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Slide 1 of 36 23–2 Roots 🛋 Types of Roots



The two main types of roots are:

- taproots, which are found mainly in dicots, and
- fibrous roots, which are found mainly in monocots.

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23–2 Roots **I Types of Roots**

In some plants, the primary root is lengthy and bulky. This primary root is called a **taproot**.

A carrot is an example of a taproot.





Slide 3 of 36 23–2 Roots **I Types of Roots**

Fibrous roots branch to such an extent that no single root grows larger than the rest.

Fibrous roots are found in grasses.



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A mature root has an outside layer, the epidermis, and a central cylinder of vascular tissue. Between these two tissues lies a large area of ground tissue.

The root system plays a key role in water and mineral transport.



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The root's surface is covered with cellular projections called **root hairs**. Root hairs provide a large surface area through which water can enter the plant.





The epidermis protects the root and absorbs water.





Inside the epidermis is a layer of ground tissue called the **cortex**.





The cortex extends to another layer of cells, the **endodermis**.

The endodermis completely encloses the vascular cylinder.





The vascular cylinder is the central region of a root that includes the xylem and phloem.



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Roots grow in length as their apical meristem produces new cells near the root tip.





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These new cells are covered by the **root cap** that protects the root as it forces its way through the soil.



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23–2 Roots Root Functions

Root Functions





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Roots anchor a plant in the ground and absorb water and dissolved nutrients from the soil.



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23-2 Section QUIZ





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Taproots are more common than fibrous roots in

a. monocots.

b. dicots.

- c. neither monocots or dicots.
- d. both dicots and monocots.



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The cells in a root that divide are found in the

a. apical meristem.

- b. epidermis.
- c. endodermis.
- d. vascular cylinder.



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- The tough layer of cells that covers the root tip is called the
 - a. vascular cylinder.

b. root cap.

- c. ground tissue.
- d. apical meristem.



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Xylem and phloem are found in the

- a. epidermis.
- b. endodermis.
- c. apical meristem.
- d. vascular cylinder.



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