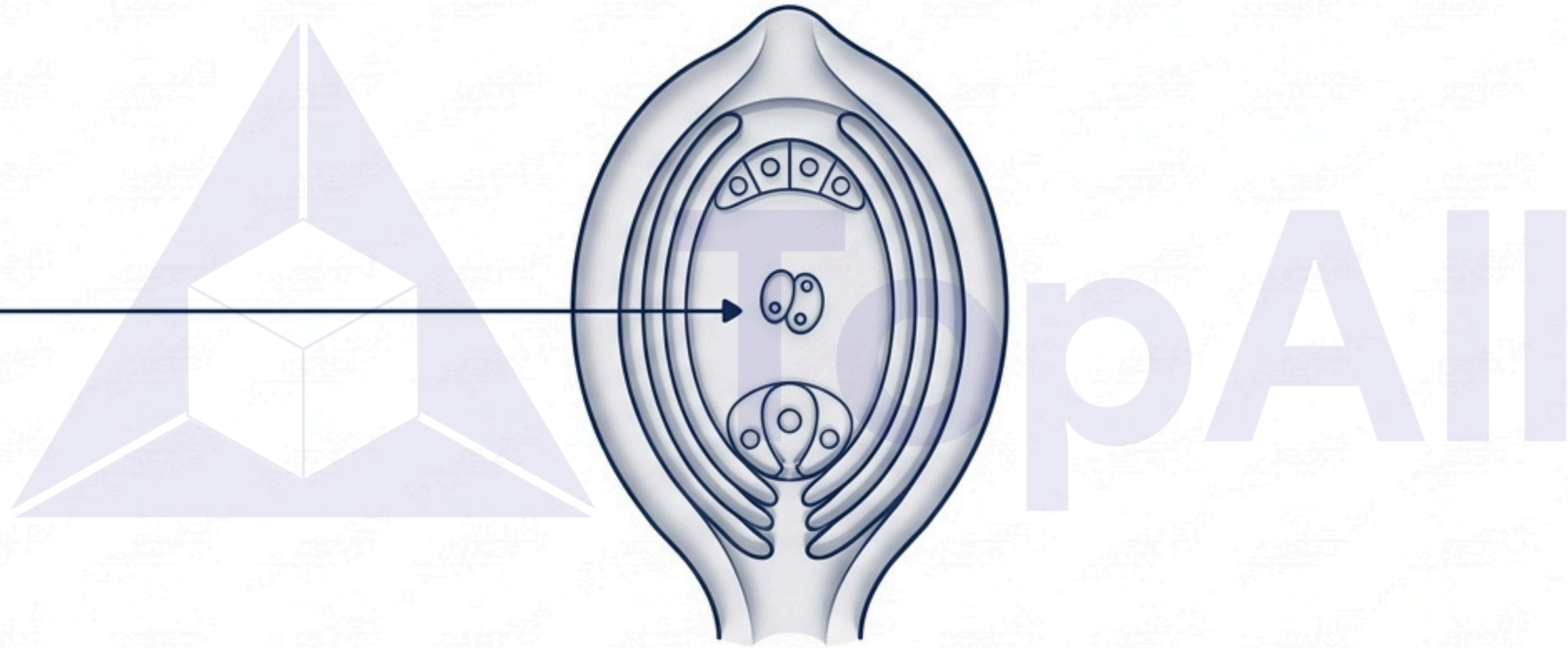


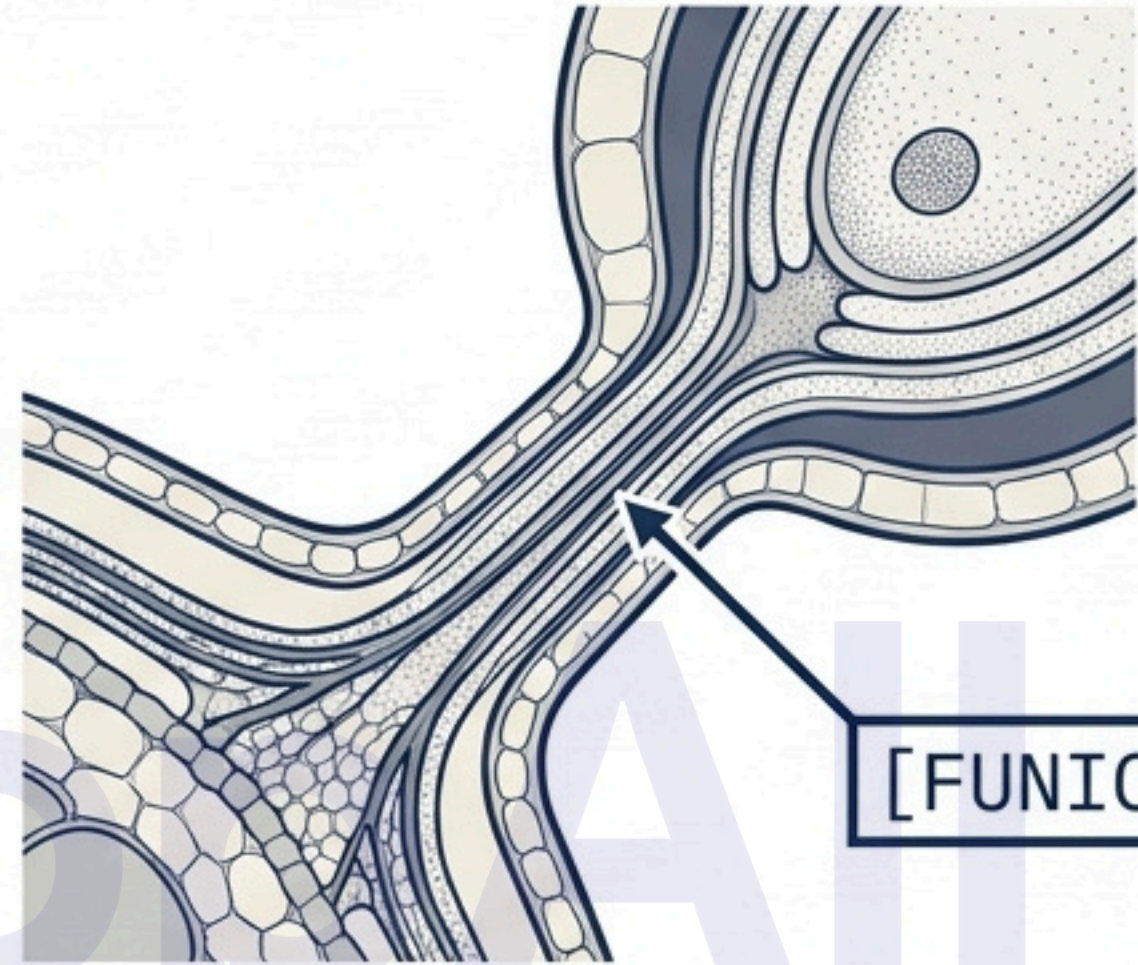
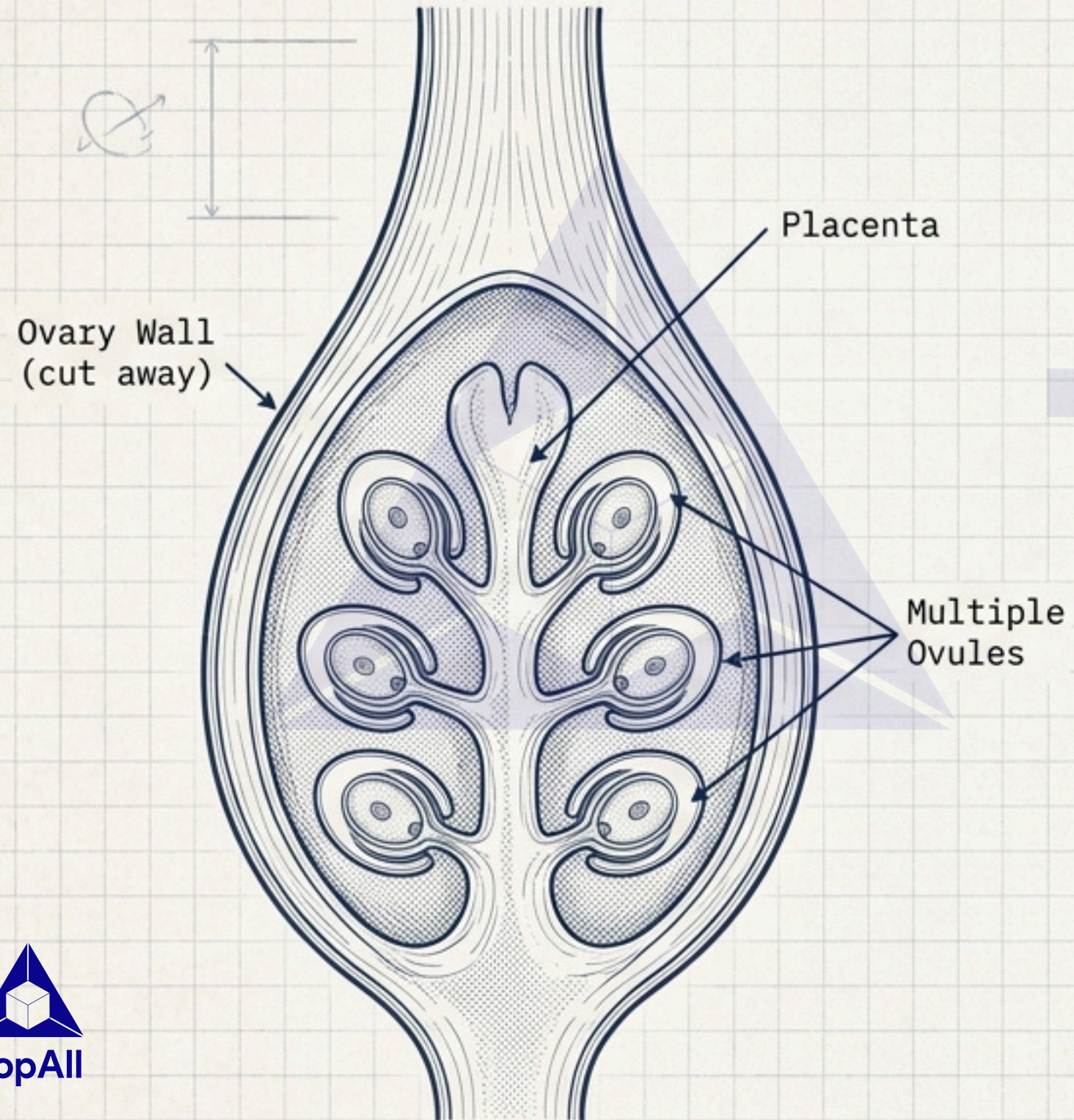
The Future Seed

[BOTANICAL BLUEPRINTS v1.0]

An Anatomical Dissection of the Megasporangium (Ovule)



The Anchor: Funicle

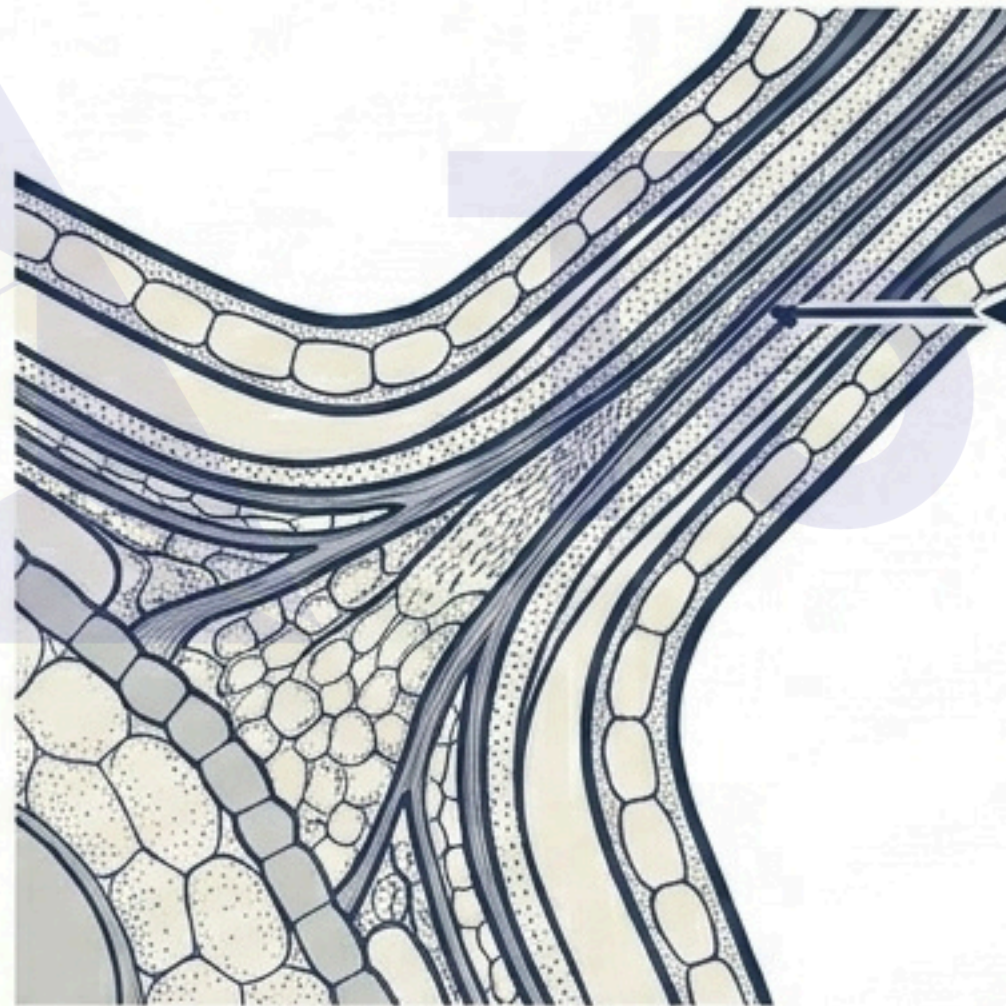


[FUNICLE]

The ovule (megasporangium) is a small structure attached to the placenta by means of a stalk called the funicle. It serves as the physical and vascular conduit between the parent plant and the developing structure.

Analogy: The funicle acts much like an umbilical cord, providing structural attachment and vital resource delivery from the parent plant.

The Junction: Hilum



[HILUM]

The body of the ovule fuses with the funicle at the hilum. Thus, the hilum represents the precise structural junction between the main ovule body and its supporting stalk.



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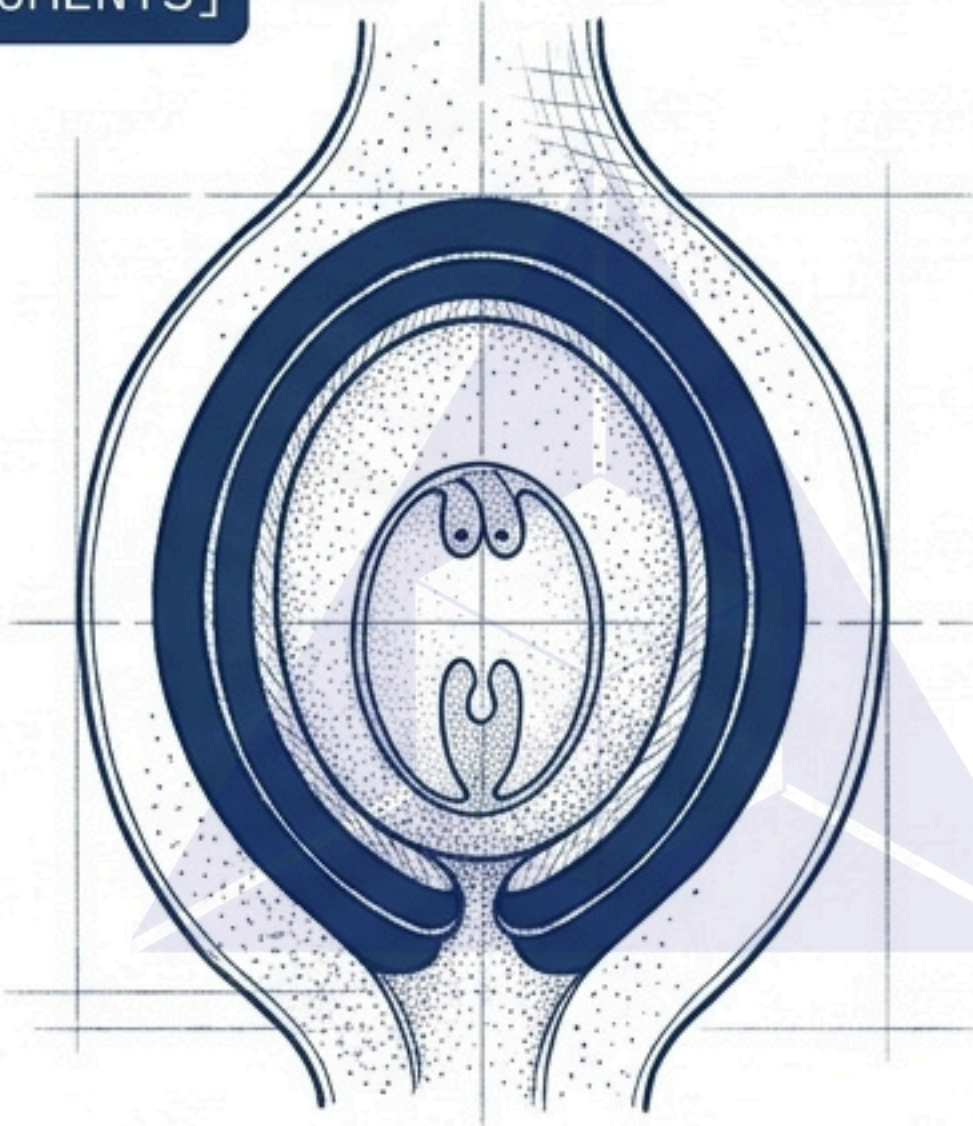
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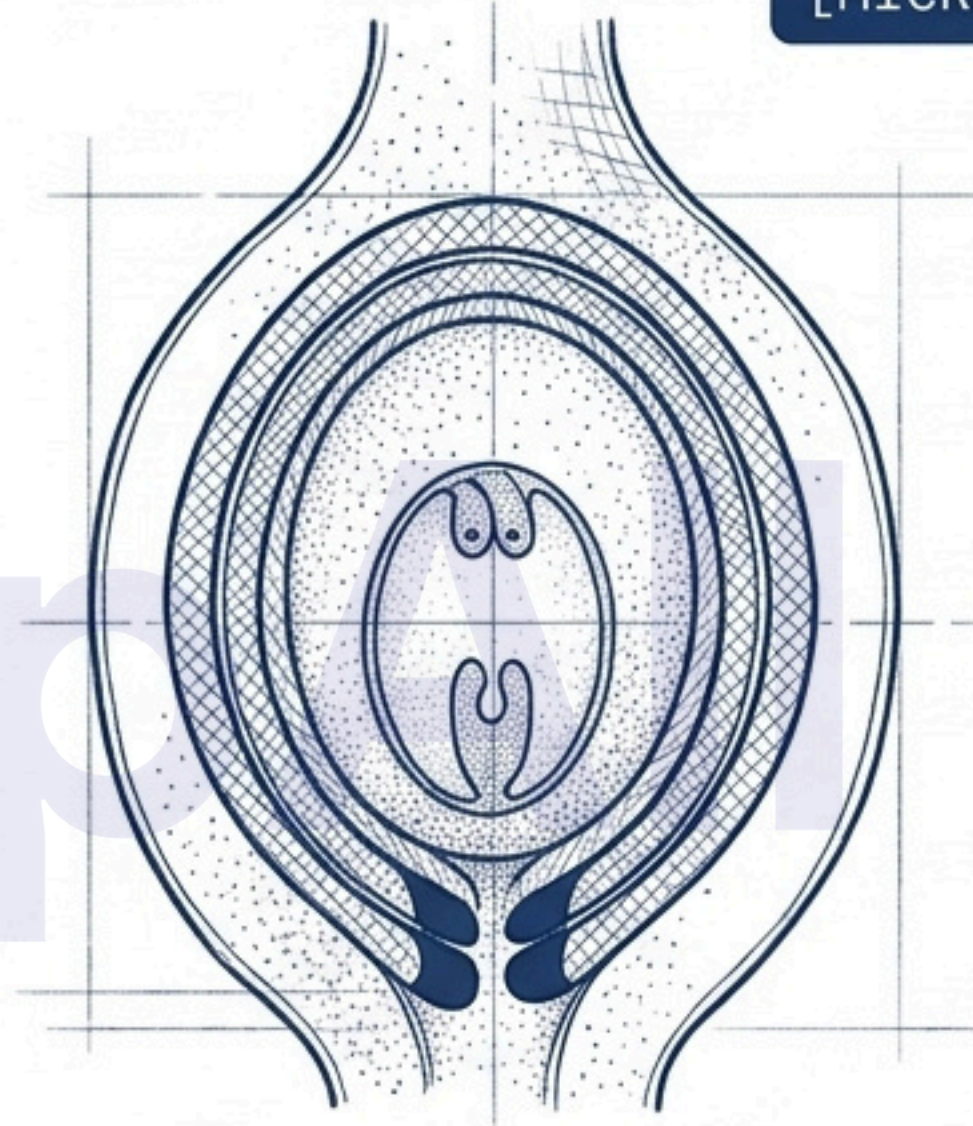
Protection & Access

[INTEGUMENTS]



One or two protective envelopes that encircle the nucellus, guarding the delicate inner structures.

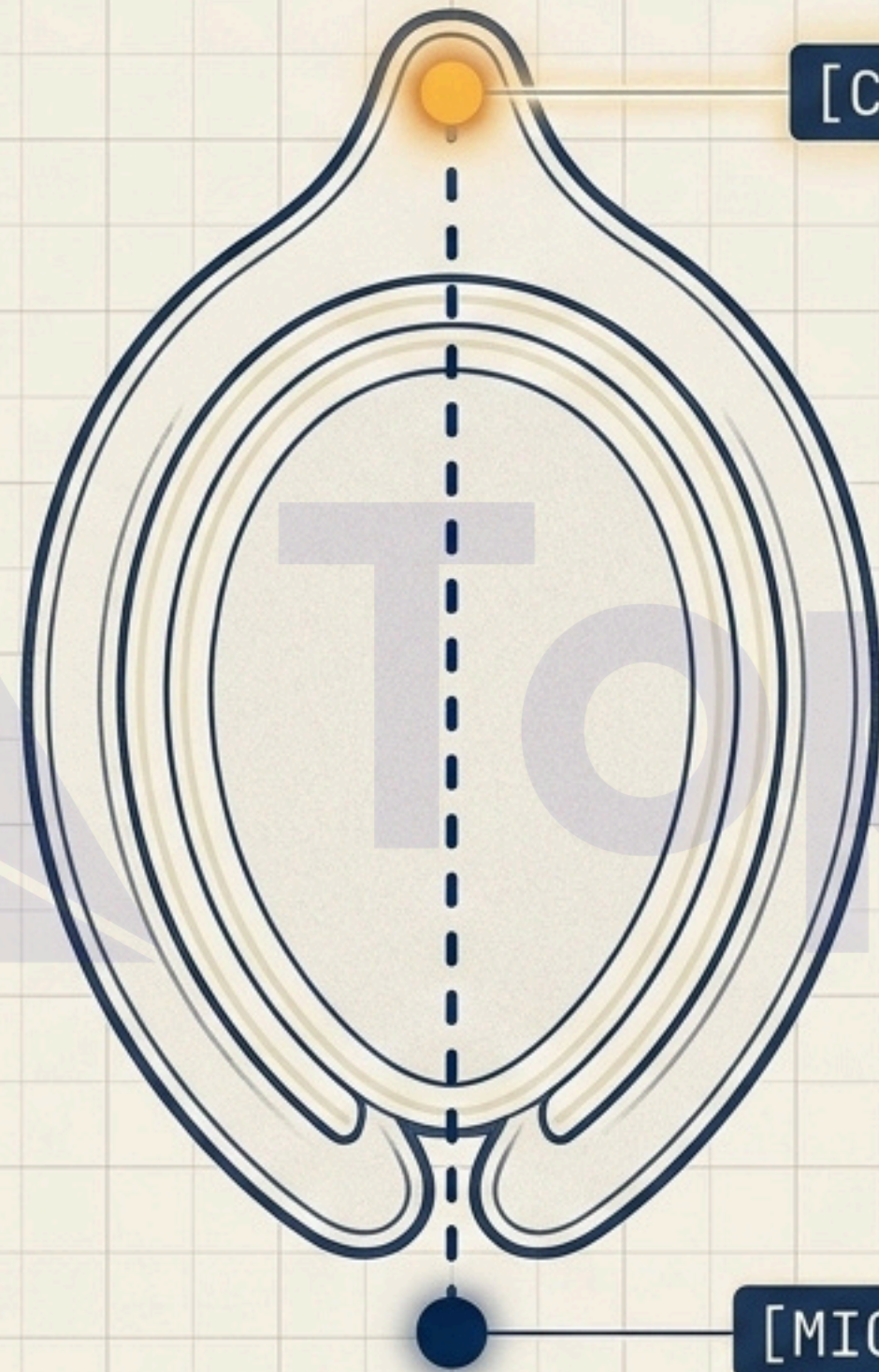
[MICROPYLE]



A small opening organised at the tip where the integuments are deliberately absent.

Crucial pathway: This pore remains unsealed to allow the eventual entry of the pollen tube during fertilisation.

Establishing Polarity



[CHALAZA]

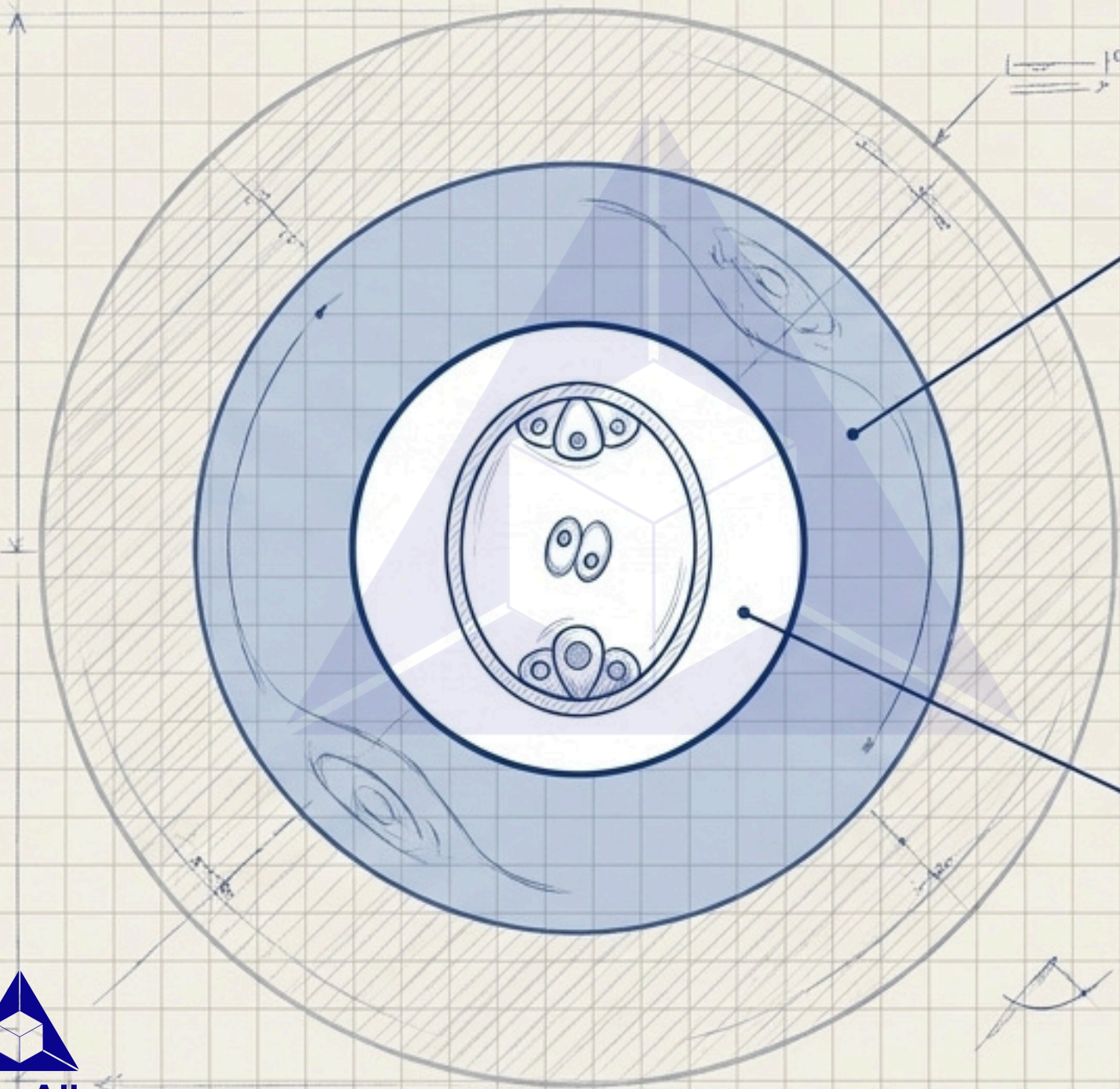
Represents the basal part of the ovule.

Located opposite the micropylar end, the chalaza establishes the fundamental structural and developmental axis of the megasporangium.

[MICROPYLAR END]

The apical opening.

The Biological Core



[NUCELLUS] [2n]

Enclosed within the integuments.

Composed of a mass of cells containing abundant reserve food materials to nourish development.

[EMBRYO SAC] [n]

Located centrally within the nucellus.

Also known as the female gametophyte, typically formed from a single functional megaspore.

Anatomy of an Anatropous Ovule

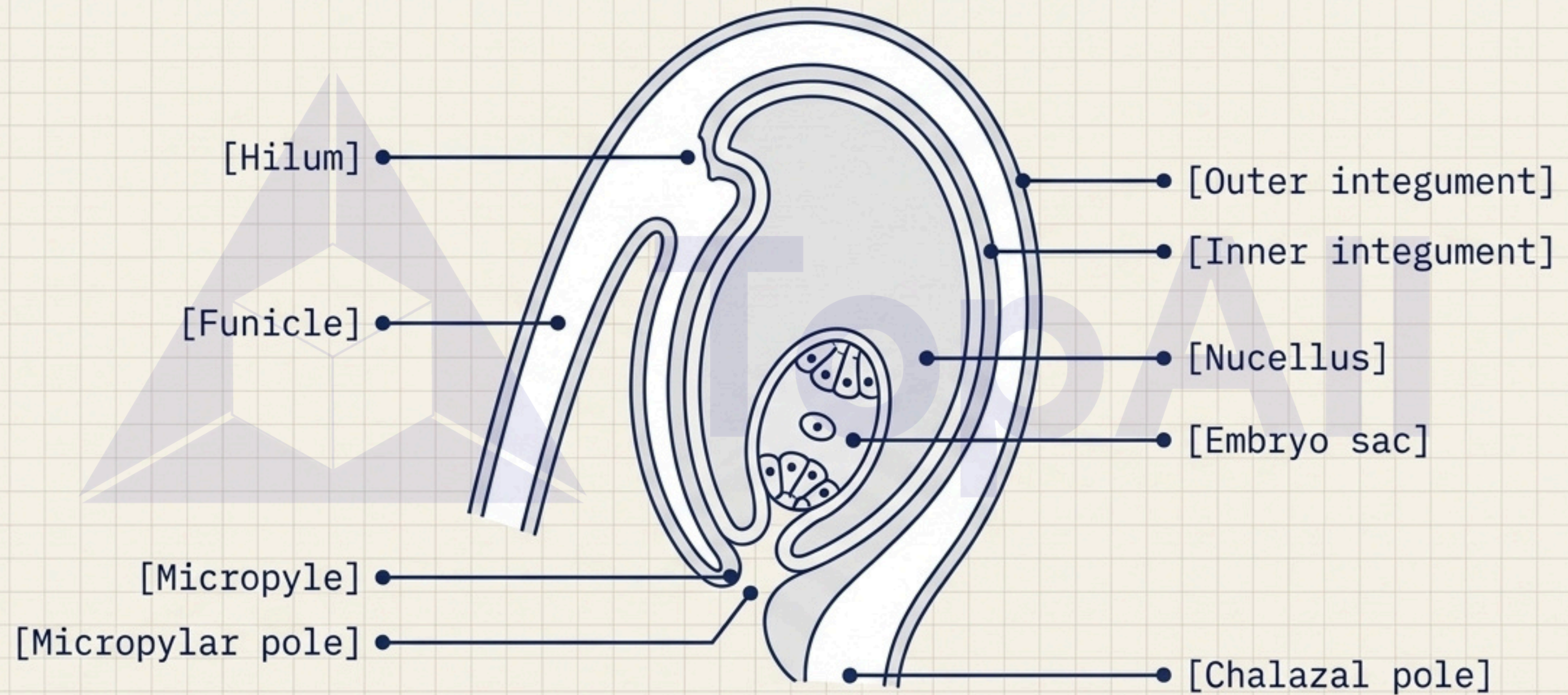


Figure 1.7d: Diagrammatic view of a typical anatropous ovule.

The Transformation

Before (Ovule Phase)	→	After (Seed Phase)
Ovule	→	Seed
Integuments	→	Seed Coats (Testa & Tegmen)
Micropyle	→	Seed Pore (facilitates entry of oxygen and water during germination)
Nucellus	→	Consumed (or remains persistent as perisperm in some species)

The transformation of ovules into seeds proceeds simultaneously with the ovary developing into a fruit.



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