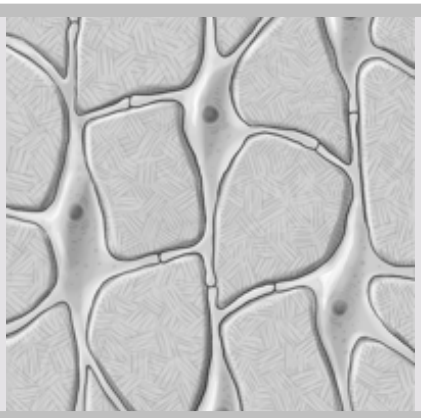
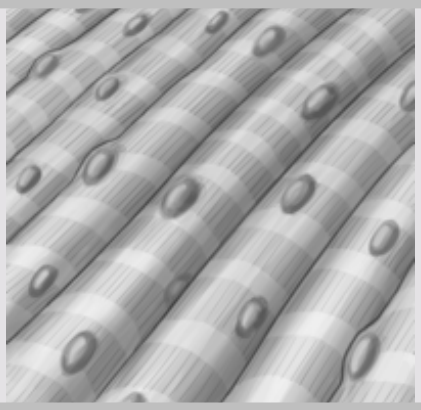
Form Follows Function: compare human cells

Cut out all seven cards below. Each one corresponds to one of the cell descriptions on the other sheet. Place each specimen over the description it matches.

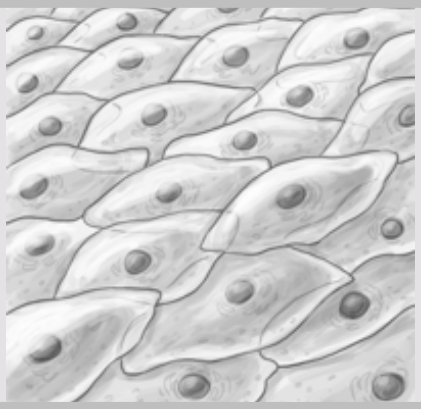
SPECIMEN D



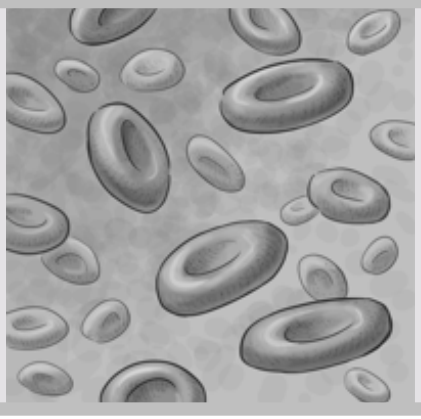
SPECIMEN C



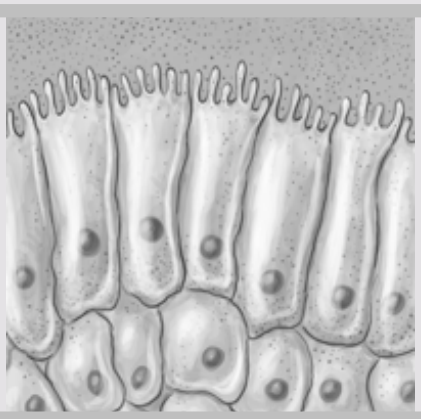
SPECIMEN B



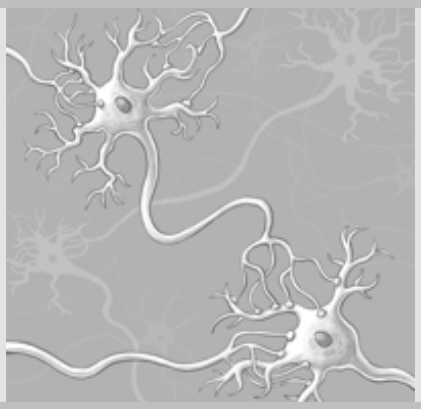
SPECIMEN A



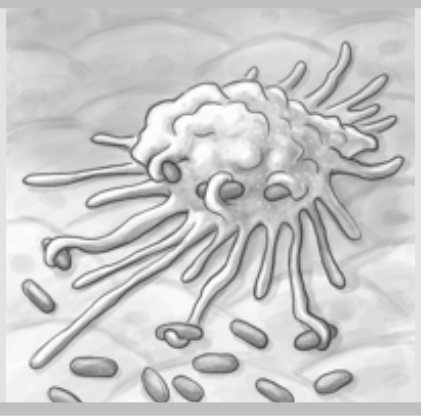
SPECIMEN G



SPECIMEN F



SPECIMEN E



Form Follows Function: compare human cells

Various cells in the human body share many things in common, but differ to do their part on the multicellular team. Read about each cell type's form and function, then find an image of a specimen to place on top of each description.

Squamous cells

The barrier these flat cells form protects the body, keeping moisture in and germs out. They are the top layer of skin and line our insides too, as in the mouth, blood vessels, lungs, heart, digestive system, and so on. These scale-like cells overlap like shingles / roof tiles.

SPECIMEN

Intestinal cells

After the stomach breaks down food, intestinal absorptive cells take in nutrients through their “microvilli”. These tiny finger-like structures increase the total surface area of the cell membranes, making it easier to absorb lots of nutrients.

SPECIMEN

Bone cells

Bone cells deposit hard, calcium-rich material around themselves. Thin tunnels allow bone cells to stay connected so that they can receive signals, oxygen, and nutrition.

SPECIMEN

Nerve cells (or neurons)

Nerve cells (or neurons) string together like wires to carry electrical signals very quickly throughout the body, especially the brain. The messages they carry include telling muscles to move and sensing (sight, sound, touch, temperature, pain, etc.) Branches at the ends of nerve cells create complex networks of multiple neurons connecting to each other.

SPECIMEN

Muscle cells

The muscles that move your fingers, arms, legs, and so on are each made of millions of skeletal muscle cells all bundled together. These long, thin fibers become shorter and thicker when they contract. Most cells have just one nucleus. Not these! They have many.

SPECIMEN

Red blood cells

A red blood cell has no nucleus. This gives it room to carry more oxygen from the lungs to other cells all over the body. Unlike most cells that stick together to form large structures, red blood cells must flow through blood vessels, so they are round and stay separate.

SPECIMEN

Macrophages

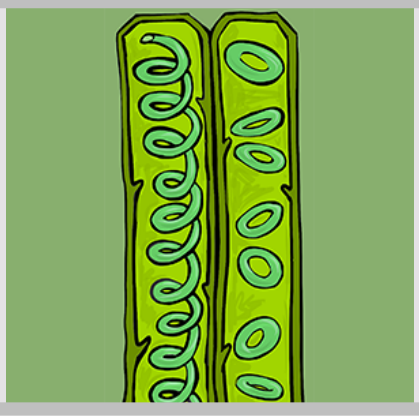
A macrophage is a kind of white blood cell that crawls around inside your body hunting for germs. When it finds some, the macrophage reaches out and grabs it with a gooey arm called a “pseudopod” (which means “fake limb”).

SPECIMEN

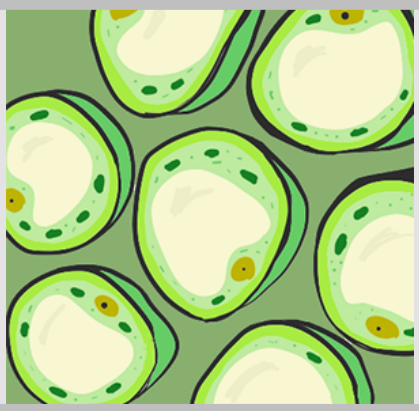
Form Follows Function: compare plant cells

Cut out all seven cards below. Each one corresponds to one of the cell descriptions on the other sheet. Place each specimen over the description it matches.

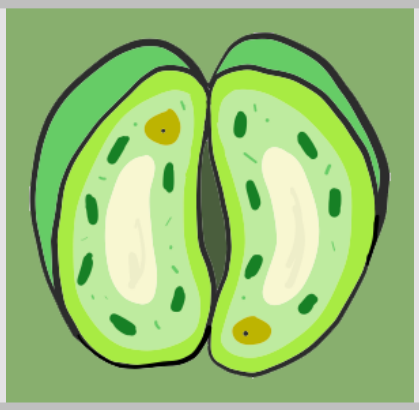
SPECIMEN A



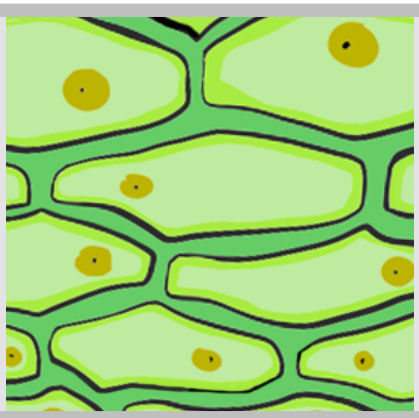
SPECIMEN B



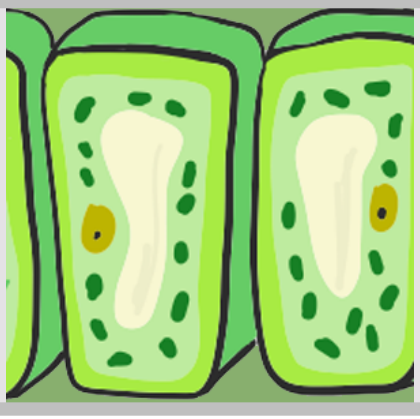
SPECIMEN C



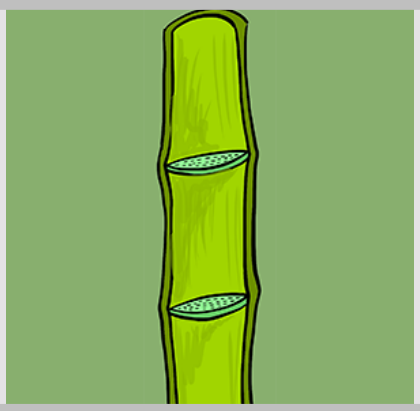
SPECIMEN D



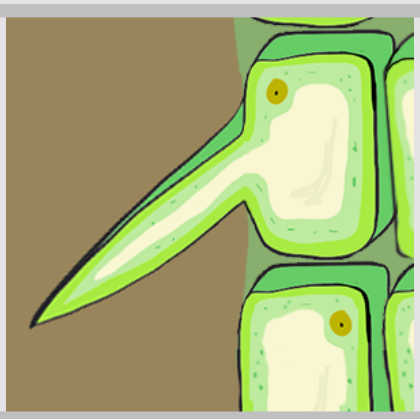
SPECIMEN E



SPECIMEN F



SPECIMEN G



Form Follows Function: compare plant cells

Various cells in the human body share many things in common, but differ to do their part on the multicellular team. Read about each cell type's form and function, then find an image of a specimen to place on top of each description.

Epidermis cells

The waxy, waterproof surfaces of epidermis cells protect the plant. They lay close together to form a layer of skin around the plant.

SPECIMEN

Phloem

Phloem cells form long, tall tubes through which sugar and other food is sent back and forth around the plant. Their walls have hole-filled ends called sieve plates. They have little cytoplasm and no nucleus.

SPECIMEN

Palisade cells

Block-shaped palisade cells are full of chloroplasts. Their tall shape allows them to capture more light and carbon dioxide for photosynthesis.

SPECIMEN

Root hair cells

Found near the tips of roots, root hair cells stick out into the soil. Water enters them easily through their thin walls. Because roots are underground and in the dark, they have no chloroplasts.

SPECIMEN

Spongy leaf cells

Because they are round and don't pack as closely together as other plant cells, spongy leaf cells are surrounded by plenty of air space where gases move in and out.

SPECIMEN

Xylem

Xylem is made up of tube-shaped cells that bring water in one direction: up to the leaves from the roots. As they die, the thick walls become thin, woody tubes.

SPECIMEN

Guard cells

The walls of guard cells are thin on the outside and thick on the inside. This structure helps them open and close holes that allow water vapor and gases in and out of leaves.

SPECIMEN