MG17218 | MONOCOTYLEDONAL STEM SECTION (ZEA MAYS)

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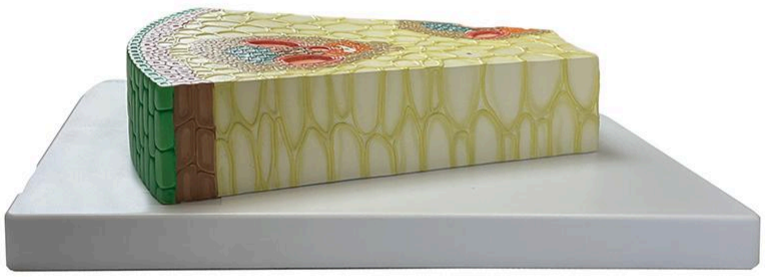

Anatomical Model of a Monocot Stem Section (Zea Mays): This model, magnified 400 times its natural size, presents a cross and longitudinal section of a corn stem (Zea Mays), exhibiting in detail the epidermis, cortex, central vascular cylinder and other main internal structures. The model is mounted on a polymer base for easy viewing and handling.

Applications:

Ideal for the study and teaching of botany, plant anatomy and plant morphology, especially for demonstrating the structures of monocot stems. Suitable for universities, technical schools, laboratories and research institutions. Serves as a training support tool for students and professionals in the field of biology and related areas.

Technical Characteristics:

* Precise molding;
* Manufactured from stable synthetic material and resin approved in toxicological tests;
* Detailed replicas;
* Numbered and hand-painted;
* Includes an information card with the related structures.

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 aids learning, allowing comparative analysis of anatomical structures and offering resources for education in anatomy, physiology and pathophysiology.

Technical Specifications:

* Scale: 400x natural size;
* Material: Synthetic resin.

Main Structures:

Epidermis: Outermost layer of the stem, responsible for protection against water loss, mechanical damage and infections. In monocots, it usually has a thick cuticle.

Sclerenchyma fibers: Elongated and lignified cells that provide mechanical support to the stem, contributing to its rigidity and strength.

Cortical parenchyma: Ground tissue that fills the cortex, performing functions of substance storage, photosynthesis (in some regions) and substance transport. In monocot stems, often similar to the medullary parenchyma.

Bundle of sclerenchyma cells covering the girdle: Groups of sclerenchyma fibers that form a ring of support around the vascular cylinder, contributing to the stem's strength.

Non-functional sieve tubes with sieve plate between all articles: Sieve elements of the phloem that have lost their transport function, but still retain the basic structure with sieve plates between the elements.

Sieve tubes with sieve plate between all articles: Sieve elements of the phloem responsible for the transport of elaborated sap (sugars) through their sieve plates.

Sieve plate: Perforated region in the transverse walls of the sieve elements of the phloem, allowing the passage of elaborated sap between adjacent cells.

Companion cells: Specialized parenchyma cells associated with the sieve elements of the phloem, which provide metabolic support and regulate nutrient transport.

Xylem sclerenchyma fiber: Elongated and lignified cells that provide support and strength to the xylem.

Tracheas: Conducting cells of the xylem, dead at maturity, with lignified and perforated walls, forming continuous vessels for the transport of water and mineral salts.

Tracheids: Elongated and lignified conducting cells of the xylem, with pits in the walls, also responsible for the transport of water and mineral salts.

Protoxylem lacuna: Space left by the lysis of protoxylem cells during stem growth.

Xylem parenchyma: Parenchyma cells located in the xylem, responsible for the storage of substances and radial transport of water and mineral salts.

Medullary parenchyma: Ground tissue that occupies the central region of the stem medulla, with storage and filling functions. 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 for teaching and research. They present the essential morphological characteristics, combining a good cost-benefit ratio, resistance, hand painting and numbering for precise identification of structures.

List of all visible structures:

- Epidermis
- Sclerenchyma fibers
- Cortical parenchyma
- Bundle of sclerenchyma cells covering the waist
- Sieve tubes in non-functional form with sieve plate between all articles
- Sieve tubes with sieve plate between all articles
- Sieve plate
- Companion cells
- Sclerenchyma fiber of xylem
- Tracheas
- Tracheids
- Protoxylem lacuna
- Xylem parenchyma
- Medullary parenchyma