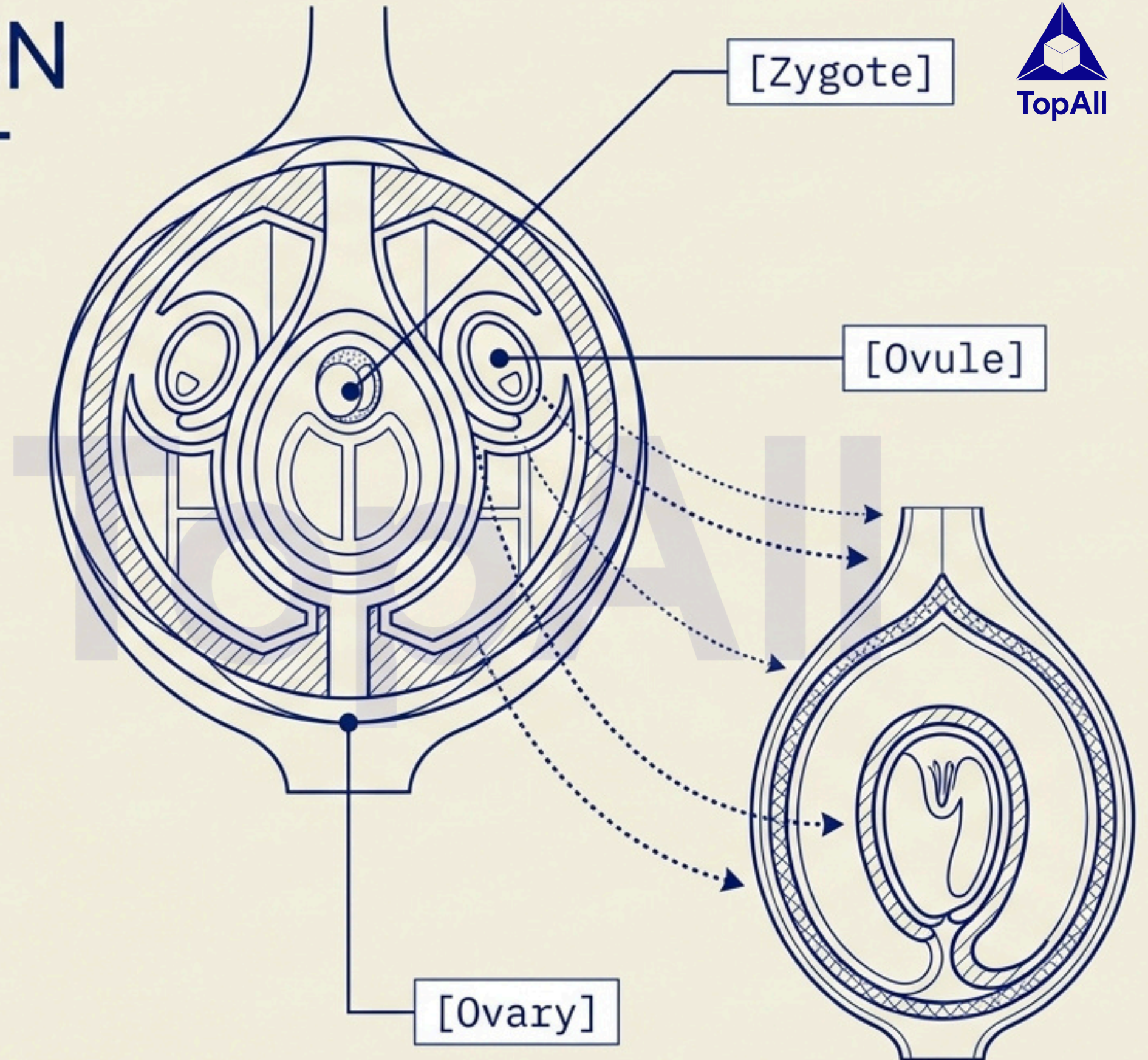


FROM FERTILISATION TO SEED AND FRUIT

The anatomical transformations following double fertilisation in angiosperms.



Endosperm Development: The Nutritional Foundation

Strategic Timing

Endosperm development strictly precedes embryo development. This is an evolutionary adaptation to provide assured nutrition to the dividing zygote.

Consumed (Non-albuminous)

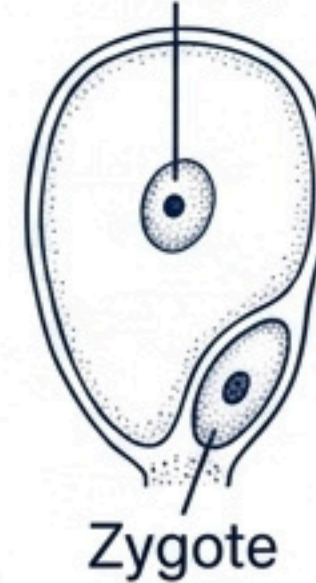
The endosperm is completely used up before seed maturation.

Pea

Groundnut

Beans

Primary Endosperm Nucleus [3n]



Path 1

Free-Nuclear Endosperm
(e.g., coconut water)



Path 2

Cellular Endosperm
(e.g., white coconut kernel)



Persistent (Albuminous)

The endosperm is retained in the mature seed to fuel germination.

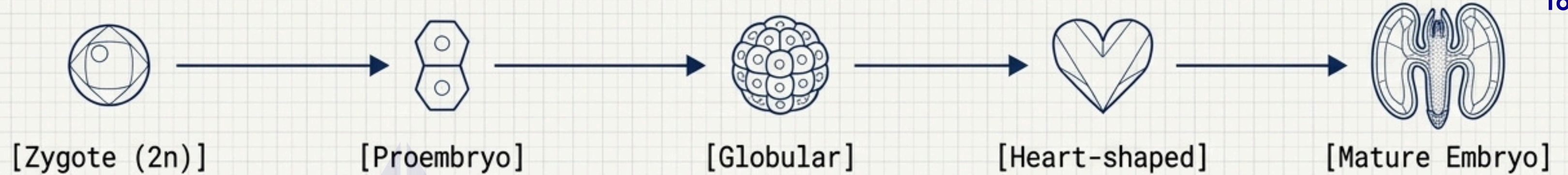
Castor

Wheat

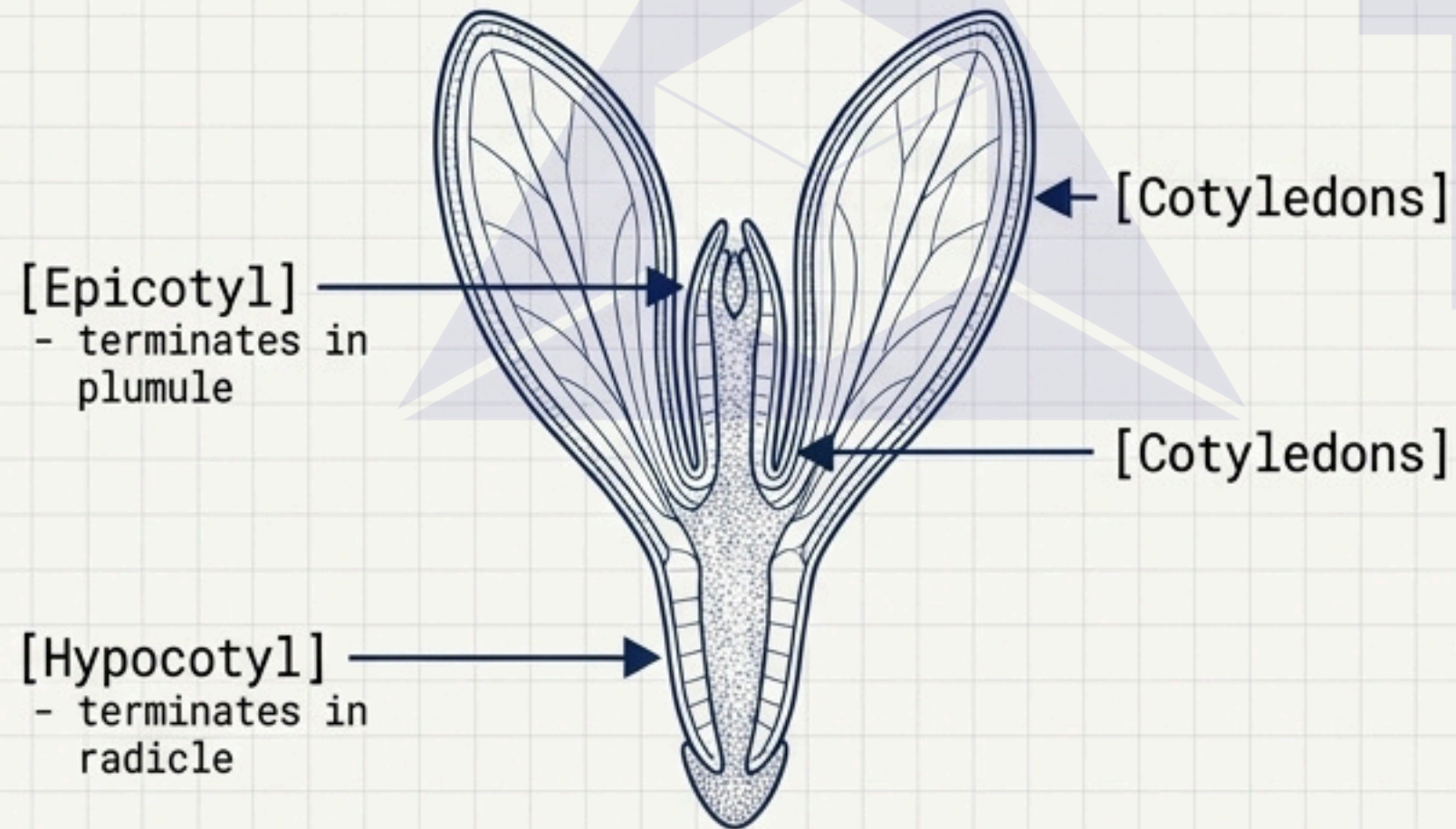
Maize

Coconut

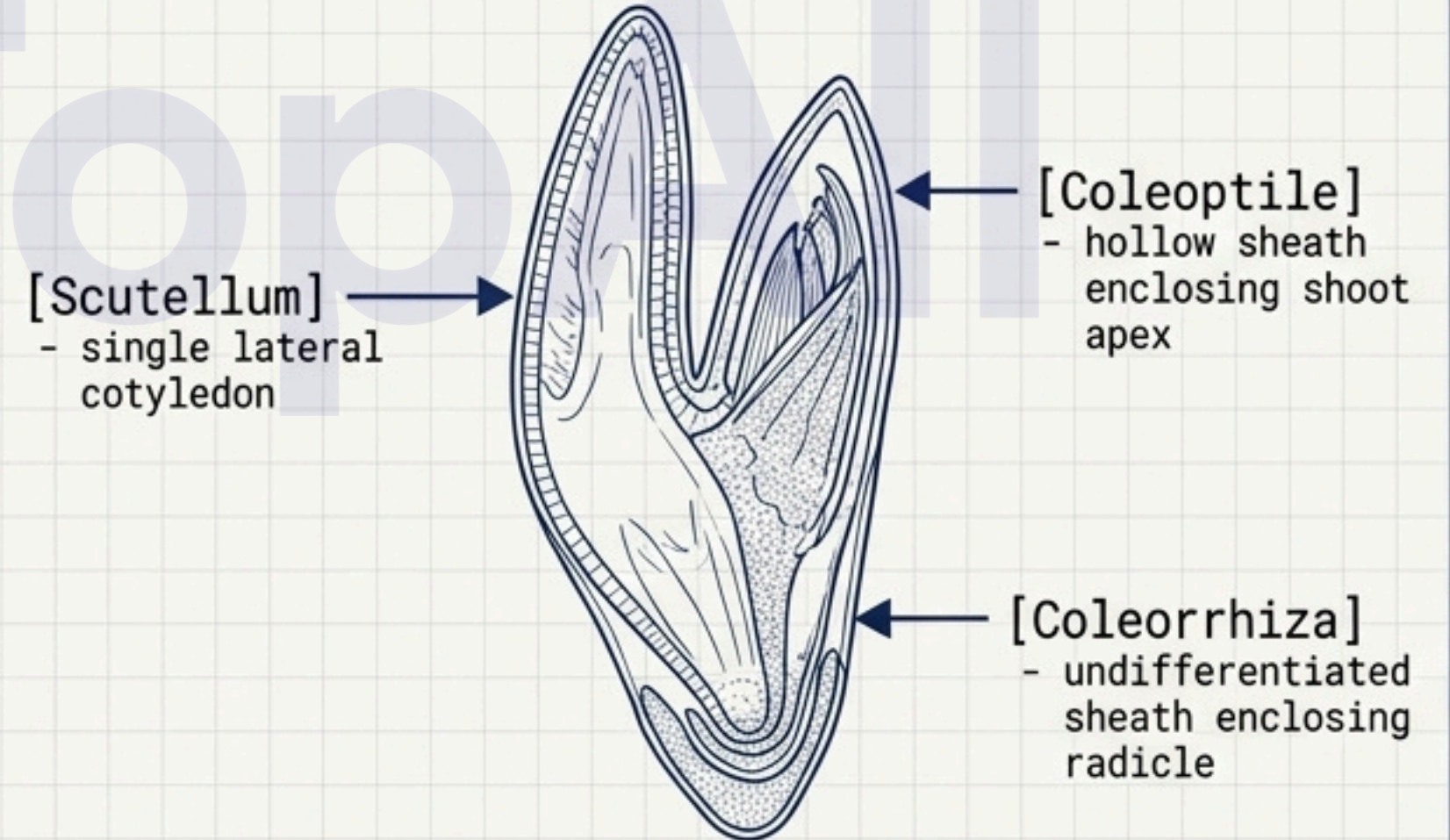
Embryogeny: Architectural Blueprints of the Zygote



Panel A: Dicotyledonous



Panel B: Monocotyledonous





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Transformation: Ovule → Seed

Integuments → Seed Coat

Hardens into a tough, protective outer envelope.

[Ovule] → [Mature Seed]

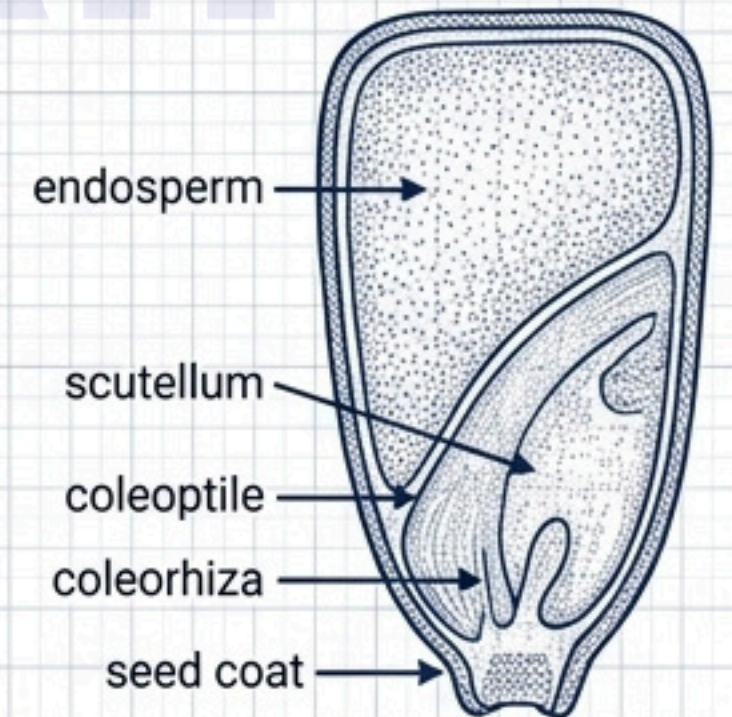
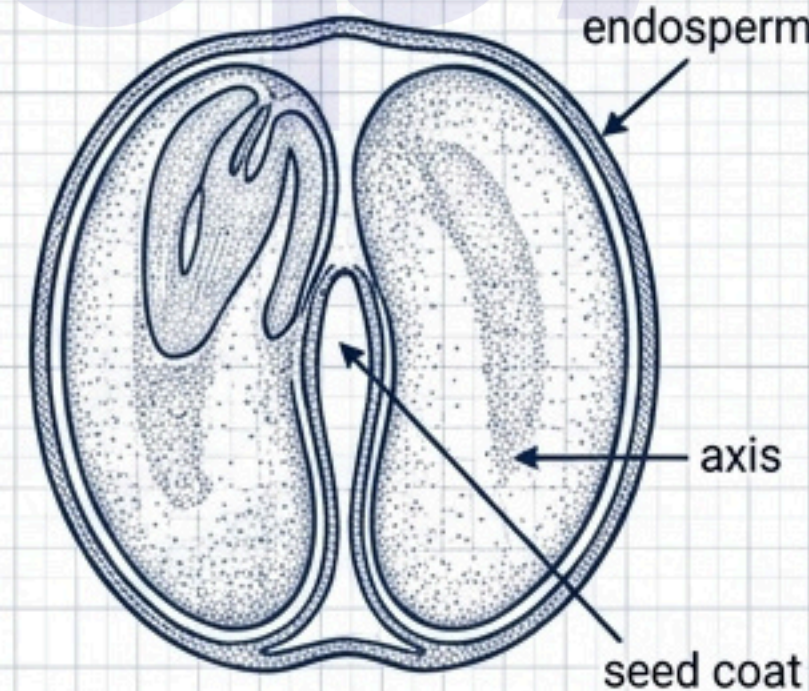
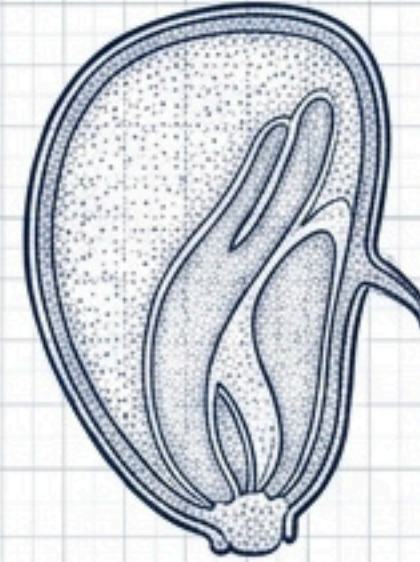
Nucellus → Perisperm

In occasional species (e.g., black pepper, beet), residual nucellus persists as a central storage tissue.

Dehydration & Dormancy

Water content reduces dramatically to 10-15% moisture by mass.

Metabolic activity slows, entering a state of inactivity (dormancy) until favorable conditions return.



Transformation: Ovary → Fruit

[Ovary] → [Fruit]

This transformation proceeds simultaneously with seed formation.

Ovary Wall → Pericarp (Fruit Wall)

Fleshy Fruits

Guava

Orange

Mango

Dry Fruits

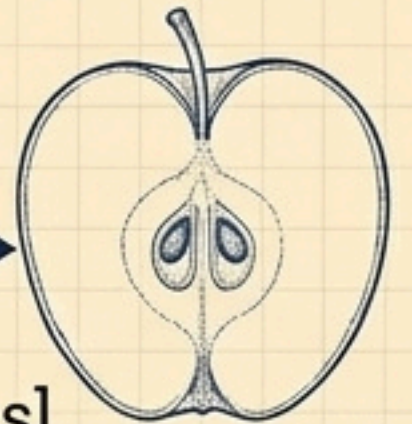
Groundnut

Mustard

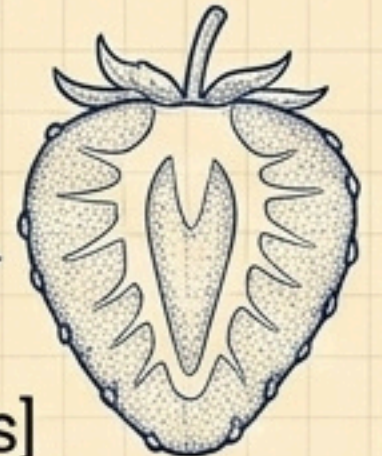
The 'False Fruit' Anomaly

True fruits develop strictly from the ovary. In "False Fruits", the thalamus also contributes significantly to fruit formation.

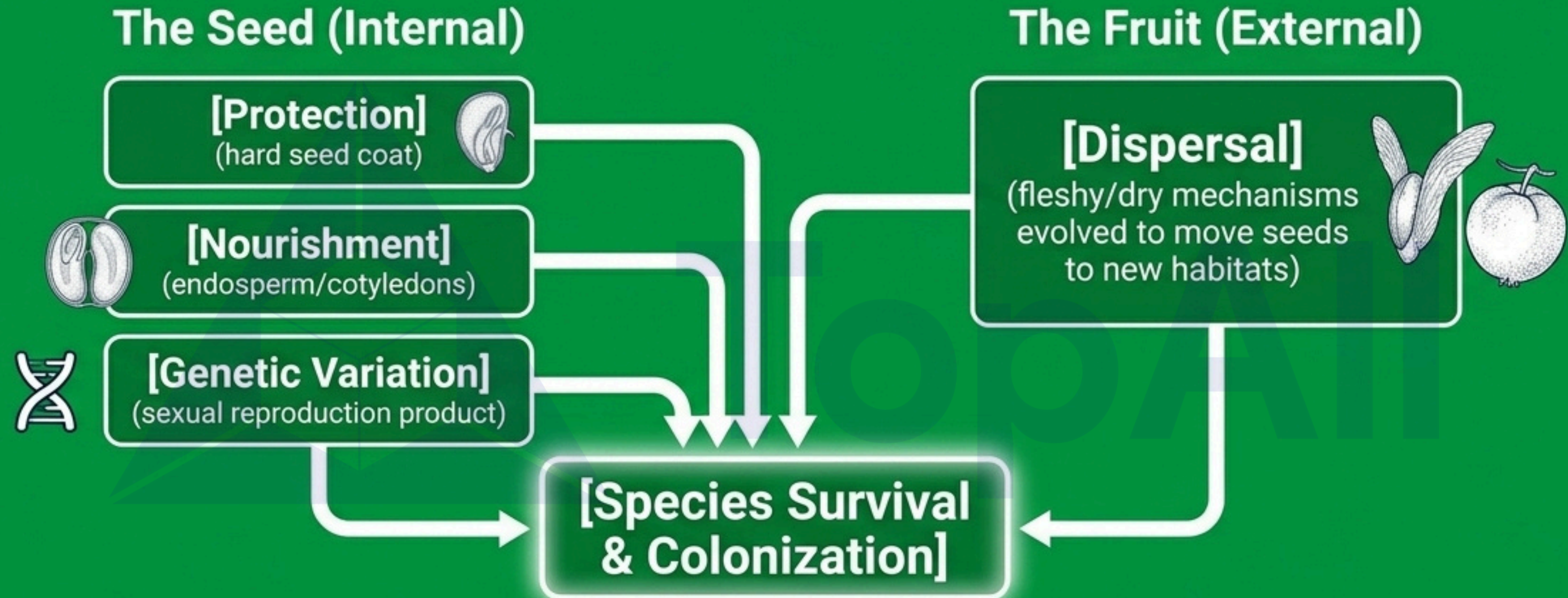
[Thalamus]



[Thalamus]



The Evolutionary Strategy



The **ultimate agricultural blueprint**: Dehydration and dormancy in seeds form the foundation of global agriculture, allowing crops to be stored year-round and planted in optimal seasons.



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