Teaming with Cells

Copy Instructions

Make Single-sided Copies

- Cut each page in half to make two cards.
- This document includes 3 sets of cards, marked A, B & C. Each set has 4 cards.
- The cards are companions for the cell types introduced in the Mystery Cell Models.

Tips

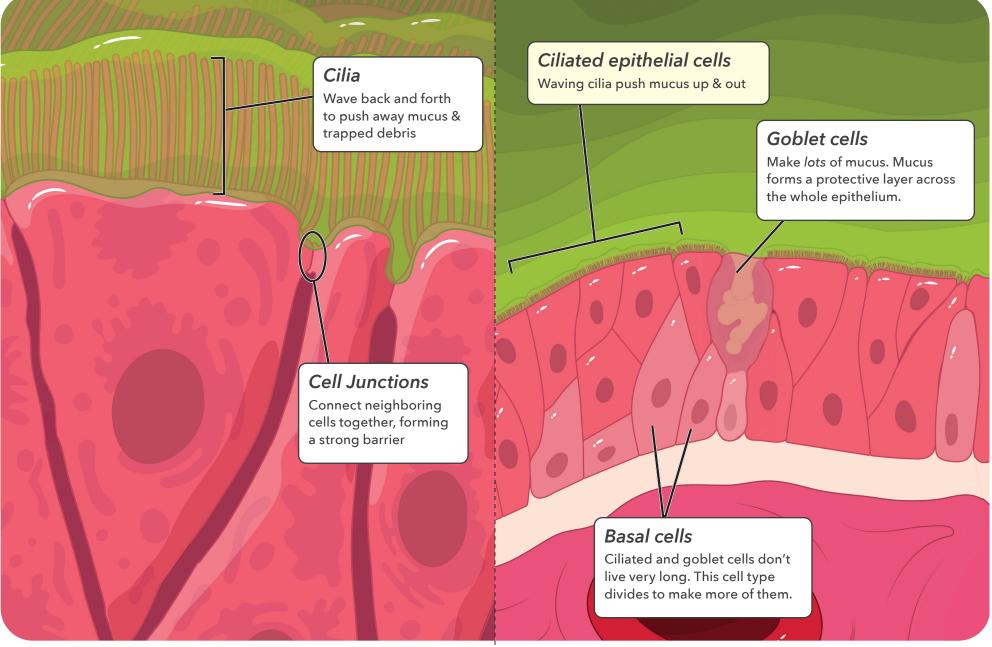
- Print in color and laminate for re-use.
- Print each set of cards on a different color of paper, to make it easier to keep track of which cards belong together.

Ciliated Epithelial Cell



Cell Types of the Airway Epithelium

These cells fit together tightly, forming a barrier that keeps harmful things away from the cells and tissues underneath.



Tissues of the Bronchus (cross-section)



(BRAHN-kus)

Cartilage

Tough tissue that holds

the bronchus open

Airway epithelium

Protects other tissues from things in the air, like bacteria and viruses Clears away dust & other junk

Gland tissue

Makes liquid and mucus. Mucus forms a protective layer; liquid keeps things moving.

Smooth muscle

Expands and contracts to make the bronchus get wider or narrower

Blood vessels

Tubes for blood, which carries nutrients, gases (oxygen, carbon dioxide), and immune cells

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Organs of the Respiratory System

The respiratory system brings air in and out of the body, delivering oxygen and taking away carbon dioxide

Nose

Takes in air, warms it, and traps some dust

Trachea

(TRAY-kee-uh) Tube where air travels to get to the lungs

Bronchi

(BRAHNG-kai) Tubes where air travels inside the lungs

Lungs

Lots of surface area for gas exchange (taking up oxygen and getting rid of carbon dioxide)

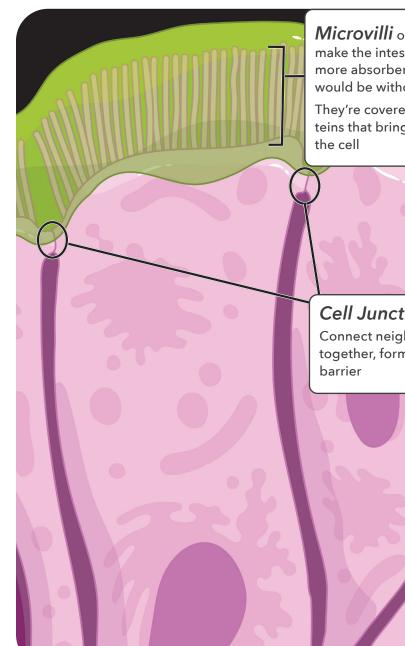
Diaphragm

(DIE-uh-fram) Contracts and relaxes to help move air in & out of the lungs

Intestinal Absorptive Cell



Cell Types of the Intestinal Epithelium **B**

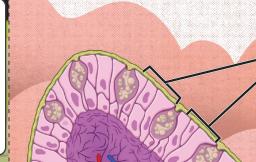


Microvilli on these cells make the intestine 600 times more absorbent than it would be without them.

They're covered with proteins that bring nutrients into

Cell Junctions

Connect neighboring cells together, forming a strong



Absorptive cells

Take up nutrients from food Connect together tightly to keep bad things out of the tissues underneath

Goblet cells

Make mucus, which keeps food moving

Stem cells

Cells in the intestinal epithelium don't live very long. This cell type divides to make more of them.

New cells migrate from the bottoms of crypts to the tips of the villi.

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Tissues of the Small Intestine

B

(cross-section) The inside of the small intestine is covered with finger-like structures called villi [VILL-ee]

Intestinal epithelium

Protects other tissues from food, bacteria, and other things in the digestive tract

Absorbs nutrients from food and transfers them to blood

Smooth muscle Pushes food through the digestive tract

Connective tissue

Holds layers of tissue together and keeps them flexible

Gland tissue Makes digestive enzymes

Blood vessels

Tubes for blood, which carries nutrients, gases (oxygen, carbon dioxide), and immune cells

Organs of the Digestive System

The digestive system is a giant tube that takes in nutrients for the body.

Mouth

Takes in food and chews it into smaller pieces

Esophagus

(eh-SOFF-uh-gus) Tube where food travels to get to the stomach

Stomach

Mixes food with digestive juices and breaks it down into smaller pieces

Small intestine

Adds more digestive enzymes to food

Absorbs nutrients and liquid from food and moves them to the blood

Large intestine

Filled with bacteria that break down food and make micro-nutrients

Absorbs liquid & micro-nutrients

Spongy Parenchyma Cell



Cell Types in Leaf Tissue

(cross-section)

Cell wall

Strong fibers support the shape of the cell and protect it from things in the environment like pests, pathogens, and weather.

Epidermal cells

Make wax to keep the leaf from drying out

Pallisade cells

Using energy from the sun, they make sugar from carbon dioxide

Vacuole

Stores water & nutrients, provides pressure, and breaks down waste.

Chloroplasts

This is where photosynthesis takes place: using the sun's energy to make sugar

Guard cells

Expand and contract to open and close pores that let air in.

Spongy Parenchyma cells

Take in carbon dioxide from the air Loosely packed for efficient gas exchange

Using energy from the sun, they make sugar from carbon dioxide

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Tissues of the Leaf

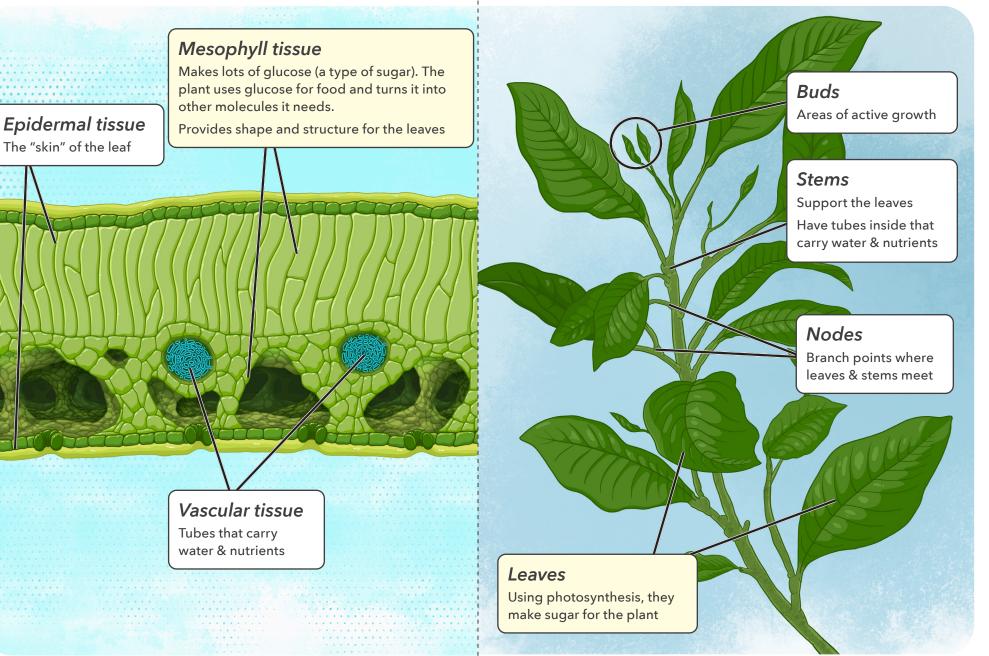
(cross-section)



Organs of the Plant Shoot System

C

The shoot system includes the parts of a plant that are above the ground (or above the root system).



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