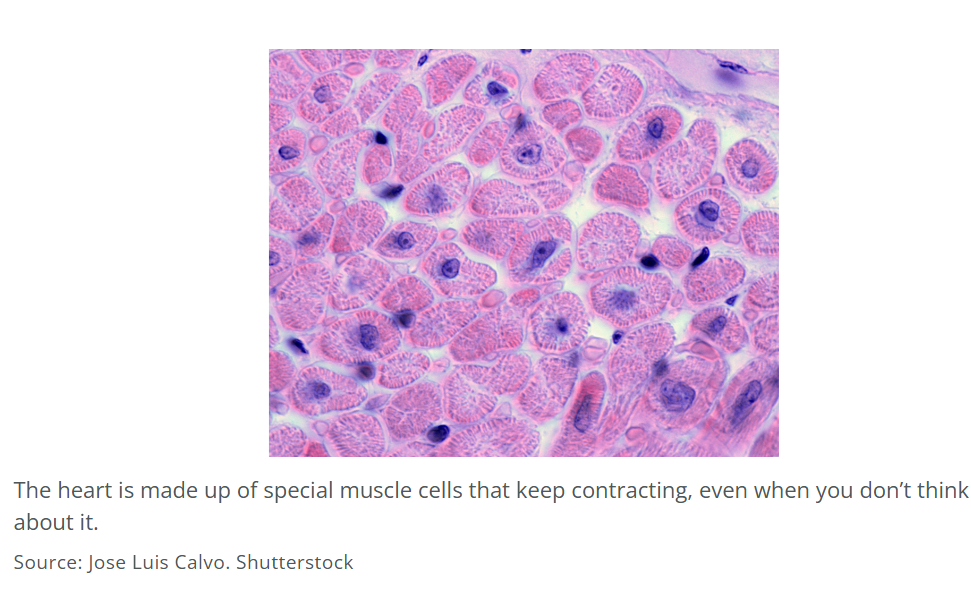
**Unit 3: Body Systems**

**Guided Notes: Multicellular Organisms**

**Big Idea:** Multicellular organisms are made up of different types of cells that work together to perform \_\_\_\_\_\_\_\_\_\_\_\_ life functions, such as growth, development, and maintaining \_\_\_\_\_\_\_\_\_\_\_\_.

**Key Concepts:**

* \_\_\_\_\_\_\_\_\_\_ is the process of maintaining a stable internal state within a cell or organism.
* Cells need to \_\_\_\_\_\_\_\_\_\_\_\_ to a change or condition in their environment.
* \_\_\_\_\_\_\_\_\_\_\_\_ cell types are cell types with different characteristics and functions.
* An \_\_\_\_\_\_\_\_\_\_\_\_ is a rigid bone cell.

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**Real World Examples:**

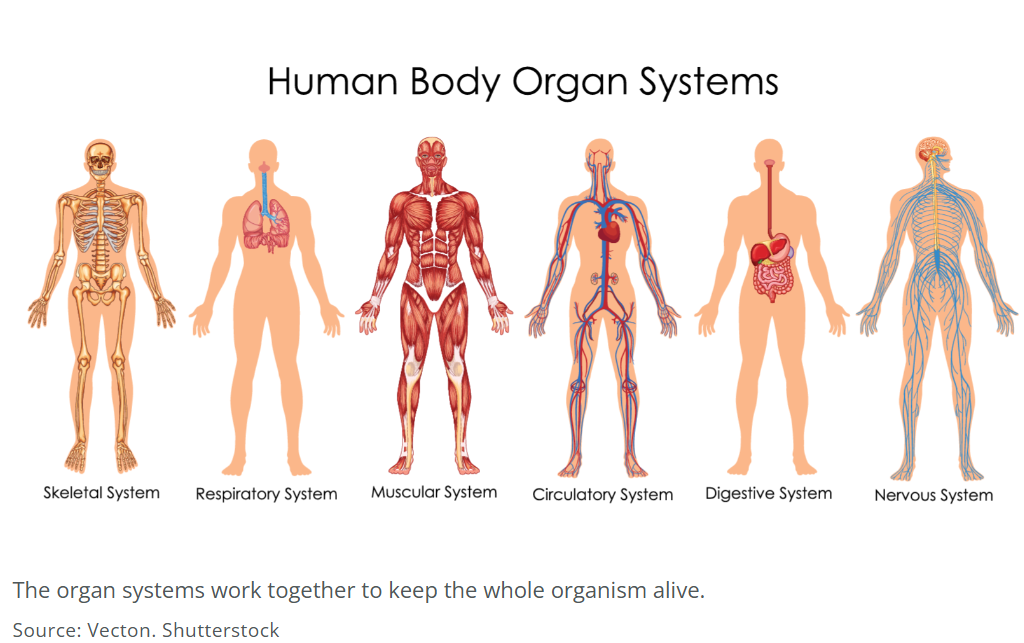
1. Imagine your body is like a well-organized \_\_\_\_\_\_\_\_\_\_\_\_. Different workers (cells) have specific jobs to keep everything running smoothly.
2. Think your favorite song. Each lyric (cell) has unique words to build a verse, like a \_\_\_\_\_\_\_\_\_\_\_\_ cell providing structure or a neuron sending messages, and they all work together to make a catchy beat.

**Guided Notes: Body Systems Hierarchy**

**Big Idea:** Multicellular organisms are organized from \_\_\_\_\_\_\_\_\_\_\_\_ through \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ to perform complex life functions.

**Key Concepts:**

* The \_\_\_\_\_\_\_\_\_\_ is the basic living unit of all organisms.
* An \_\_\_\_\_\_\_\_\_\_ is a body structure with a specific function and is made up of one or more types of tissue.
* An \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ is a group of organs that work together to do a certain job.
* An \_\_\_\_\_\_\_\_\_\_ is an individual, complete living thing.
* A \_\_\_\_\_\_\_\_\_\_ is a group of the same type of cells.

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**Real World Examples:**

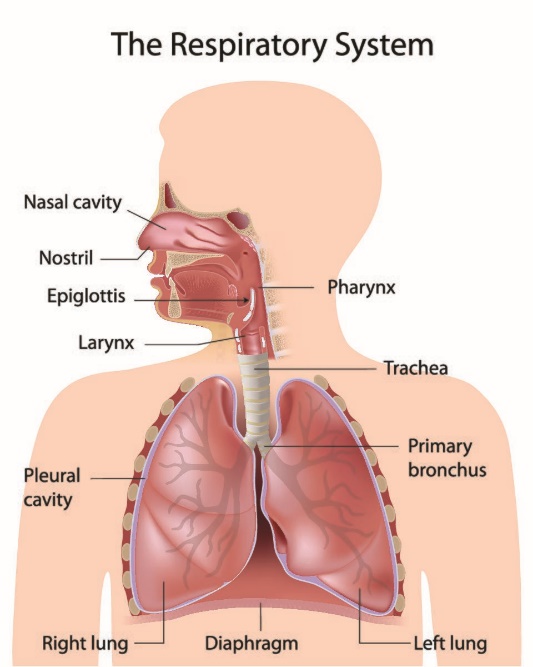
1. Imagine your body is like a \_\_\_\_\_\_\_\_\_\_\_\_. Each room (organ) has a specific function, and all the rooms together make up the entire house (organism).
2. Think of a band. Each musician is like a \_\_\_\_\_\_\_\_\_\_\_ is like a cell who has a specific role, and together they form a team of musicians (organ system) that work towards a common goal.

**Guided Notes: Respiratory and Circulatory Systems**

**Big Idea:** The respiratory and circulatory systems work together to deliver \_\_\_\_\_\_\_\_\_\_\_\_ to the body and remove \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_.

**Key Concepts:**

* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – the inside of the nose
* \_\_\_\_\_\_\_\_\_\_\_\_ – upper part of the pharynx, near the nasal cavity
* \_\_\_\_\_\_\_\_\_\_\_\_ – airway from the nose and mouth to the larynx
* \_\_\_\_\_\_\_\_\_\_\_\_ – airway from the pharynx to the trachea; holds the vocal cords
* \_\_\_\_\_\_\_\_\_\_\_\_ – airway from the larynx to the bronchi
* \_\_\_\_\_\_\_\_\_\_\_\_ – airway from the trachea to the lungs
* \_\_\_\_\_\_\_\_\_\_\_\_ – network of tubes that take air throughout the lungs
* \_\_\_\_\_\_\_\_\_\_\_\_ – organ that moves oxygen into the body and moves carbon dioxide out of the body
* \_\_\_\_\_\_\_\_\_\_\_\_ – organ that pumps blood
* \_\_\_\_\_\_\_\_\_\_\_\_ – the main artery that moves oxygenated blood away from the heart and to the body



**Real World Examples:**

1. When you take a deep breath in, air enters your \_\_\_\_\_\_\_\_\_\_\_\_ and passes through the \_\_\_\_\_\_\_\_\_\_\_\_. The air then moves through the \_\_\_\_\_\_\_\_\_\_\_\_ and reaches the \_\_\_\_\_\_\_\_\_\_\_\_. From there, it travels down the \_\_\_\_\_\_\_\_\_\_\_\_ and into the \_\_\_\_\_\_\_\_\_\_\_\_. Finally, the air reaches the \_\_\_\_\_\_\_\_\_\_\_\_ where oxygen is exchanged with carbon dioxide.
2. The \_\_\_\_\_\_\_\_\_\_\_\_ circulates blood throughout the body. Oxygenated blood is pumped from the left ventricle into the \_\_\_\_\_\_\_\_\_\_\_\_. Deoxygenated blood from the upper body returns to the heart through the \_\_\_\_\_\_\_\_\_\_\_\_, while blood from the lower body returns through the \_\_\_\_\_\_\_\_\_\_\_\_. The right atrium receives this deoxygenated blood and passes it into the \_\_\_\_\_\_\_\_\_\_\_\_, which then sends it to the lungs for oxygenation.

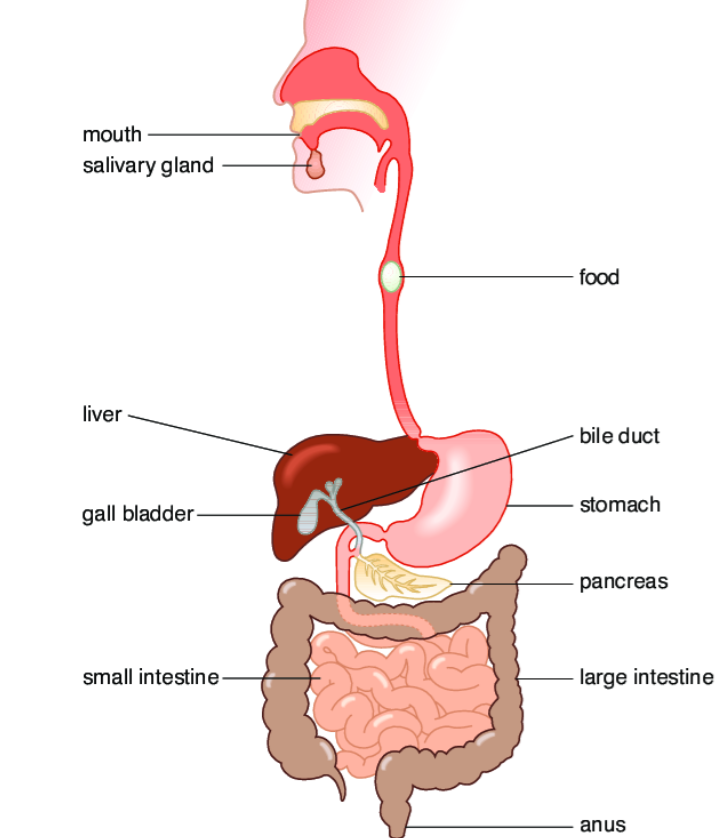
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**Guided Notes: Digestive and Excretory Systems**

**Big Idea:** The digestive and excretory systems work together to obtain \_\_\_\_\_\_\_\_\_\_\_\_ from food and remove \_\_\_\_\_\_\_\_\_\_\_\_ from the body.

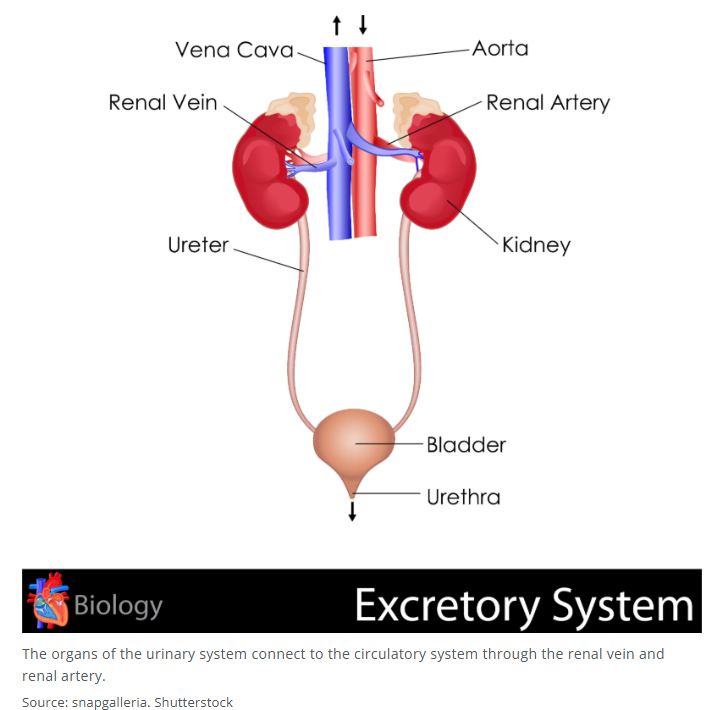
**Key Concepts:**

* \_\_\_\_\_\_\_\_\_\_\_\_ – organ that stores urine until it can be expelled from the body
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – system that digests food and absorbs its nutrients
* \_\_\_\_\_\_\_\_\_\_\_\_ – carries food from the mouth to the stomach
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – system that removes cellular waste and excess materials from the body
* \_\_\_\_\_\_\_\_\_\_\_\_ – organ that filters the blood
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – organ that absorbs water from food and moves the waste out of the body
* \_\_\_\_\_\_\_\_\_\_\_\_ – beginning of the digestive system
* \_\_\_\_\_\_\_\_\_\_\_\_ – structures in the kidneys that remove waste material and return water and glucose to the blood
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – organ that absorbs nutrients from the food
* \_\_\_\_\_\_\_\_\_\_\_\_ – organ that breaks down food chemically and physically

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**Real World Examples:**

1. When you eat a meal, the food enters your \_\_\_\_\_\_\_\_\_\_\_\_ and travels down the \_\_\_\_\_\_\_\_\_\_\_\_. In the \_\_\_\_\_\_\_\_\_\_\_\_, the food is mixed with digestive juices. The partially digested food then moves into the \_\_\_\_\_\_\_\_\_\_\_\_, where most of the nutrients are absorbed into the bloodstream. Finally, the remaining waste moves into the \_\_\_\_\_\_\_\_\_\_\_\_ before being expelled from the body.
2. The \_\_\_\_\_\_\_\_\_\_\_\_ includes several organs that help filter and remove waste. The \_\_\_\_\_\_\_\_\_\_\_\_ play a crucial role by removing waste products and excess substances from the blood. These waste products, including \_\_\_\_\_\_\_\_\_\_\_\_, are then transported through the \_\_\_\_\_\_\_\_\_\_\_\_ to the \_\_\_\_\_\_\_\_\_\_\_\_. When it is time to urinate, the urine passes through the \_\_\_\_\_\_\_\_\_\_\_\_ and is expelled from the body.

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**Guided Notes: Nervous System**

**Big Idea:** The nervous system is a complex network that allows the body to \_\_\_\_\_\_\_\_\_\_\_\_ to stimuli and maintain \_\_\_\_\_\_\_\_\_\_\_\_.

**Key Concepts:**

* \_\_\_\_\_\_\_\_\_\_\_\_ – basic cell of the nervous system
* \_\_\_\_\_\_\_\_\_\_\_\_ – nerve cells
* \_\_\_\_\_\_\_\_\_\_\_\_ – part of the neuron that contains the nucleus
* \_\_\_\_\_\_\_\_\_\_\_\_ – part of the neuron that transmits information away from the cell body
* \_\_\_\_\_\_\_\_\_\_\_\_ – part of the neuron that carries information to the cell body
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – neurons that take in sensory information and send it to the brain
* \_\_\_\_\_\_\_\_\_\_\_\_ – neurons that connect other neurons together
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – neurons that tell the body how to respond to stimuli
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – the part of the nervous system made up of the brain and spinal cord
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – the network of nerve tissue that spreads out throughout the body

**Real World Examples:**

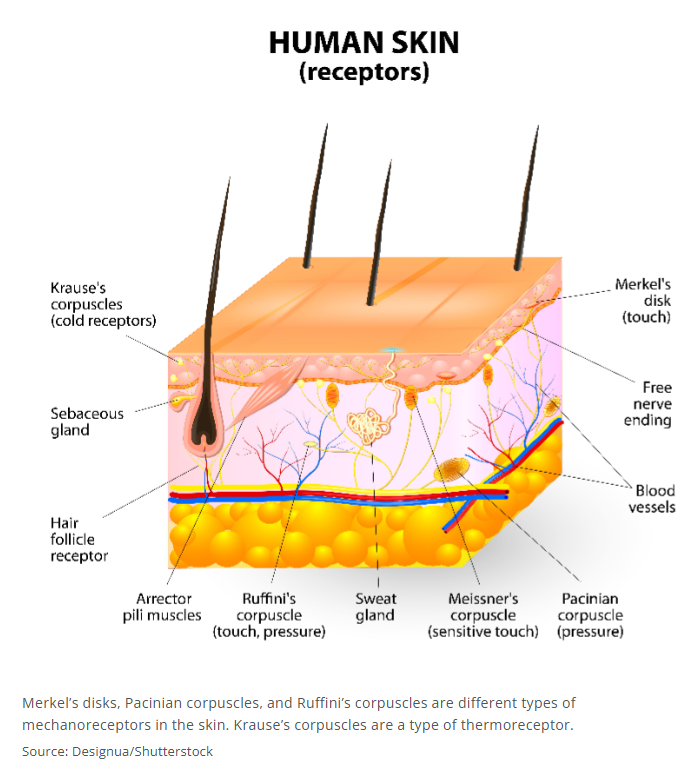
1. When you touch a hot surface, \_\_\_\_\_\_\_\_\_\_\_\_ in your skin detect the heat and send signals through \_\_\_\_\_\_\_\_\_\_\_\_ to your \_\_\_\_\_\_\_\_\_\_\_\_. The signals travel through the \_\_\_\_\_\_\_\_\_\_\_\_ of the neurons and reach the \_\_\_\_\_\_\_\_\_\_\_\_. Here, \_\_\_\_\_\_\_\_\_\_\_\_ connect with other neurons to relay the message. Finally, \_\_\_\_\_\_\_\_\_\_\_\_ send signals to your muscles to pull your hand away from the hot surface.
2. The \_\_\_\_\_\_\_\_\_\_\_\_ consists of the brain and spinal cord, which process information and coordinate responses. The \_\_\_\_\_\_\_\_\_\_\_\_ spreads out throughout the body, connecting different parts of the body to the central nervous system. When you step on a sharp object, the \_\_\_\_\_\_\_\_\_\_\_\_ in your foot detect the pain and send signals to your brain. The brain then sends signals through the \_\_\_\_\_\_\_\_\_\_\_\_ to the muscles in your leg, causing you to lift your foot away from the sharp object.

**Guided Notes: Sensory Receptors**

**Big Idea:** Sensory receptors detect different types of \_\_\_\_\_\_\_\_\_\_\_\_ and send information to the \_\_\_\_\_\_\_\_\_\_\_\_ for processing.

**Key Concepts:**

* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – special cells that detect sensory stimuli
* \_\_\_\_\_\_\_\_\_\_\_\_ – sensory receptors that detect visible light
* \_\_\_\_\_\_\_\_\_\_\_\_ – sensory receptors that detect mechanical stimuli, such as pressure
* \_\_\_\_\_\_\_\_\_\_\_\_ – sensory receptors that detect hot and cold temperatures
* \_\_\_\_\_\_\_\_\_\_\_\_ – sensory receptors that detect chemical stimuli

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**Real World Examples:**

1. When you step outside on a sunny day, your eyes use \_\_\_\_\_\_\_\_\_\_\_\_ to detect visible light, allowing you to see your surroundings. At the same time, your skin uses \_\_\_\_\_\_\_\_\_\_\_\_ to detect the warmth of the sun, helping you to feel the temperature.
2. When you press your hand against a surface, \_\_\_\_\_\_\_\_\_\_\_\_ in your skin detect the pressure, allowing you to feel the touch. If you taste something spicy, \_\_\_\_\_\_\_\_\_\_\_\_ in your mouth detect the chemical stimuli, giving you the sensation of spiciness.

**Guided Notes: The Eye**

**Big Idea:** The eye is a complex organ that works as a system to receive and process \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_.

**Key Concepts:**

* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – information about images sent from photoreceptors in the retina through the optic nerve to the brain
* \_\_\_\_\_\_\_\_\_\_\_\_ – the white part of the eye
* \_\_\_\_\_\_\_\_\_\_\_\_ – front part of the eye through which light enters
* \_\_\_\_\_\_\_\_\_\_\_\_ – colored part of the eye that surrounds the pupil
* \_\_\_\_\_\_\_\_\_\_\_\_ – part of the eye that controls how much light is allowed to enter the eye
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – muscles that change the shape of the lens so the eye can focus
* \_\_\_\_\_\_\_\_\_\_\_\_ – part of the eye that focuses light on the retina
* \_\_\_\_\_\_\_\_\_\_\_\_ – part of the eye that turns light into visual signals
* \_\_\_\_\_\_\_\_\_\_\_\_ – sensory receptors that detect light
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – the nerve that passes visual signals from the eye to the brain
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – tissue that connects and holds the parts of the body together
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – tissue that covers the outer surface and lines the inner passages of the body
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – tissue made up of nerve cells
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – tissue made up of muscle cells

**Real World Examples:**

1. When you look at an object, light first enters your eye through the \_\_\_\_\_\_\_\_\_\_\_\_ and then passes through the \_\_\_\_\_\_\_\_\_\_\_\_. The \_\_\_\_\_\_\_\_\_\_\_\_ controls how much light is allowed to enter by adjusting the size of the \_\_\_\_\_\_\_\_\_\_\_\_. The light then passes through the \_\_\_\_\_\_\_\_\_\_\_\_, which focuses it onto the \_\_\_\_\_\_\_\_\_\_\_\_. Here, \_\_\_\_\_\_\_\_\_\_\_\_ detect the light and convert it into \_\_\_\_\_\_\_\_\_\_\_\_. These signals are then sent to the brain via the \_\_\_\_\_\_\_\_\_\_\_\_.
2. Think of your eye as a \_\_\_\_\_\_\_\_\_\_\_\_. The lens adjusts to focus on objects at different distances, like how a camera lens adjusts to take clear pictures.

**Guided Notes: Homeostasis**

**Big Idea:** Homeostasis is the process by which organisms maintain \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ despite changes in their environment.

**Key Concepts:**

* \_\_\_\_\_\_\_\_\_\_\_\_ – process of maintaining a stable internal state
* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ – those things outside your body that can affect your internal stability, including temperature, stress, and disease

**Real World Examples:**

1. Imagine you are mowing the lawn on a hot day. Your body starts to sweat to cool down and maintain \_\_\_\_\_\_\_\_\_\_\_\_.
2. Think of an arctic fox. The thick fur on its feet helps it maintain a stable \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ in a very cold environment.