

MG17219 | MONOCOTILEDONE SECTION (ZEA MAYS)









This model, magnified 500 times its natural size, presents a cross and longitudinal section of a monocotyledonous leaf (Zea Mays), displaying details of its internal and external structures, mounted on a polymer base for easy viewing. The main structures are clearly visible and numbered, allowing for a detailed study of leaf anatomy.

Applications:

Ideal for the study of plant anatomy, especially monocotyledons; used in practical botany, biology, and science classes; support tool for students and researchers; allows understanding of the structure and function of leaves; valuable resource for demonstrations and presentations.

Technical Characteristics:

- * Detailed representation of the internal and external structures of the leaf;
- * High-precision natural molding;
- * Manufactured from stable synthetic material and resin, approved in toxicological tests;
- * Faithful replicas;
- * Numbered and hand-painted;



- * Includes an information card with the related structures;
- * High resistance;
- * Excellent cost-benefit ratio.

3D Technology and Augmented Reality:

Our anatomical models offer a visual complement through information cards that allow visualization of 3D models in augmented reality (AR). This interactive platform assists learning, allowing for comparative analysis of anatomical structures and offering resources for education in anatomy, physiology, and pathophysiology.

Technical Specifications:

- * Scale: 500x natural size;
- * Material: Resin;

Main Structures:

Cuticle: External protective layer of the leaf epidermis, composed mainly of cutin, a lipid substance that reduces water loss through transpiration and protects against pathogens.

Stomata: Microscopic structures present in the epidermis, responsible for gas exchange (CO₂ entry and O₂ and H₂O exit) between the plant and the environment. They are formed by two guard cells that regulate the size of the stoma (pore).

Epidermis: External cell layer that covers the leaf, protecting the internal tissues. It presents compacted cells and is frequently covered by the cuticle.

Bulliform cells: Large, elongated cells, present in the upper epidermis of some monocotyledonous leaves, responsible for leaf rolling in dry conditions.

Trichome: Epidermal appendages of various shapes and functions, such as protection against herbivores, reduction of transpiration, and reflection of sunlight.

Chloroplast: Cell organelle responsible for photosynthesis, containing chlorophyll and other pigments that capture solar energy.

Parenchyma with chloroplast: Fundamental tissue of the leaf, rich in chloroplasts, where most of the photosynthesis takes place. In the case of C₄, the organization of the parenchyma is specialized to optimize carbon fixation.



Nucleus: Cell organelle that contains the cell's genetic material (DNA).

Protoxylem: Part of the xylem that differentiates first during plant development, usually with smaller tracheal elements and thinner walls.

Xylem parenchyma: Parenchyma cells present in the xylem, which perform storage and transport functions of substances.

Tracheids: Conducting elements of the xylem, elongated and dead cells at maturity, forming continuous tubes for the transport of water and minerals.

Xylem sclerenchyma fibers: Elongated and lignified cells that provide mechanical support to the xylem.

Tracheae: Conducting elements of the xylem, elongated and dead cells at maturity, which form continuous tubes for the transport of water and minerals.

Bundle sheath with chloroplast (C3 cycle): Region of the mesophyll that surrounds the vascular bundles, with cells rich in chloroplasts and involved in the C3 cycle of photosynthesis.

Sieve tubes: Conducting elements of the phloem, living cells at maturity, responsible for the transport of sugars and other organic compounds.

Companion cells: Specialized cells that associate with sieve tubes, assisting in the loading and unloading of substances.

Sclereids: Support cells with thick and lignified cell walls, present in various plant tissues.

Other structures can be verified directly on the physical piece or on the interactive 3D model.

About Anatomical Models:

They are developed with resin replication technology, offering an alternative to natural anatomical models for teaching and research. They present the main morphological characteristics, combining a good cost-benefit ratio, resistance, hand painting, and numbering for the precise identification of structures.

List of all visible structures:

- Cuticle



- Stomata
- Epidermis
- Bulliform cells
- Trichome
- Chloroplast
- Chlorenchyma
- Nucleus
- Protoxylem
- Xylem parenchyma
- Tracheids
- Xylem sclerenchyma fibers
- Tracheids
- Bundle sheath with chloroplasts (C3 cycle)
- Sieve tubes
- Companion cells
- Sclereids
- Companion cells
- Sieve tubes
- Tracheids
- Tracheids