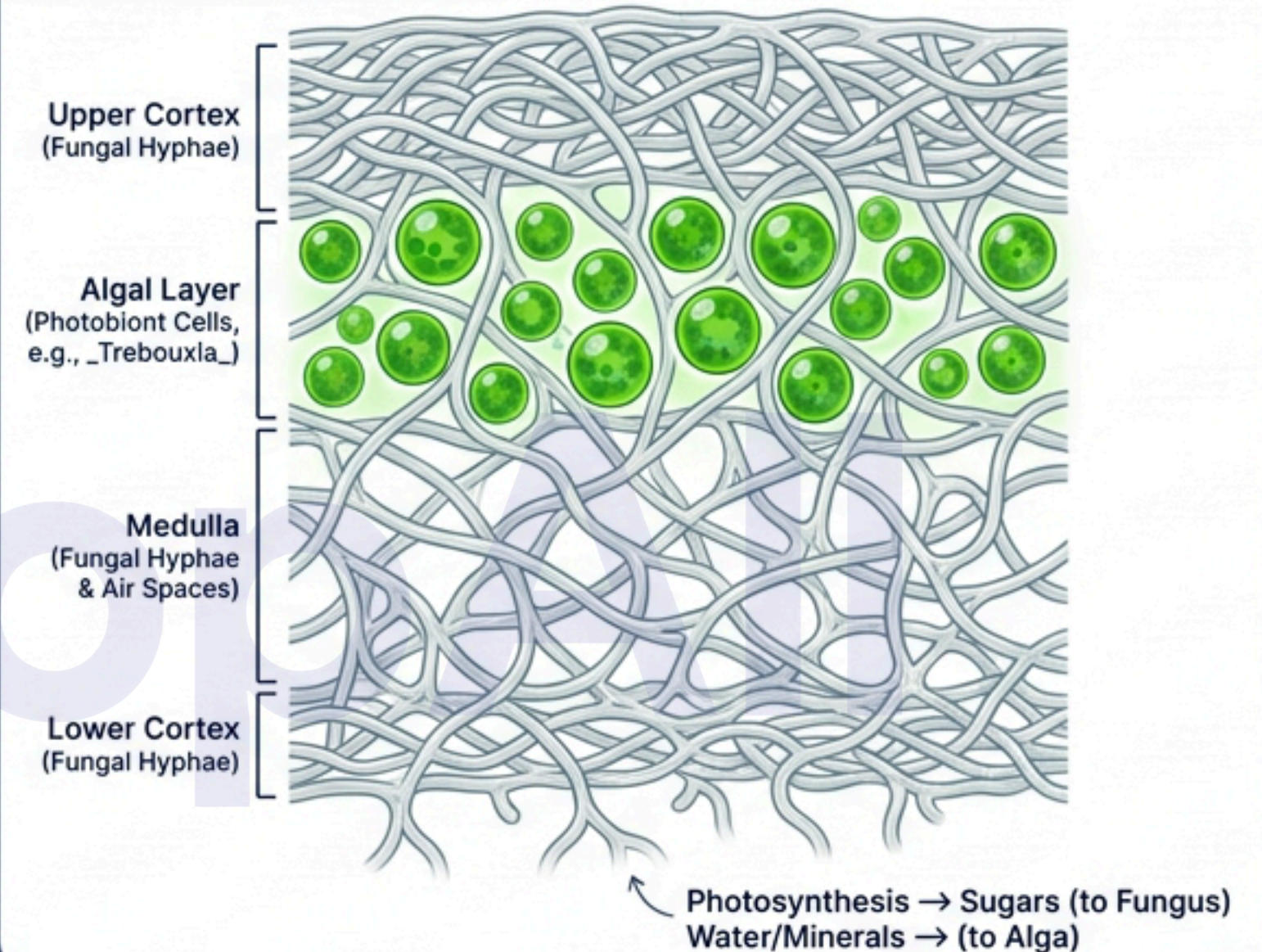


Lichens: Algae + Fungi Partnership



Macro Ecosystem: Symbiotic Organism in its Habitat.

Lichens are composite organisms resulting from a symbiotic relationship between a fungus and a photosynthetic partner, thriving in diverse environments from arctic tundras to desert rocks. Their presence indicates air quality.

CLASSIFICATION: Lichenized Fungi (e.g., *Xanthoria parietina*)

Micro Ecosystem: Cellular Interdependence.

The fungus provides structure, protection, and water/mineral absorption, while the alga or cyanobacterium performs photosynthesis, supplying sugars to the fungus. This mutualistic relationship allows lichens to survive in extreme conditions.

KEY COMPONENTS: Fungal Hyphae (Mycobiont), Algal Cells (Photobiont)

[Algae] + [Fungi] = Symbiosis

Mutually Useful Association

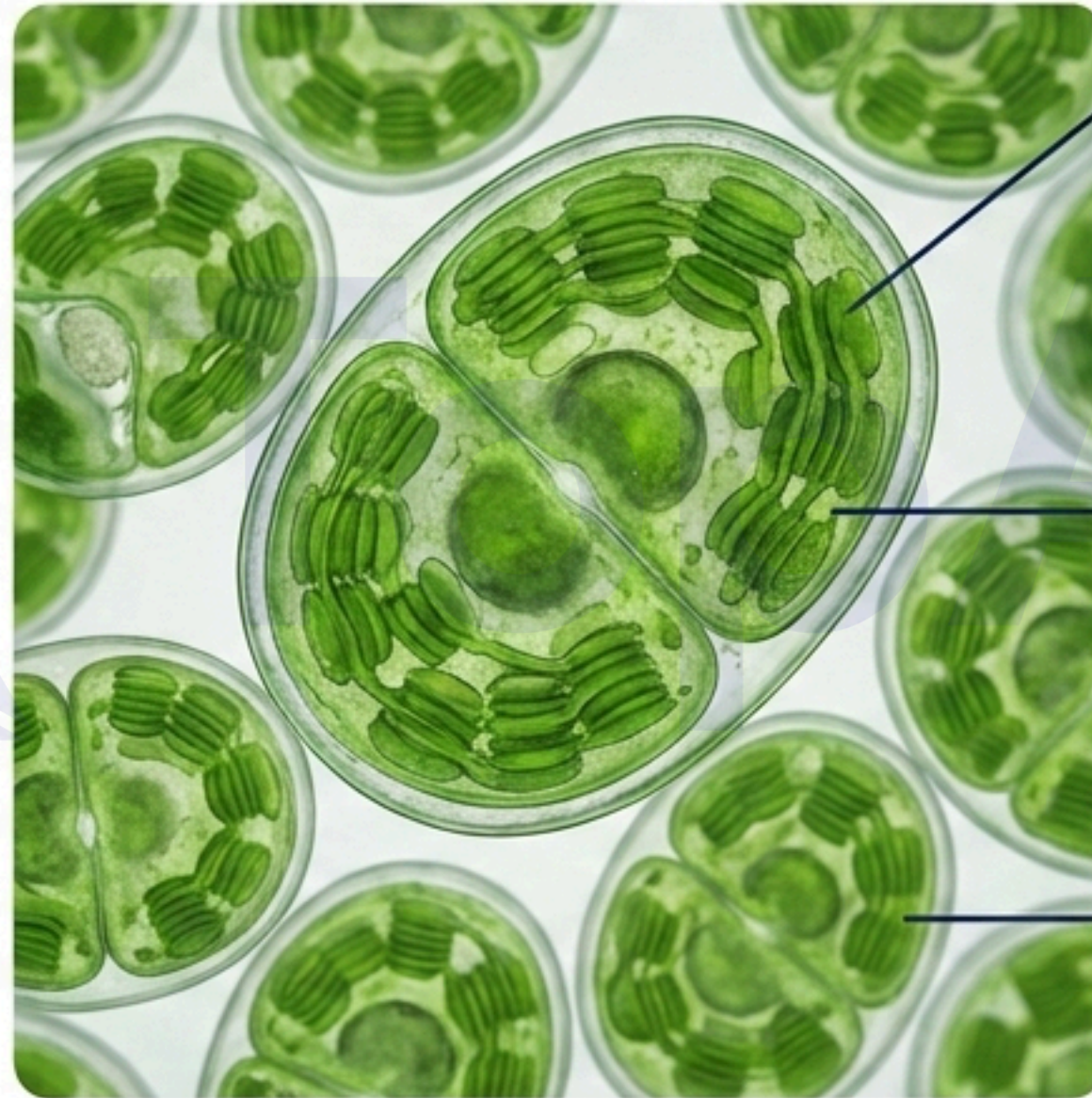
So close is their association that if one saw a lichen in nature, one would never imagine that they had two different organisms within them.

The Phycobiont

The algal partner is responsible for capturing light energy. It prepares and provides food for the entire symbiotic complex.



[OUTPUT: Food
Generation]



→ Phycobiont

→ Autotrophic

→ Photosynthesis



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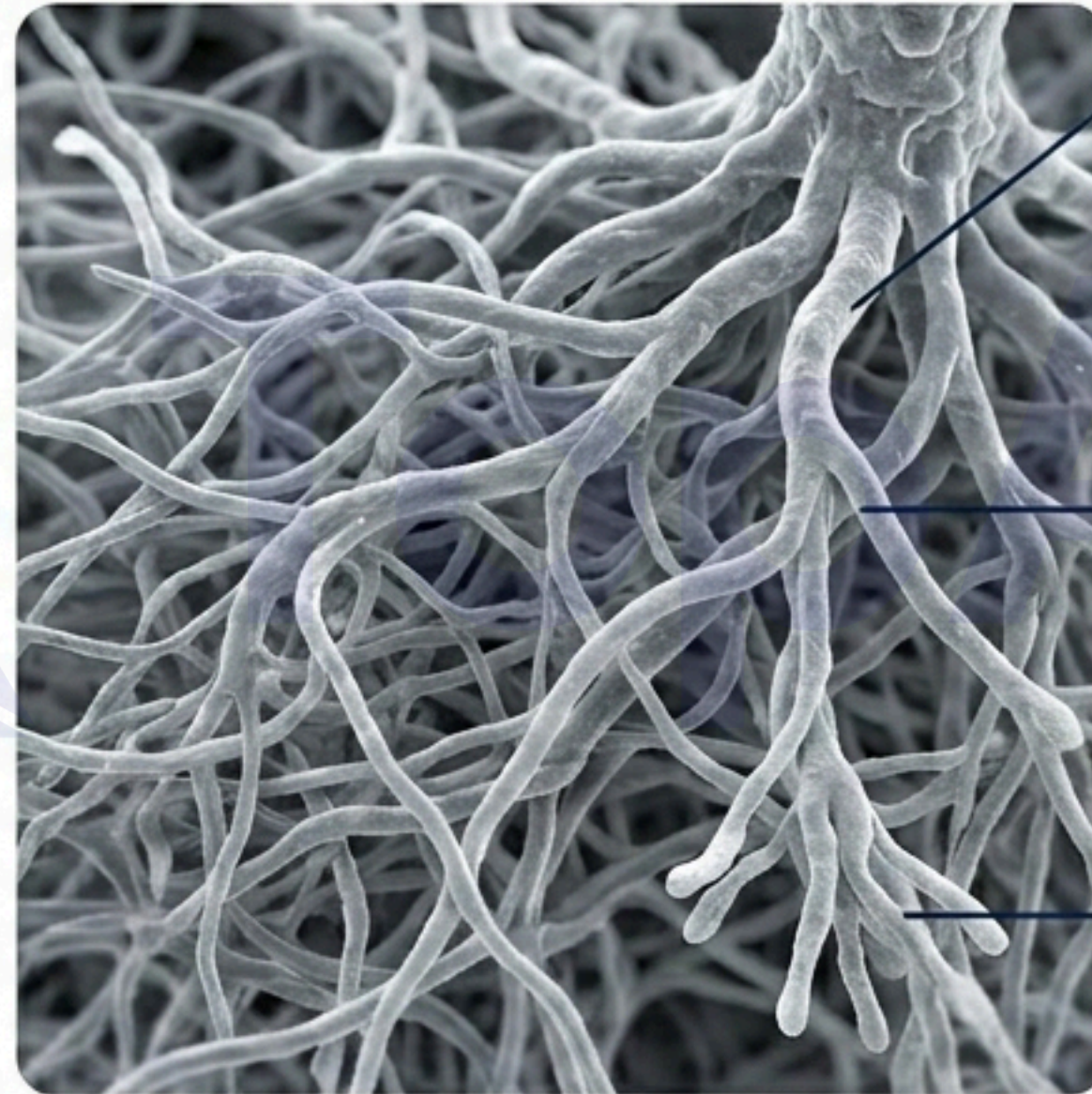


The Mycobiont

The fungal partner acts as the structural anchor. It provides a protective shelter and absorbs essential mineral nutrients and water for its partner.



[OUTPUT: Shelter,
Water & Minerals]

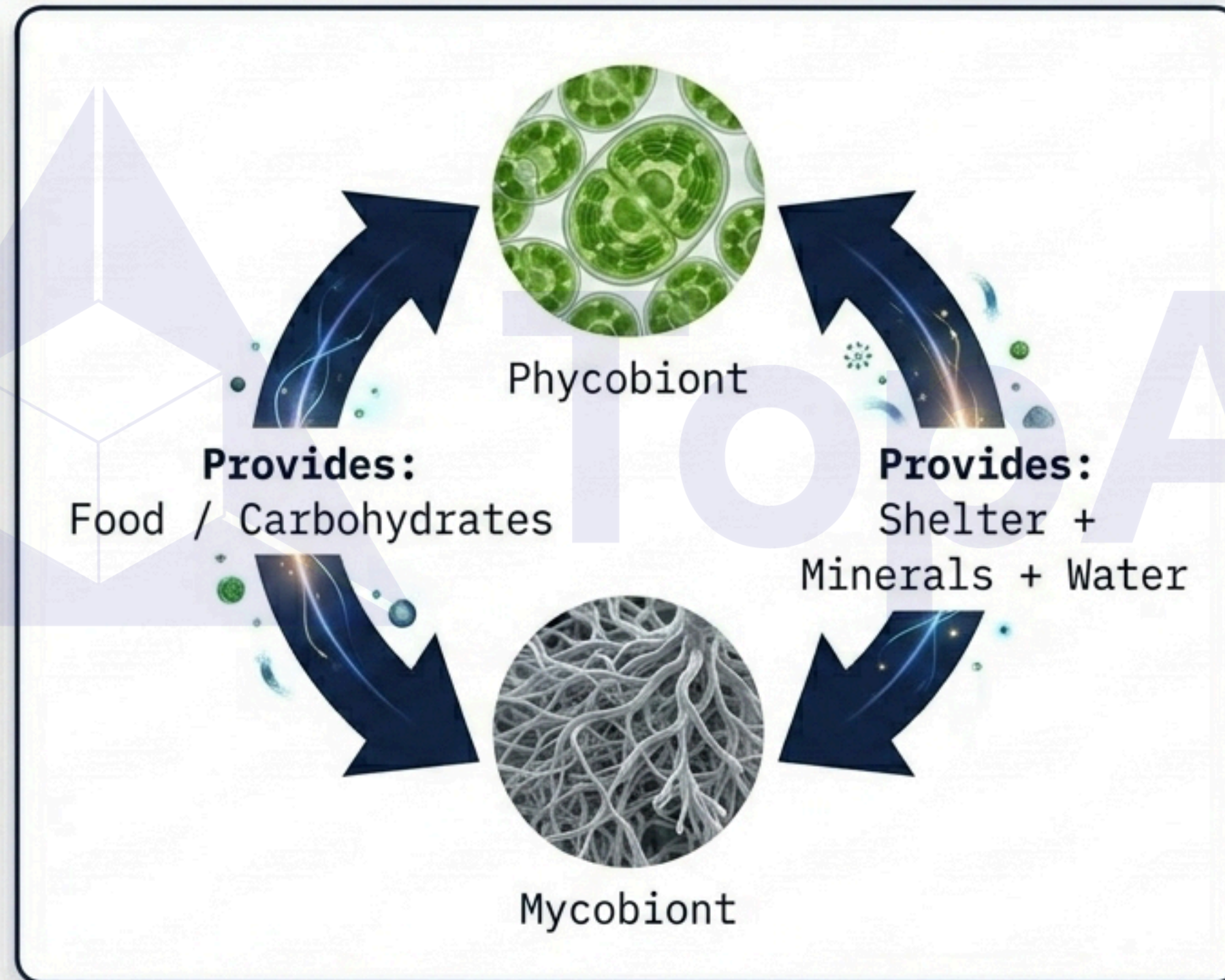


→ Mycobiont

→ Heterotrophic

→ Absorption

The Synergistic Exchange



Nature's Air Quality Sensor

Because they absorb water and minerals directly from the atmosphere, lichens act as highly sensitive pollution indicators.



Pristine Environment



Polluted Environment



Warning: High Sensitivity
to Pollutants (SO₂)

Lethal in Polluted Areas: Lichens do not grow where air quality is compromised.

Revision Summary



Symbiosis

Lichens are a mutually useful association between algae (Phycobiont) and fungi (Mycobiont).



The Division of Labor

Algae are Autotrophic (prepare food); Fungi are Heterotrophic (provide shelter and absorb water/minerals).



Ecological Role

Excellent bio-indicators; strictly absent in polluted areas.



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