

FIGURE 5.3. Diagrammatic longitudinal section of the apical region of the root. The meristematic cells are located near the tip of the root. These cells generate the root cap and the upper tissues of the root. In the elongation zone, cells differentiate to produce the xylem, phloem, and cortex. Root hairs, formed in epidermal cells, are located in the maturation zone. (Modified from Russell, 1977.)

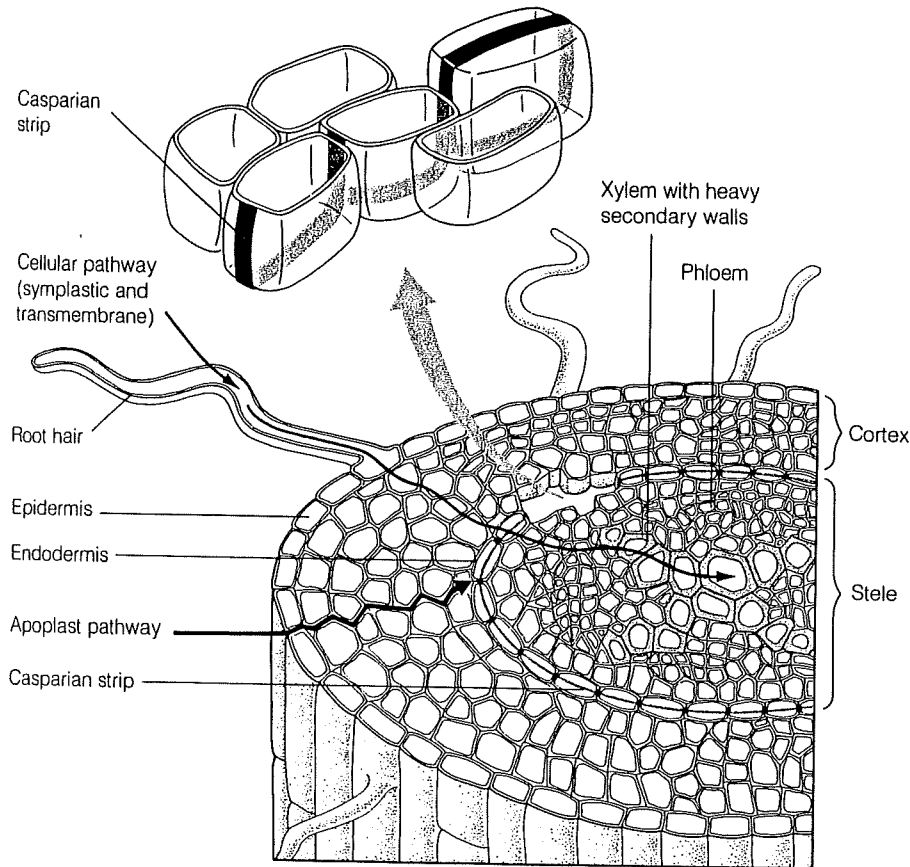


FIGURE 4.3. Pathways for water uptake by the root. Through the cortex, water may travel via the apoplast pathway or the cellular pathway, which includes the transmembrane and symplast pathways. In the symplast pathway, water flows between cells through the plasmodesmata without crossing the plasma membrane. In the transmembrane pathway, water moves across the plasma membranes, with a short visit to the cell wall space. At the endodermis, the apoplast is blocked by the Casparian strip. Water entering the root's vascular system must cross the plasma membrane of the endodermis.