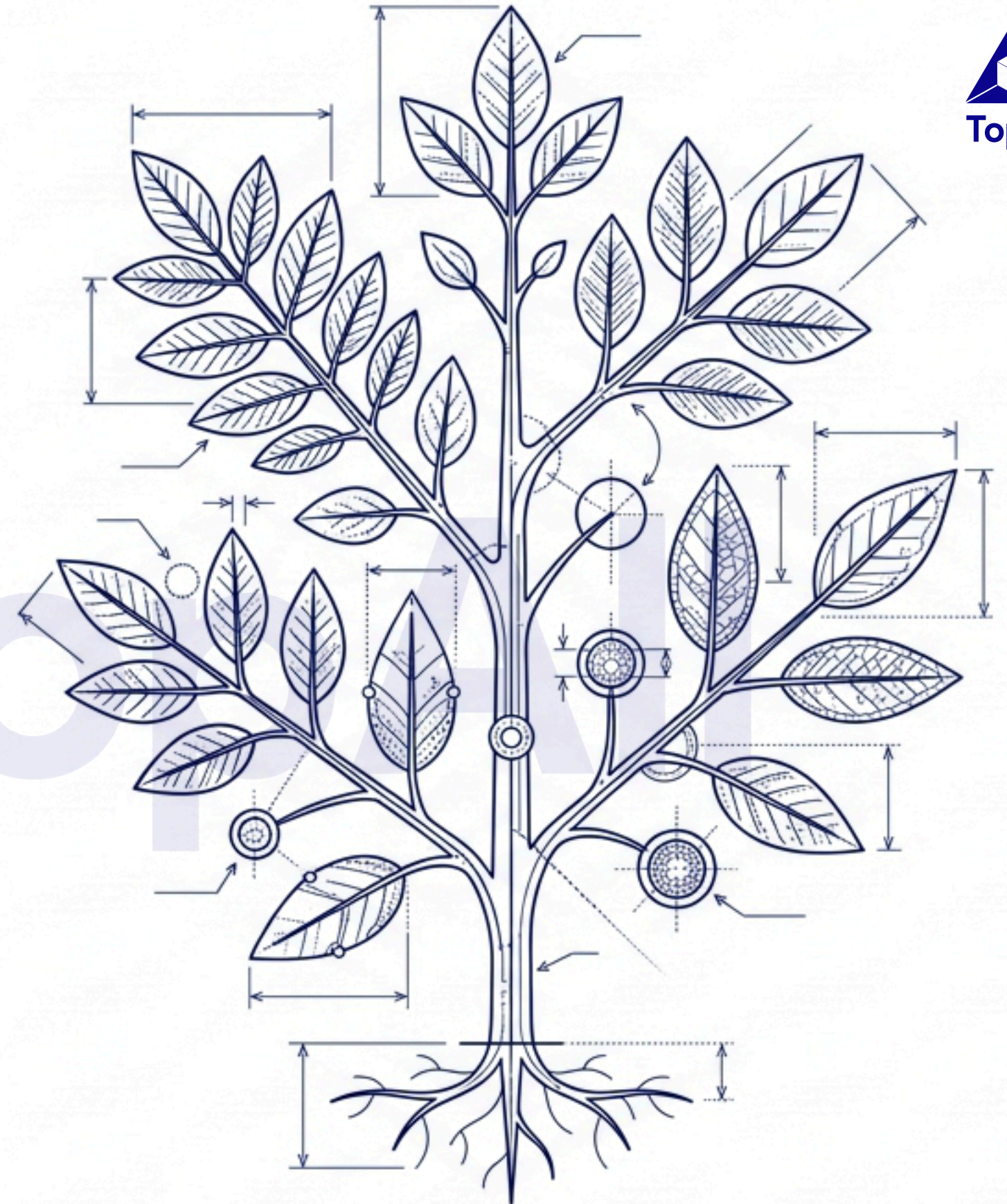


CYTOKININS

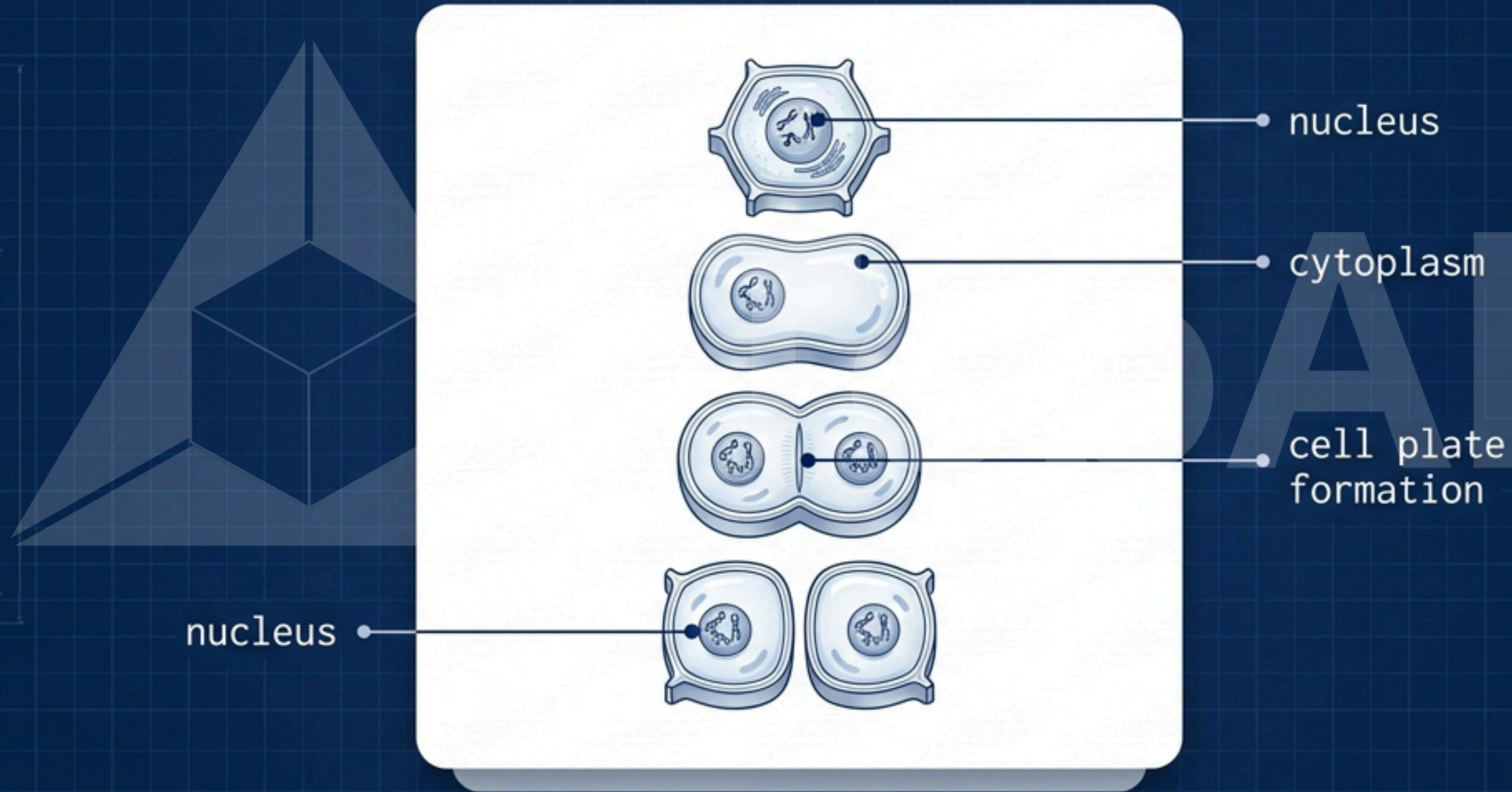
CELL DIVISION AND DELAYED SENESCENCE



BOTANICAL BLUEPRINT - MODEL 72-B

The Meaning of Cytokinins

The term is derived directly from their core function: driving cytokinesis. While other hormones may trigger cell enlargement, cytokinins specifically regulate the final, decisive physical division of one cell into two.



The Accidental Discovery of Kinetin

Discovered by Skoog and Miller (1955) during a search for cell division promoters. They identified an active substance—a modified form of adenine (a purine).

Source: autoclaved herring sperm DNA

Named kinetin, this powerful synthetic compound proved that chemical regulation of cell division was possible, triggering the global search for natural plant equivalents.

WARNING: Not Naturally Occurring in Plants



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Zeatin: The Natural Plant Equivalent

Following the discovery of synthetic kinetin, researchers successfully isolated the first naturally occurring cytokinin-like substances directly from plant tissues, proving plants synthesize their own cell-division promoters.



Zea mays
(Corn Kernels)

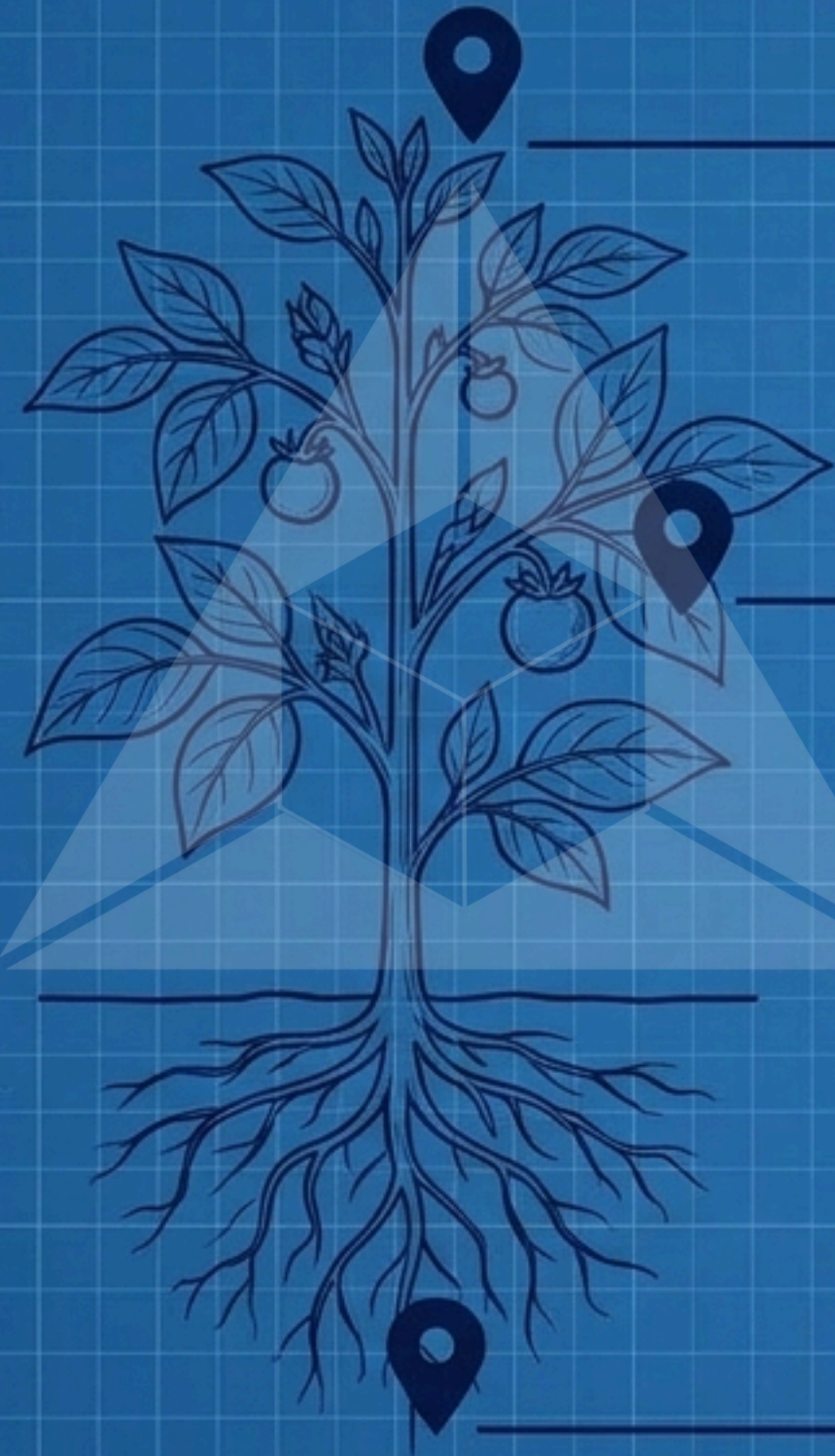
Zeatin



Liquid Endosperm
(Coconut Milk)

Sites of Natural Synthesis

Natural cytokinins are synthesized strictly in regions undergoing rapid cell division.



Developing Shoot Buds

Driving aerial expansion and branching.

Young Fruits

Regulating rapid tissue generation and fruit development.

Root Apices

The primary synthesis engine, pushing growth deep into the soil.

Physiological Effects on the Mature Plant

Tissue Generation



Promotes the production of new leaves and the formation of new **chloroplasts** within them.

Lateral Expansion



Drives lateral shoot growth and the formation of adventitious shoots.

Overcoming Apical Dominance



Actively counteracts the suppression of lateral buds typically caused by the apical growing tip.

Delayed Senescence



Keeps leaves vital for longer by actively promoting **nutrient mobilisation** toward the tissues.

Key Takeaway



Cytokinins are the ultimate hormones of youth and expansion in the botanical world. From their natural synthesis as Zeatin to their systemic distribution, they relentlessly drive physical cell division and mobilize nutrients to counteract the biological aging of the plant.



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