

**PLANT SYSTEMS**

Photosynthesis	Chemical Reaction carbon dioxide + water + sunlight → glucose + oxygen	Organism plants only	Cell Part chloroplast
Respiration	glucose + oxygen → Carbon dioxide + water + energy	plants and animals	mitochondrion


Plant Needs vs. Animal Needs

plants	both	animals
sunlight	gas exchange	locomotion
	internal transport system for water, nutrients and wastes	
	reproduction	

Hierarchy of organization for Plants

cells → tissues → plant parts (organs) → body systems

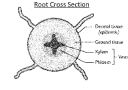
Body Systems



SYSTEM	FUNCTION
Root system	<ul style="list-style-type: none"> <li>usually below ground</li> <li>anchors plant in soil</li> <li>absorbs water and minerals from soil</li> <li>store food</li> </ul>
Shoot system	<ul style="list-style-type: none"> <li>conducts photosynthesis</li> <li>produce flowers for sexual reproduction</li> </ul>
leaf	<ul style="list-style-type: none"> <li>uses chlorophyll in chloroplasts to provide most of photosynthesis</li> <li>can trap cells support, protection, and reproduction (see p. 172)</li> </ul>
flower	<ul style="list-style-type: none"> <li>sexual reproduction occurs when male pollen fertilizes female eggs which develop into seeds which are protected by fruit</li> </ul>
stem	<ul style="list-style-type: none"> <li>support for other plant parts</li> <li>system of transport between roots and leaves</li> <li>stores food</li> </ul>

**PLANT TISSUES AND TISSUE SYSTEMS**

When plants and animals grow, the cells undergo differentiation to form **specialized** cells. Plants have **meristematic** cells to do this. They are located in **root tips** and **stem tips** where there is constant growth. The cells become one of three tissue types:



**Dermal** - outer surfaces of plant parts

**Vascular** - transport water, minerals and nutrients

**Ground** - all other structures in the plant

TISSUE	FUNCTION
Dermal	<p><b>epidermal tissue</b> - covers surface of stem, leaf and root</p> <p><b>periderm tissue</b> - in woody plants forms bark (stem) and covers large roots</p> <p>root dermal cells have hairs extending to absorb water and minerals from the soil</p> <p>leaf and stem produce wax covering (<b>cuticle</b>) to prevent water loss or have hairs to help with defense (some hairs are poisonous)</p>
Vascular	<p><b>xylem tissue</b> - transports water and minerals from roots to the rest of the plant in hollow tubes - mature cells are not living</p> <p><b>phloem tissue</b> - transports sugar solution from photosynthesis out of the leaves to the rest of the plant in hollow tubes - mature cells are living - transports hormones to plant parts, and stored food from roots</p>
Ground	perform photosynthesis, store food, support the plant structure