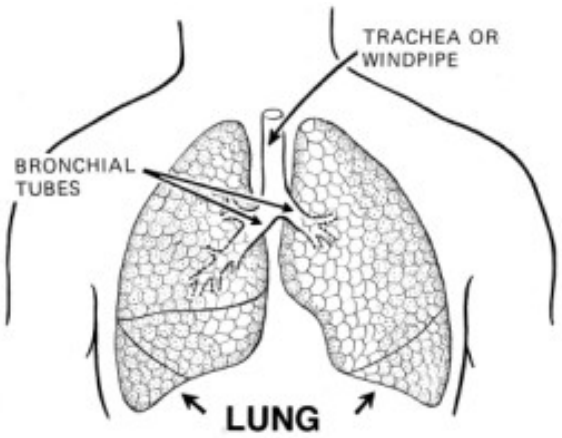
1. Respiratory System (Lung) Facts



-The primary functions of your lungs are to transport oxygen from the air you breathe into your bloodstream while taking away carbon dioxide, which is released into the air when you breathe out.

-Most vertebrate animals (animals with spines) have two lungs.

-Your left and right lungs aren't exactly the same. The lung on the left side of your body is divided into two lobes while the lung on your right side is divided into three. The left lung is also slightly smaller, allowing room for your heart.

-Can you live without one lung? Yes you can, it limits your physical ability but doesn't stop you from living a relatively normal life. Many people around the world live with just one lung.

-People who have a large lung capacity can send oxygen around their body faster. You can increase you lung capacity with regular exercise.

-When resting, the average adult breathes around 12 to 20 times a minute.

-An average person breathes in around 11,000 litres of air every day.

-The study of lung diseases is known as pulmonology.

-As well as other parts of your body and your general health, smoking is bad for your lungs. Smoking can cause lung cancer among other lung affecting diseases.

-Asthma is a common disease that affects the lungs. Asthma attacks happen when your airways narrow after being irritated. The narrow airways make it hard for you to breathe in air.

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Pneumonia is a dangerous disease that makes it harder for your lungs to absorb oxygen from the air you breathe.

-Other lung diseases include emphysema, tuberculosis and bronchitis.

2. Human Heart (Circulatory System) Facts

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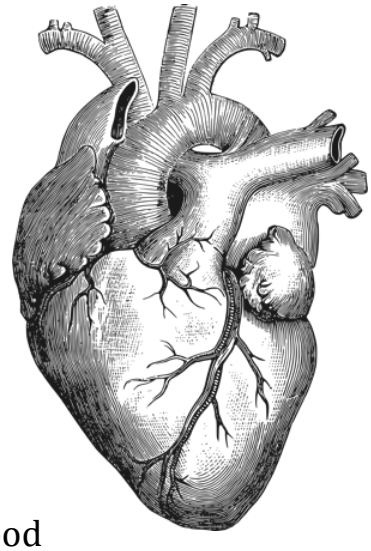


-The heart is one of the most important organs in the human body, continuously pumping blood around our body through blood vessels.

-Your heart is located in your chest and is well protected by your rib cage. The study of the human heart and its various disorders is known as cardiology.

-The heart is made up of four chambers, the left atrium, right atrium, left ventricle and right ventricle.

-There are four valves in the human heart, they ensure that blood only goes one way, either in or out.

-Blood that leaves the heart is carried through arteries. The main artery leaving the left ventricle is the aorta while the main artery leaving the right ventricle is the pulmonary artery.

-Blood going towards the heart is carried through veins. Blood coming from the lungs to the left atrium is carried through the pulmonary veins while blood coming from the body to the right atrium is carried through the superior vena cava and inferior vena cava.

-Electricity going through your heart makes the muscle cells contract.

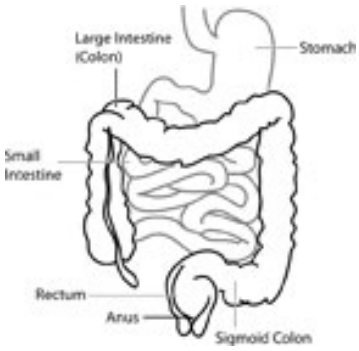
-You might have watched television shows or movies where a patient in a hospital is attached to an electrocardiogram (ECG). The machine with a line moving across a screen that occasionally spikes (or remains flat when a patient is dying). This machine can measure the electricity going through a patient's heart.

-Red blood cells have the important job of carrying oxygen around the body. They also contain a protein called hemoglobin. Hemoglobin contains iron, which combines with oxygen to give hemoglobin and our blood, a red color.

-One of the principal signs of life for humans is blood pressure, this is the measure of pressure that circulating blood has on the walls of blood vessels. Blood pressure is usually taken from a person's upper arm. A general human being is known to have a normal blood pressure of around 112/64 mmHg. High blood pressure can increase the risk of a stroke or heart attack.

3. Digestive System Facts

http://www.sciencekids.co.nz/sciencefacts/humanbody/heart.html



-The digestive system is responsible for breaking down food we eat into smaller components so that nutrients can be easily absorbed by the body and the waste discarded.

-There are two types of digestion. Mechanical digestion is the physical breakdown of large pieces of food into smaller pieces through, chewing (mastication). While chemical digestion uses enzymes to break down this food mass further into small molecules which the body can separate and use.

-Saliva in our mouths plays a key role in initial digestion by moistening the food to help with the mechanical chewing and swallowing process. Saliva also contains an enzyme which starts the chemical digestion of starchy foods.

-Our salivary glands produce around 1.5 litres of saliva each day!

-The pharynx, at the back of the throat, has a flap of tissue called the epiglottis that closes during swallowing to prevent food going down the trachea (windpipe).

-Once swallowed, bolus (food) travels down through the esophagus to the stomach, taking about 7 seconds to get there.

-Muscles in the esophagus tighten and relax to create a wave-like process called peristalsis which pushes food down the small tube, which is why your food never falls back out if you happen to be eating and swallowing upside down!

-Enzymes called proteases break down proteins within the stomach and small intestine. While in saliva, amylases break down carbohydrates and lipases break down fats.

-The inner wall of the stomach secretes hydrochloric acid to help kill bacteria and, along with proteases enzymes, aids in the digestion of food. To protect itself from the corrosive acid, the stomach lining must create a thick coating of mucus.

-Some animals such as cows, giraffes and deer have stomachs with multiple compartments (not multiple stomachs as is commonly believed). While others like seahorses, lungfishes and platypuses have no stomachs at all

-Most of the digestion and absorption of food nutrients actually takes place in the small intestine.

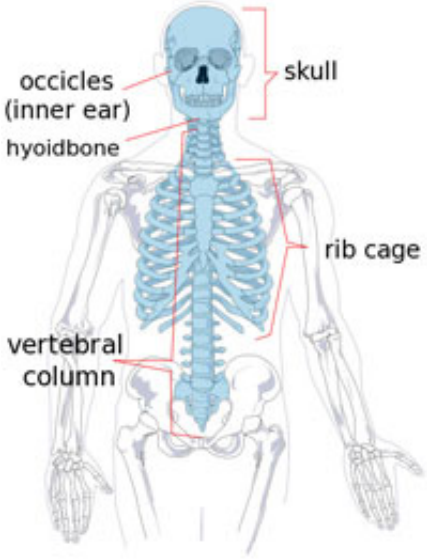
-The pancreas secretes enzymes for use by the small intestine.

-The large intestine is the final part of the digestive system. The liver produces bile for the digestive system and processes the nutrients. The gall bladder stores the bile used to break down dietary fat.

4. Skeleton & Bones Facts

-At birth the human skeleton is made up of around 300 bones. By adulthood, some bones have fused together to end up with 206 bones.

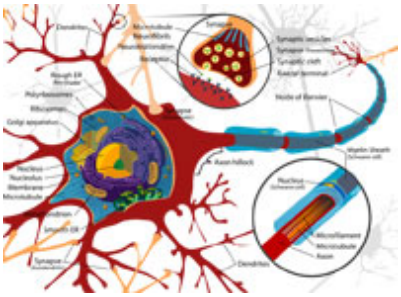
- Human bones grow continually from birth until our mid 20's. Our skeleton's bone mass is at its maximum density around the age of 30.



If broken our bones will re-grow and repair themselves. Often doctors will place a cast on splint to make sure these bones repair straight and true.

- The appendicular skeletal section of our skeleton has 126 bones.
- The human skeletal system has six major functions including the production of blood cells, for support, for movement, for protection, for storage of ions and endocrine regulation.
- The longest bone in the human body is the thigh bone called the femur.
- The smallest bone found in the human body is located in the middle ear. The staples (or stirrup) bone is only 2.8 millimetres (0.11 inches) long.
- Like our skin, the human body's bones are also constantly worn down and re-made, to the point where every 7 years we essentially have a new bone.
- The area of our body with the most bones is the hand, fingers and wrist where there are 54 bones.
- Our teeth form part of the skeletal system, but are not counted as bones.
- The majority of human bones have a dense, strong outer layer, followed by a spongy part full of air for lightness, while the middle contains a soft, flexible, tissue substance called bone marrow.
- Bone marrow makes up 4% of a human body mass. It produces red blood cells which carry oxygen all over the body.
- Calcium is very important for our bones and helps keep them strong and healthy.
- The areas where our bones meet are called joints. The joints in our cranium have no movement while our hip joints allow for a wide range of movement.
- Bones are held in place at joints by muscles and also tissues called ligaments. Another type of tissue called cartilage covers each bone joint surface area to prevent the bones rubbing.
- There are a number of skeletal disorders, osteoporosis is a bone disease that increases the chance of fractures, scoliosis is a curvature of the spine, while arthritis is an inflammatory disease that damages joints.

5. Nervous System Facts



-The nervous system is a complex structure of nerves of neurons that transmit signals around the body to coordinate actions. It's our body's electrical wiring.

-The nervous system has two parts, the central nervous system (CNS) and the peripheral nervous system (PNS).

-The CNS includes the brain, spinal cord and retina of the eyes. The brain is protected by the skull, and the spinal cord by the skeletal vertebrae.

-The PNS includes all other nervous system structures that sit outside the CNS but that help connect the CNS to areas of the body.

-Nerves are enclosed bundles of long fibers called axons which are made up of nerve cells. There are two types of nerve cells: neurons and glial cells.

-Glial (or glia) cells are specialized cells that provide structure and support to neurons. They help hold neurons in place, supply nutrients to neurons, destroy germs, remove dead neurons, and direct axons of neurons.

-Some types of glial cells generate a substance called myelin that coat axons and work as electrical insulation to help them quickly and efficiently transmit signals.

-Neurons quickly and precisely send signals as electrochemical waves along axons to other cells. There are two types of neurons, sensory and motor neurons.

-Sensory neurons change light, touch and sound into neural signals which are sent back to our CNS to help our body understand and react to its surroundings.

-Motor neurons transmit neural signals to activate muscles or glands.

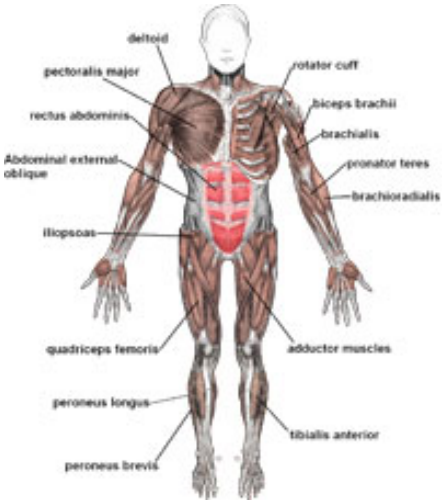
-There are approximately 100 billion neurons in the human brain and 13.5 million neurons in the human spinal chord.

-The nervous system can transmit signals at speeds of 100 meters (328 feet) per second.

-Nerves in our body can be vulnerable to both physical damage and damage through diseases. Damage to nerves can cause great pain, loss of feeling, or loss of muscle control

6. Muscle Facts for Kids

-Muscle is a soft tissue in the body of humans and animals. Its main purpose is to produce force and motion.



-Muscles are responsible for maintaining posture, physical movement (sitting, walking, eating, etc.), and movement of internal organs (such as keeping the heart pumping to circulate blood and moving food through the digestive system).

-Tendons connect our soft contracting muscle to our hard bones.

-There are around 650 skeletal muscles in the human body.

-There are three types of muscle, skeletal, cardiac, and smooth.

-Skeletal muscles (or striated) are voluntary muscles that control nearly every action a person intentionally performs. Tendons attach the muscle to two bones across a joint, as one muscle contracts the other relaxes to move the bones.

-Skeletal muscle can be further divided into two types, slow twitch and fast twitch.

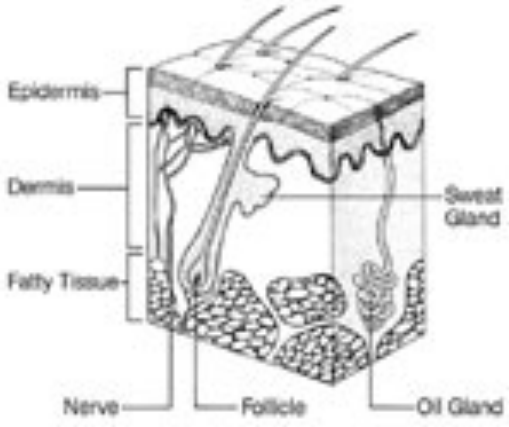
-Slow twitch (Type I) muscle contain proteins that give it a rich red color. This muscle carries more oxygen efficiently and using fats, proteins or carbs as energy slow twitch muscle fibers contract over a long period of time like aerobic sports such as long distance running and cycling.

-Fast twitch (Type II) muscle is whiter in color as it has less myoglobin (a oxygen carrying protein). Fast twitch fibers contract quickly and powerfully, however they fatigue rapidly for anaerobic exercise such as sprinting or for strength sports like weightlifting.

-The strongest muscles in relation to the job they have to do is the external muscles of the eye which are large and about 100 times stronger than they need to be in relation to the small size and weight of the eyeball.

-The tongue has 8 muscles, so is technically not the strongest muscle in the body.
-The heart cardiac muscle does the most work of any muscle over a lifetime.

7. Integumentary System (Skin) Facts



-Skin is the human body's largest organ (an organ is a group of tissues that work together to perform functions in your body, others include your brain, heart and lungs).

-Your skin performs a range of different functions which include physically protecting your bones, muscles and internal organs, protecting your body from outside diseases, allowing you to feel and react to heat and cold and using blood to regulate your body heat.

-The outer layer of your skin is the epidermis, it is found thickest on the palms of your hands and soles of your feet (around 1.5mm thick).

-The subcutis (or hypodermis) is the deepest layer of your skin, as well as storing fat, it also contains blood vessels, hair follicle roots and nerves.

-If skin is severely damaged then it may try to heal by forming scar tissue. Scar tissue is not the same as normal skin tissue, it often appears discolored and lacks sweat glands and hair.

-The color of human skin depends on the amount of pigment melanin that the body produces. Small amounts of melanin result in light skin while large amounts result in dark skin.

-A large amount of the dust in you home is actually dead skin.

8. Immune System

-The Human immune system is the body's protection system.

When it is healthy and functioning properly it is able to identify invading diseases, bacteria, viruses and parasites in the body and destroy them.

-The immune system is made up of skin, bone marrow, spleen, thymus, white blood cells, hormones, and antibodies that work to keep the body healthy. When the immune system is not functioning properly, or the immune system itself is attacking the body, a variety of health issues can begin to develop, including cancer, autoimmune disorders, colds, flu, and infections that range from mild to life-threatening.

-One of the first responses by the immune system is inflammation. Common symptoms of inflammation in the body include redness, swelling, pain, and even heat at the site of inflammation. It can also occur inside the body where we can't see it. The process of inflammation draws immune cells to the injured area to promote healing.

-Although many people think a fever is bad - it is actually good in most cases because it is the body heating up to fight off infection.

-The human body is full of good bacteria necessary for life, but the immune system can learn which bacteria and germs are not healthy and fight them off when they try to invade the body. This is why eating food that builds good bacteria in the digestive system is important for a healthy body and strong immune system.

-Some people are born with almost no immune system and must live in an environment that is completely sterile to avoid becoming sick. A movie about a boy with this disorder was made in 1976 called *The Boy in the Plastic Bubble*. 1 in 100,000 people are born with this.

-Vaccinations are designed to provide the body with defense against dangerous and deadly diseases such as smallpox, flu epidemics, and polio.

-Autoimmune diseases are those that cause the body's natural defense system to attack healthy tissues, such as psoriasis, celiac disease and rheumatoid arthritis.

-In the immune system it is the white blood cells that travel around in the blood and lymph to fight infections. Despite their small proportion of only 1% of blood they are extremely effective and important to one's immune system and health.

