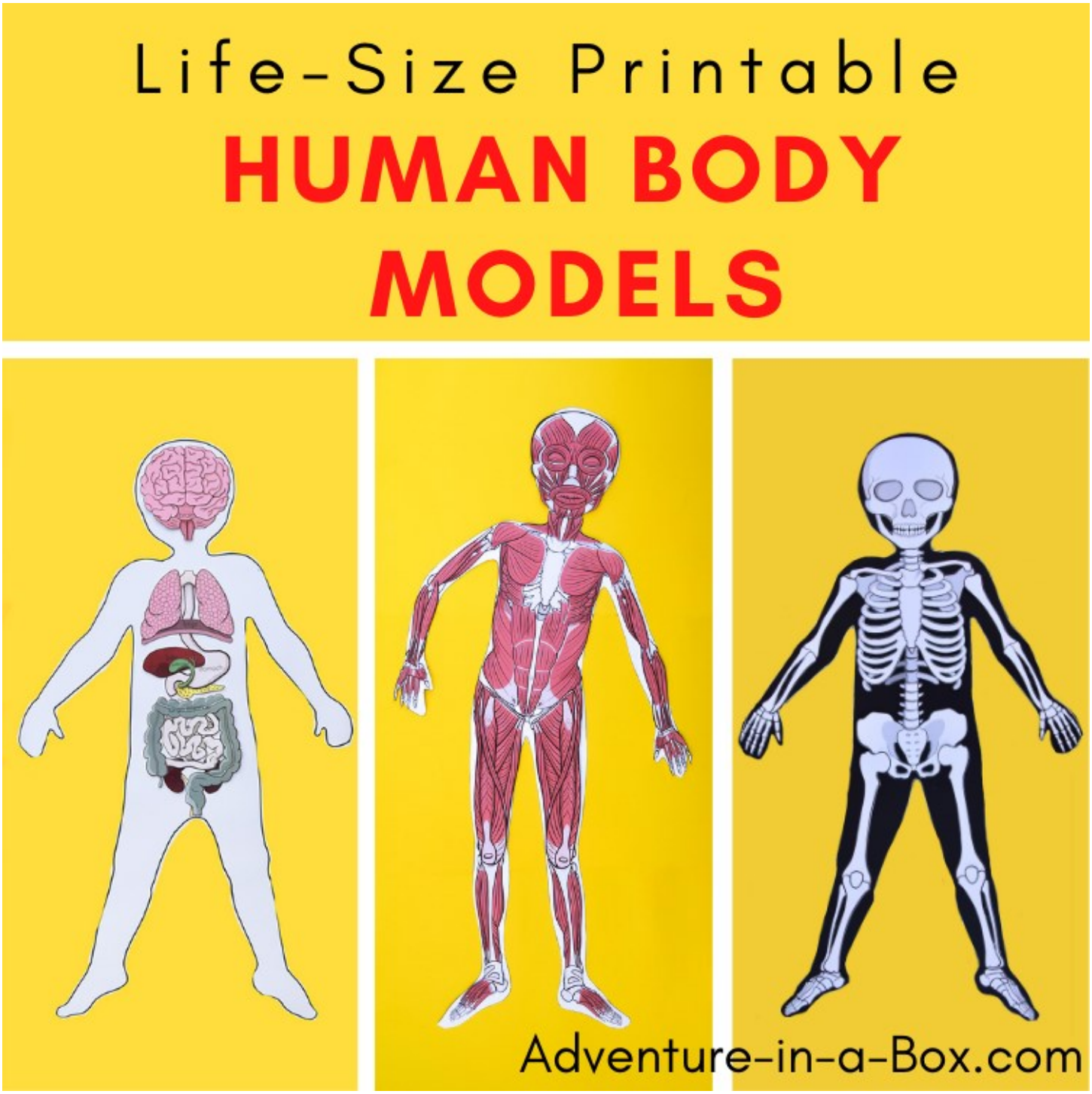

Life-Size Human Body Models

Thank you for your order!

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Visit our website or join our mailing list to receive the latest updates on our projects and promotions! We have something new and fun happening every week.

All the best,

Liska

Table of Contents

BODY SYSTEM INFO CARDS

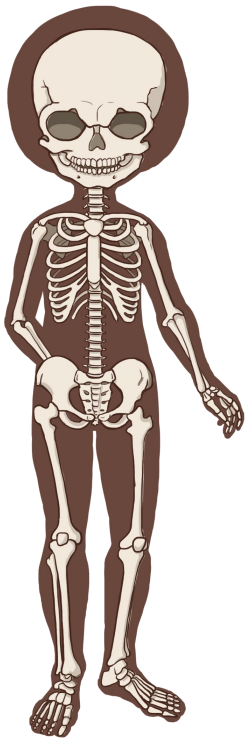
ABOUT THE INFORMATION CARDS

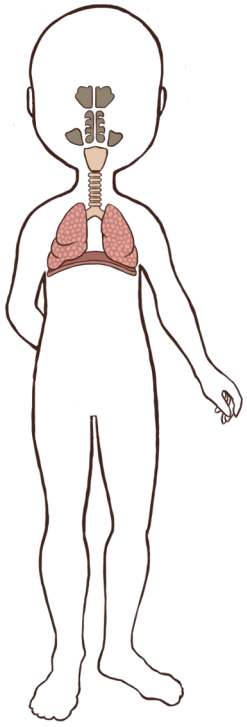
The following pages describe all the human body systems:

- Respiratory System
- Digestive System
- Circulatory System
- Urinary System
- Nervous System
- Muscular System
- Skeletal System
- Integumentary System
- Endocrine System
- Immune System
- Reproductive systems (male/female)

WHAT TO DO WITH THE INFORMATION CARDS

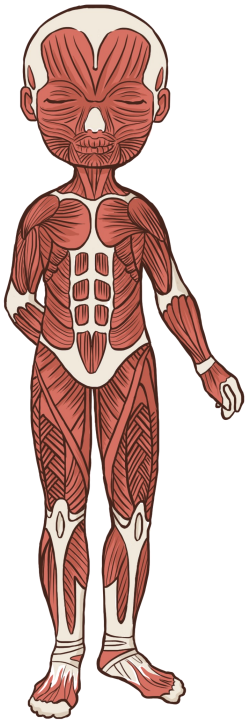
Print them and refer to them while doing all of the activities. You can bind them into a book or spread them out as information sheets. We recommend that you read them the first time as you complete the introductory activity of building a paper body model.

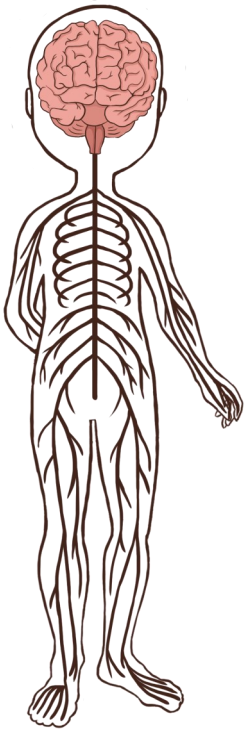


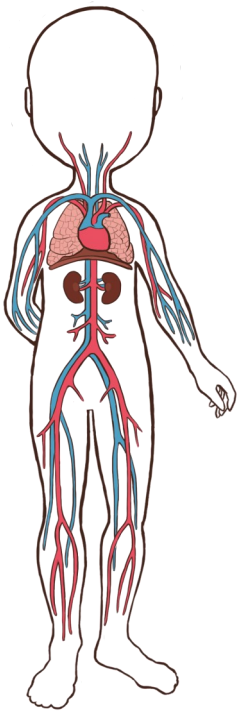


HUMAN

BODY SYSTEMS





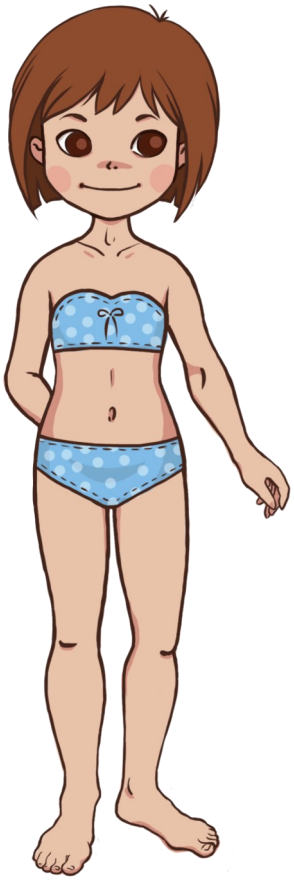


ABOUT BODY SYSTEMS

The various organs in your body work together to perform important jobs. For instance, your stomach, pancreas, liver, gallbladder and intestines are all involved in the process of digesting food. The groups of organs that work together on a particular task are called body systems.

All body systems work together to maintain the internal conditions necessary for our bodies to function and for us to live. There are eleven major organ systems in the human body. Here we are going to talk about eight of them in detail.

INTEGUMENTARY SYSTEM



The organs aren't all internal like the brain or the heart. There is one you wear on the outside—your skin. It is your largest organ, and it completes an astonishing number of tasks!

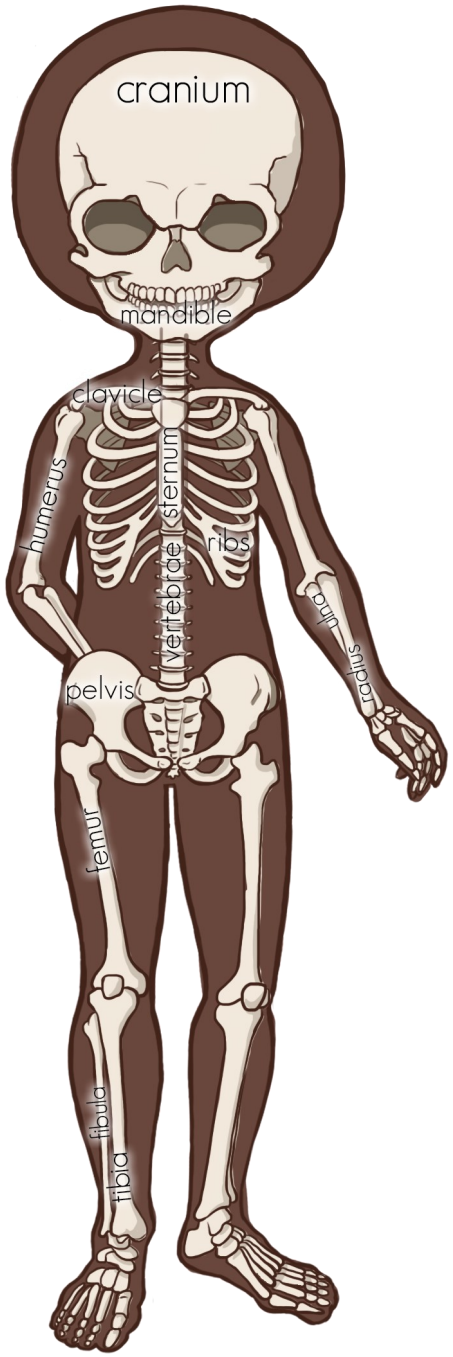
Skin protects your internal organs from infections, cold and hot weather, UV rays and harmful chemicals. It stores water, fat, glucose, and vitamin D. Skin is packed with nerves for keeping the brain in touch with the outside world. It also regulates body temperature.

Skin has three layers. Epidermis, the top layer, is the one you can see. It constantly produces the new cells that make up your skin. It renews every 2-4 weeks. Every year, you lose up to 9 lb (4 kg) of skin cells!

The layer underneath is called dermis. It contains nerve endings, blood vessels, oil glands, and sweat glands. The nerve endings in your dermis tell your brain how things feel when you touch them. Your dermis is also full of tiny blood vessels. These keep your skin cells healthy by bringing them the oxygen and nutrients they need and by taking away waste.

The third layer of skin is hypodermis. It stores fat, insulates the body and cushions the internal organs. This layer is where you'll find the base of hairs, too. Each hair grows out of a tiny tube in the skin called a follicle—there are more than 100,000 follicles on your head!

SKELETAL SYSTEM



The type of skeleton you have is called an endoskeleton – bones on the inside of the body. Your skeleton is well adapted to your habit of walking upright. You have bulky knee joints, hips and heels, and your skull is shaped and balanced to sit atop your neck. That makes you very different from other primates!

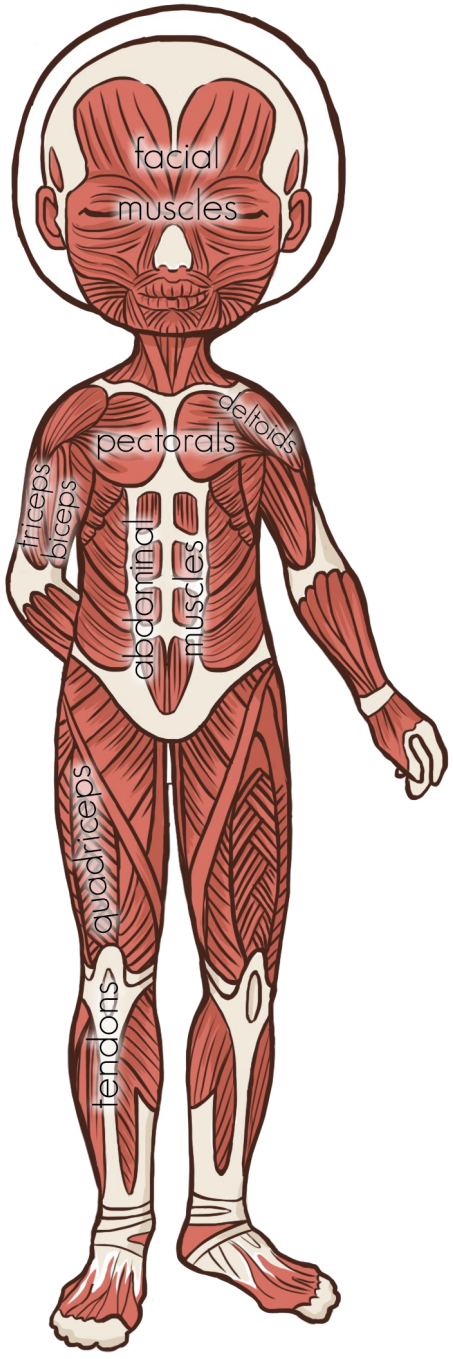
Bones are actually organs, though you may not often think of them that way. They produce red and white blood cells and store minerals. They also protect sensitive organs and act as levers with special attachment points for muscles to act upon, so that you can move your body.

There is more to your skeletal system than bone, though. Cartilage plays an important role too; it is a hard, rubbery material that cushions joints and makes your nose and ears firm but flexible.

Babies are born with about 270 bones, but you will only have about 206 by the time you are an adult, because some of them fuse together into fewer, bigger bones.

The biggest bone you have is a thigh bone, and the smallest bone is located inside your ear.

MUSCULAR SYSTEM

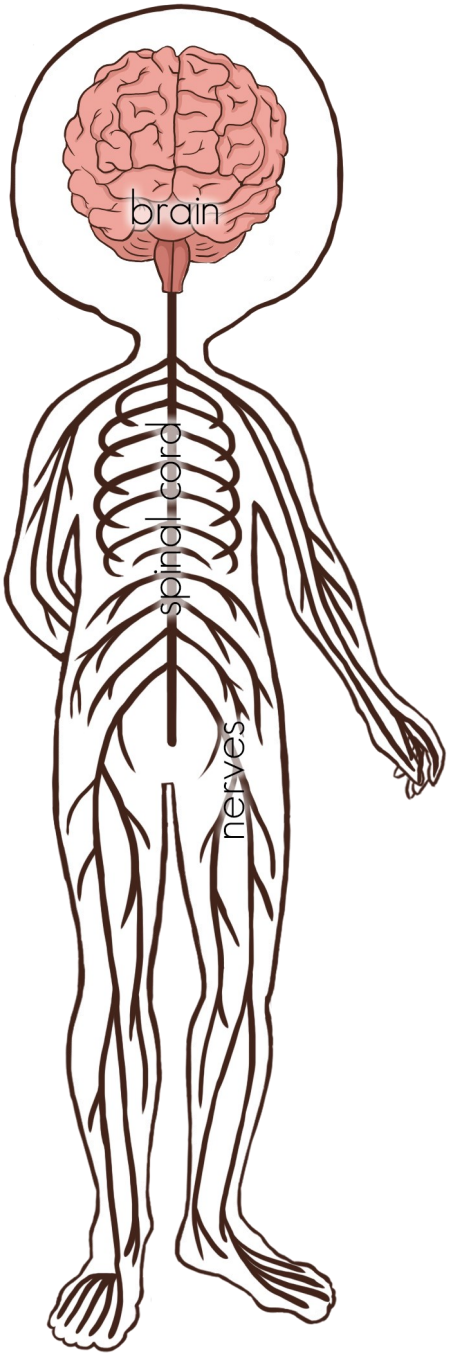


All over your skeleton, attached to the bones by tendons, are stretchy muscles. The main role of the muscles in your body is to make it move. When you want to make a movement, the first step is for the brain to send a message to the muscles, using the nervous system. Next, the muscles tighten, pulling on the bones and making them move.

While most of your muscles can be directed by your thoughts, some others work on their own. This is particularly true of your heart.

Different muscles have different jobs. The biceps, a muscle on the front of your upper arm, is responsible for bending your arm at the elbow. The triceps, a large muscle on the back of your upper arms, does the opposite job—it pulls to straighten your arm. Stressing these muscles makes them repair and reinforce, which results in muscle growth.

When you smile, you involve, on average, about twelve of your facial muscles.

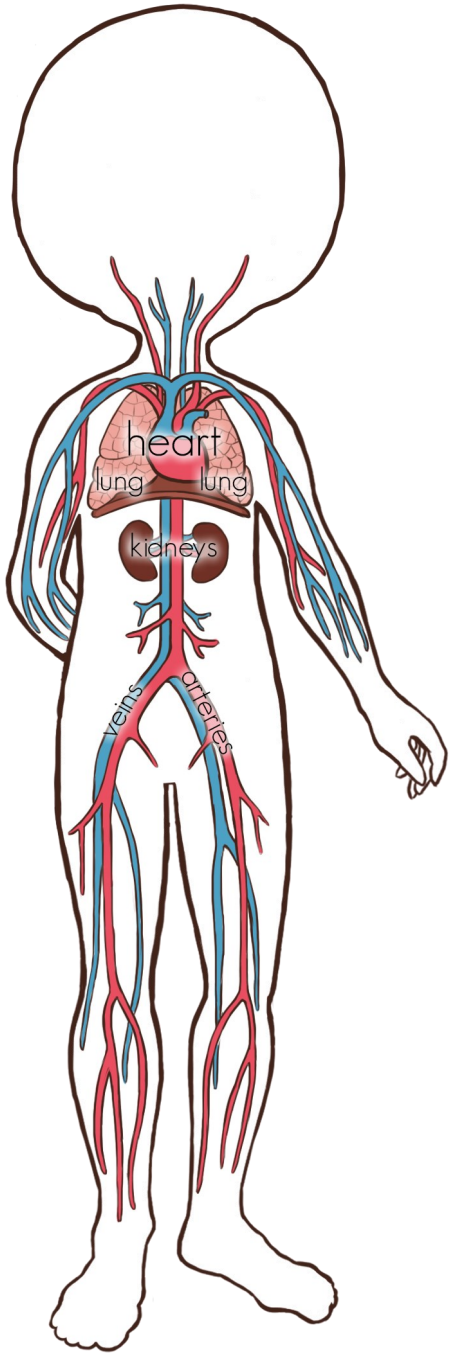


NERVOUS SYSTEM

The nervous system sends signals back and forth through the body, so that you can sense your surroundings (like when your eyes tell your brain what they see) and control your movements (like when your brain tells your legs to move).

In most cases, the nerves that are responsible for your sense of touch and for controlling your movements (the peripheral nervous system) are well protected where they pass through your body. One nerve that is not as well protected is the ulnar nerve, near the elbow – if you have ever banged your "funny bone," you know the one.

The brain and spinal cord (the central nervous system) are also well protected. The skull and vertebrae protect them from physical damage, and a special blood/ brain barrier protects them from chemicals in the rest of the body.



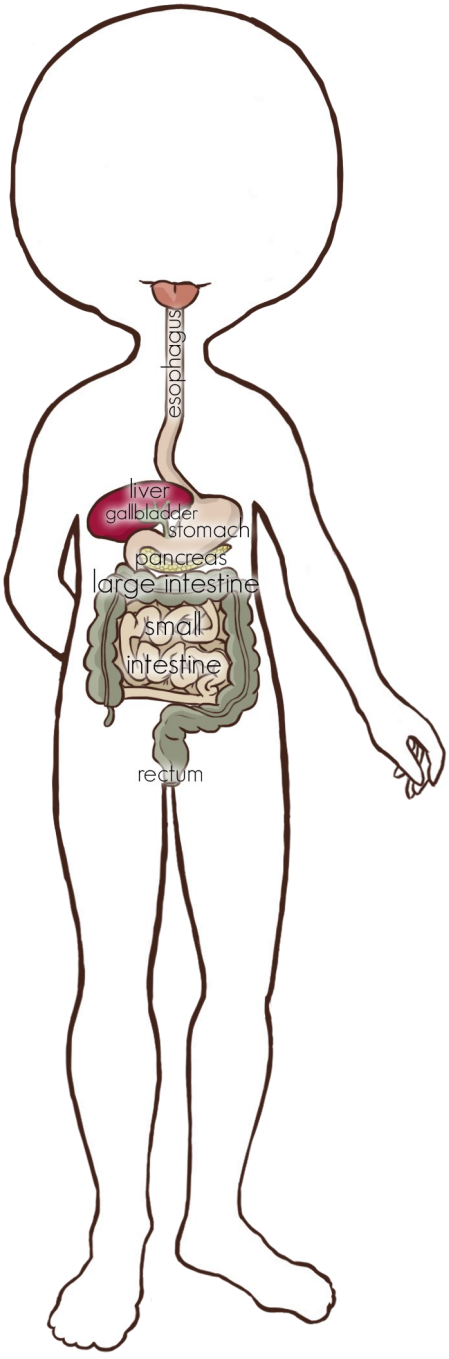
CIRCULATORY SYSTEM

Your heart is a muscular organ that pumps blood – with the oxygen and nutrients it carries – to the rest of the body. Your heart has two sides that pump blood at the same time. One side pumps blood into the arteries and through them to the organs and tissues. Blood that has delivered its nutrients and oxygen and needs more comes back to your heart through the veins and enters the other side of the heart. That side pumps blood to the lungs to get oxygen. The blood then returns to the side that pumps it to the rest of the body again.

Your heart pumps all day and all night to circulate blood around the body. It takes just under one minute for blood to make the round trip to the heart. If you are running fast, your heart is pumping more blood, so it takes even less time.

The 300 million-or-so blood vessels in a kid's body would stretch 100,000 km (60,000 miles) if they were laid out in a straight line.

DIGESTIVE SYSTEM



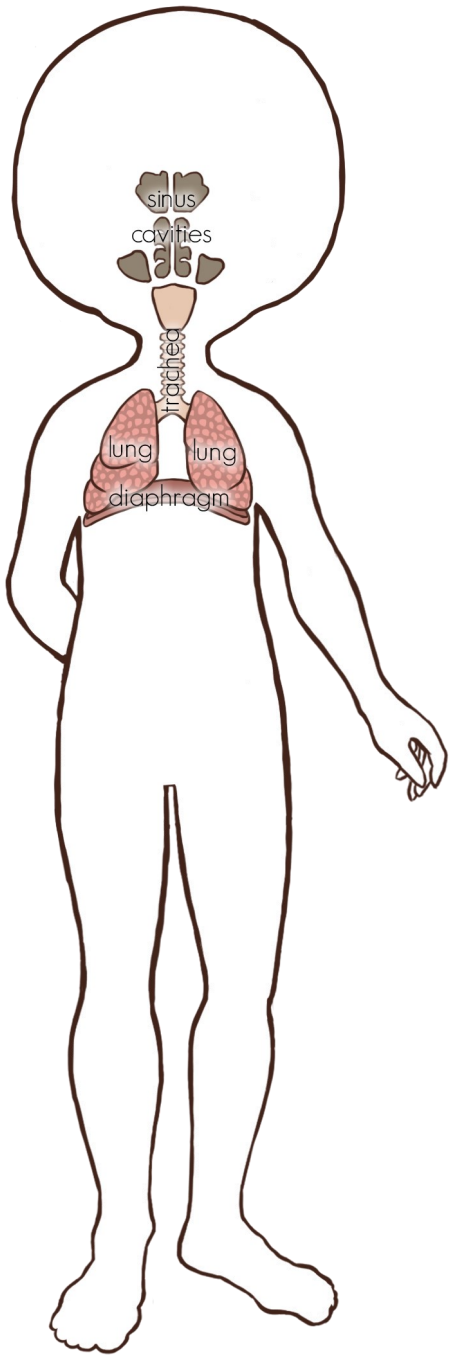
The digestive system handles food, in order to keep the nutritious part and get rid of the rest.

After you have put food in your mouth, chewed it with your teeth and mixed it with spit, your tongue pushes it down into the esophagus – a muscular tube that connects your throat with your stomach. In your stomach, the food gets churned and soaked in an acid mixture that breaks it down further.

Having been turned liquid, the food goes into your small intestine, about one or two hours after being eaten. There it gets further reduced in size, with the help of digestive enzymes made by your pancreas, bile made by your liver and stored by gallbladder, as well as other various digestive processes. When the food particles are small enough, they get absorbed into intestinal walls. Blood carries them to your liver which sorts and stores nutrients.

It takes about six to eight hours for the food to go through the small intestine. Afterwards, it passes into the large intestine where most remaining water is removed from what is left of the food. It moves a lot slower and takes from 12 hours to two days until it reaches your rectum and gets out through your anus.

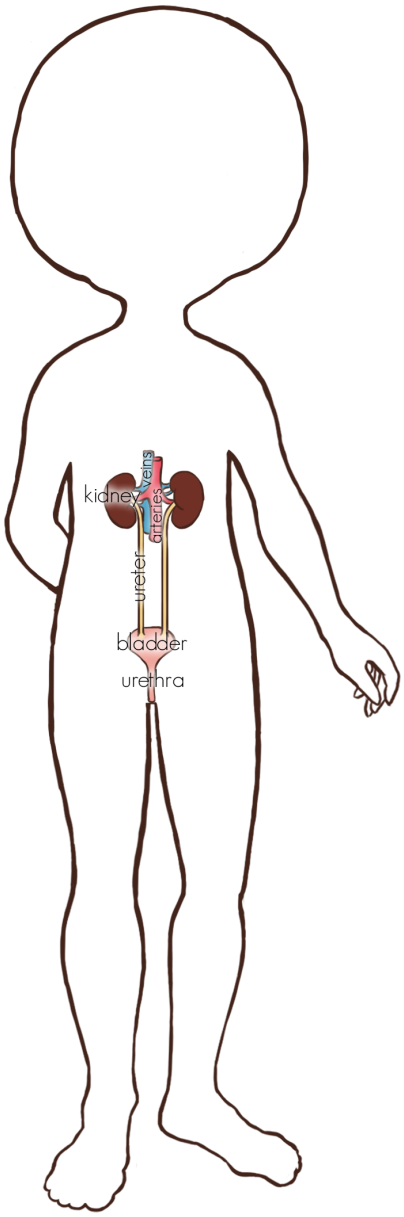
RESPIRATORY SYSTEM



Your body needs oxygen from the air to stay alive. Air comes through your nose or your mouth and travels down your trachea into your lungs.

The ribs protect your lungs. The lungs are spongy air-filled organs on both sides of your chest. When you breathe in, your ribs move out; when you breath out, your ribs move in. This happens with the help of two rows of muscles attached to your ribcage. There is also a big domed sheet of muscles under your lungs called a diaphragm. Your diaphragm contracts and flattens when you inhale. This creates a vacuum effect that pulls air into your lungs. When you exhale, your diaphragm relaxes and the air is pushed out of your lungs.

The air travels through your trachea, then through the tubes inside your lungs – the big tubes called bronchi and the narrow tubes called bronchioles. Blood picks up oxygen from your lungs and carries it around your body. The leftover air is then exhaled.

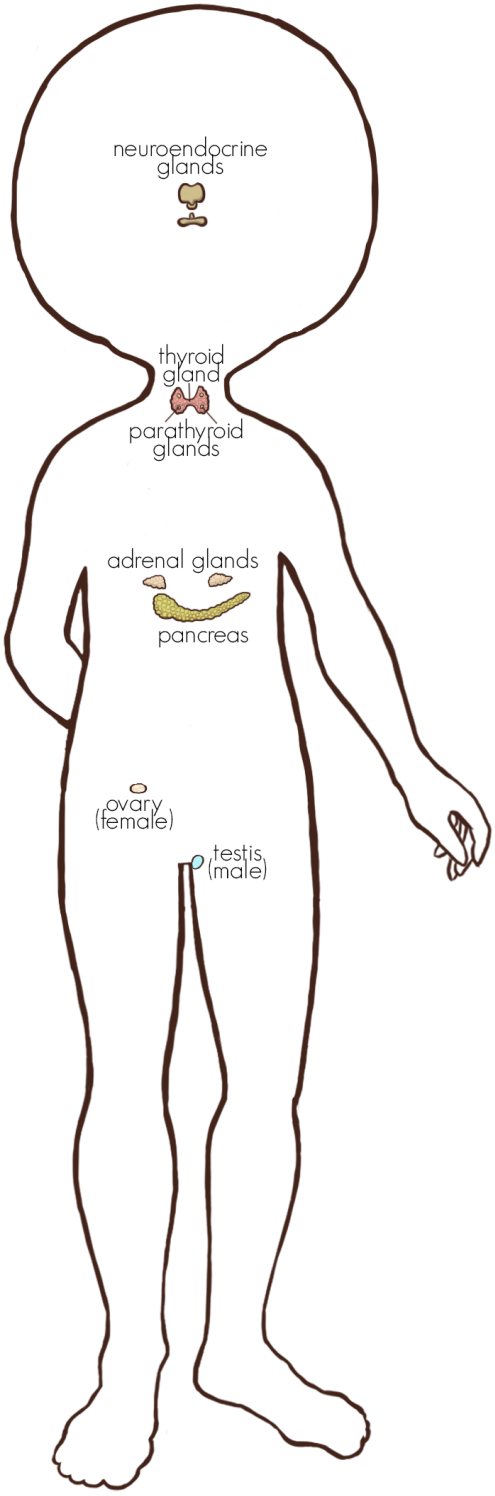


URINARY SYSTEM

Your body needs water to work properly – water makes about 60% of your body weight! Your kidneys are responsible for controlling the right water balance in your body. They also filter blood, reabsorbing what is needed and removing the rest (waste, medicine, and toxic materials) as urine. As a result, urine is about 96% water.

Urine goes down from your kidneys through two tubes, called ureters. Urine is stored in a bladder, a stretchy muscular organ that sits at the bottom of your abdomen. A full bladder can hold about two cups of urine before the urge to use the washroom occurs. Urine leaves the body through your urethra when you pee.

ENDOCRINE SYSTEM

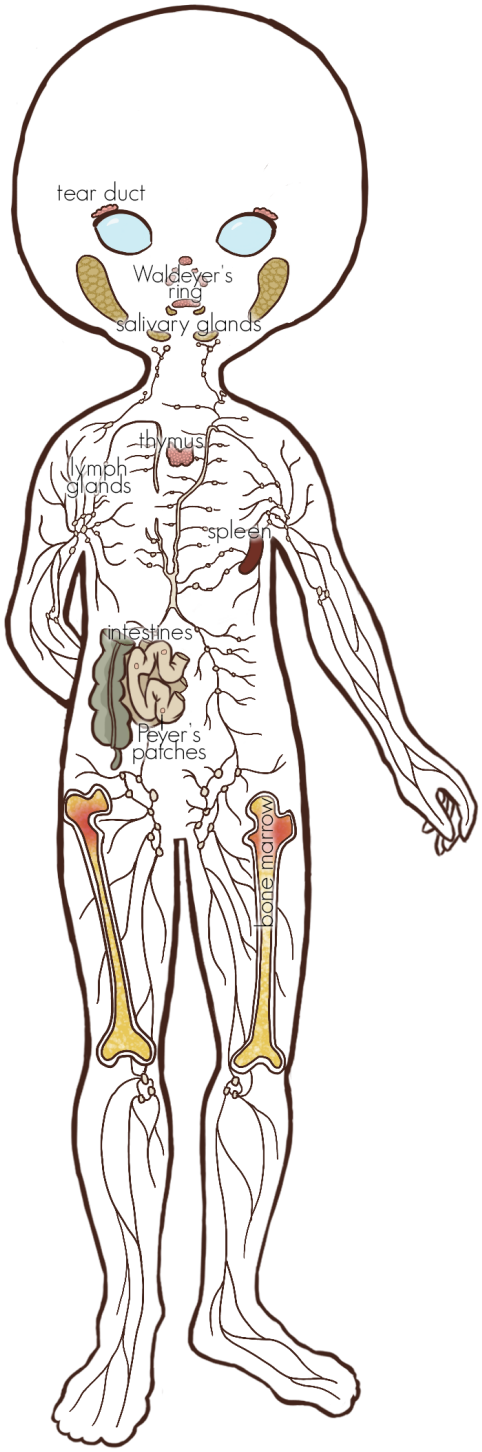


Your endocrine system is a series of glands that give instructions to other parts of your body, telling them to make adjustments to how they work. If you think of your body functions as a large panel of dials, with a few of them labelled growth, sleep, hunger, mood, and reproduction, your endocrine system would be the one constantly turning them up and down.

The way one of your glands turns up a dial is by dumping out a chemical instruction, called a hormone, which is carried by the blood around your body. The instruction is picked up by the tissue it is intended for, and that tissue gets to work. In fact, it just keeps working as long as it keeps getting the hormone. Eventually, the dial needs to be turned back down to avoid a harmful effect, so the hormone is blocked for a while. This is called feedback. Without feedback, your body would still feel hungry after you eat, you would still feel tired after you slept, etc.

So, what do the individual glands do? Their job descriptions are actually pretty complicated, because some of them oversee a lot of tasks, some of them oversee other glands, and some tasks require several glands to make things work. But basically, the neuroendocrine glands hang out in your brain, with the pea-sized pituitary gland watching over all your other glands. The thyroid gland in your neck regulates your rate of growth, and how fast you use up energy. Perched atop your kidneys, the adrenal glands help regulate blood pressure and give you the unmistakable rush that comes from being startled. Your pancreas helps with digestion, and the ovaries and testes regulate the reproductive systems in females and males. Every system in your body is fine tuned by the endocrine system!

IMMUNE SYSTEM



Your immune system fights off tiny invaders, like viruses, bacteria, and fungi. It either prevents you from being sick altogether or helps you recover when you get sick.

The immune system does its work with a lot of different tools, and many of them are parts of other systems. For example, the tears in your eyes can destroy germs, and the boogers (mucus) in your nose trap and kill them.

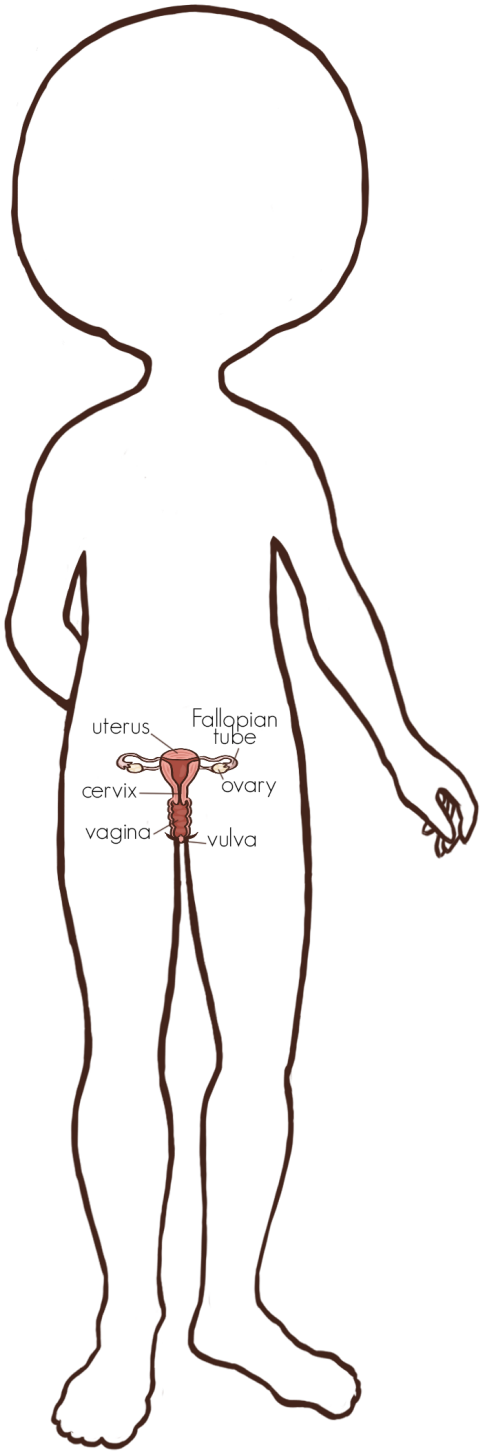
If you do happen to breathe in or eat a germ, your body's tonsils can detect it right away. Your tonsils form a cluster of organs called "Waldeyer's ring" behind your nose and mouth, which trigger the release of germ-fighting cells on contact.

Another important part of the immune system is the lymphatic system. It is a series of organs and vessels that make and carry a clear fluid called "lymph" through your body. The lymph carries bits of waste from between cells back into your bloodstream where they can be filtered out. As the lymph moves through lymphatic vessels, it passes through lymph glands throughout your body, which are full of white blood cells, ready to attack anything that doesn't belong there.

Similarly, the Peyer's patches in the small intestines monitor bacteria in your waste. There is a lot of good bacteria hard at work digesting food, but woe betide any bacteria with the wrong idea!

Other organs in your body, like your spleen, thalmus, and even the marrow in your bones, work as factories manufacturing immune cells that circulate in blood or lymph, or lay in wait in filtering traps, ready to pounce.

FEMALE REPRODUCTIVE SYSTEM



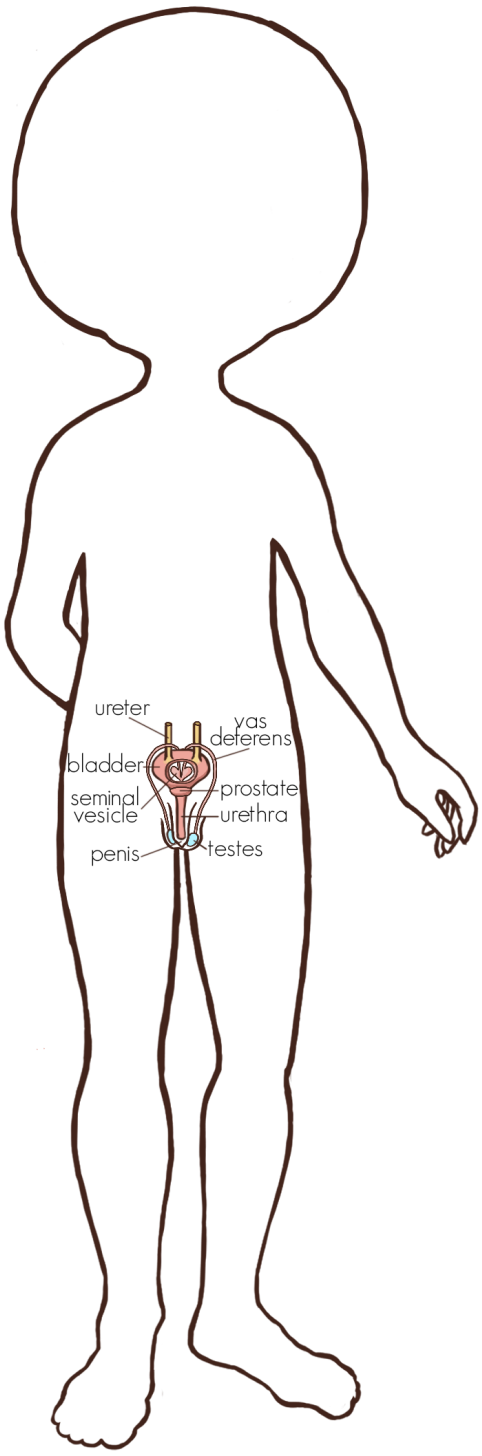
This is where you came from—no storks or cabbage patches involved!

Your life, like every other person's, started when an egg and a sperm combined. That egg came from your biological mother, and she had it stored in one of her ovaries since she was born, along with about a million other eggs! When that egg matured, it was released from your mother's ovary, and started a journey down the Fallopian tube. In the bell-shaped part of the Fallopian tube (ampule), that egg met a sperm from your biological father, and they fused to create the complete instructions for building a human—you!

The super-tiny you then kept trekking down the Fallopian tube and finally ended up in the uterus, where you attached to the lining and developed for 9 months. When you were ready to live outside your mother, her cervix, which had been holding you in her uterus while you grew, then opened up, and the muscles of her uterus pushed you through the birth canal (cervix, vagina & vulva), and you were born!

If there had not been a sperm waiting for the egg in the Fallopian tube, that egg would not have become a person. The lining in the uterus that had been prepared for a baby would have dissolved and come out, in a process called menstruation, that happens about once every month in women aged about 12 to 50.

MALE REPRODUCTIVE SYSTEM



Remember the sperm that joined the egg, making you? That sperm came from your biological father's reproductive system.

He wasn't born with that sperm; it was freshly made in one of his testes (singular = testis), at a rate of about 1500 per second! Sperm has to be made at a lower temperature than inside the body, so testes hang from the body in an adjustable bag, called a scrotum. If it gets cold, the scrotum pulls the testes closer to the body, to warm them up!

From the epididymis where it was stored, your father's sperm was pumped out of his body and into your mother's by muscular contractions of the vas deferens. On its wild ride out, the sperm passed through the seminal vesical and prostate, where it was joined with other liquids to help it along, making a mixture called semen. The semen then exited the penis, through the urethra.

You may wonder if that is the same penis and urethra that pee comes out, and it is! Just upstream of the urethra is a sort of intersection at the prostrate. The prostate directs traffic—pee can flow from the bladder through the urethra on command during ordinary urinary business hours, but has to wait at a red light for the passing of emergency reproductive traffic.

ABOUT
LIFE-SIZE ANATOMY MODELS

ABOUT LIFE-SIZE ANATOMY

Building a life-size paper model of a human body is a suitable introductory activity to the topic. The fact that the models are built based on the children's outlines creates a personal connection for them, as they realize, "It's actually all about me!"

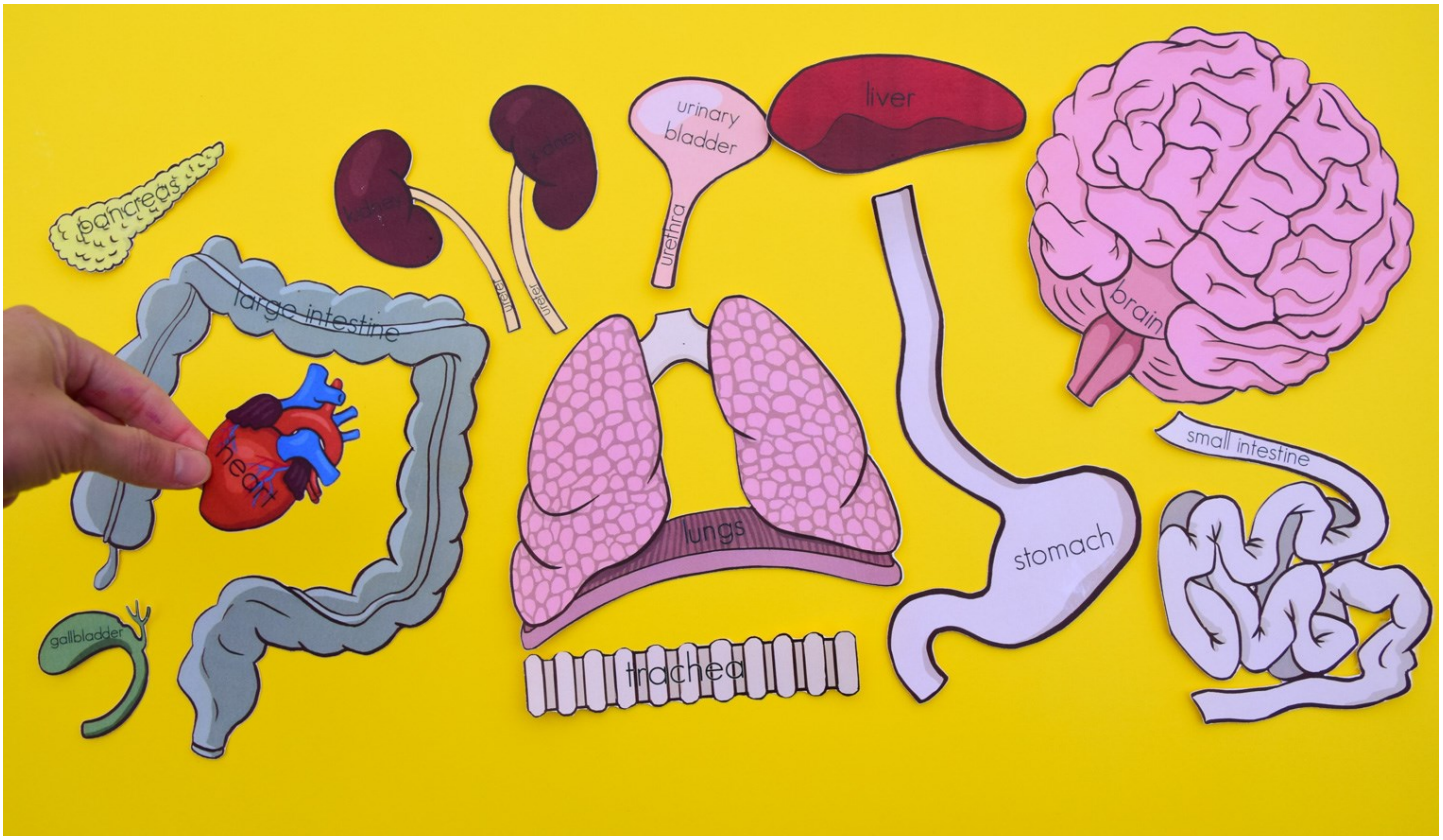
The printable organs are scaled so that their size would be right for an average 8-year-old child, but should also fit reasonably well children who are a few years younger or older. If you have a child who is significantly smaller, print the pages at a reduced scale (80 or 90%). In order to scale the pages, you can use the free program Adobe Acrobat Reader.

The printable organs consist of three main parts:

- the skeletal system
- the muscular system
- all the other organs (brain, lungs, heart, trachea, stomach, pancreas, liver, gallbladder, small intestine, large intestine, kidneys, urinary bladder, and some others.

There are pages that feature all the organs with their names (for situations where reading would be welcome) as well as pages without any text (for situations where reading would be distracting). There is also a set of organs that children can colour themselves.

Finally, this printable set also includes cards that have hints on how to build different systems.



HOW TO MAKE A LIFE-SIZE ANATOMY MODEL

Materials:

- a big sheet/roll of paper (about 24x52”)
- thread (red, blue, and black)

Preparation

Decide on which organs you are going to use (full colour or black and white; with text or without text) and print/cut them out.

Creating an Outline

First, you will need to create a child’s outline. To do so, you will need a big sheet of paper (about 24x52”). If you don’t have a sheet of that size readily available, you can look into disassembling a big cardboard box, glueing or taping two sheets of poster paper together, or using the backside of wrapping paper.

Next, you’ll need to make an outline of the child’s body. Use a pencil for doing the initial outline, because you may need to make small corrections. Later, you can go over the lines with a marker and, optionally, cut the silhouette out.

Building a Human Body Model

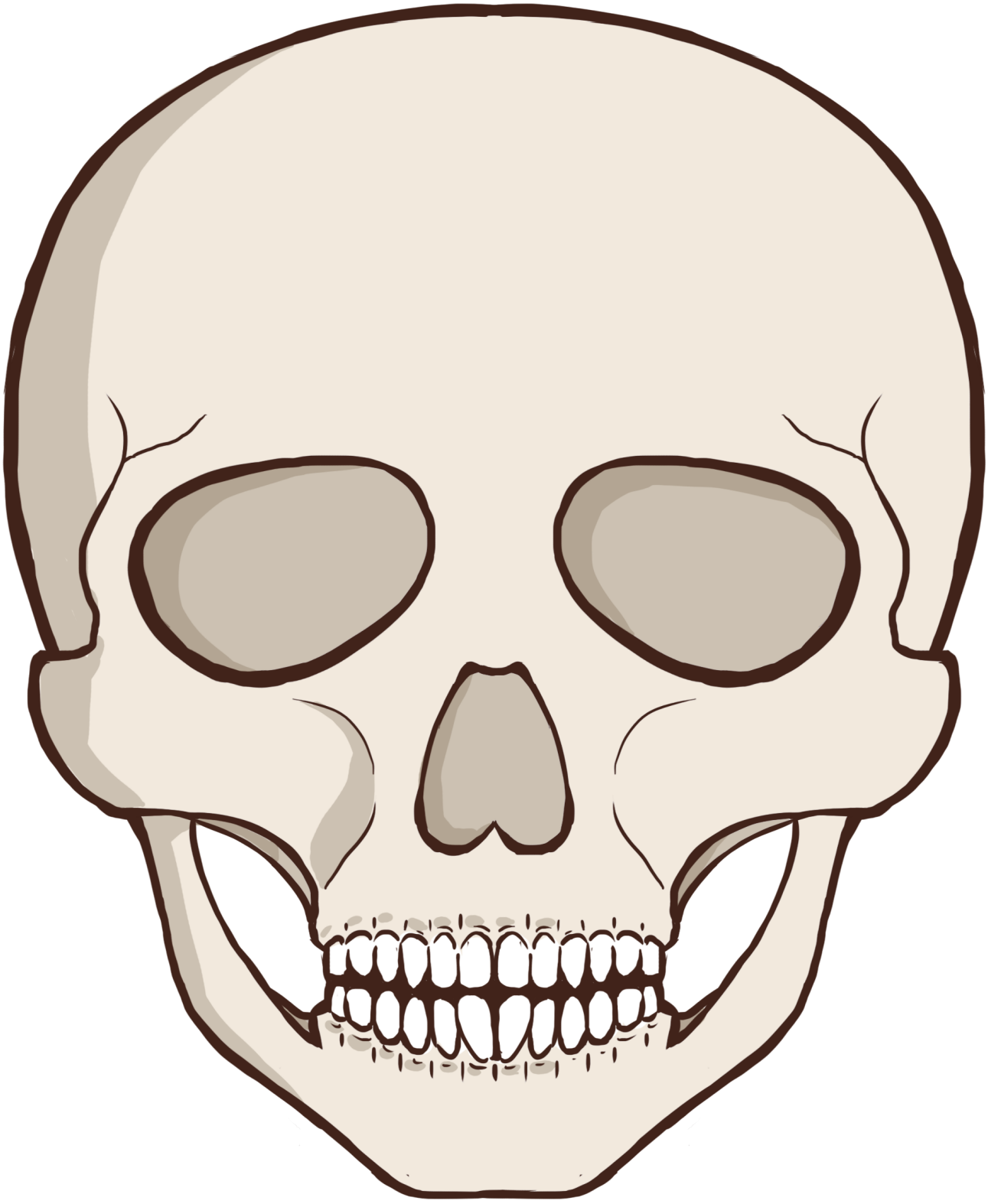
Once the outline is created, suggest to the child that they decorate it to their liking—draw hair, nose, mouth, etc. Once that’s done, you can tell the child that they have just created one of the layers of our integumentary system, the one we can clearly see with our eyes. Read about that system.

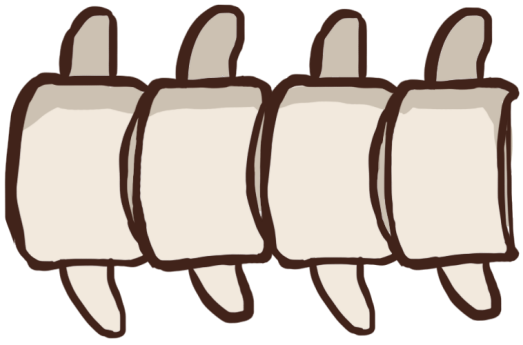
After that, suggest to explore the layers that we cannot see with our eyes, but can feel—bones and muscles (skeletal system and muscular system). The bones and muscles integrate well together.

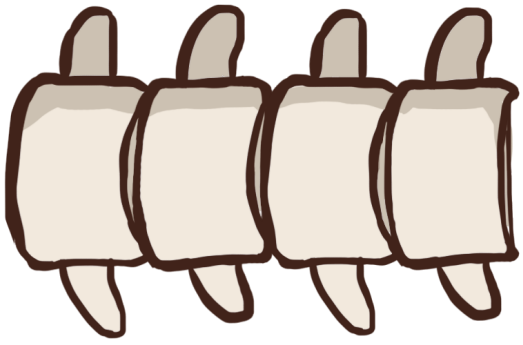
The order of the remaining systems is up to you, but we recommend nervous system, circulatory system, followed by a respiratory, digestive, and urinary system. Endocrine, immune, and reproductive systems are more complicated, so we recommend doing them last.

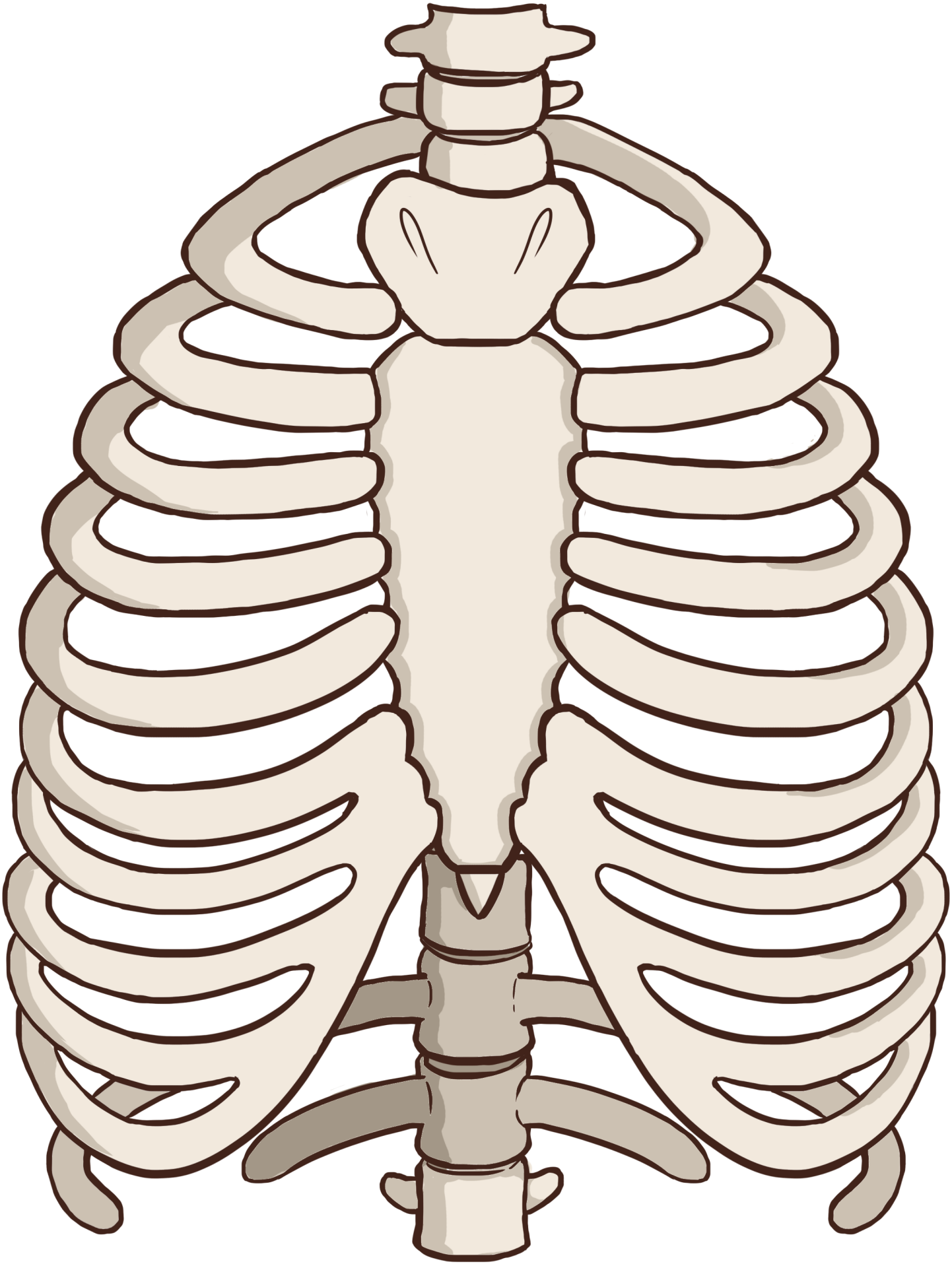
Build and remove one system at a time, discussing the function of each system. After examining the systems individually, feel free to integrate all or some of them.

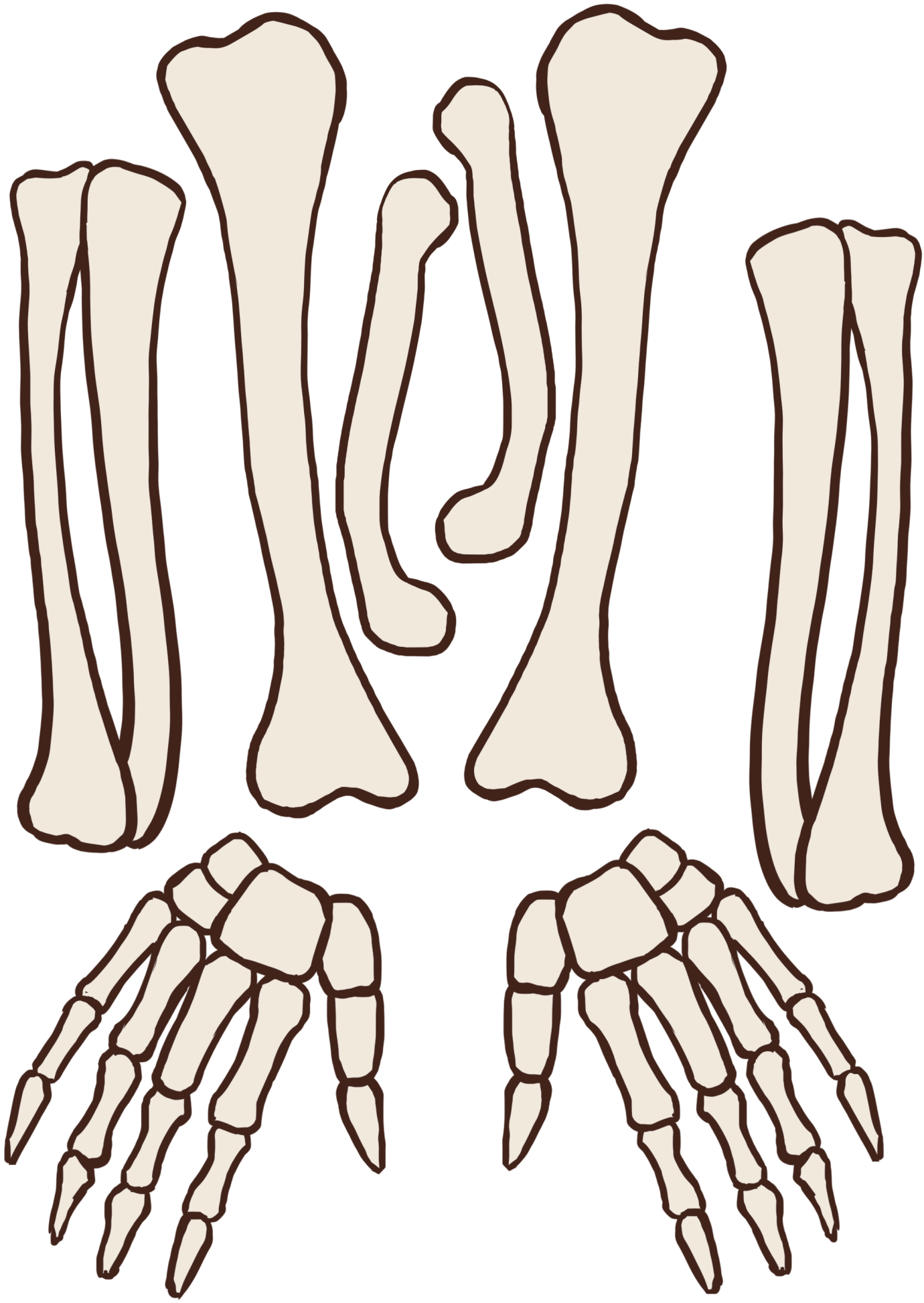
SKELETAL SYSTEM

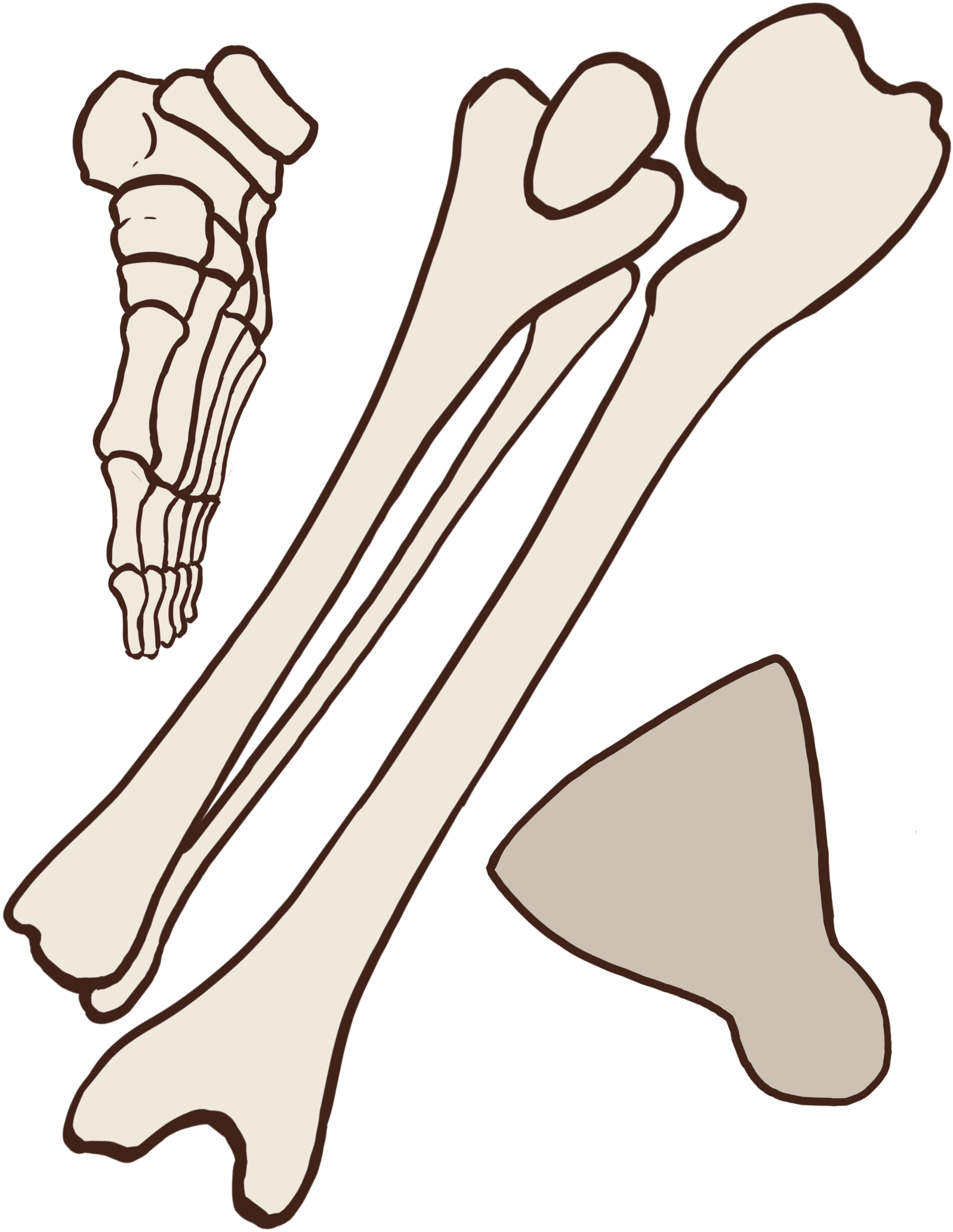


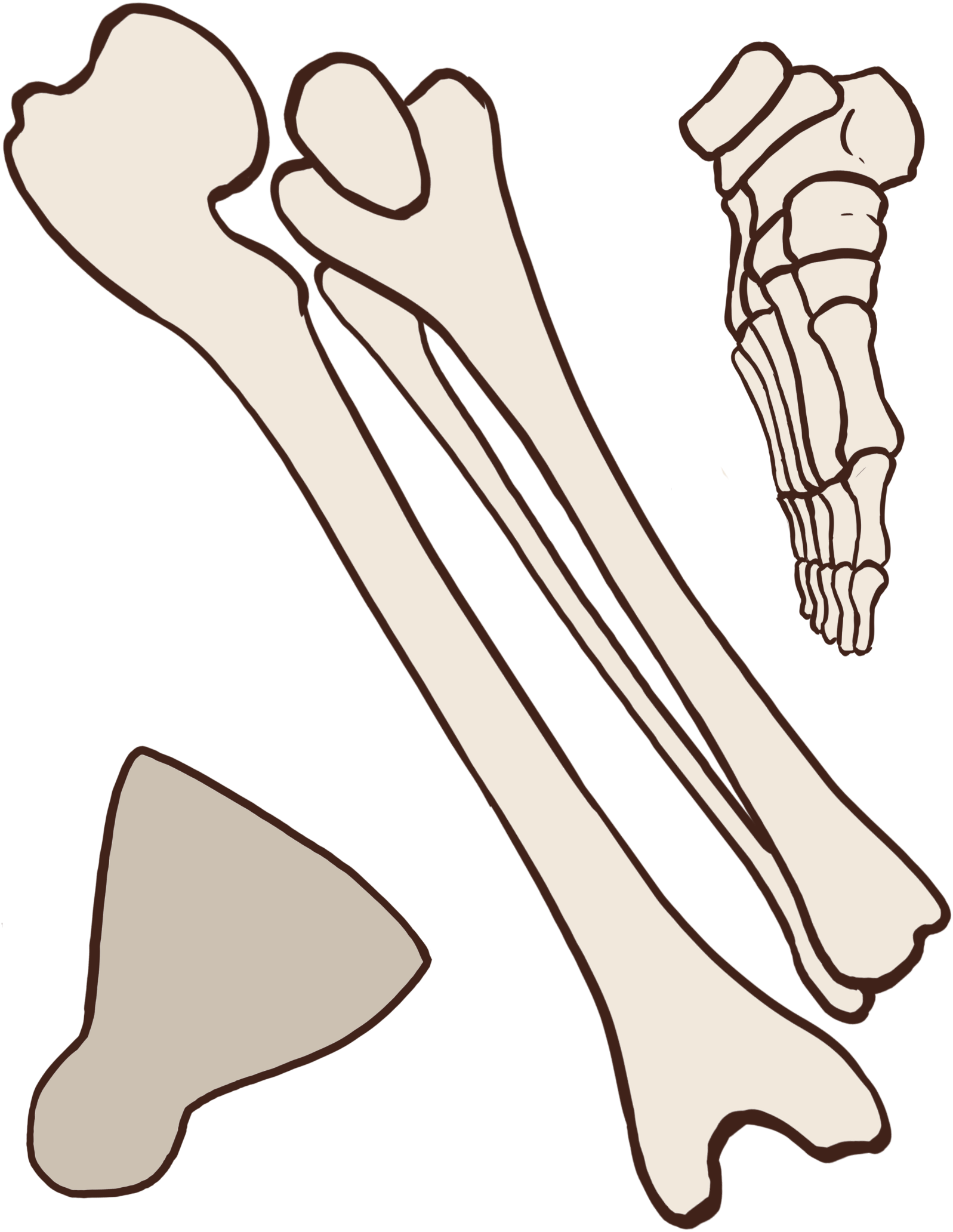


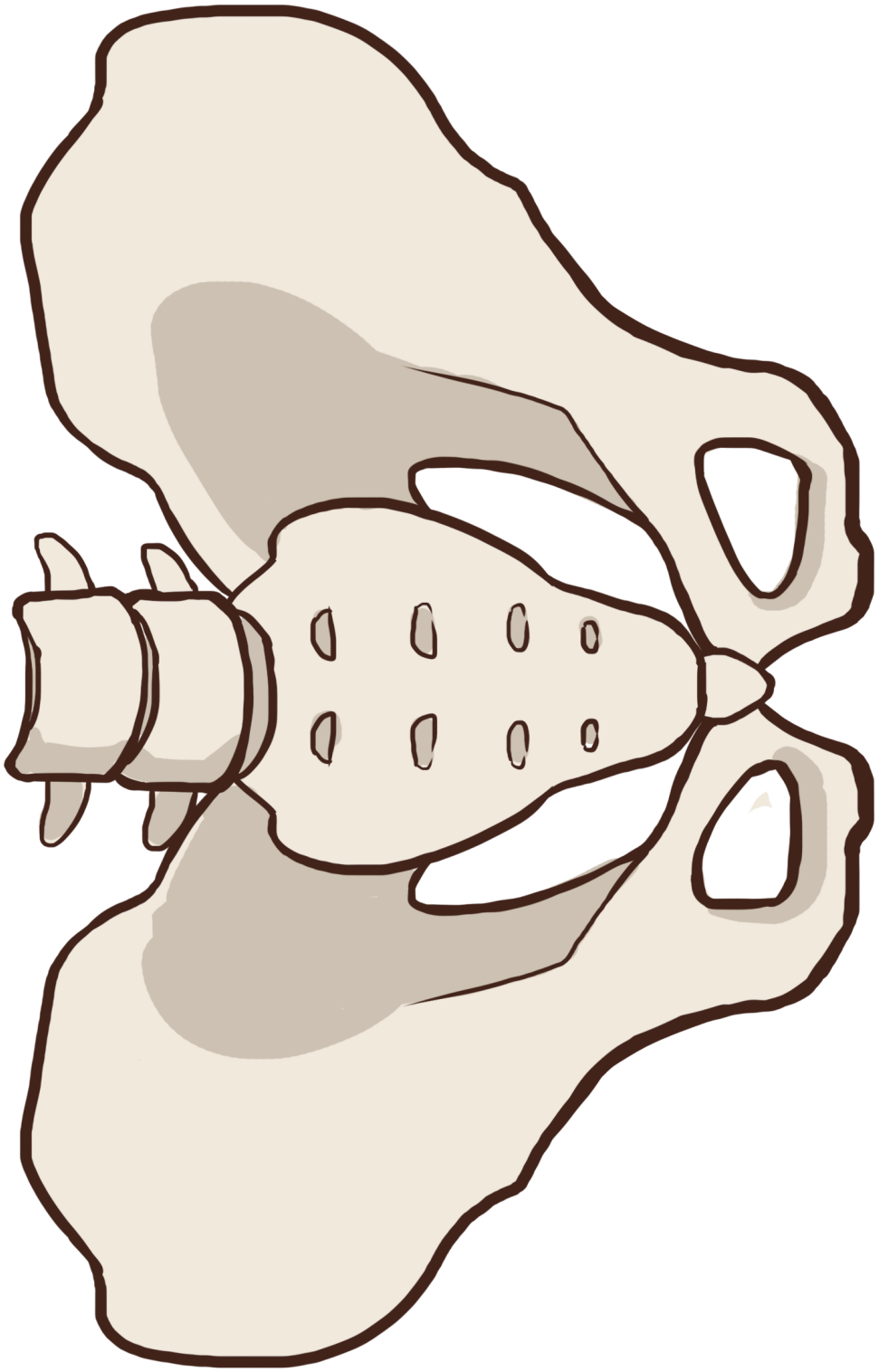












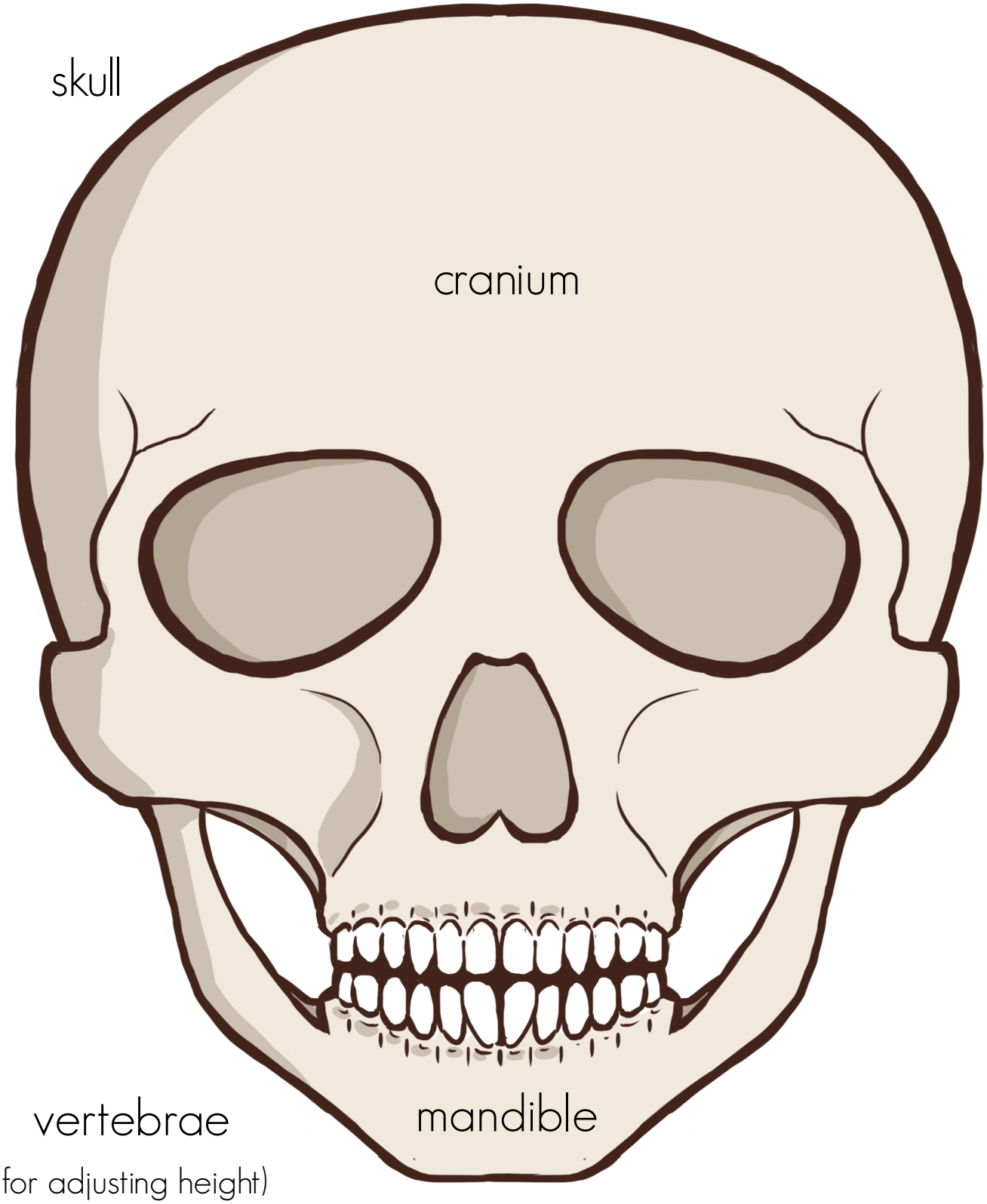
skull

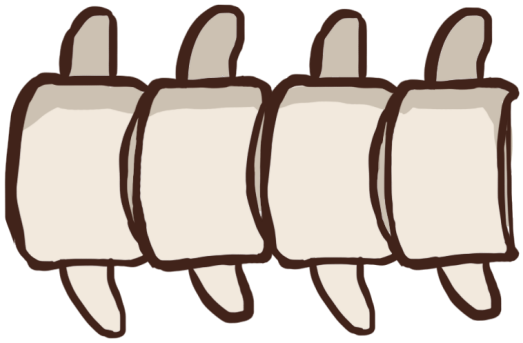
cranium

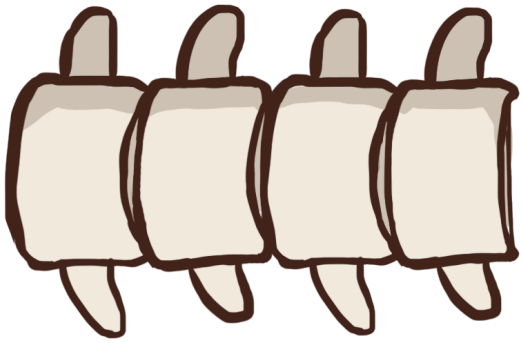
mandible

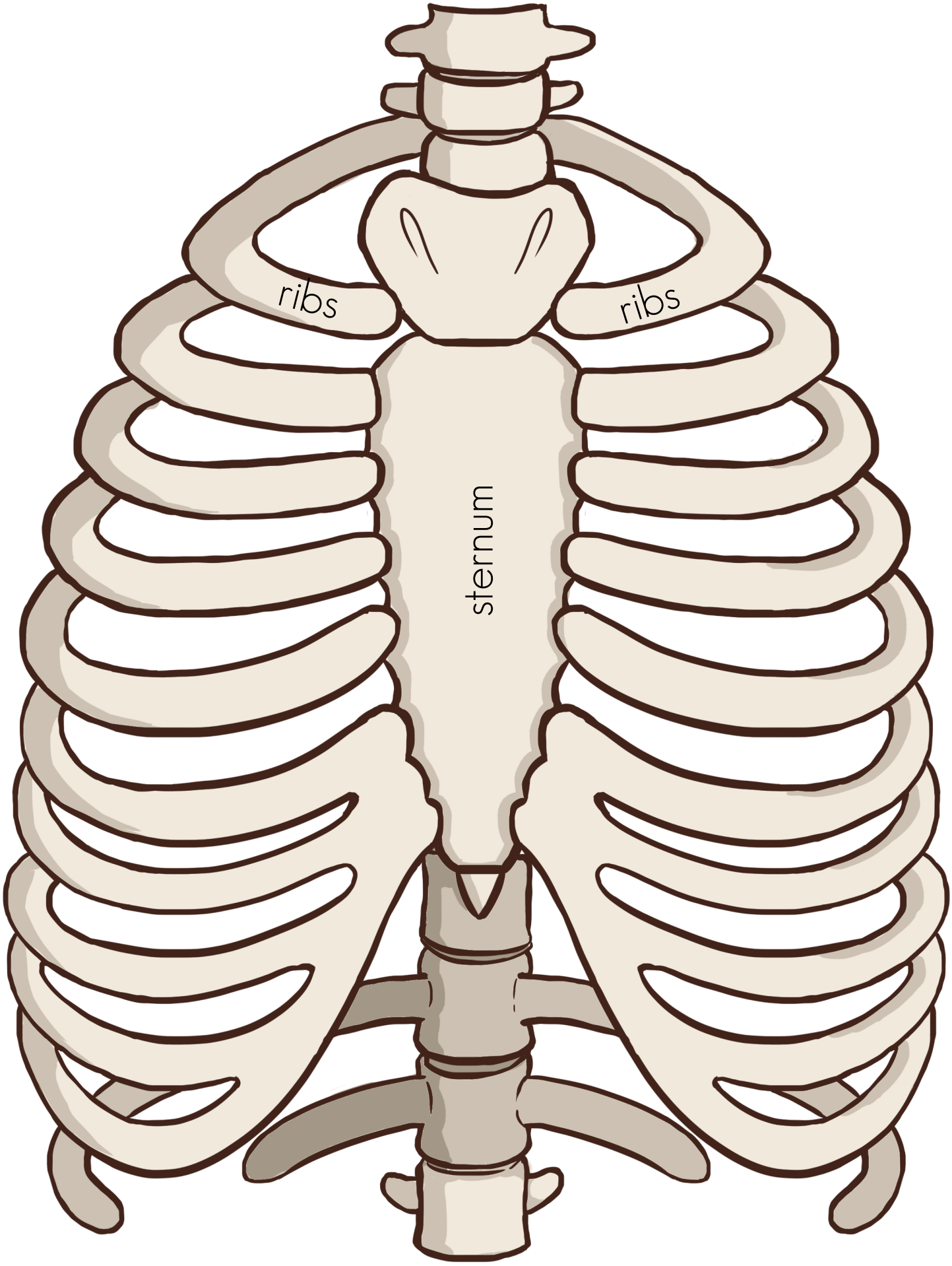
vertebrae

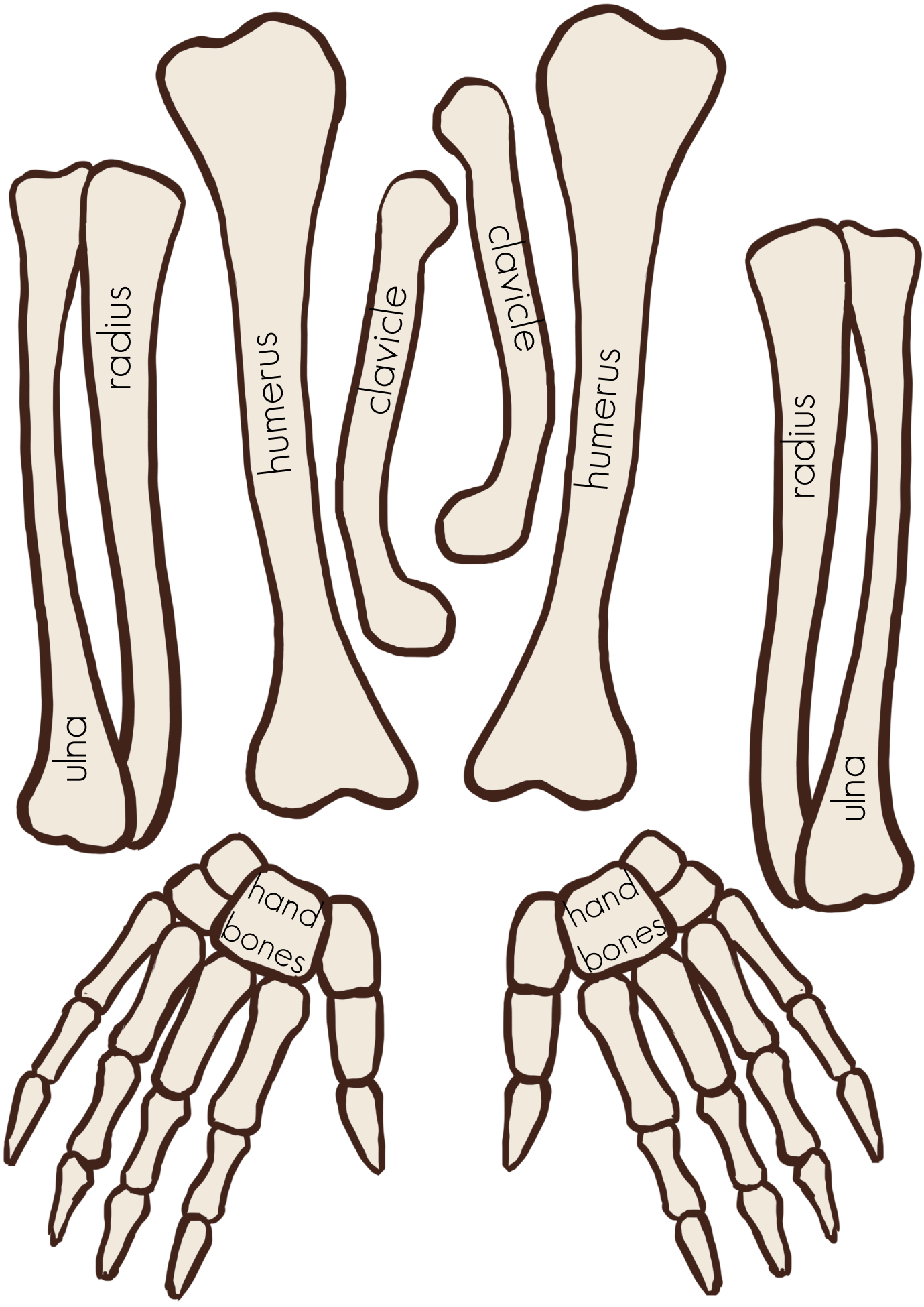
(for adjusting height)

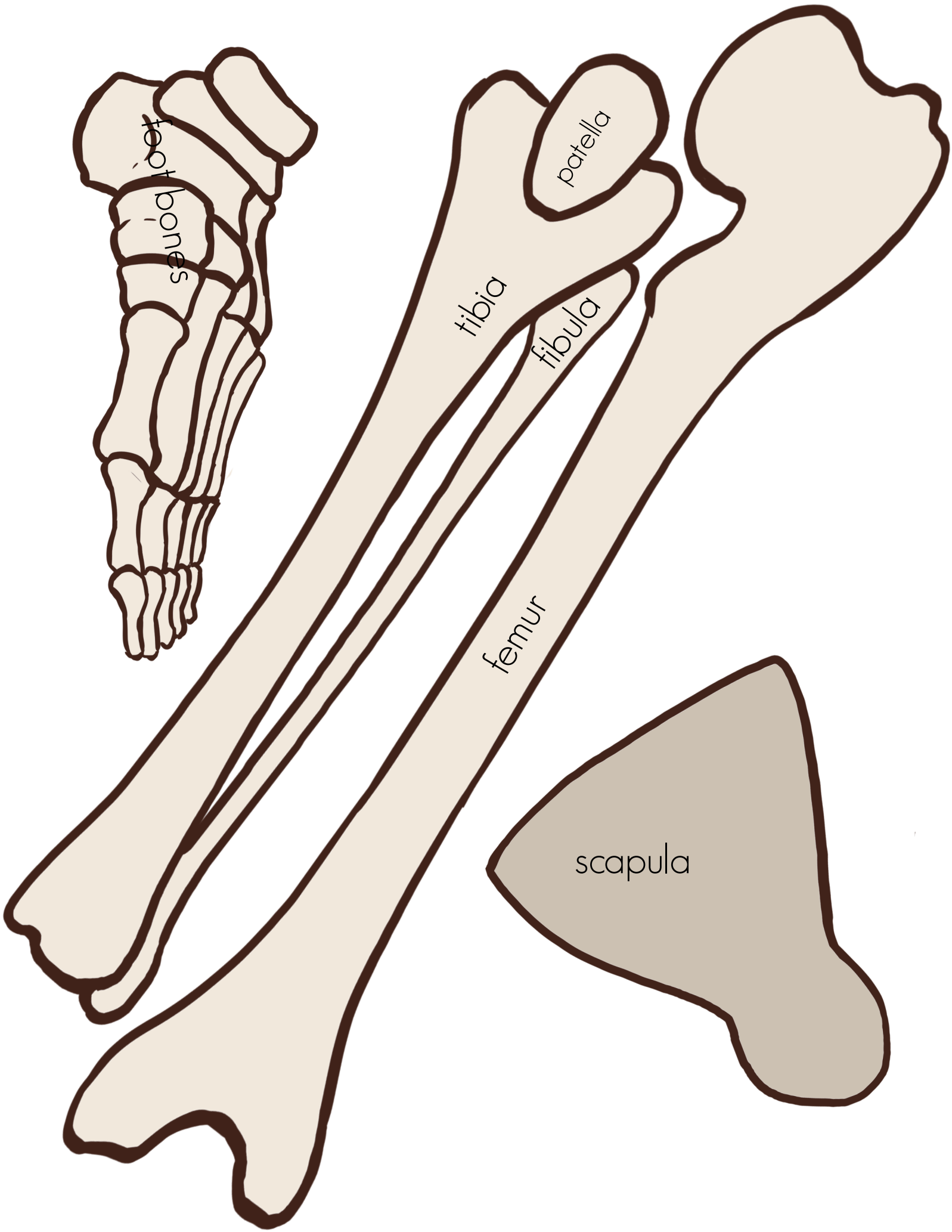


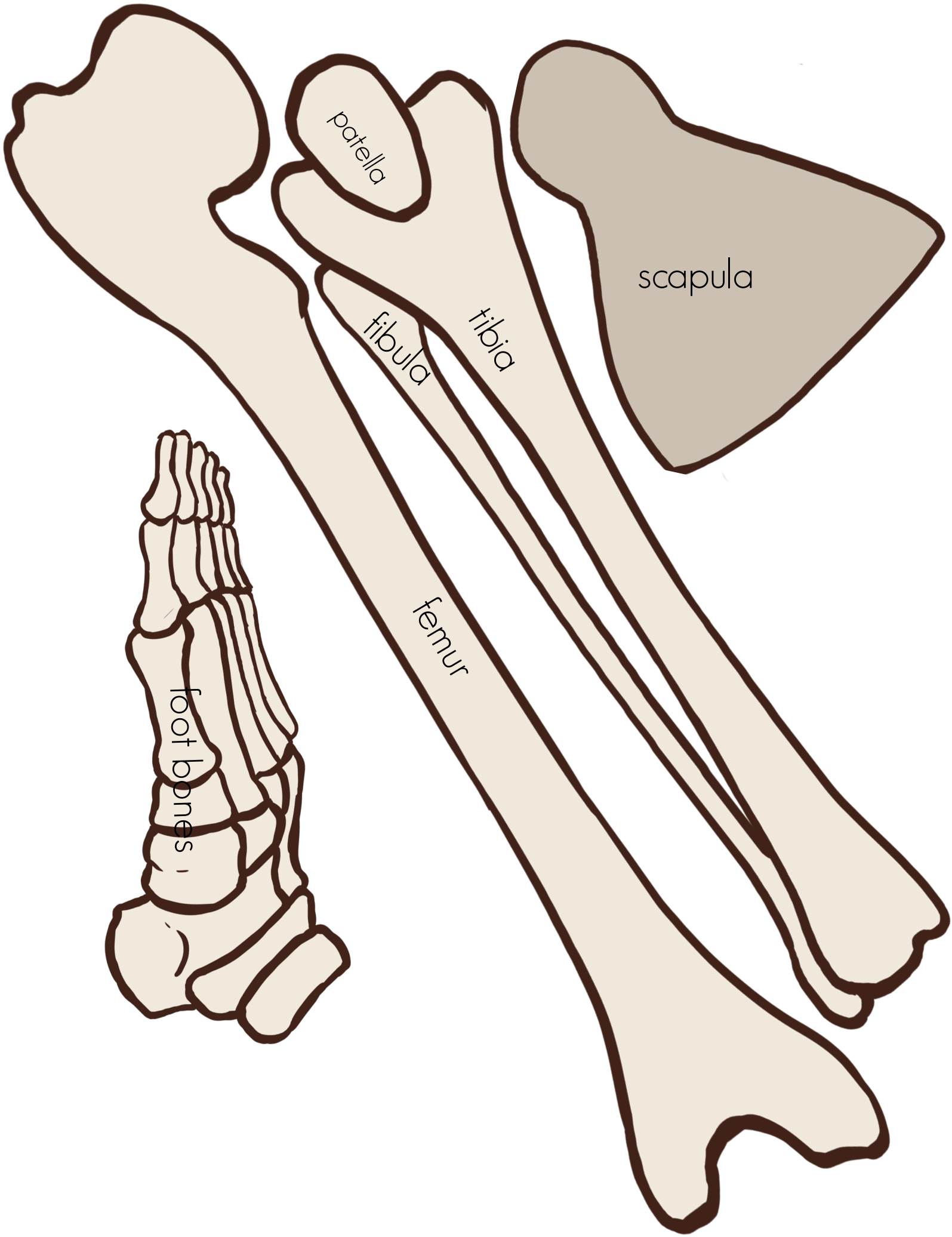


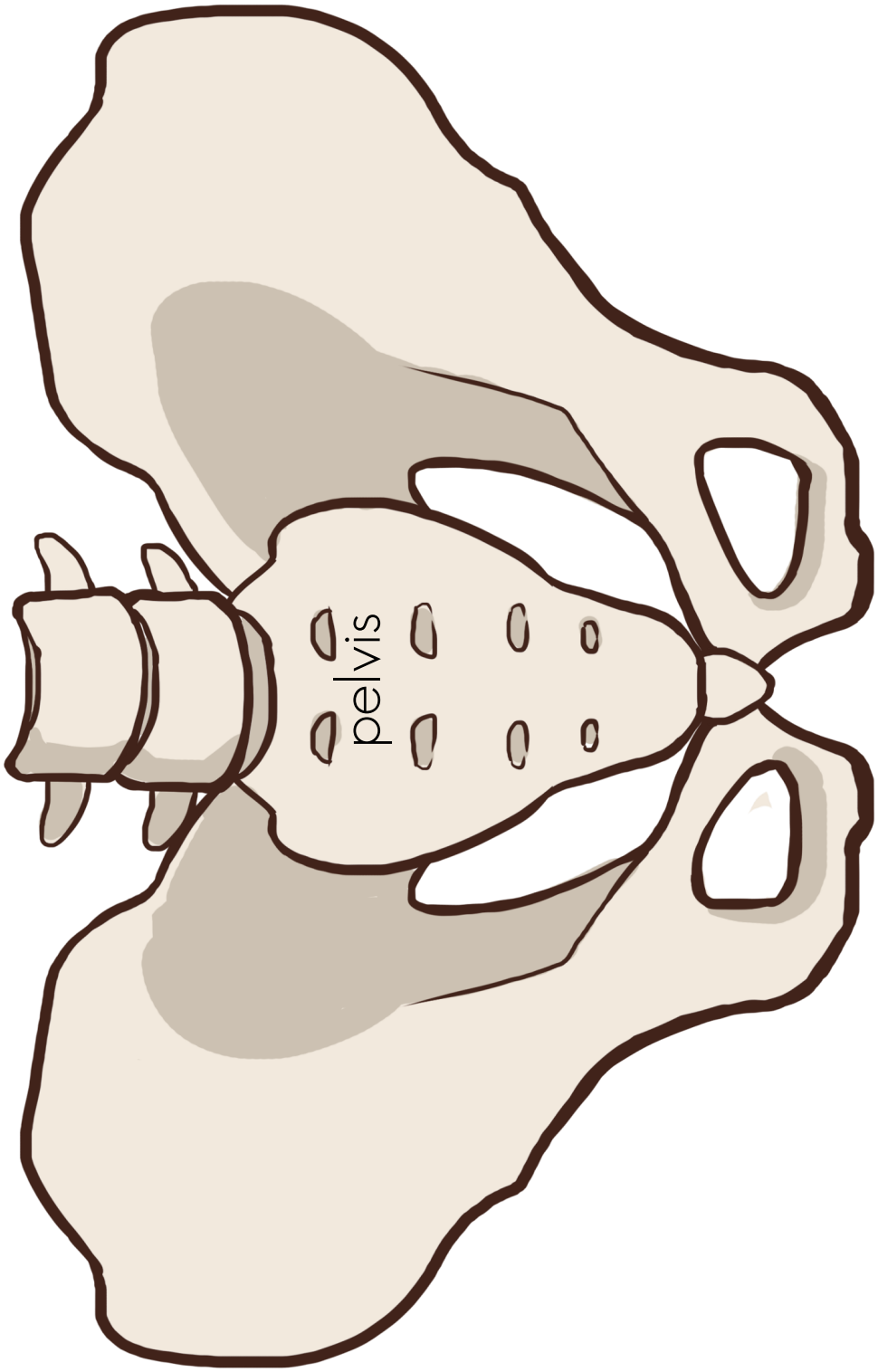



ribs
ribs
sternum

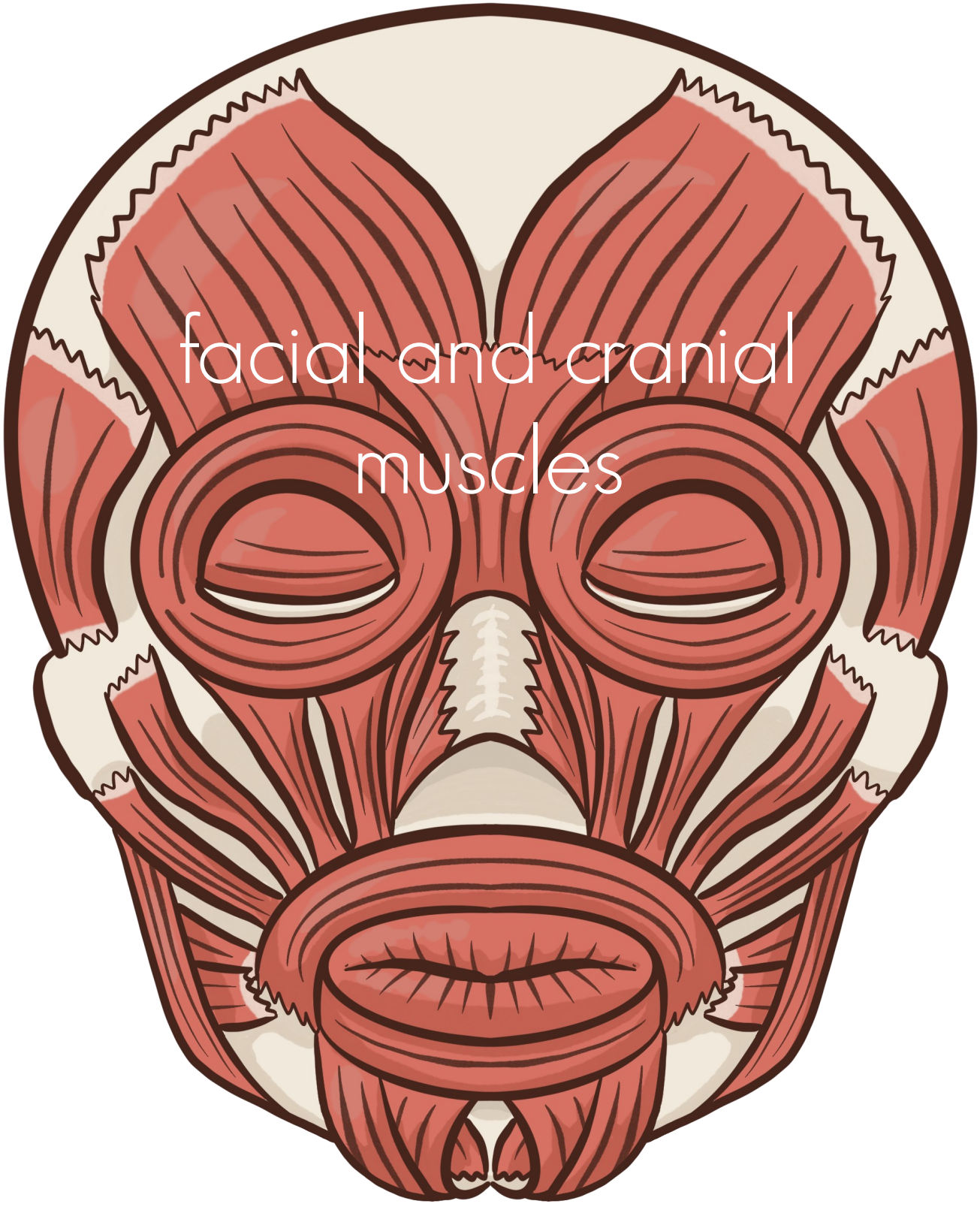

radius
ulna
humerus
clavicle
clavicle
humerus
radius
ulna
hand bones
hand bones

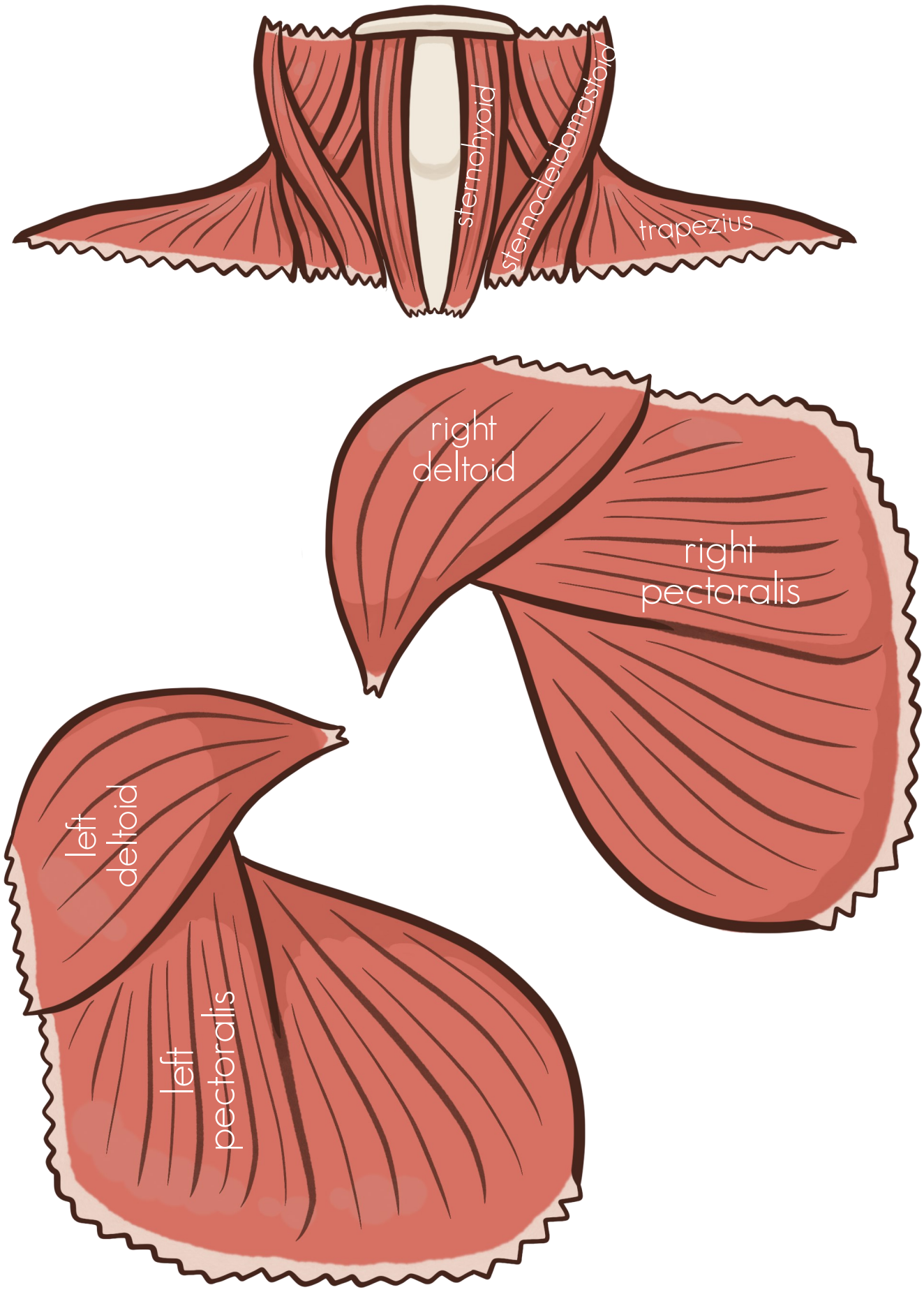

sequoia foot
patella
tibia
fibula
femur
scapula

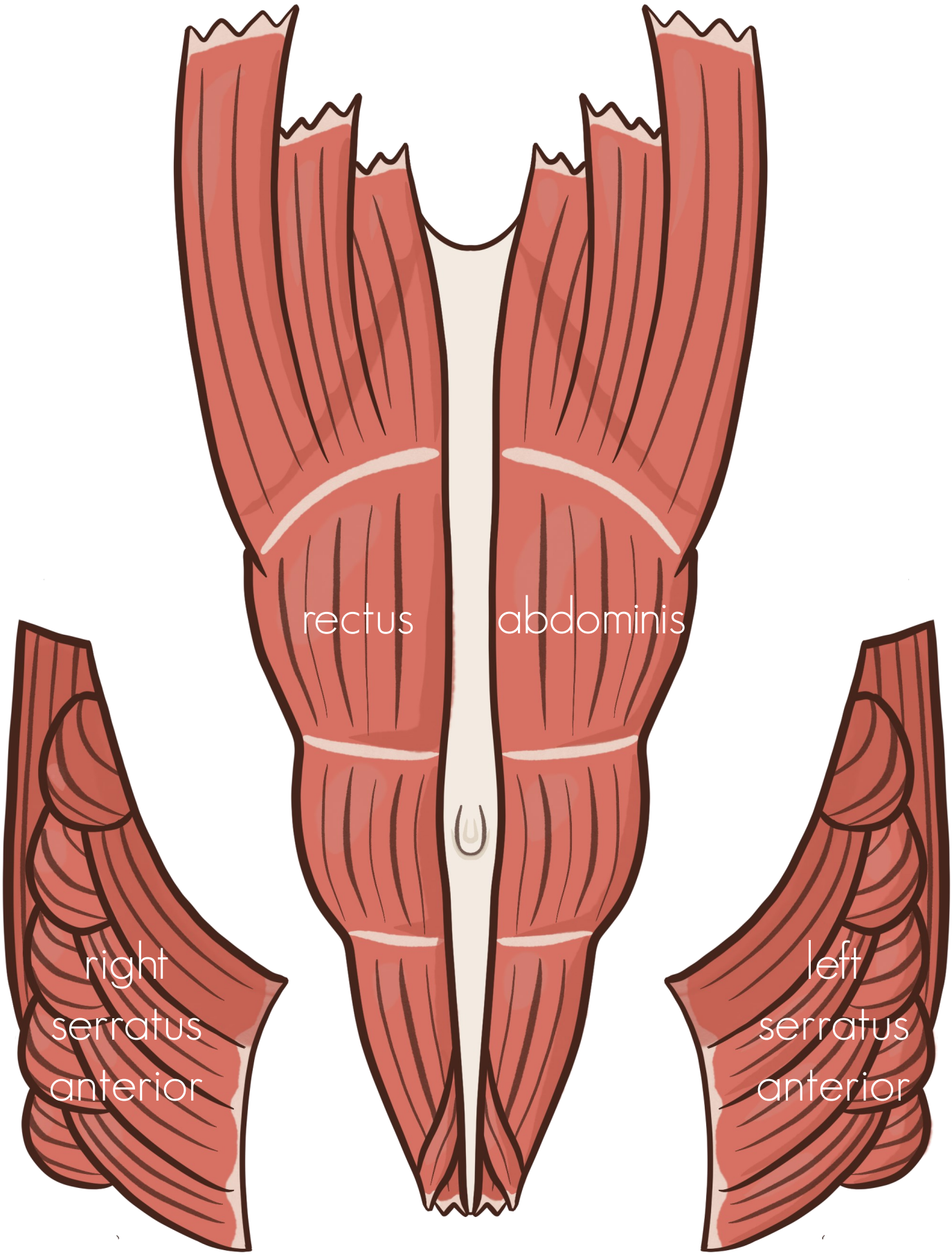

patella
scapula
tibia
fibula
femur
foot bones

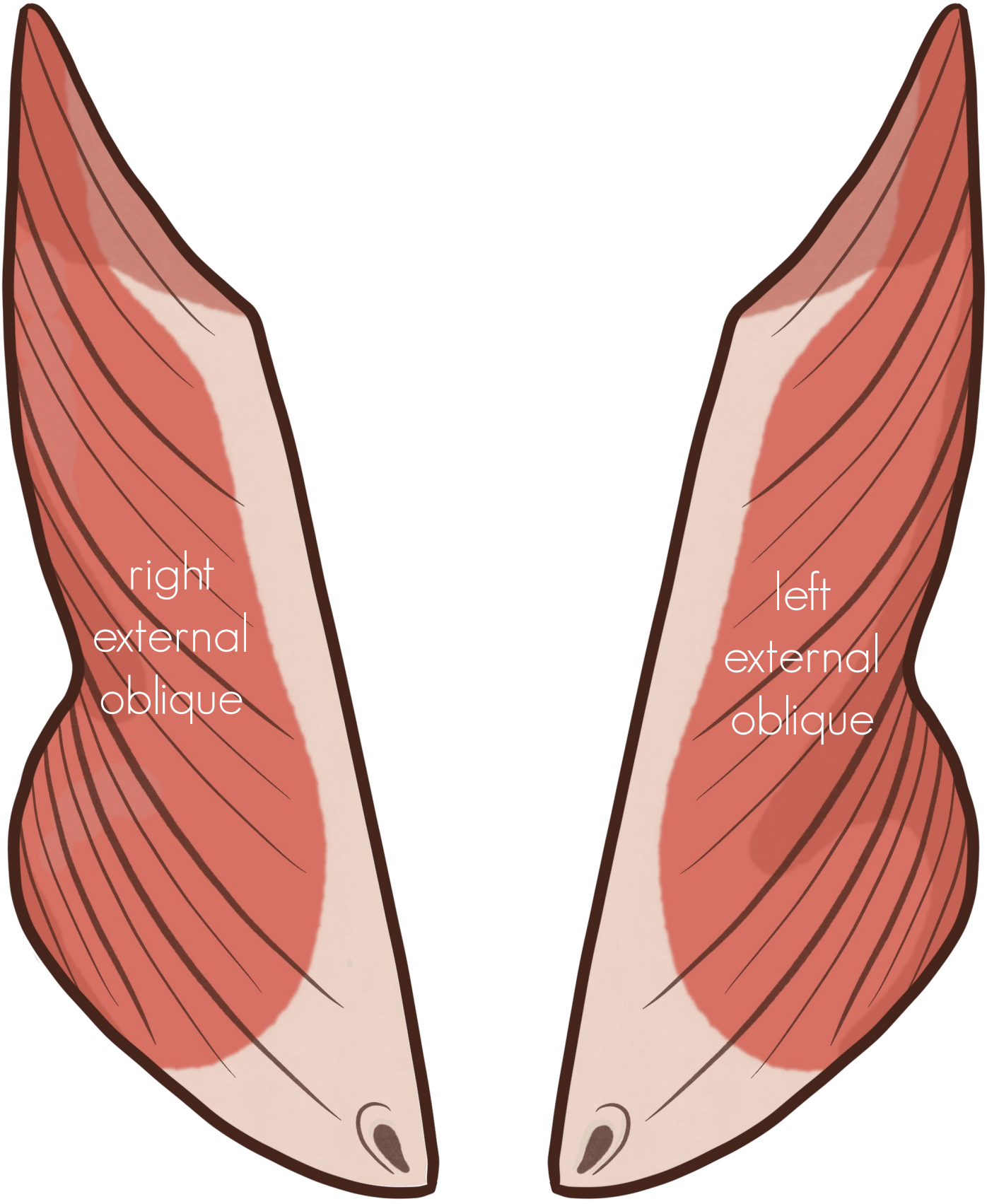

pelvis

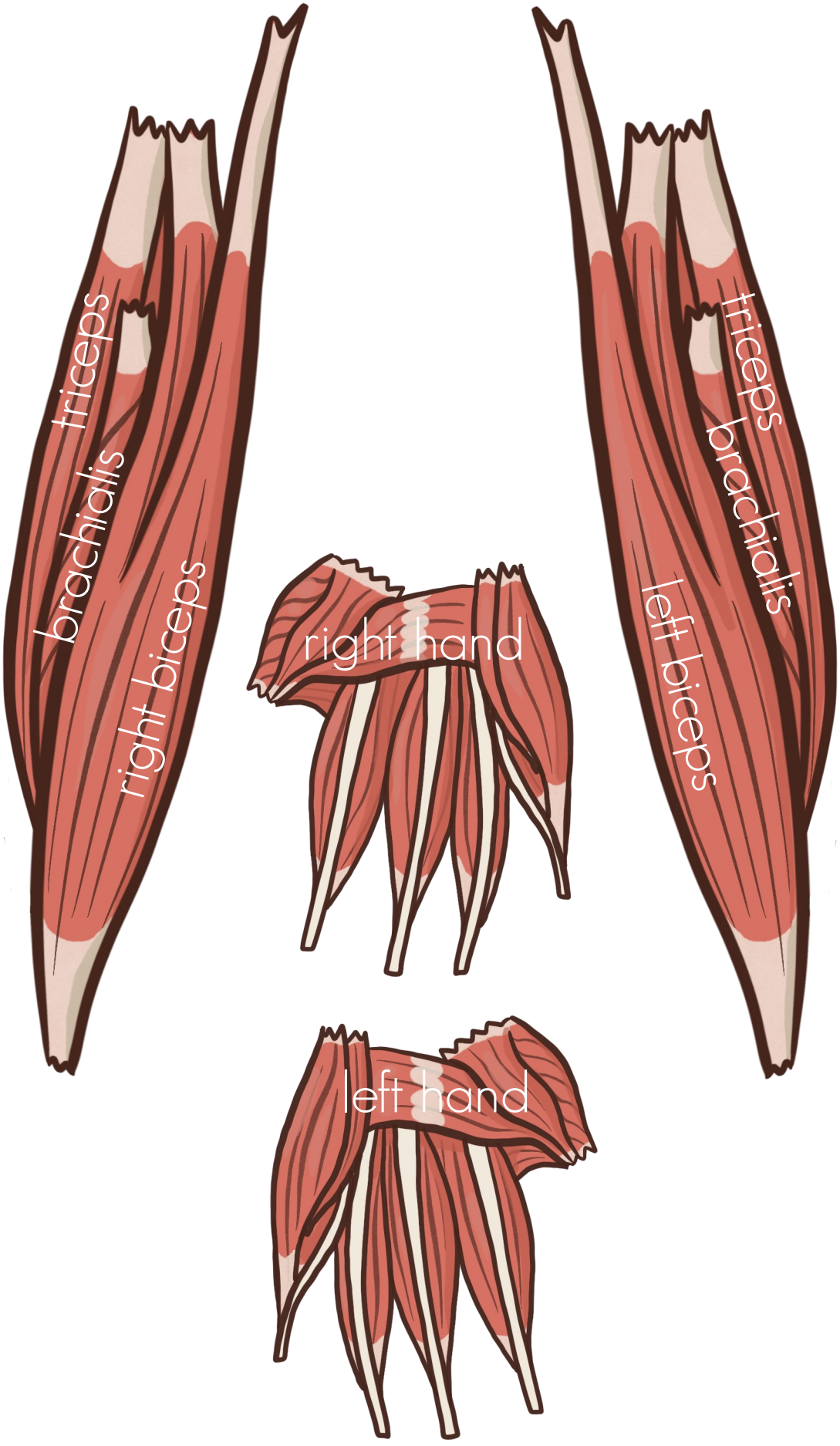
MUSCULAR SYSTEM


facial and cranial
muscles


sternohyoid
sternocleidomastoid
trapezius
right deltoid
right pectoralis
left deltoid
left pectoralis

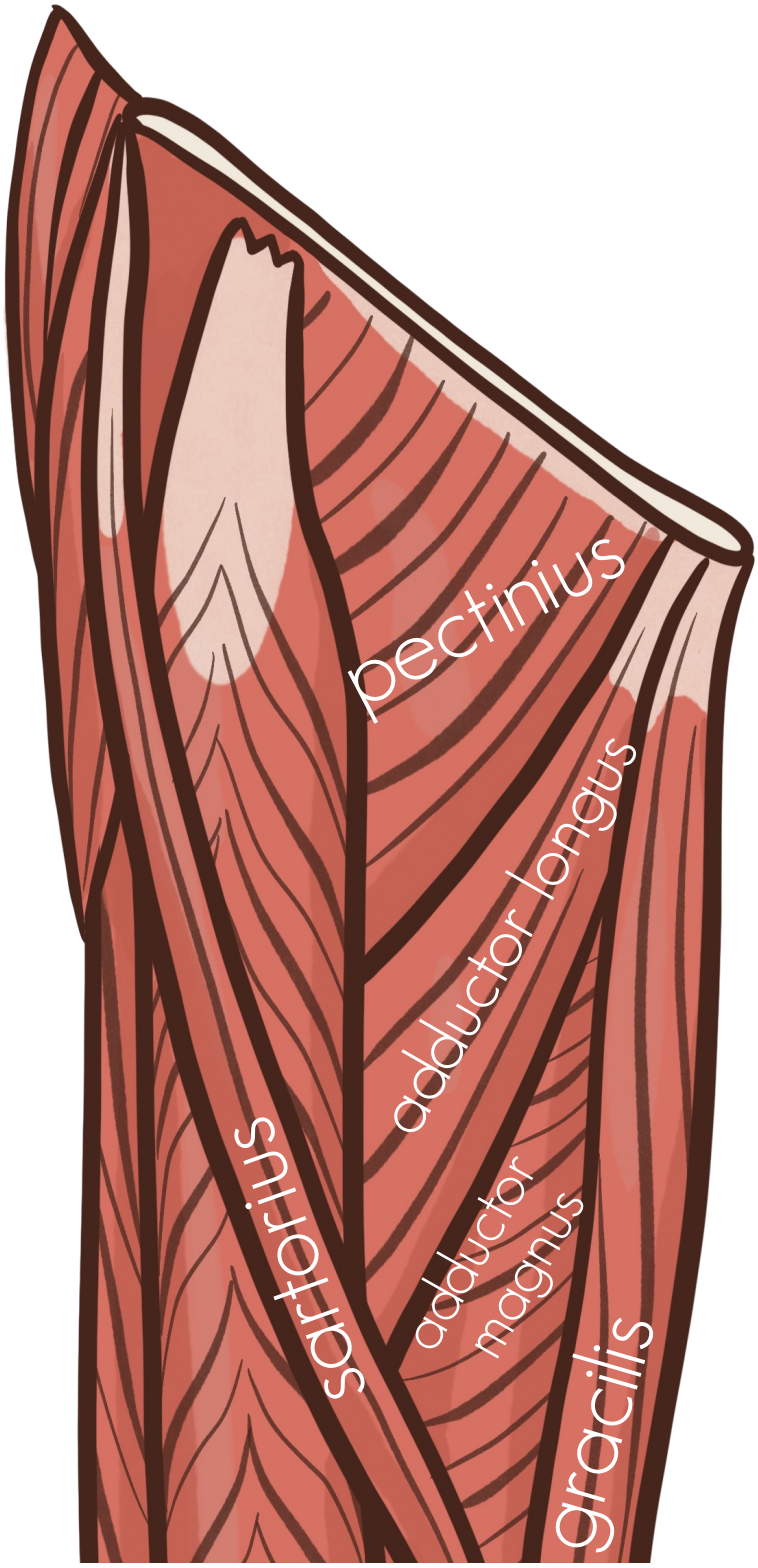

rectus abdominis
right serratus anterior
left serratus anterior

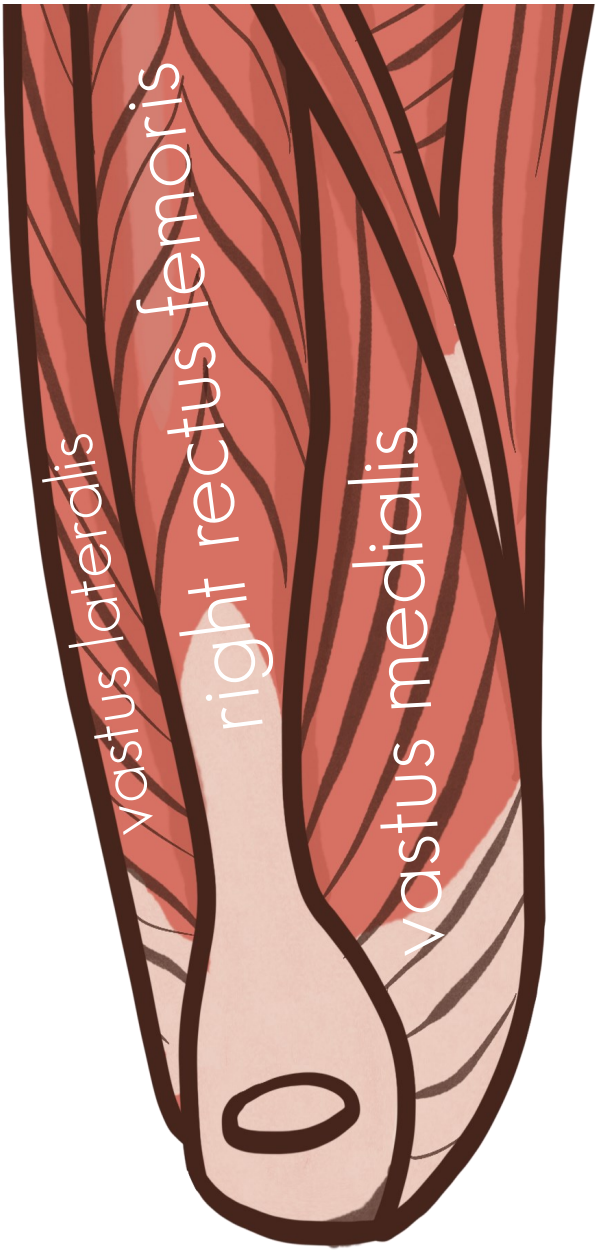

right
external
oblique
left
external
oblique


triceps
brachialis
right biceps
right hand
left hand
triceps
brachialis
left biceps

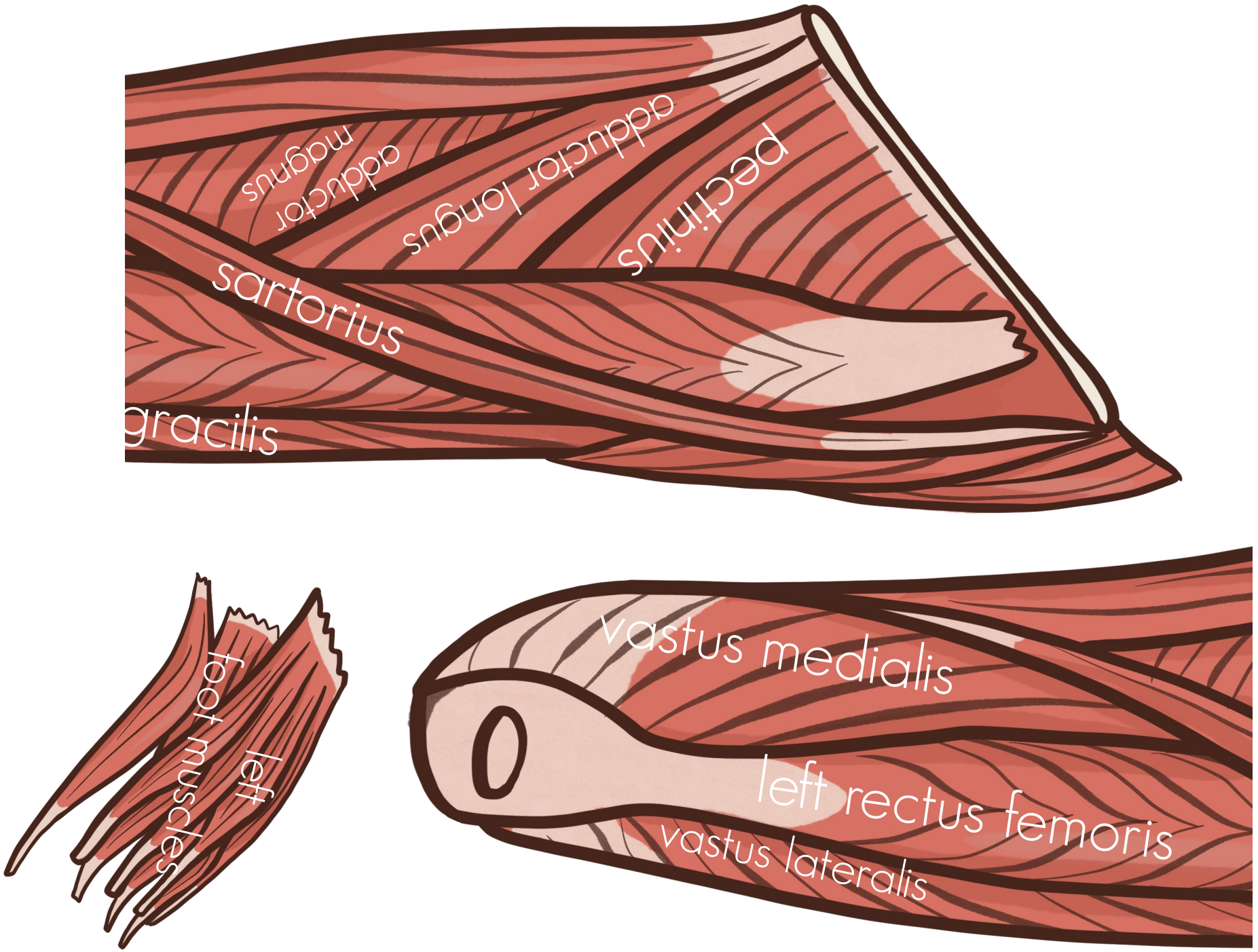
right brachioradialis
flexors

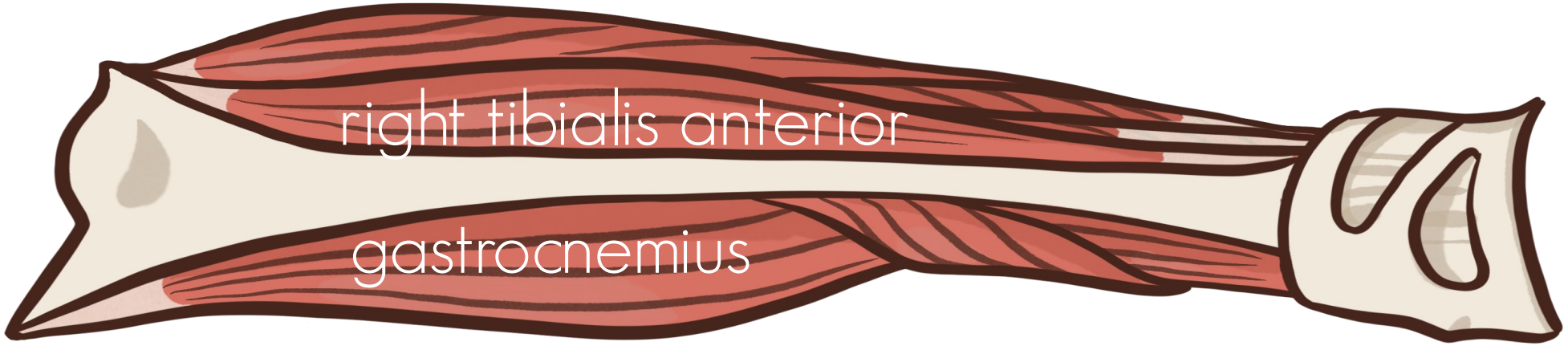
left brachioradialis
flexors

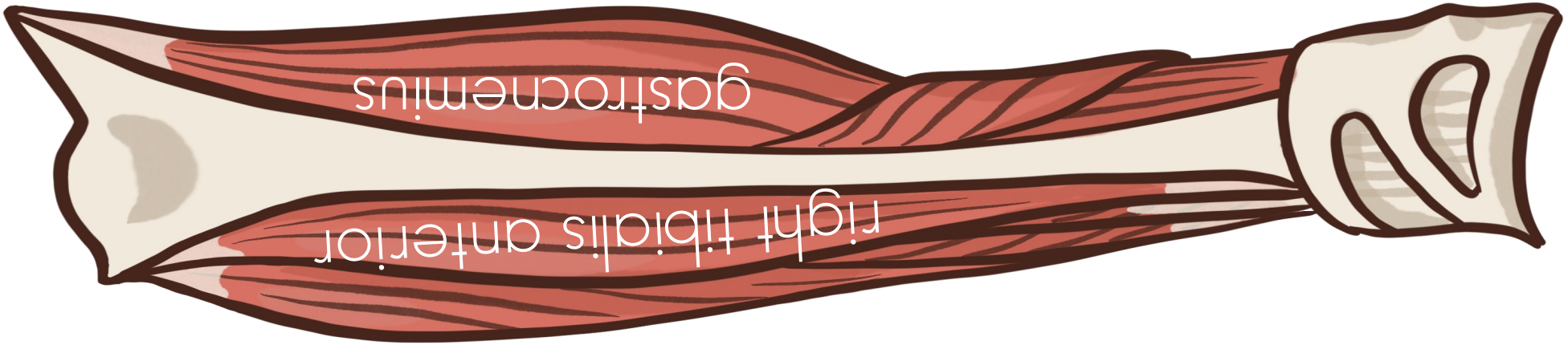

pectinius
adductor longus
adductor magnus
sartorius
gracilis

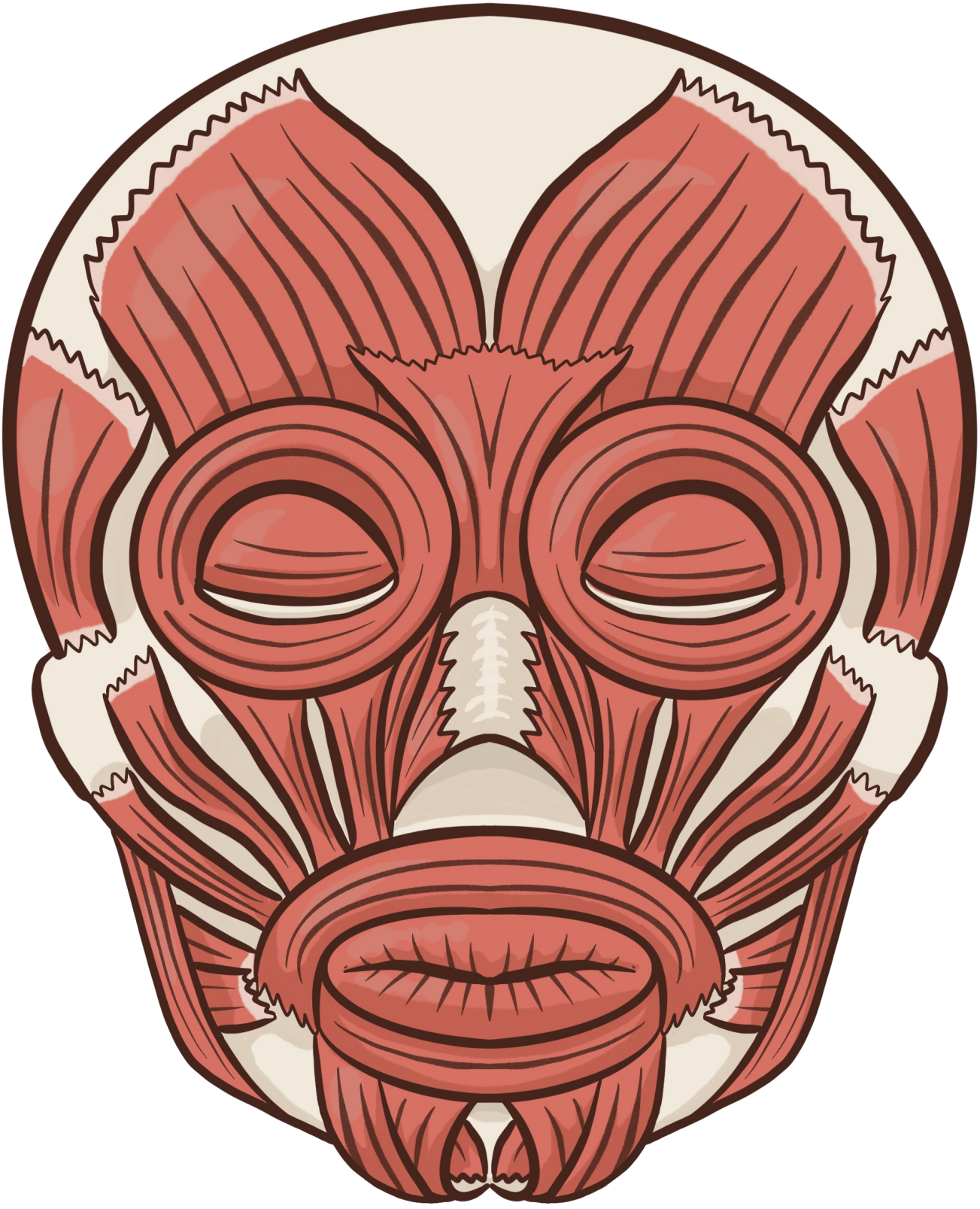

vastus lateralis
right rectus femoris
vastus medialis

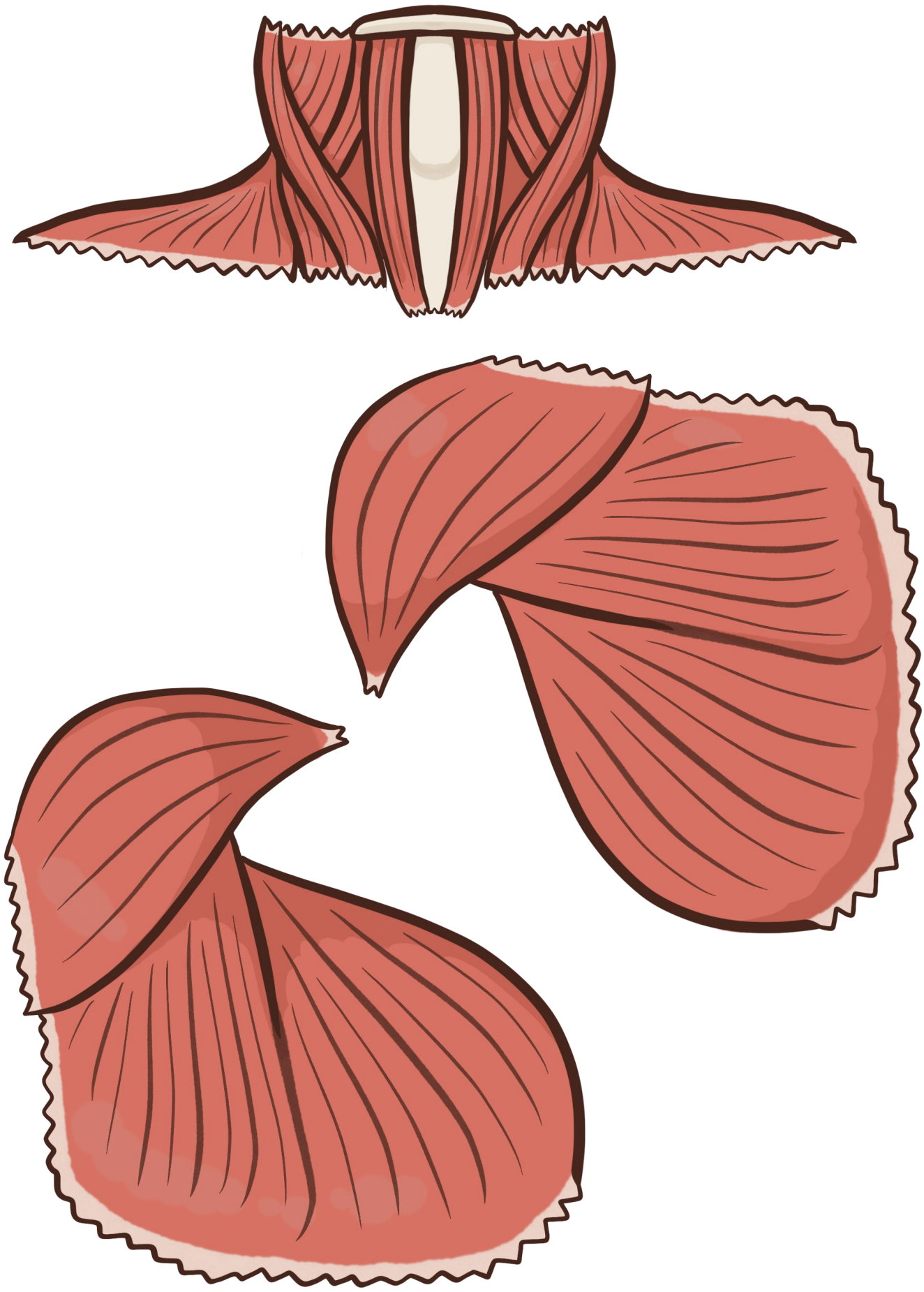

right
foot muscles

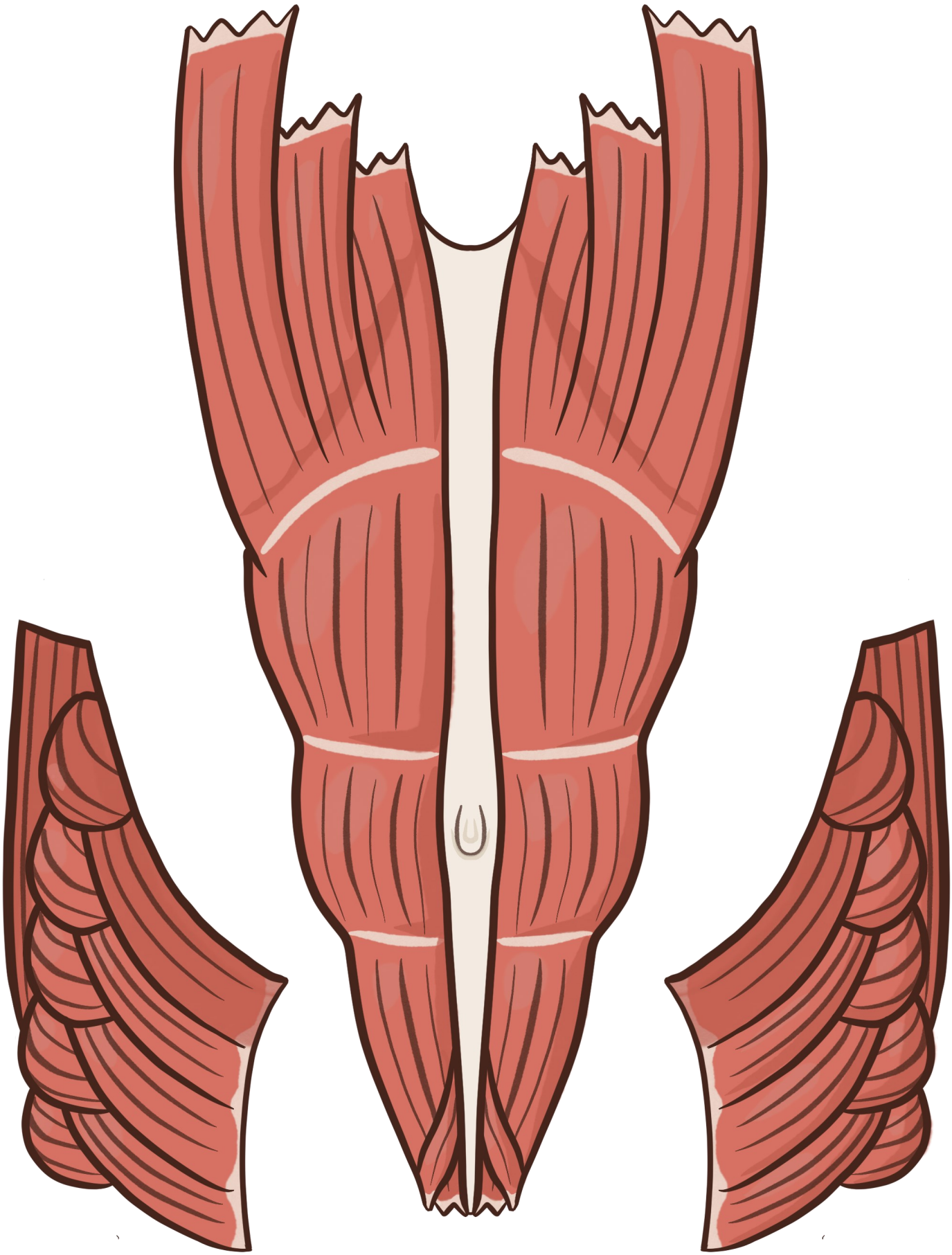

adductor magnus
adductor longus
pectinius
sartorius
gracilis
left foot muscles
vastus medialis
left rectus femoris
vastus lateralis

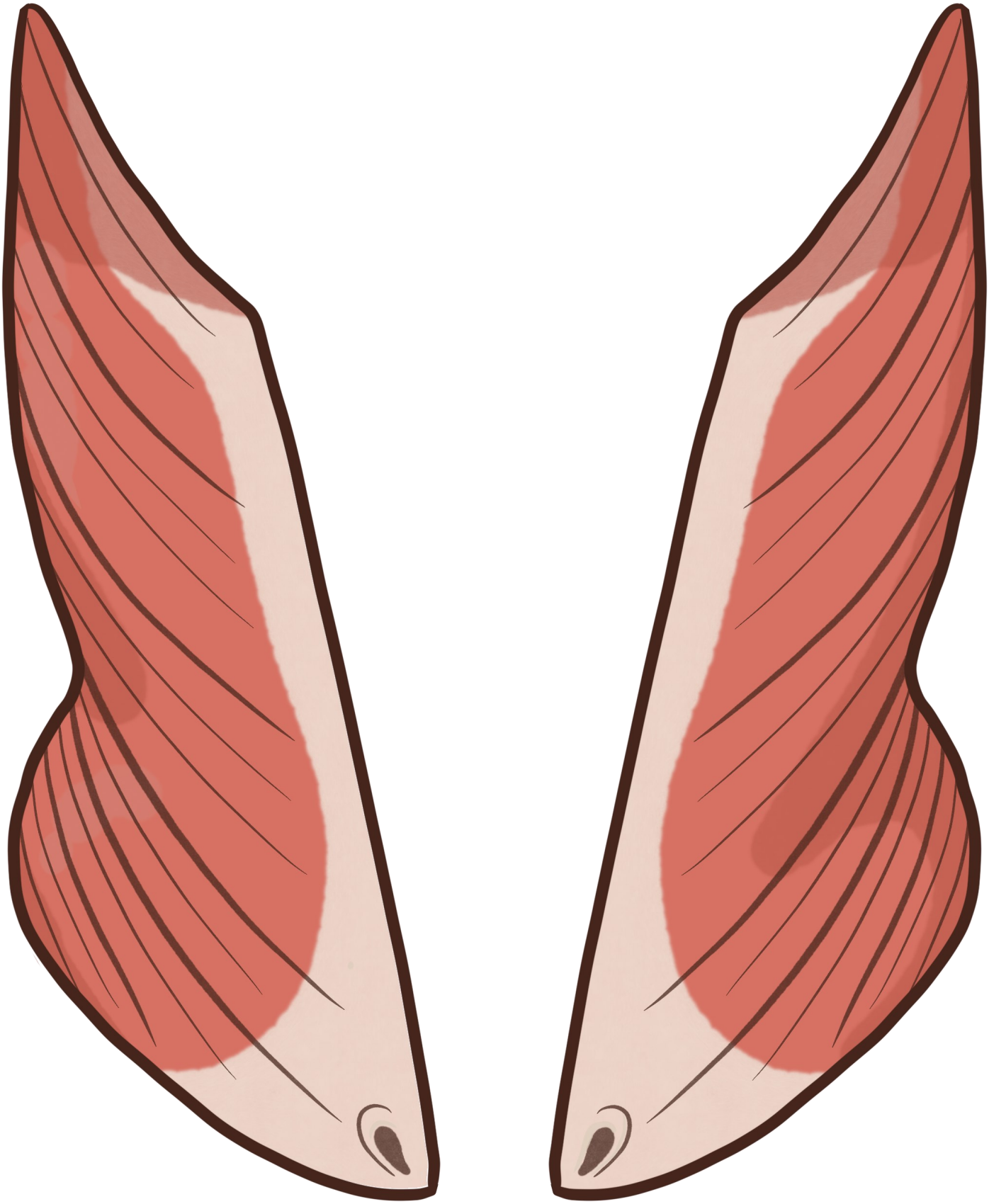

right tibialis anterior
gastrocnemius

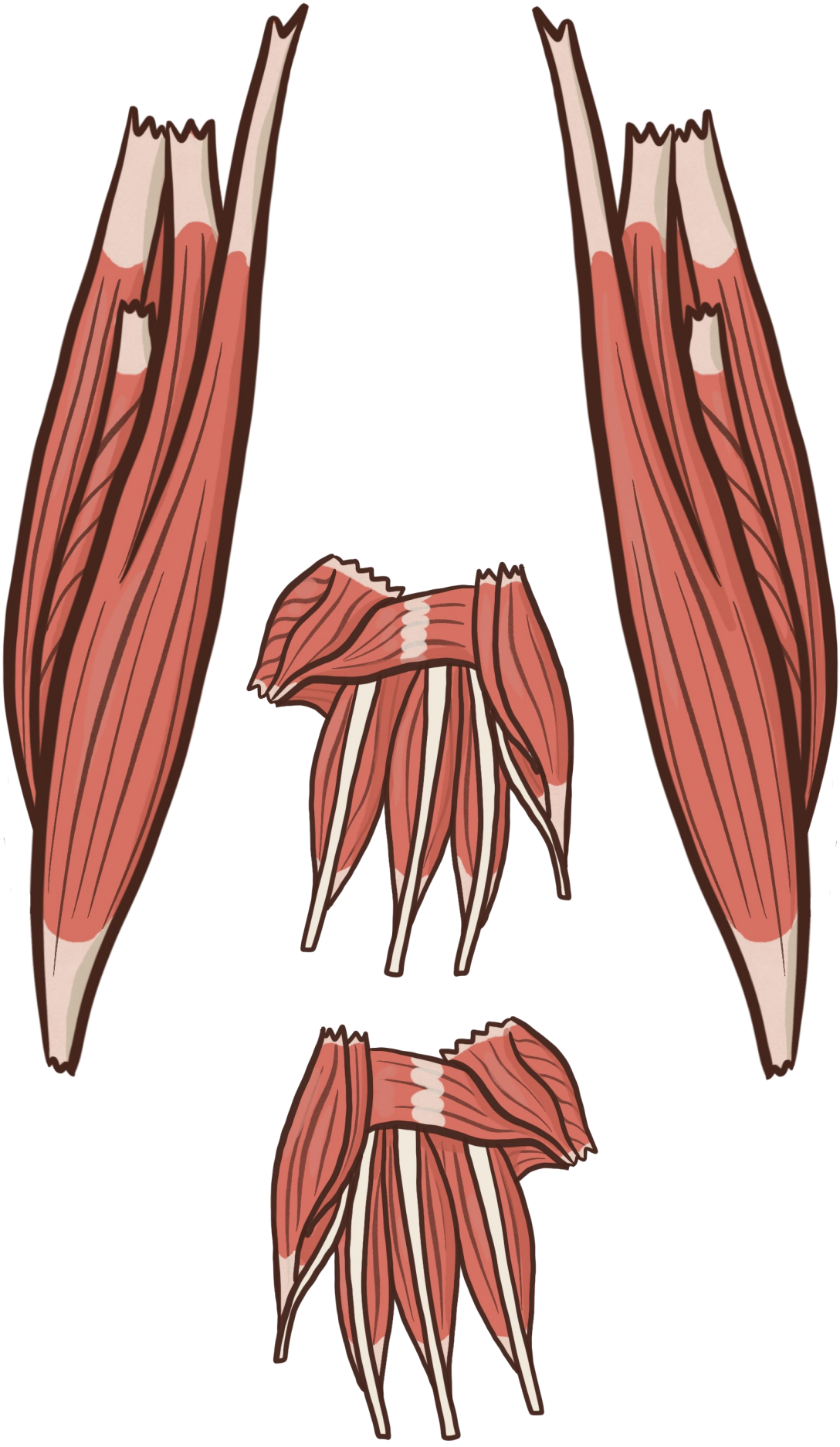

gastrocnemius
right tibialis anterior

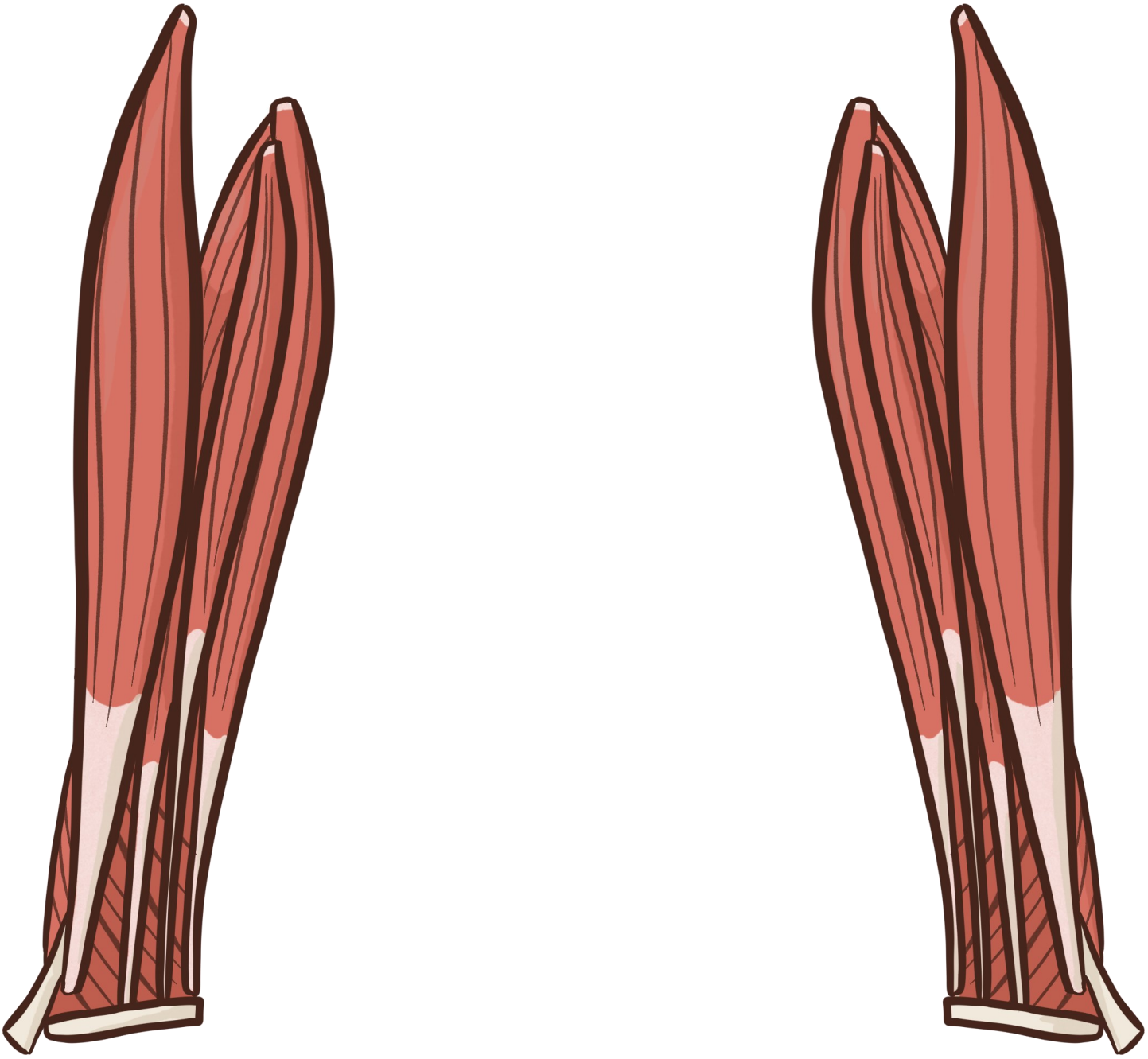


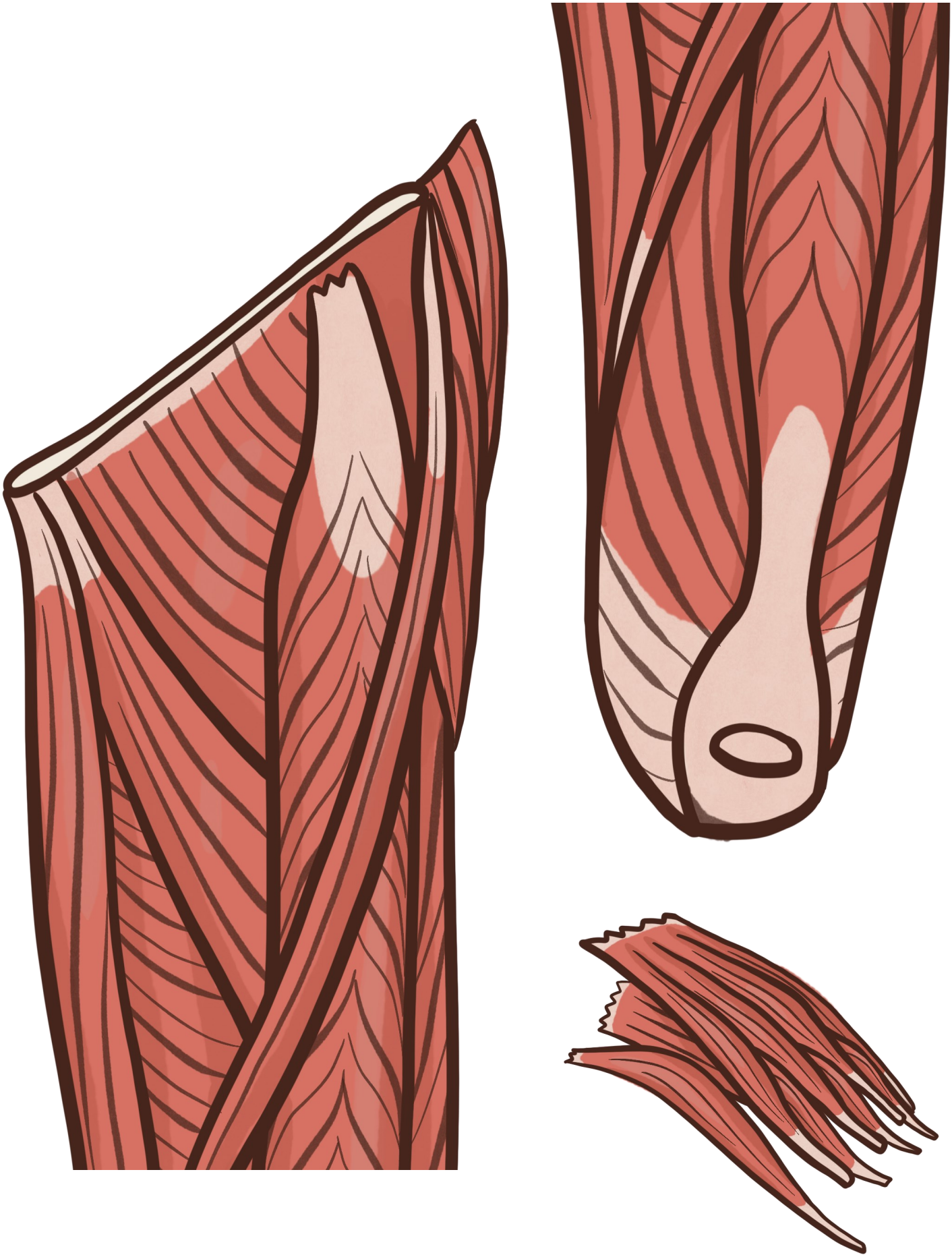


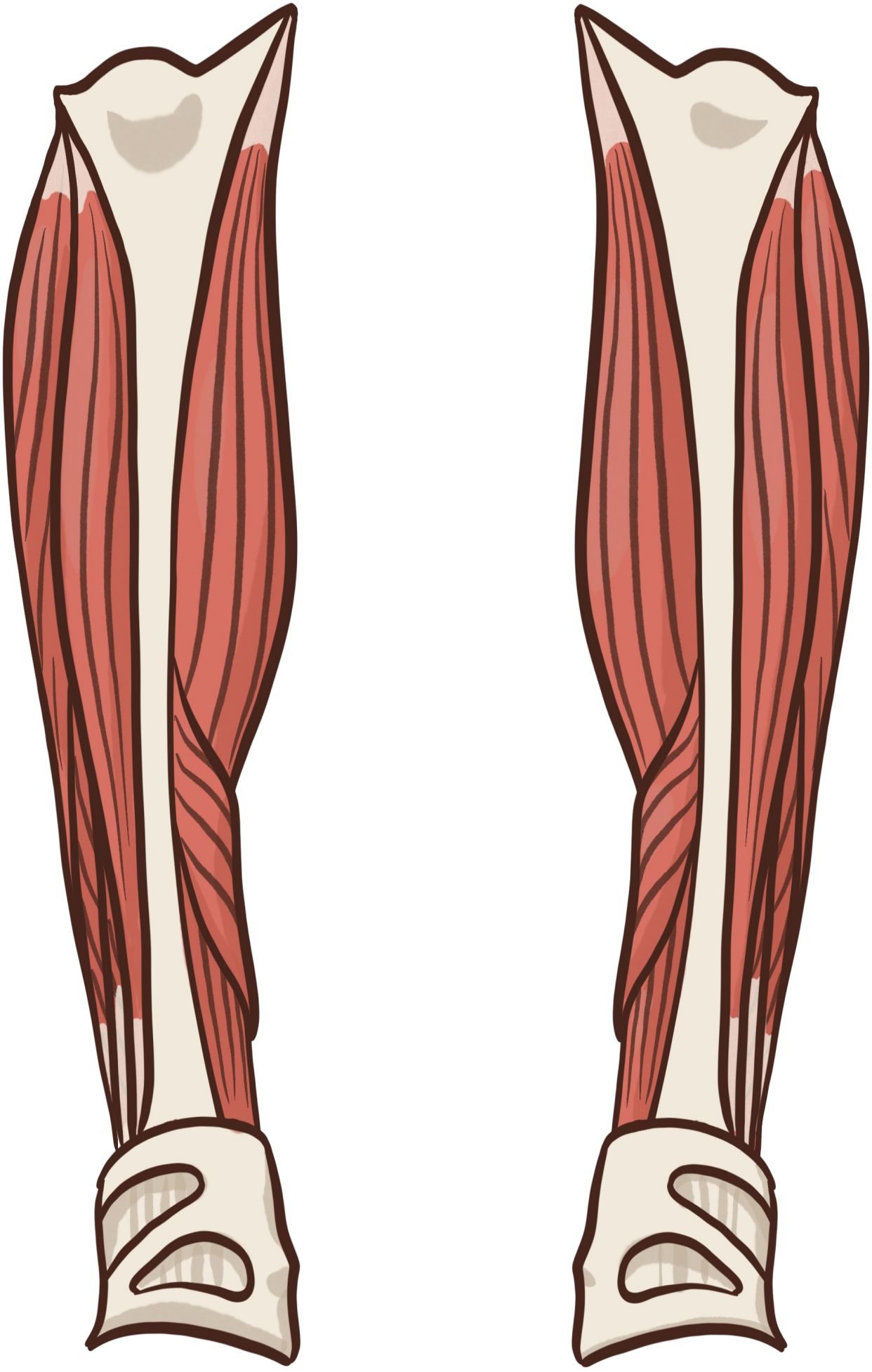


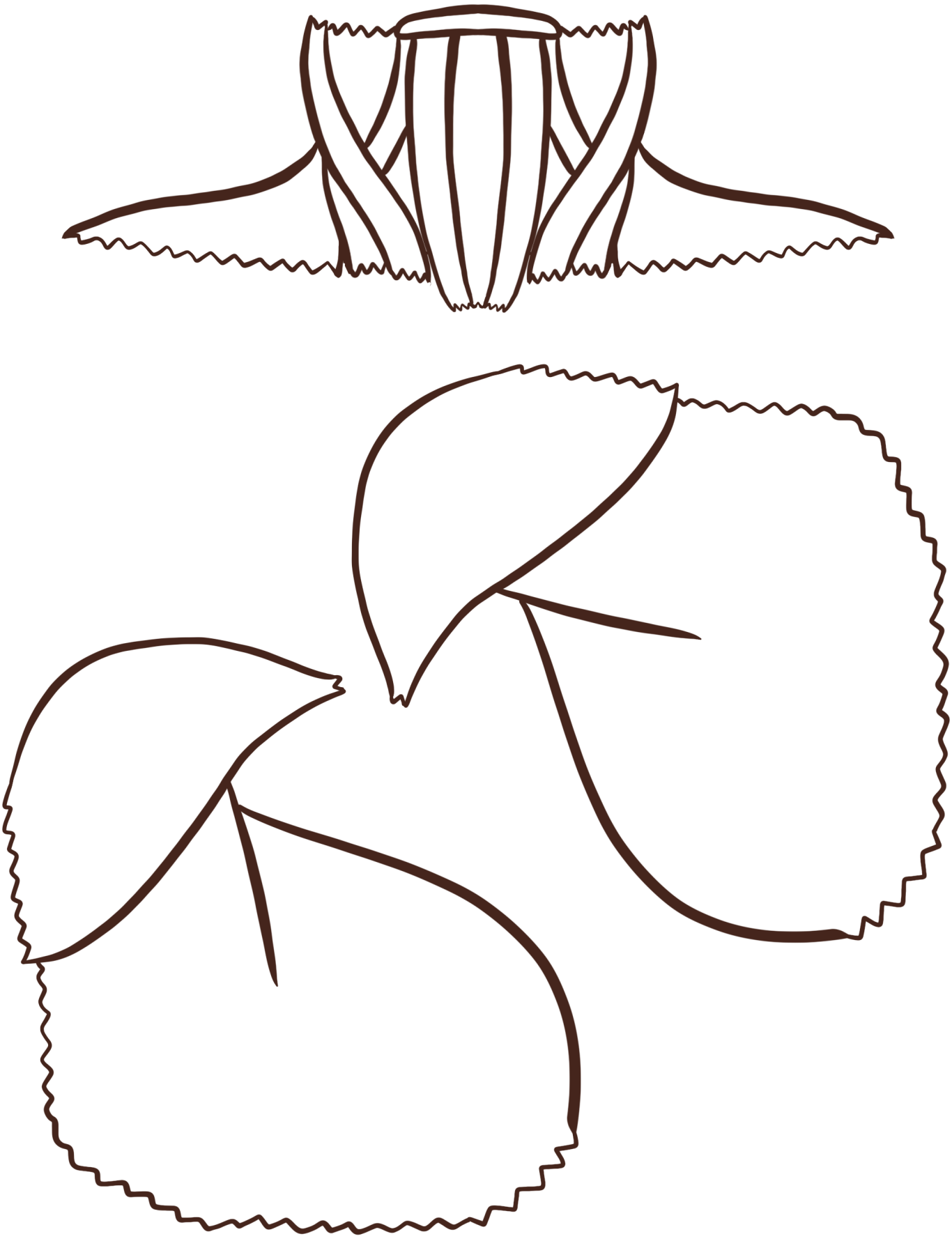


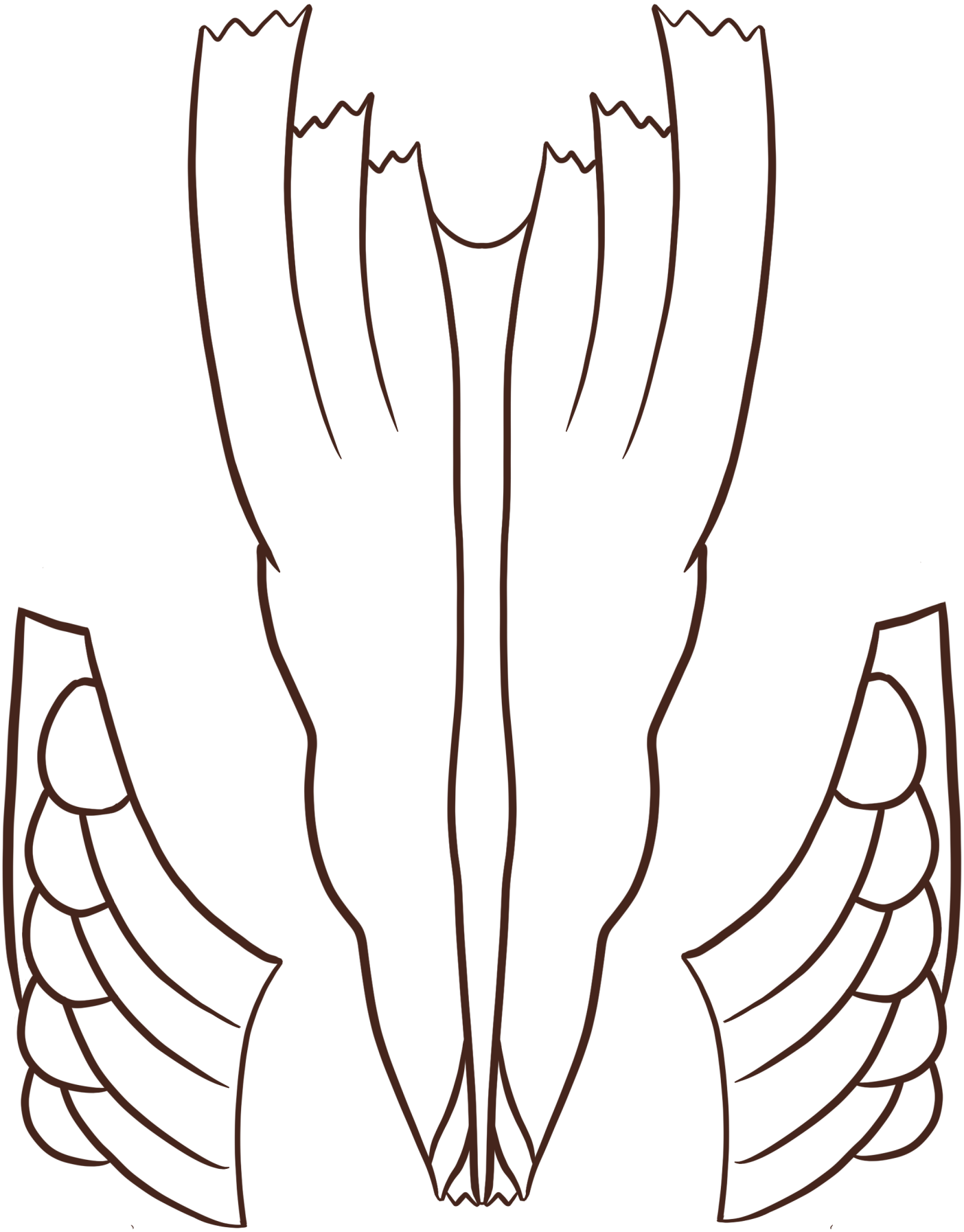


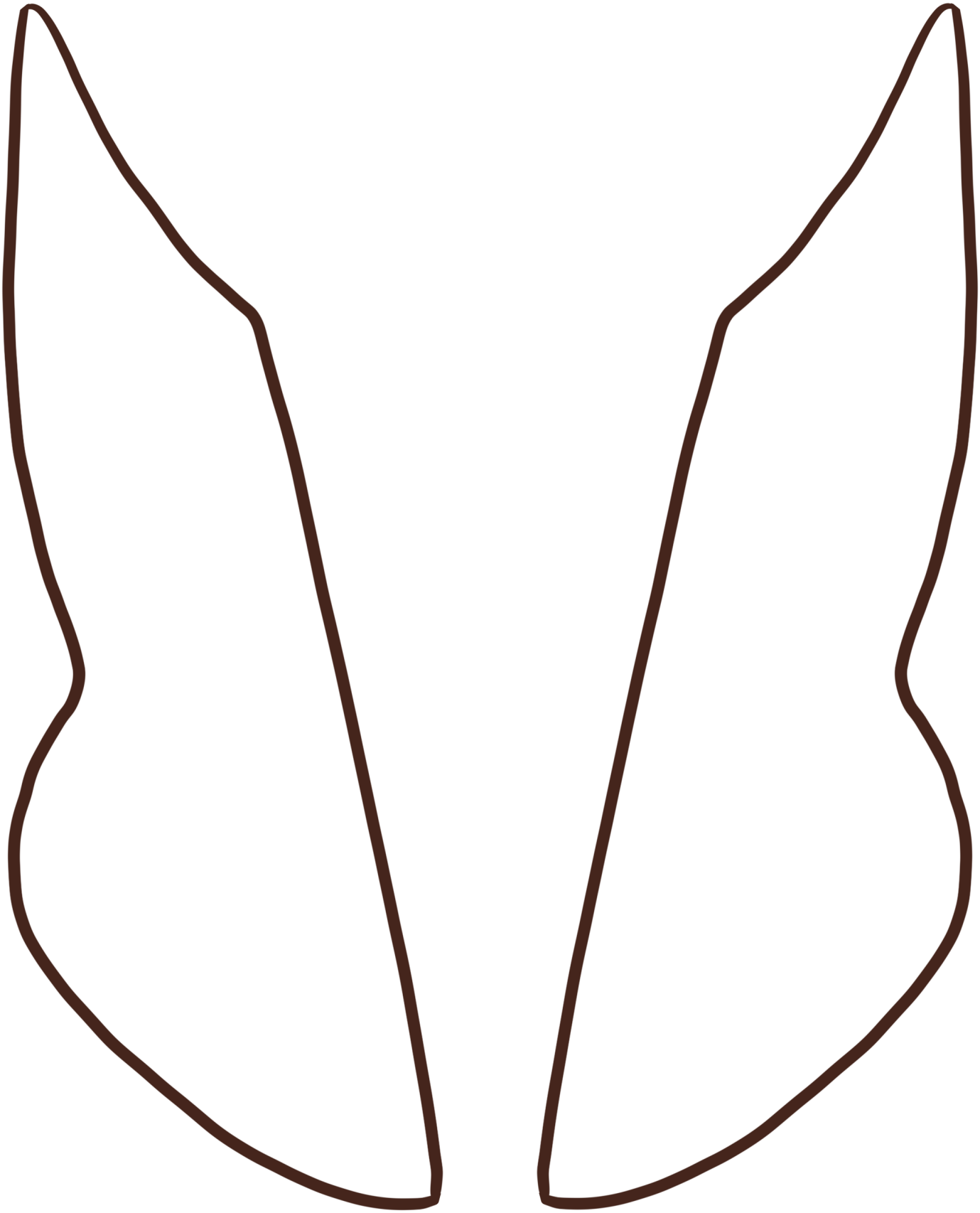


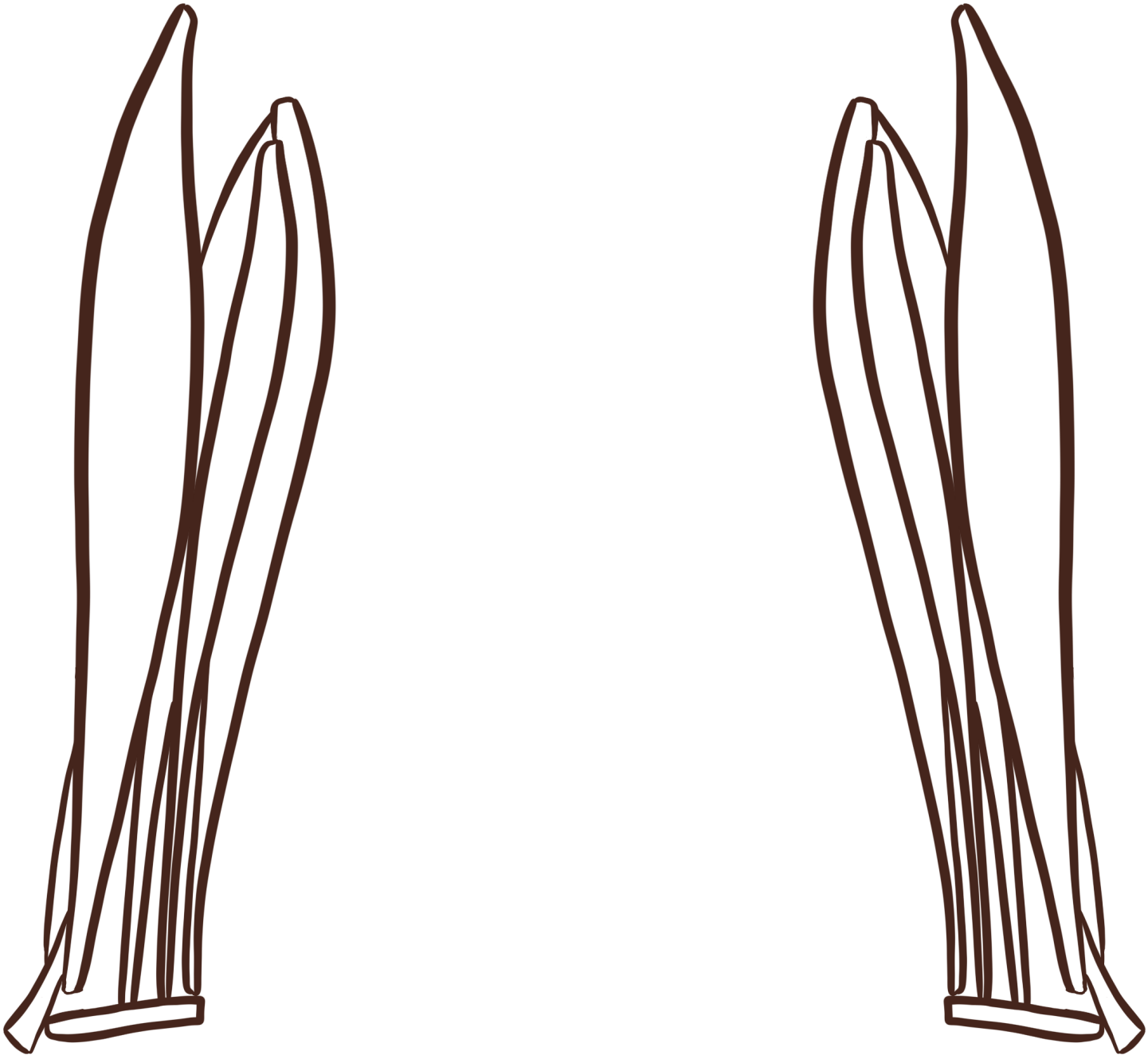




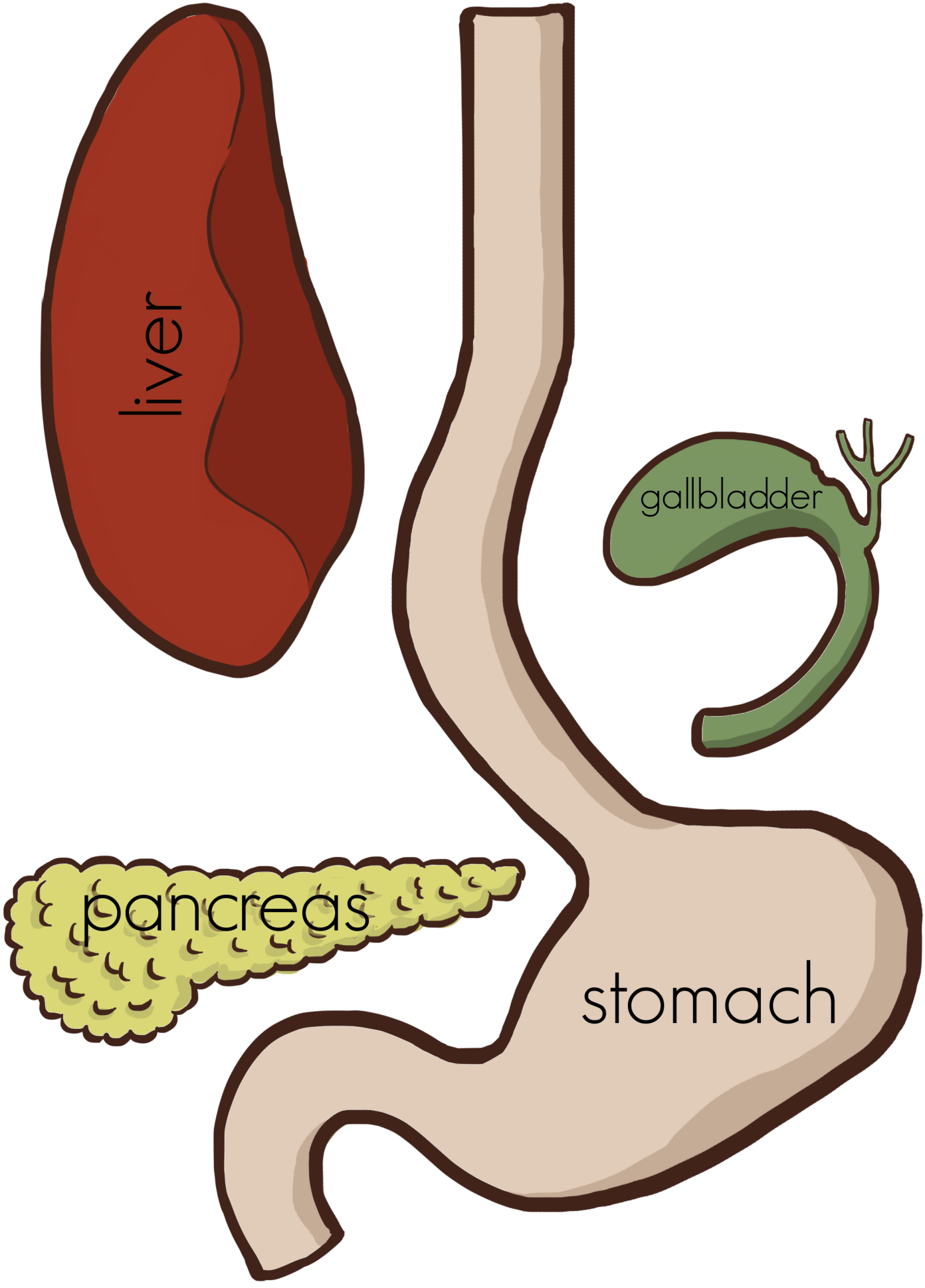


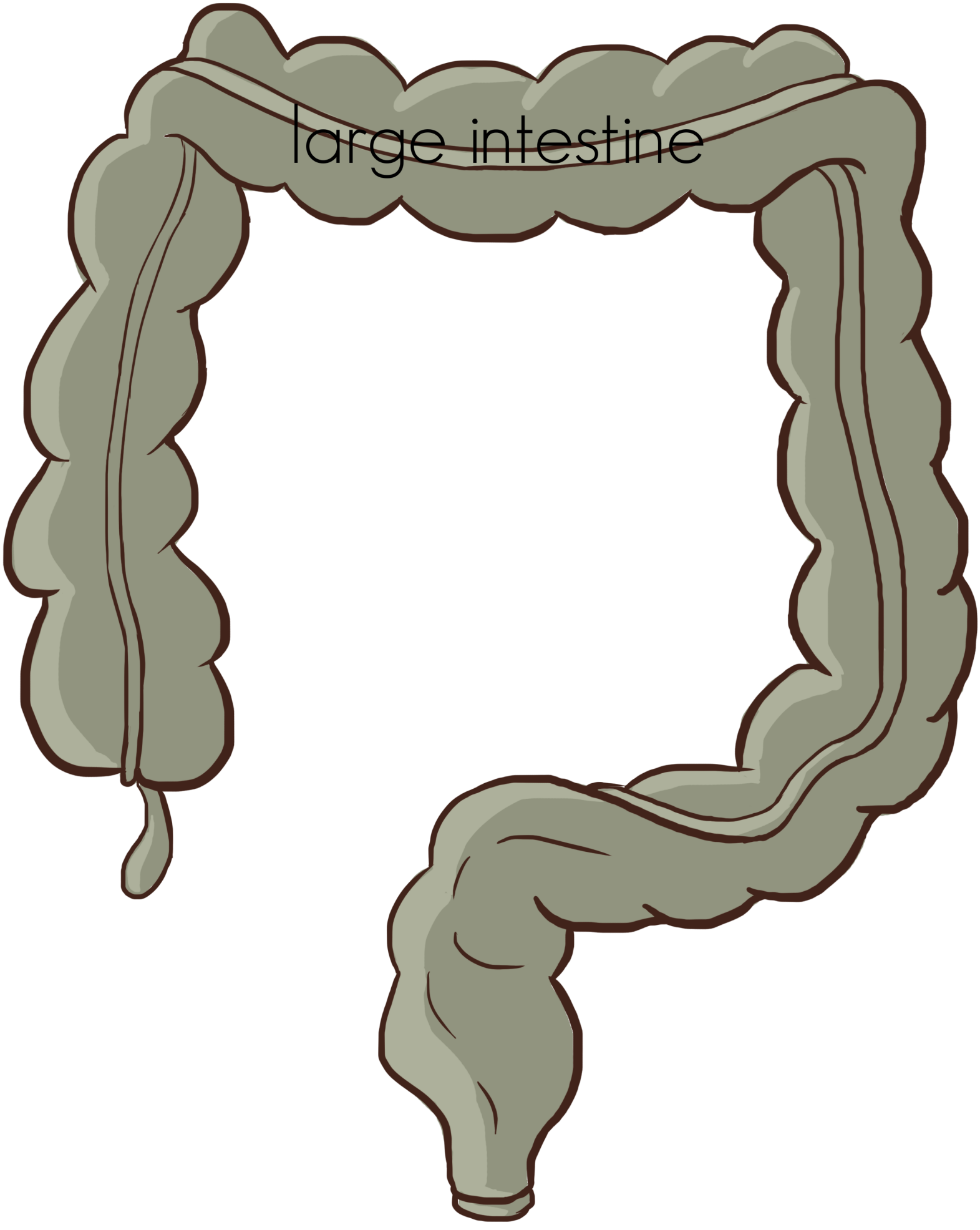


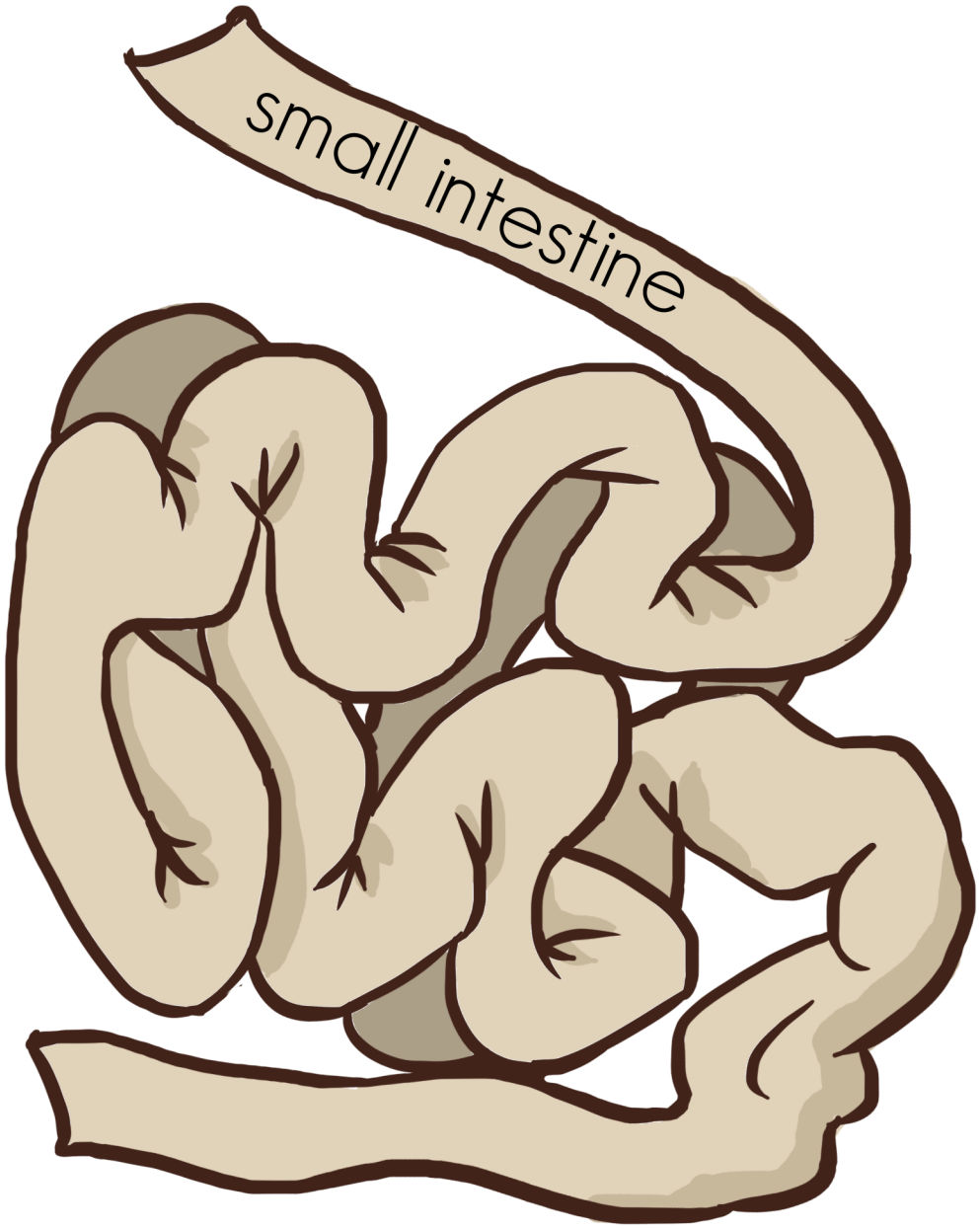


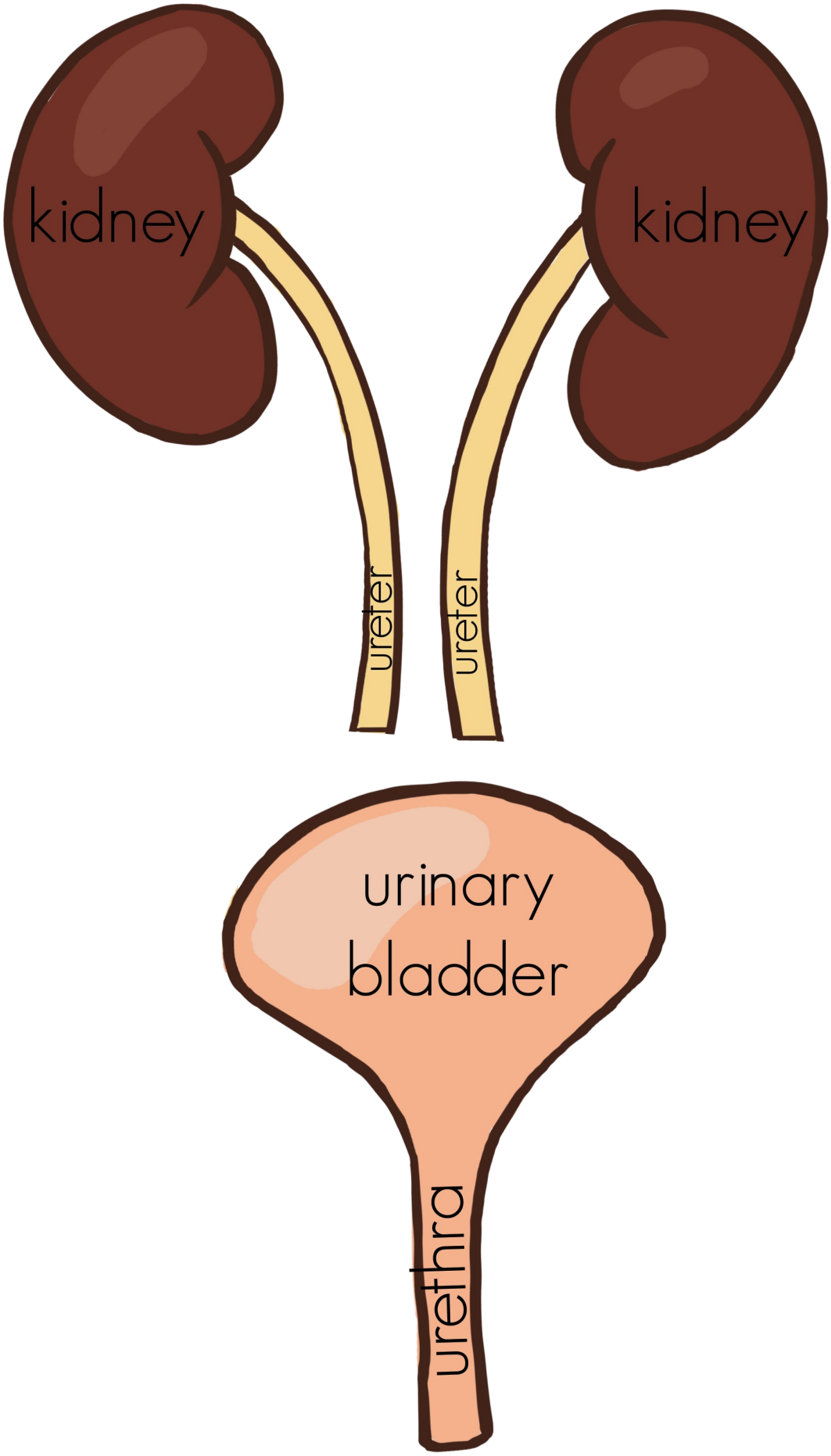


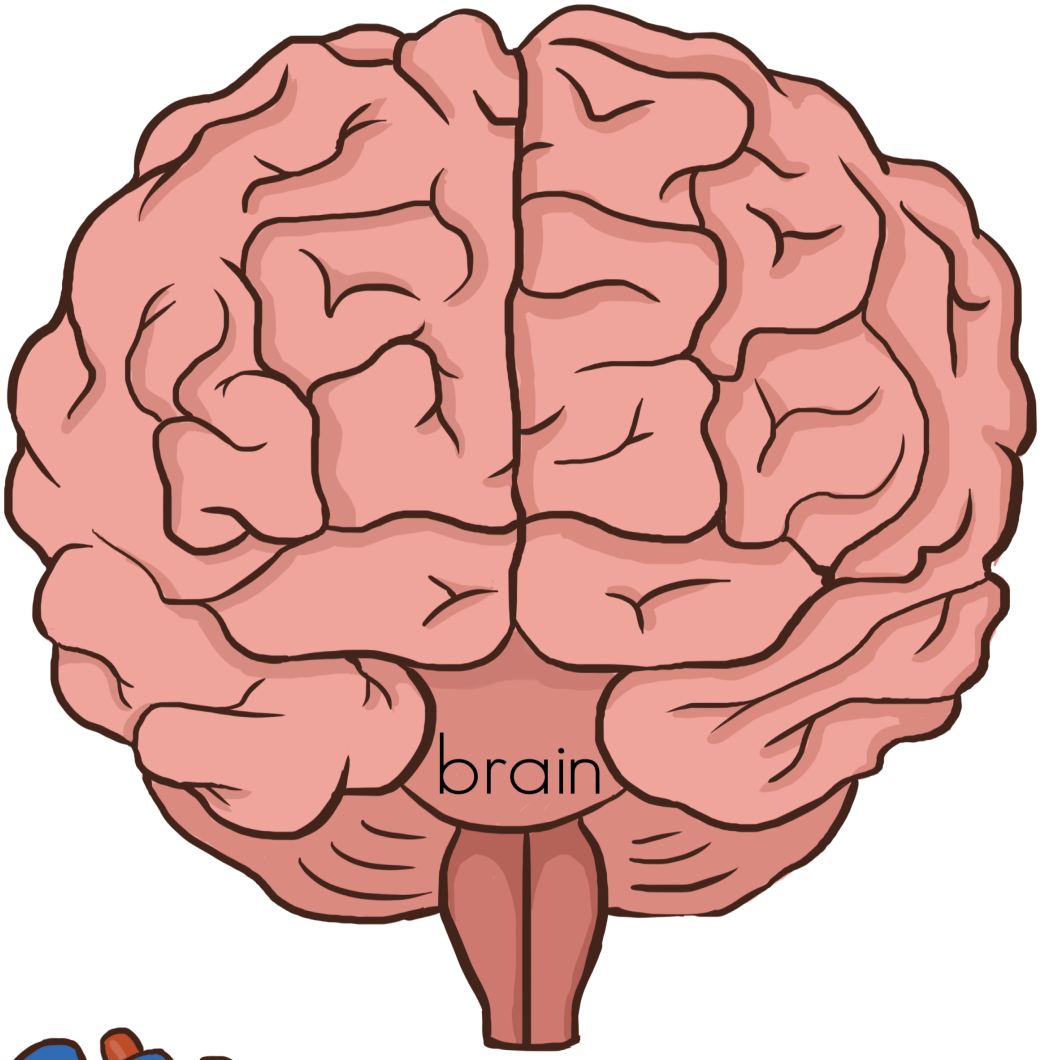
DIGESTIVE, RESPIRATORY, URINARY, NERVOUS SYSTEMS

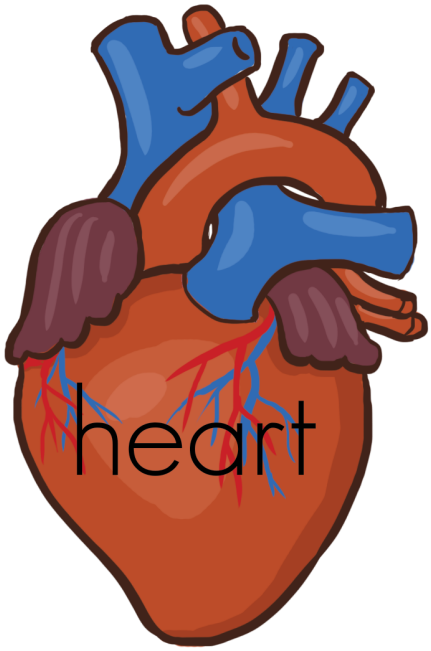

liver
gallbladder
pancreas
stomach

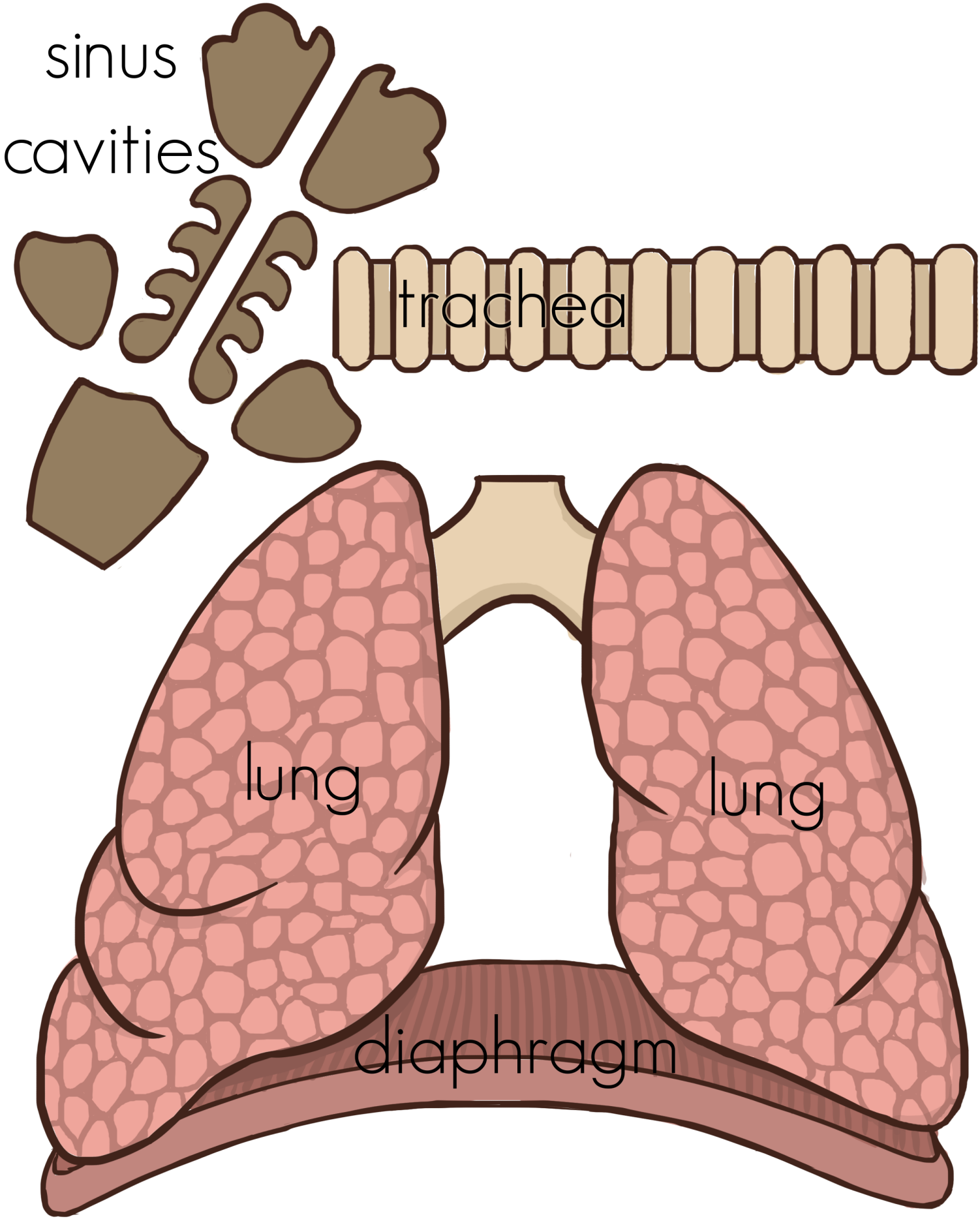

large intestine

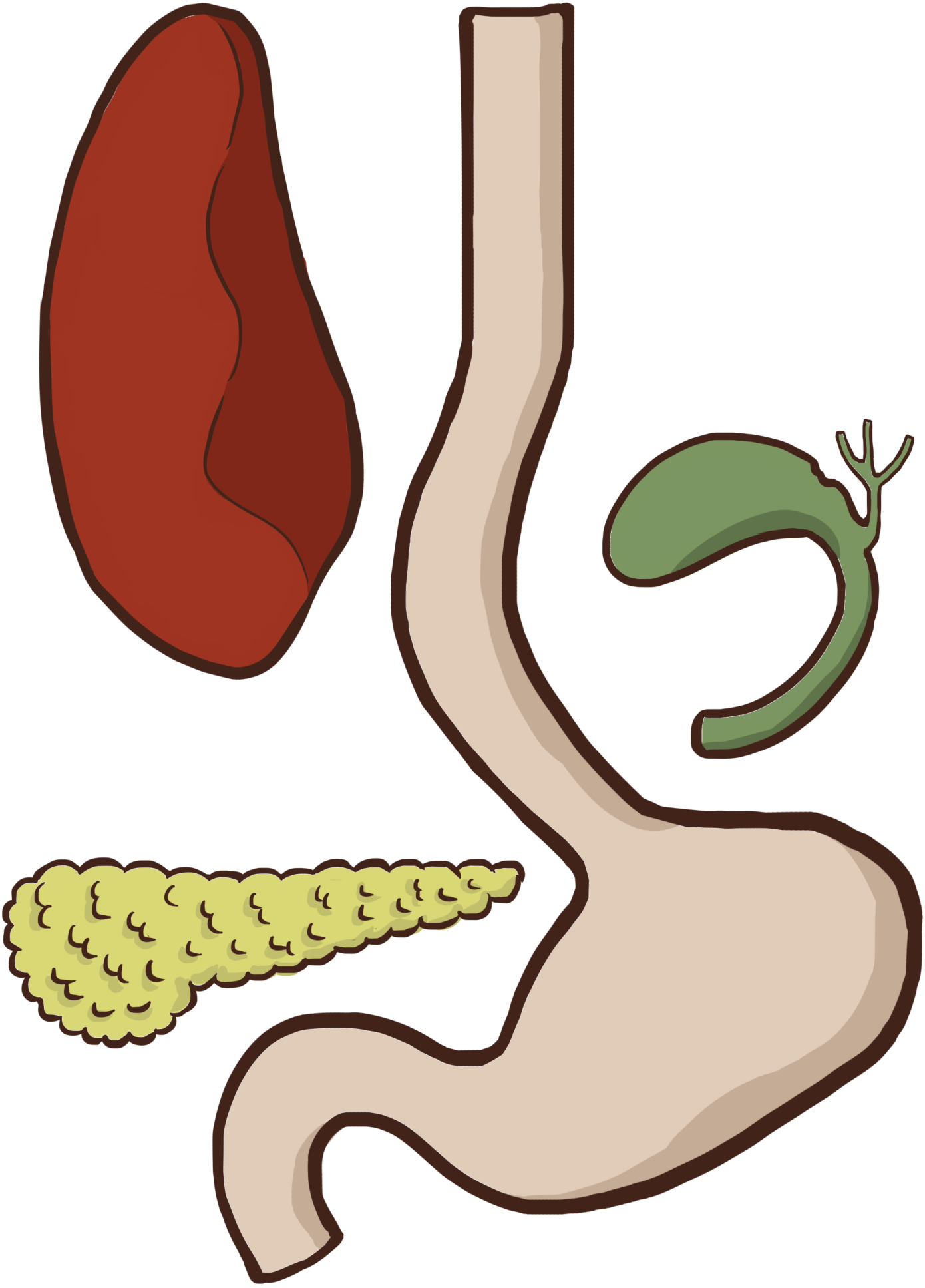

small intestine

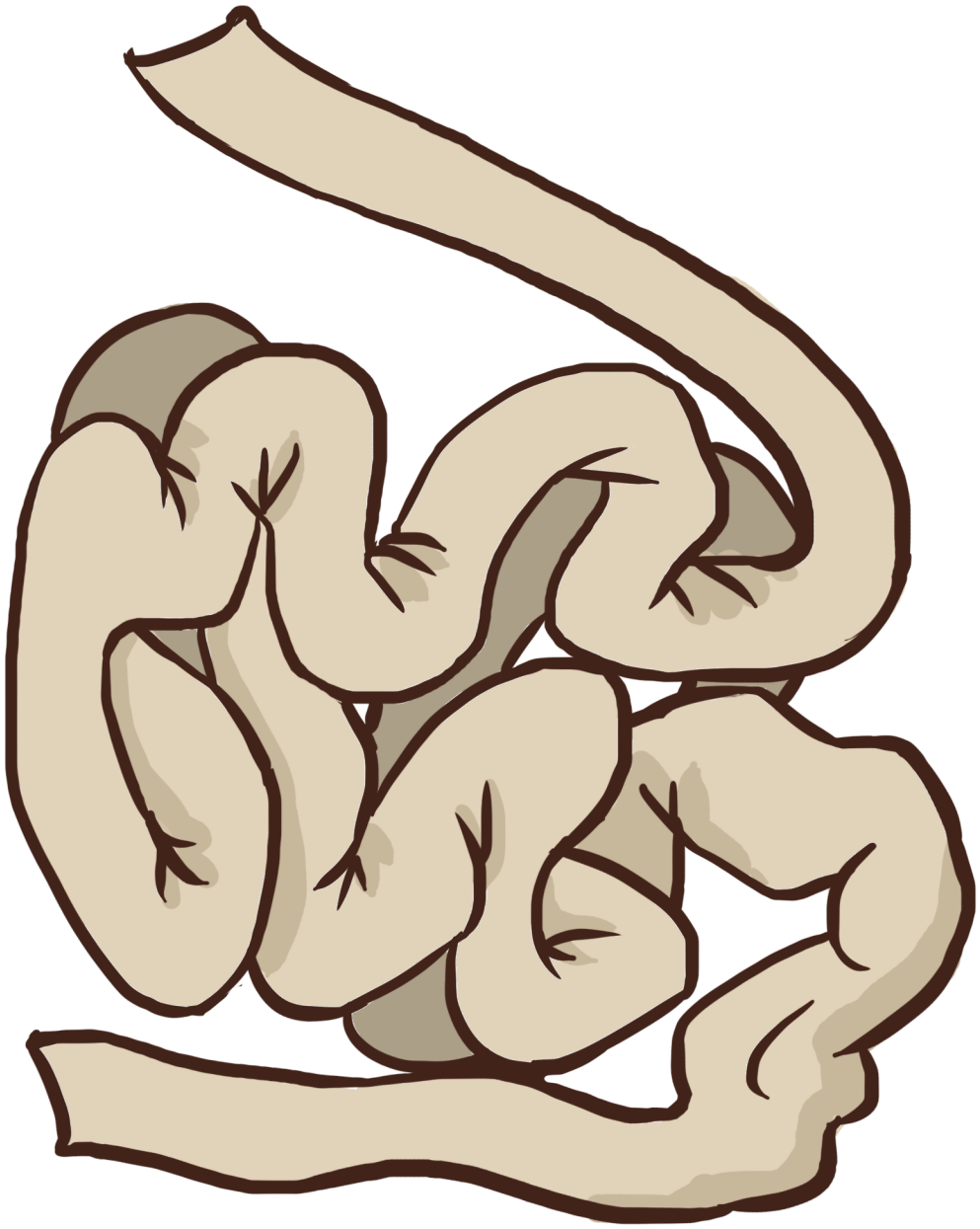

kidney
kidney
ureter
ureter
urinary
bladder
urethra

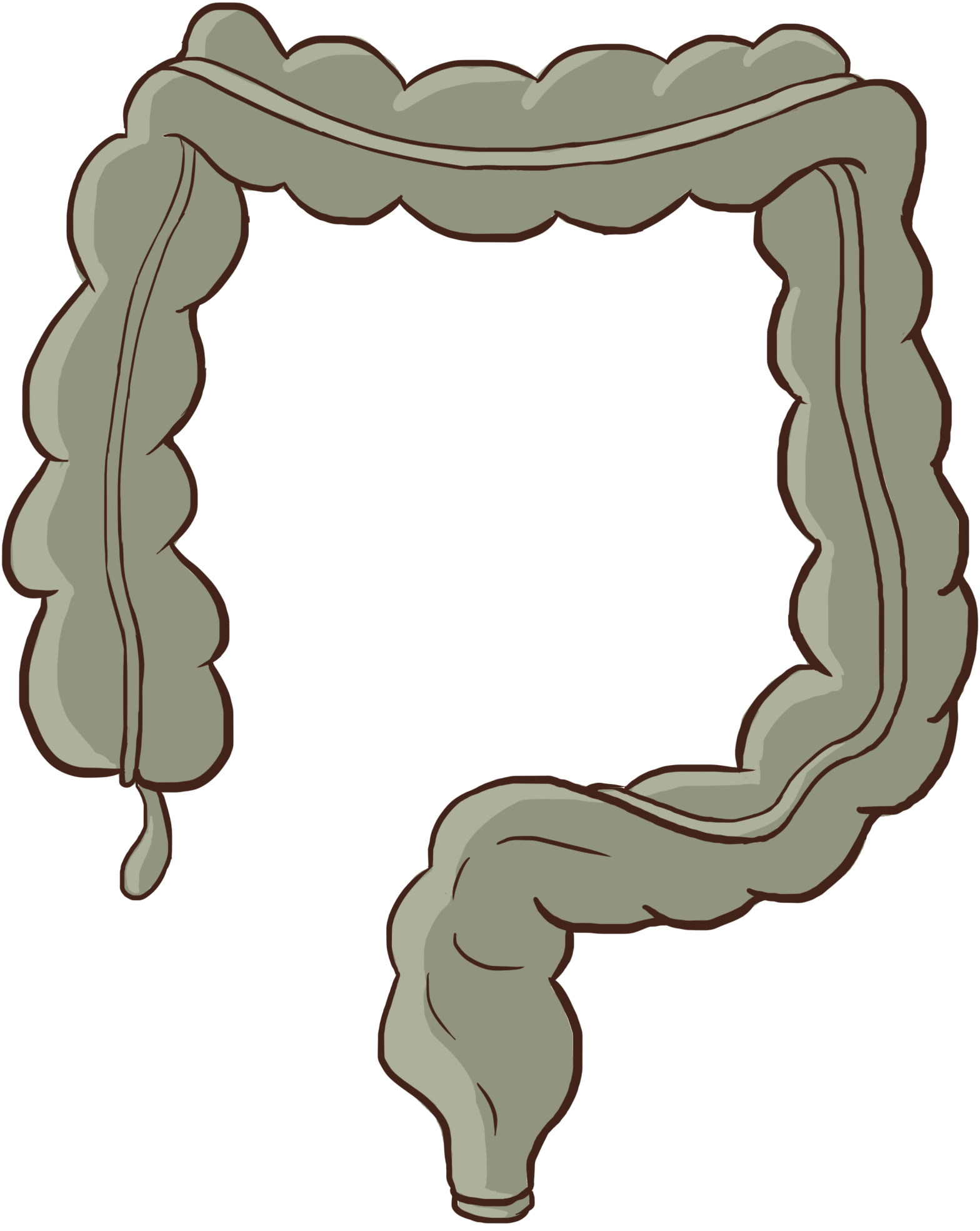

brain

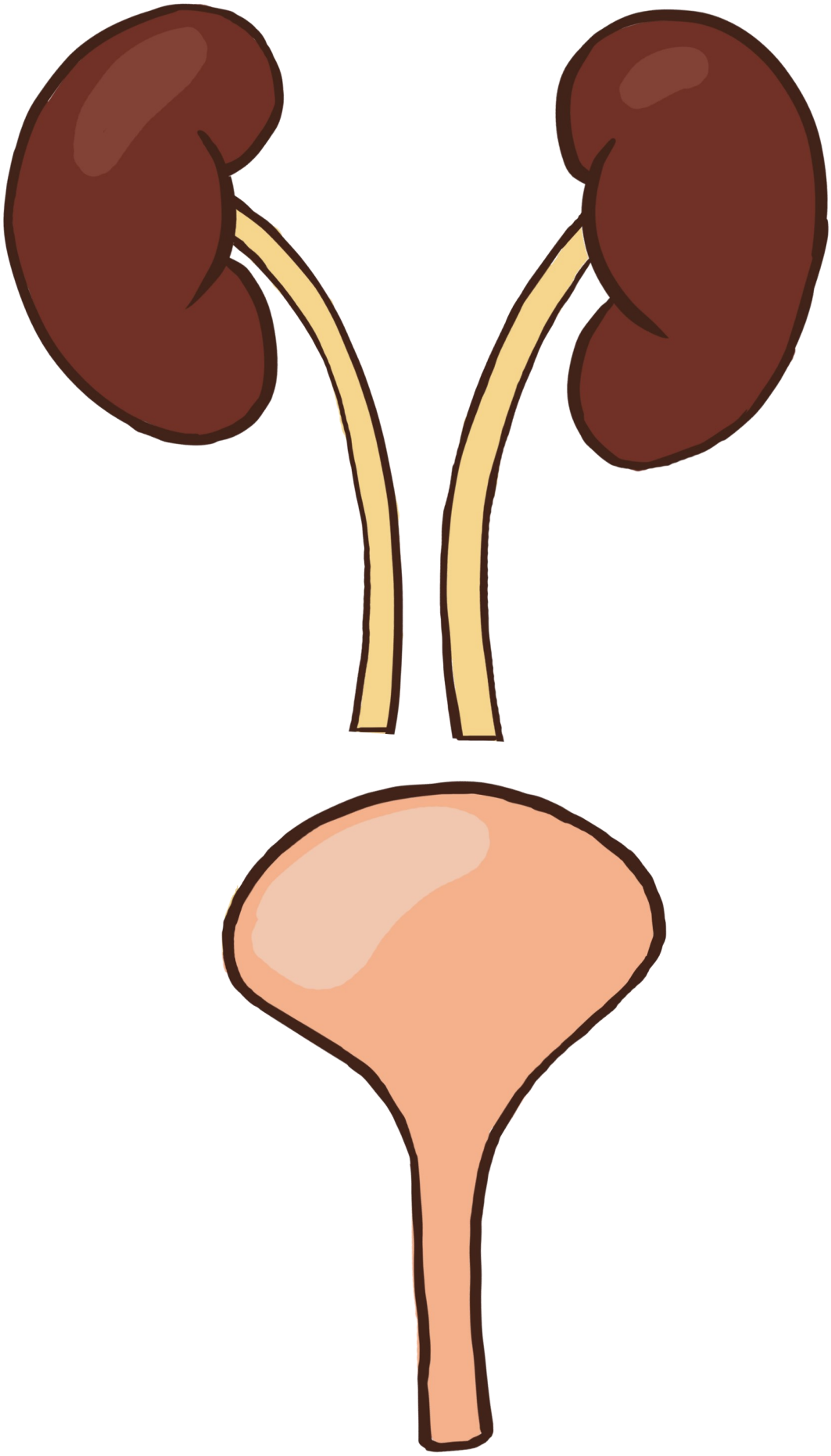

heart

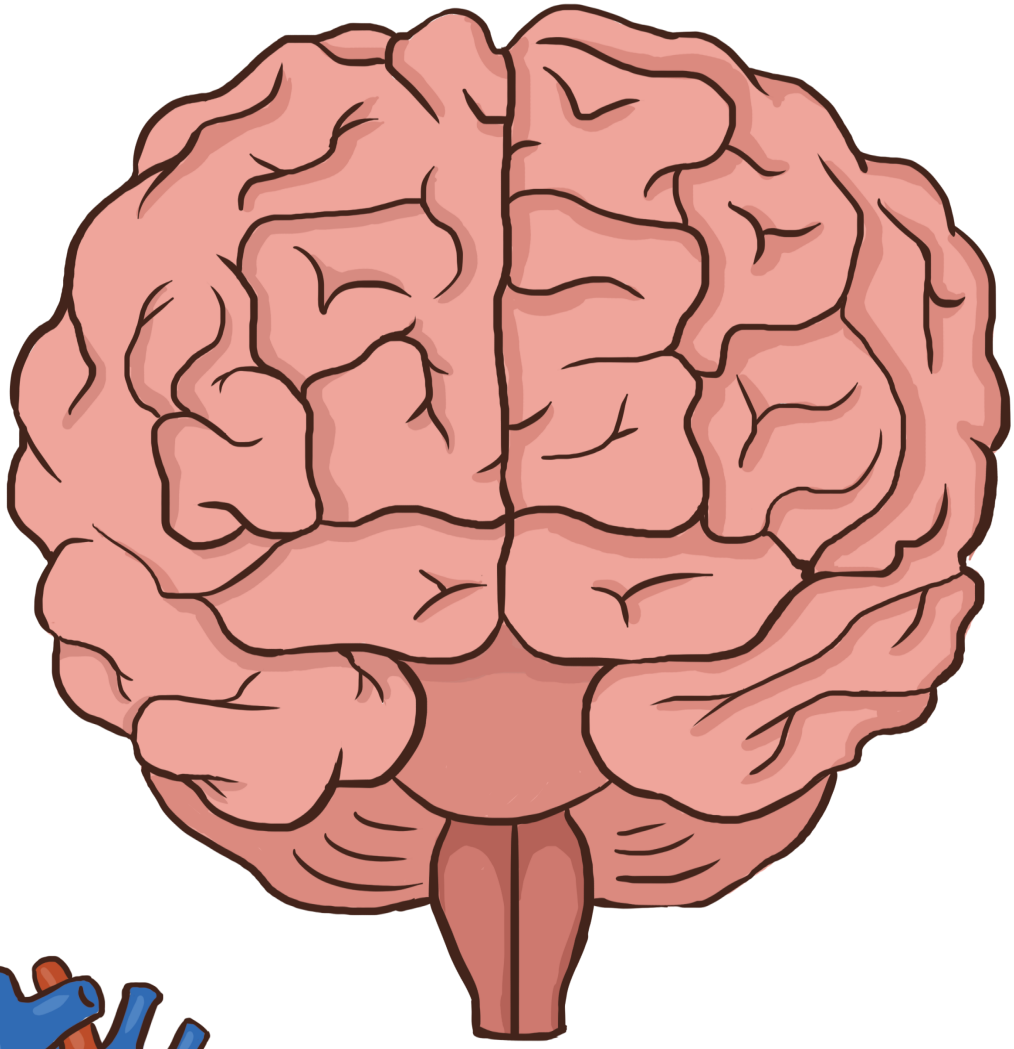

sinus cavities
trachea
lung
lung
diaphragm

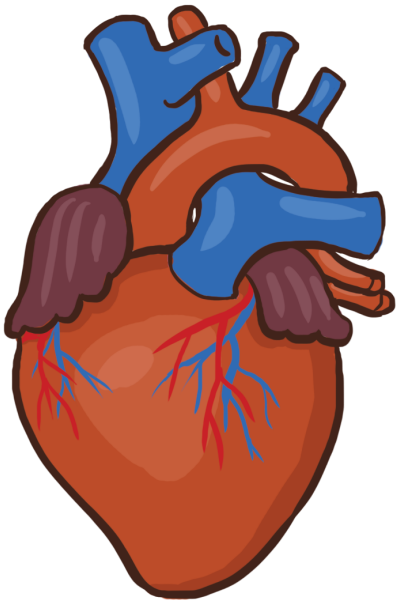


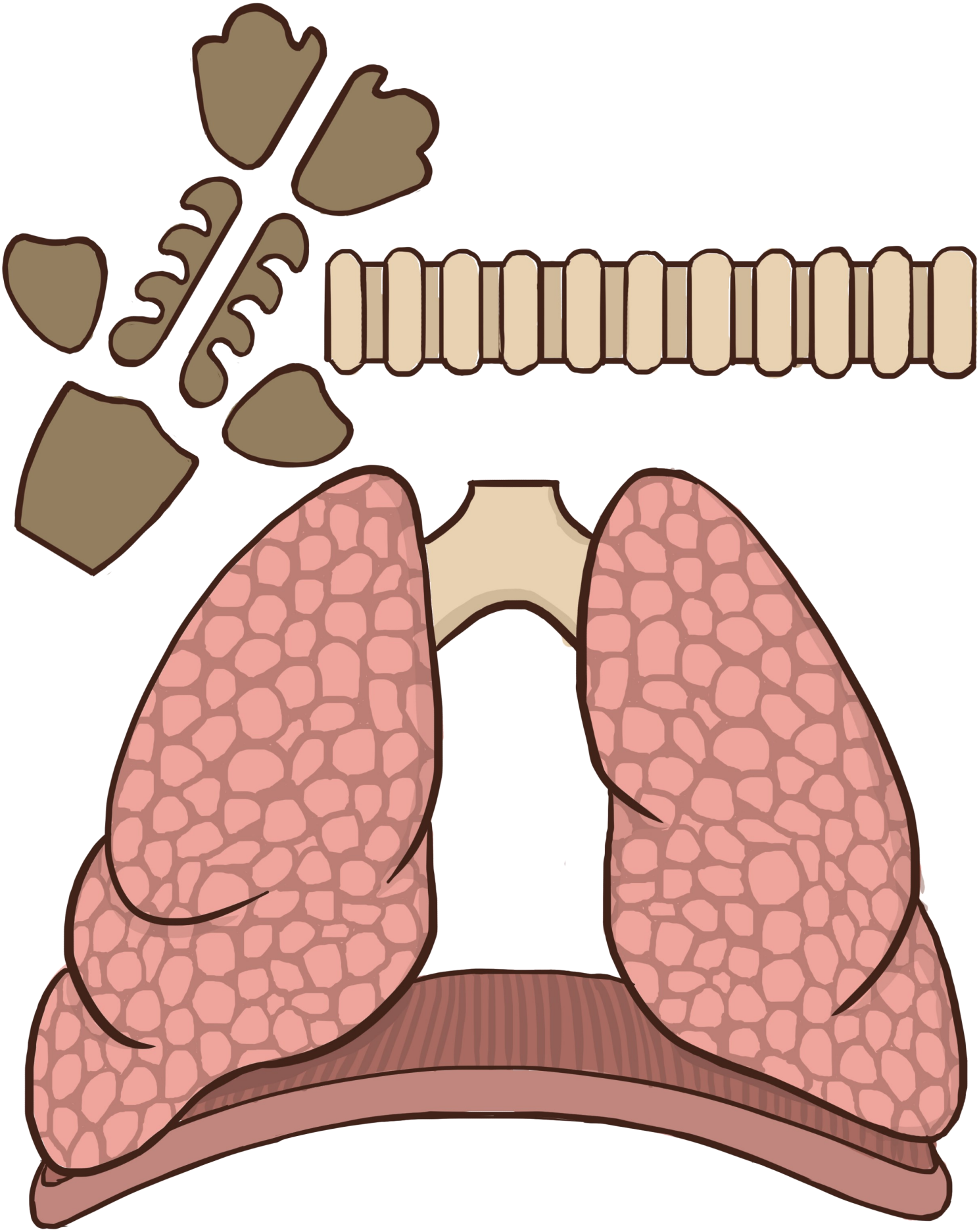


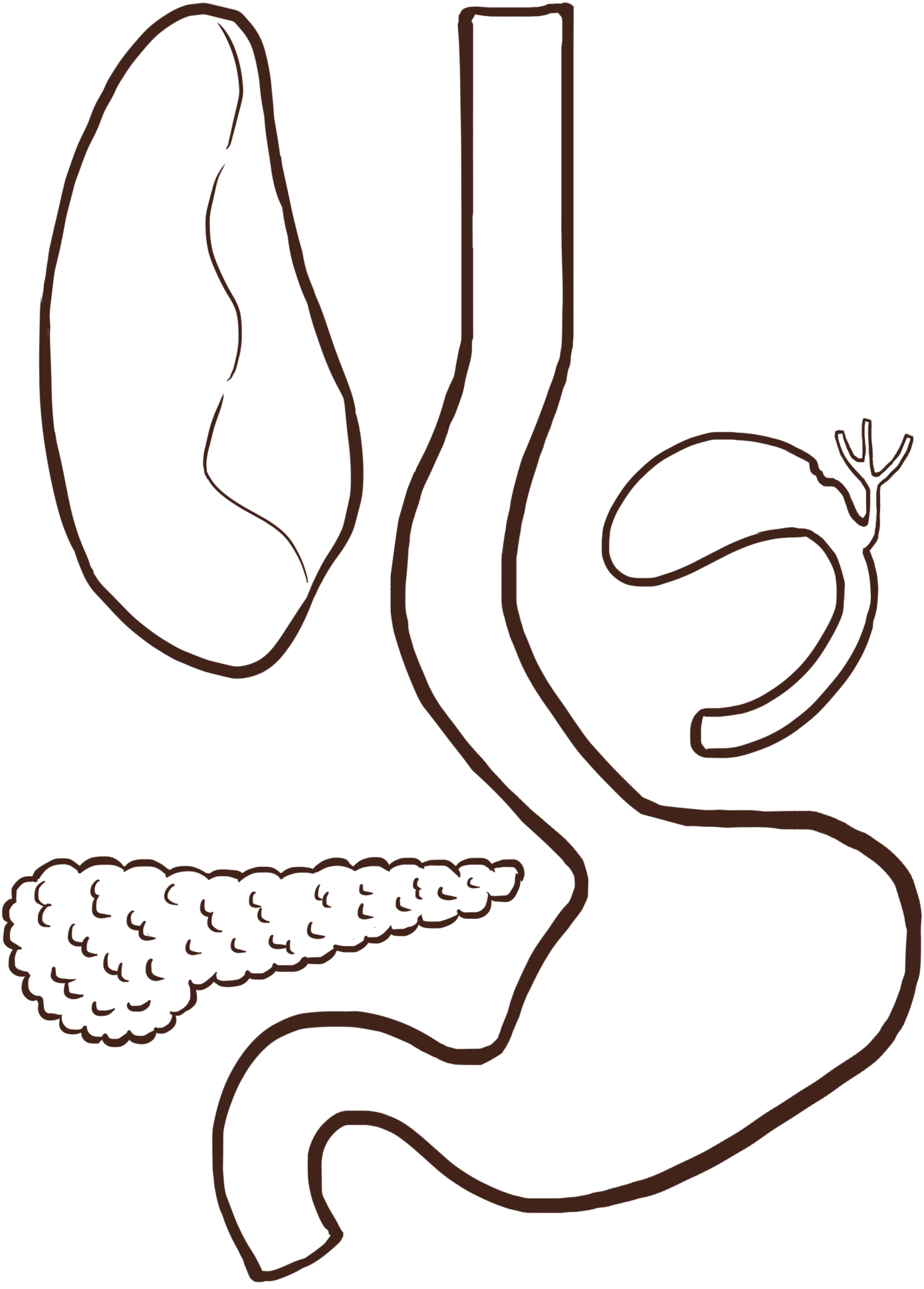


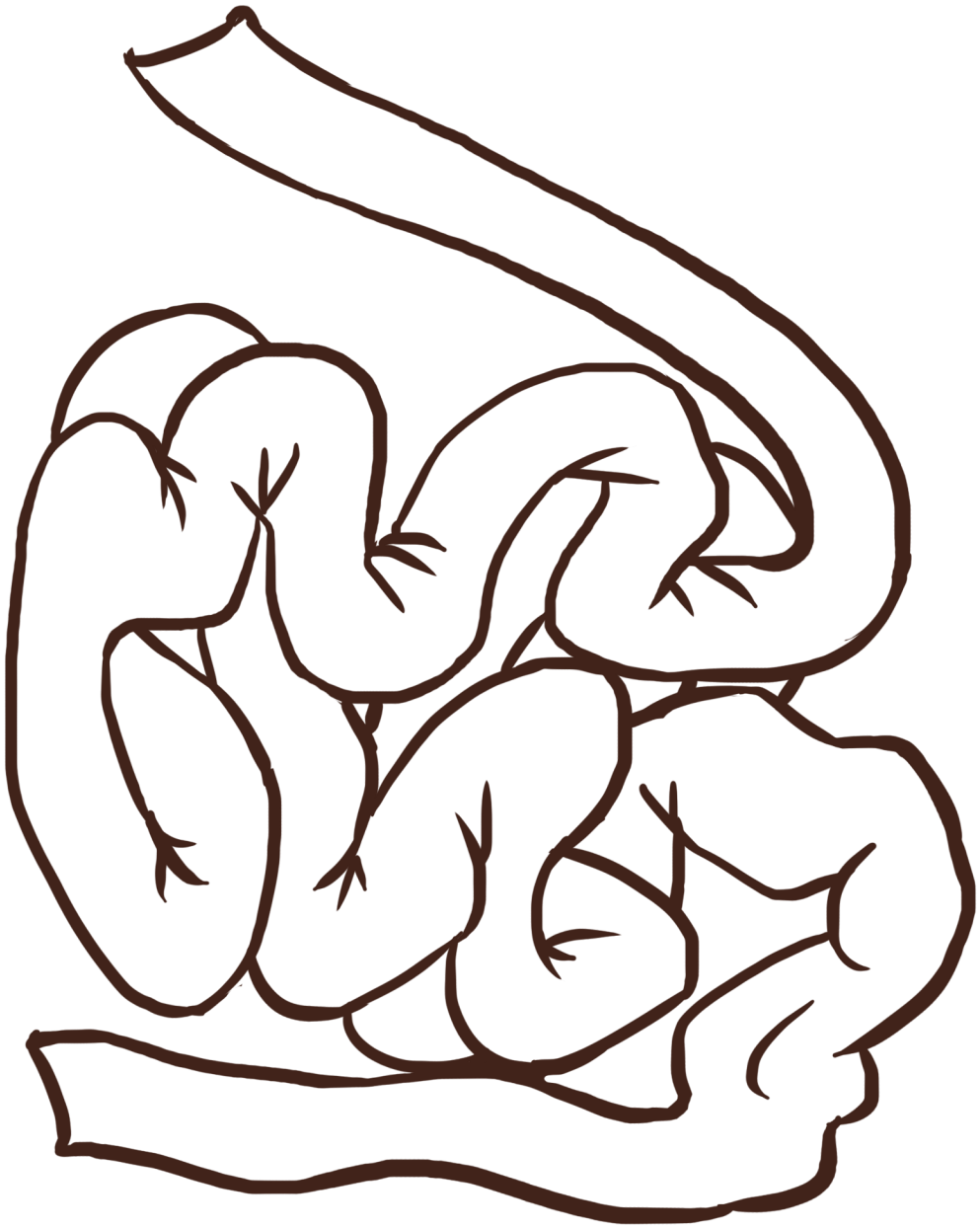


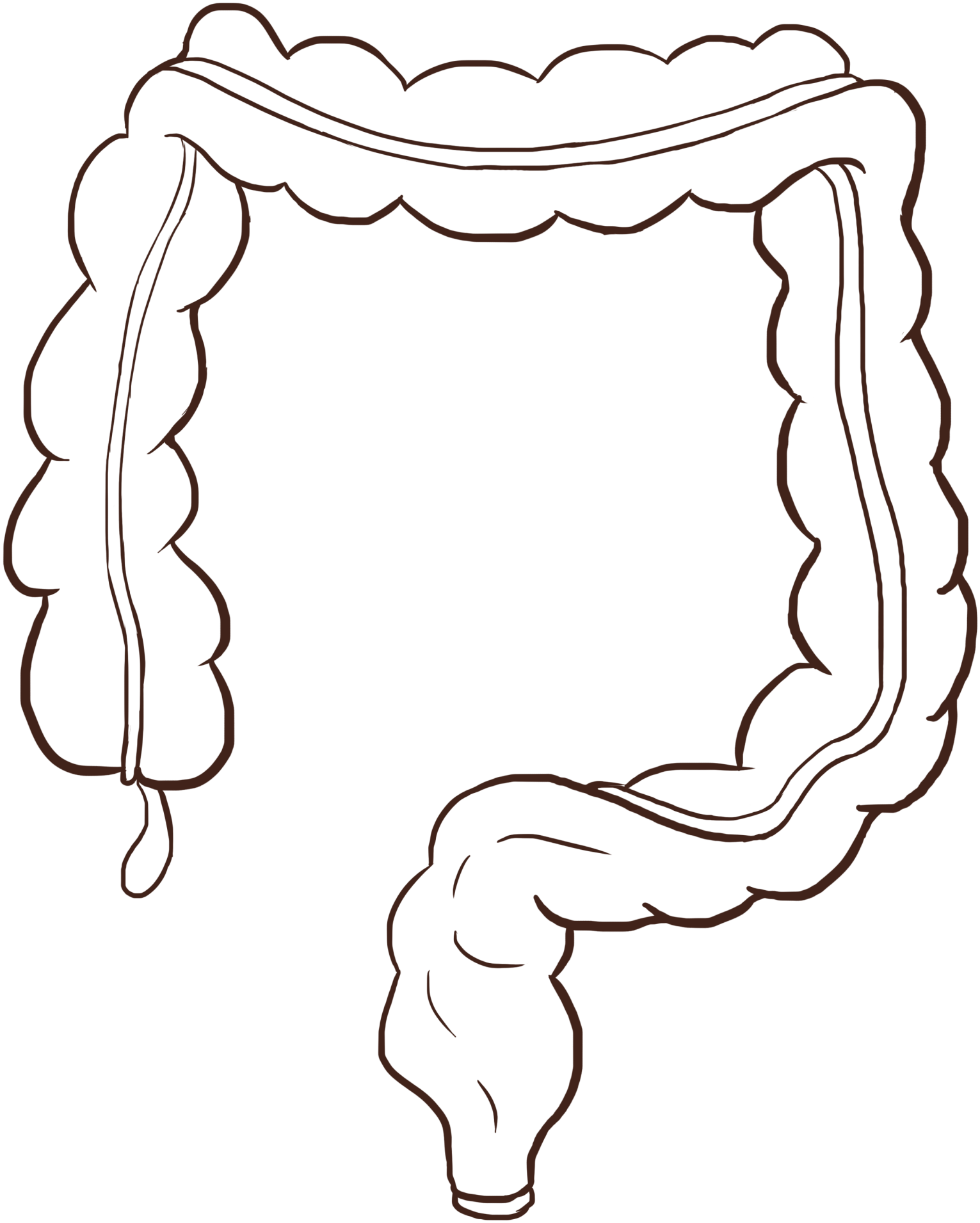


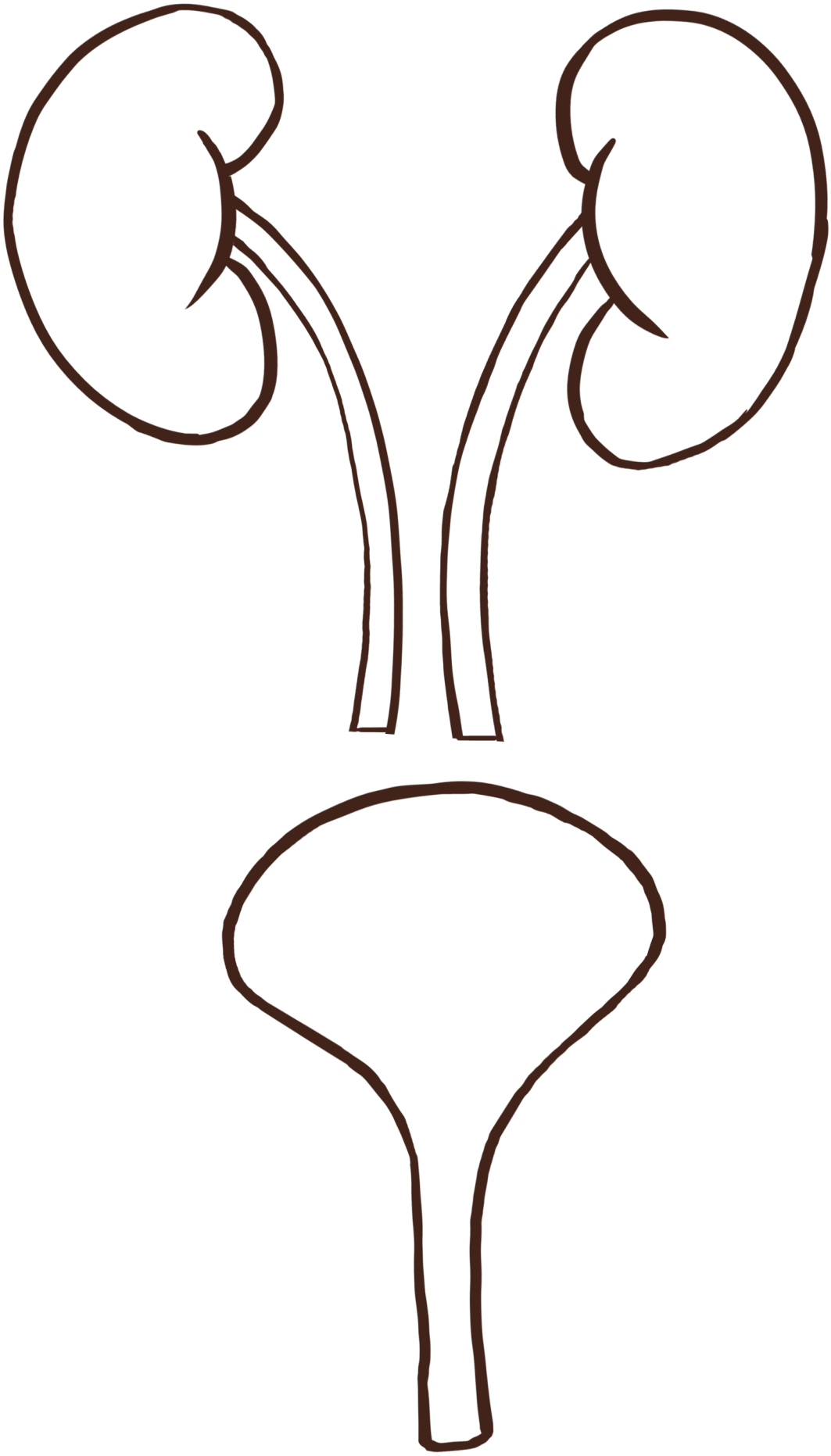


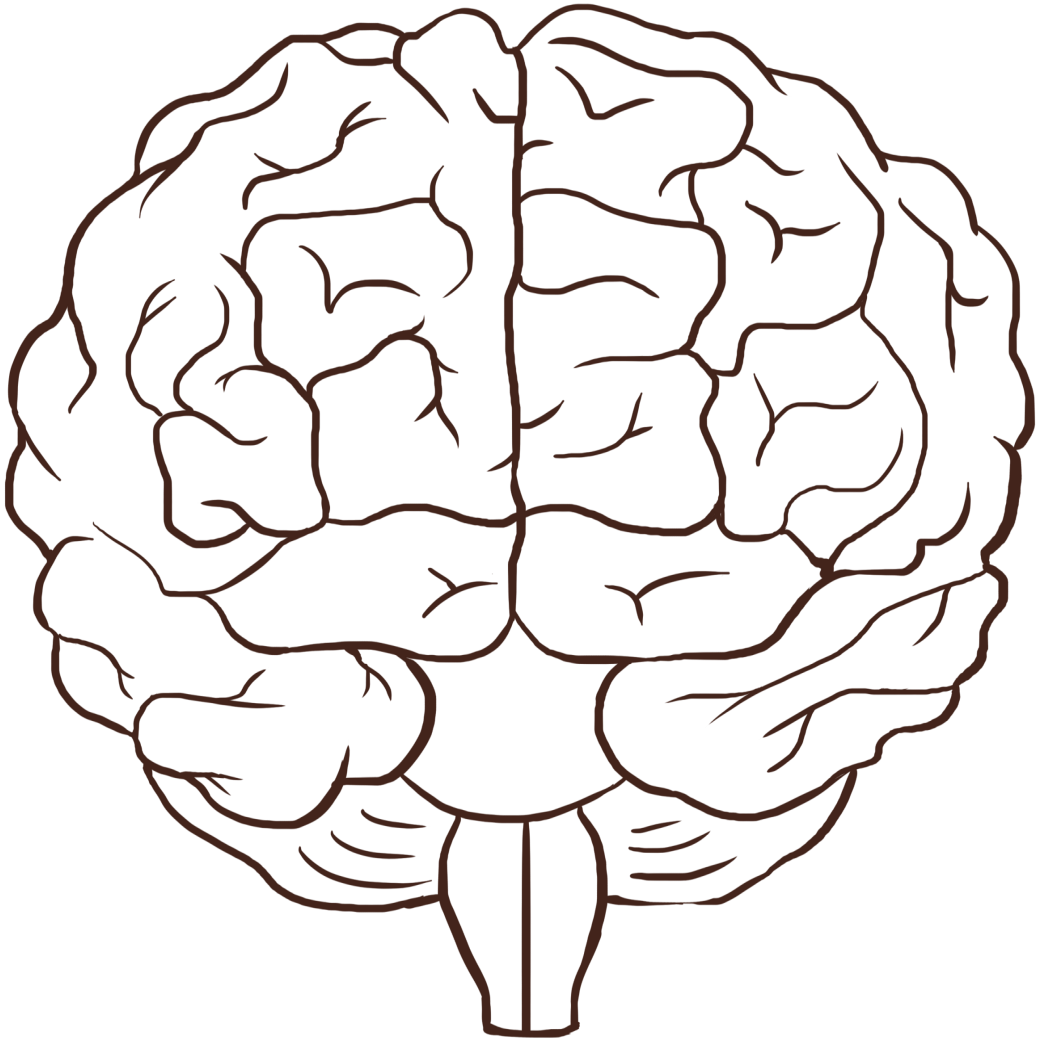


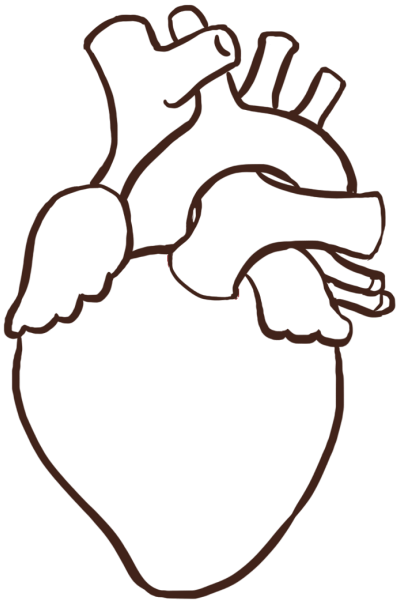


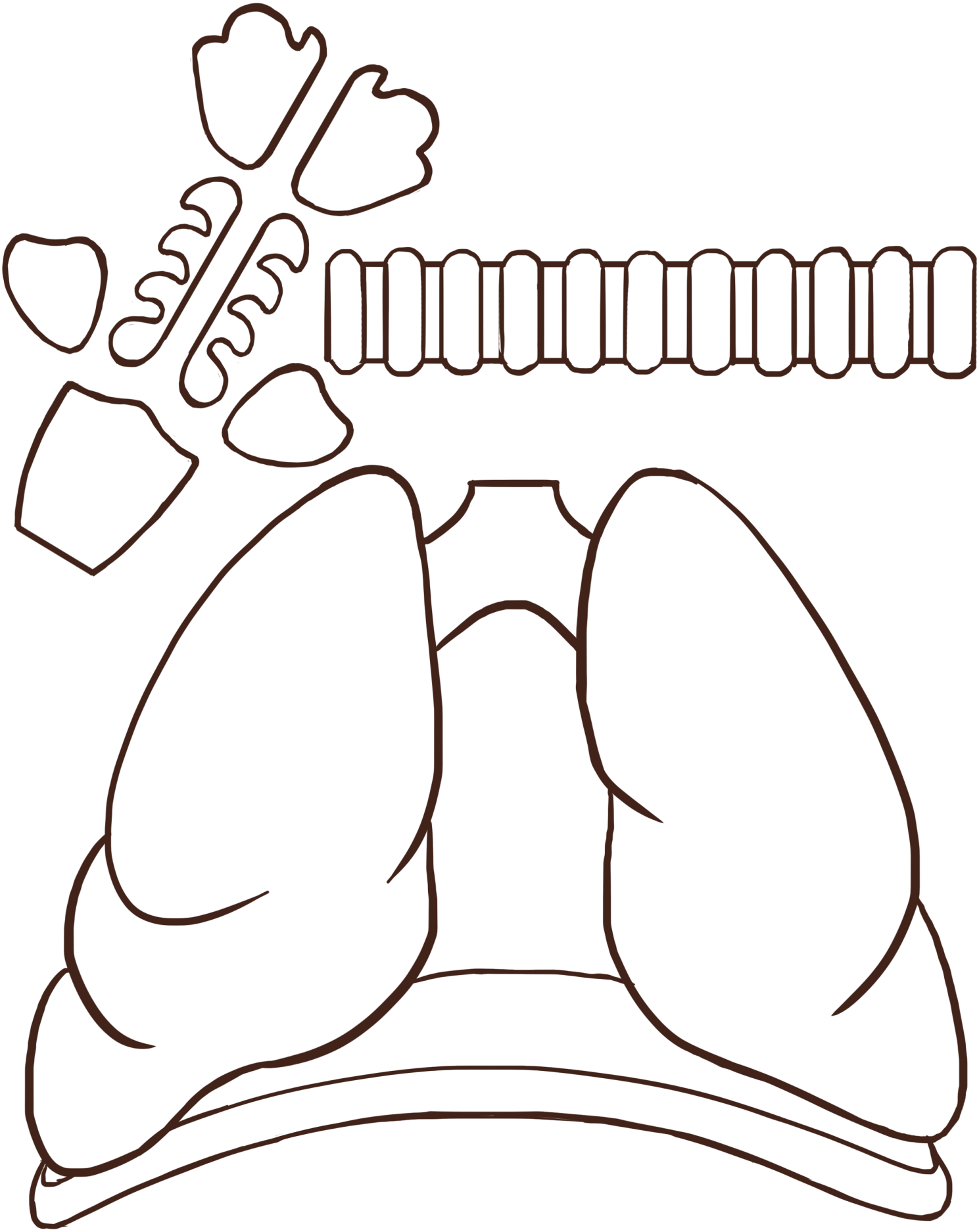






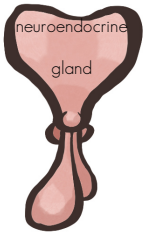


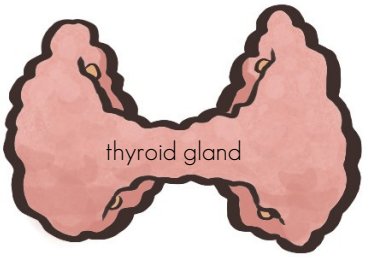




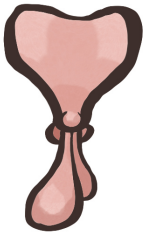
IMMUNE, ENDOCRINE, REPRODUCTIVE SYSTEMS

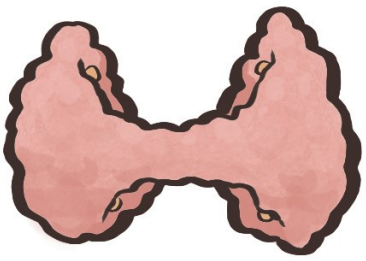
Endocrine System

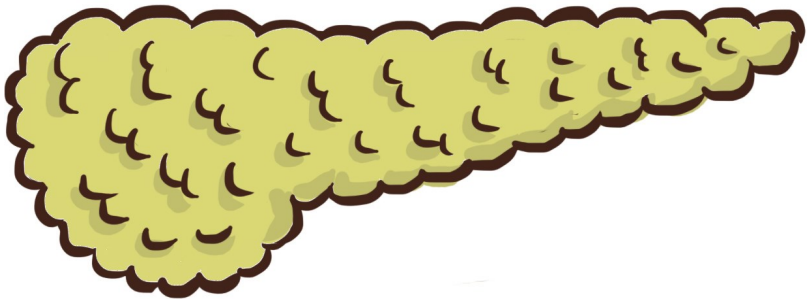




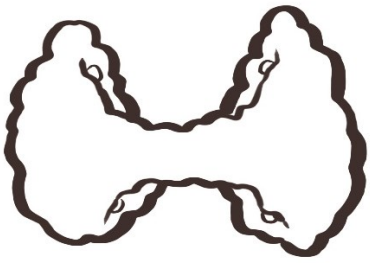
Endocrine System



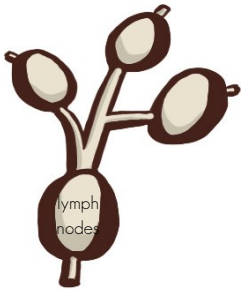


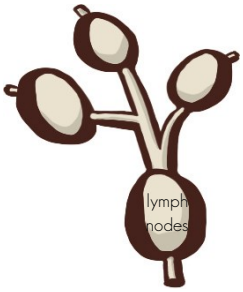


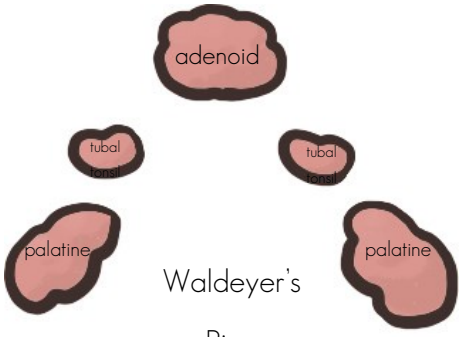
Endocrine System

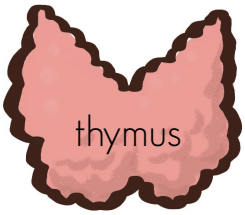


Immune System

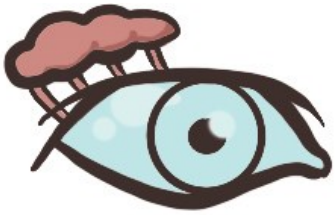


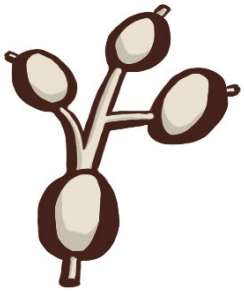


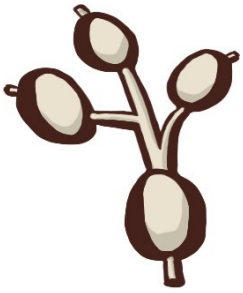


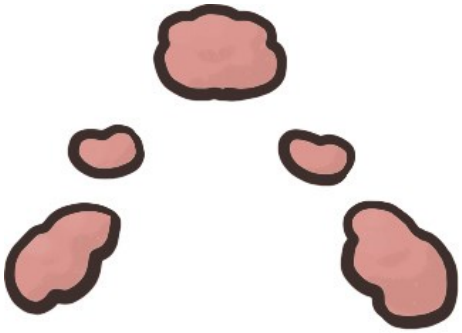


Immune System

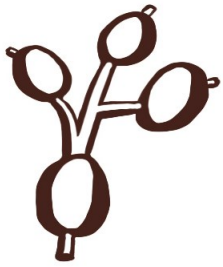


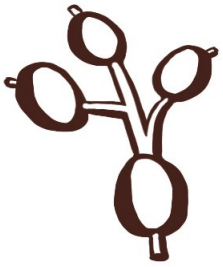


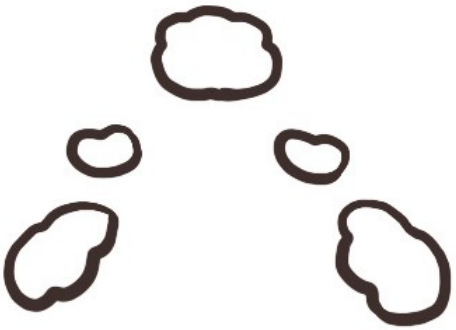


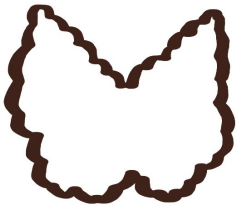


Immune System

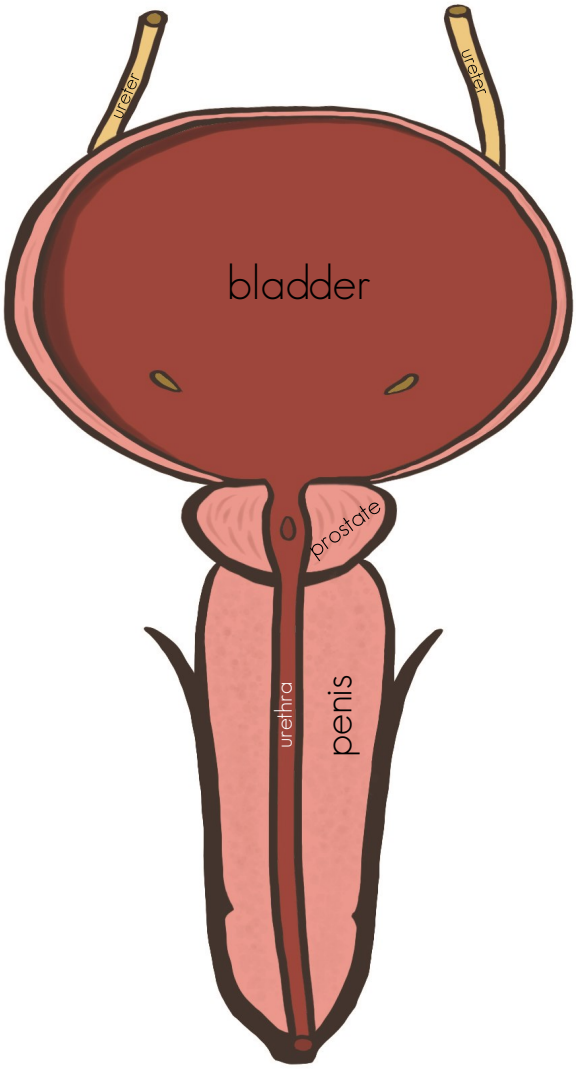


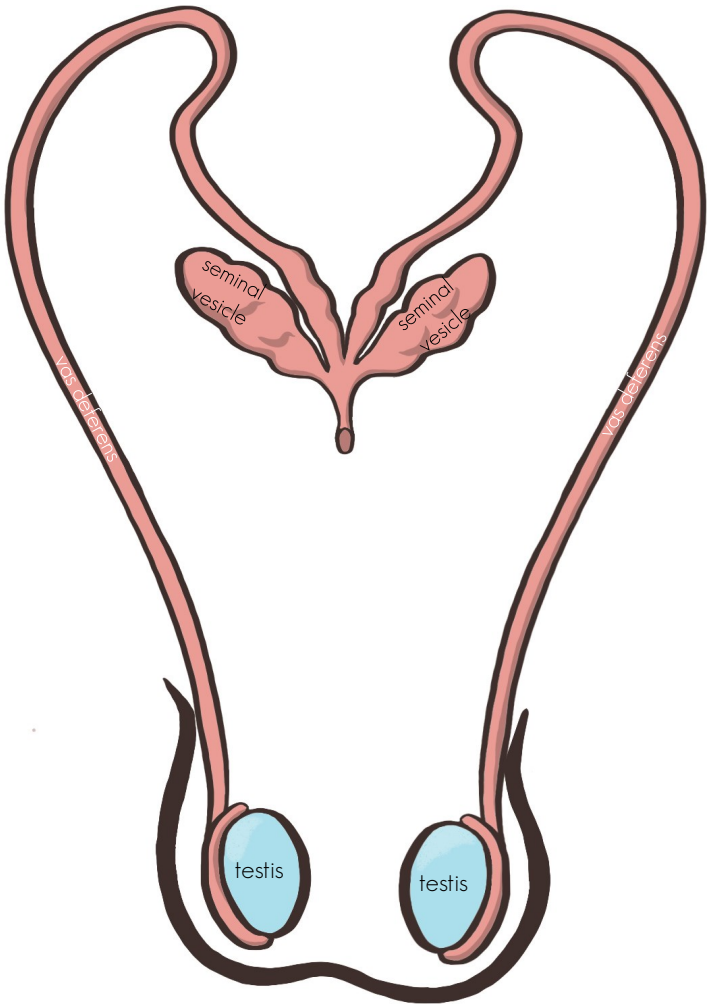




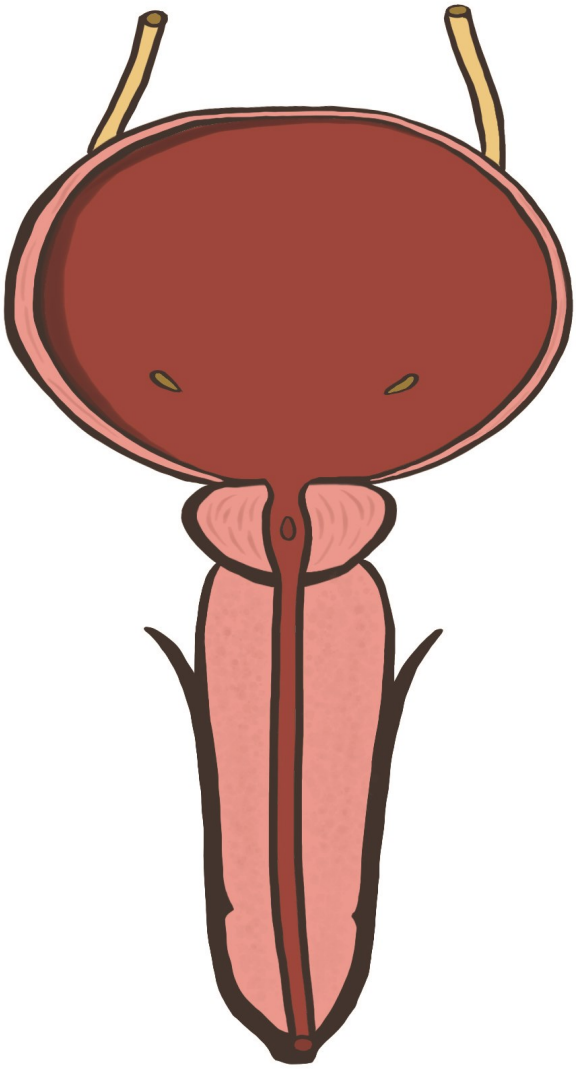


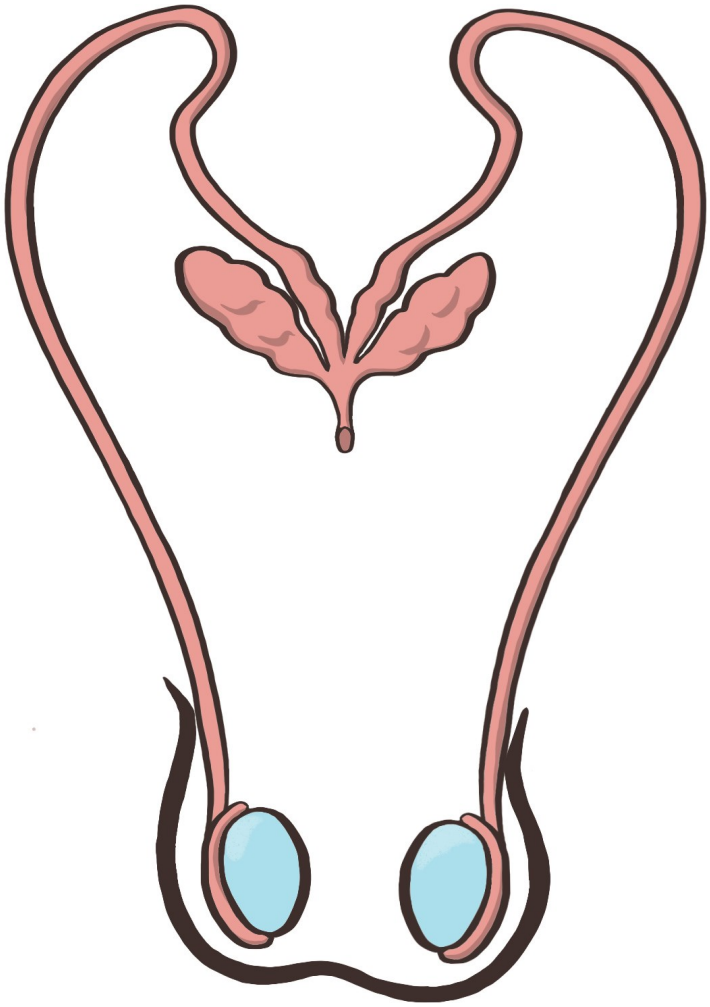
Reproductive System: Male



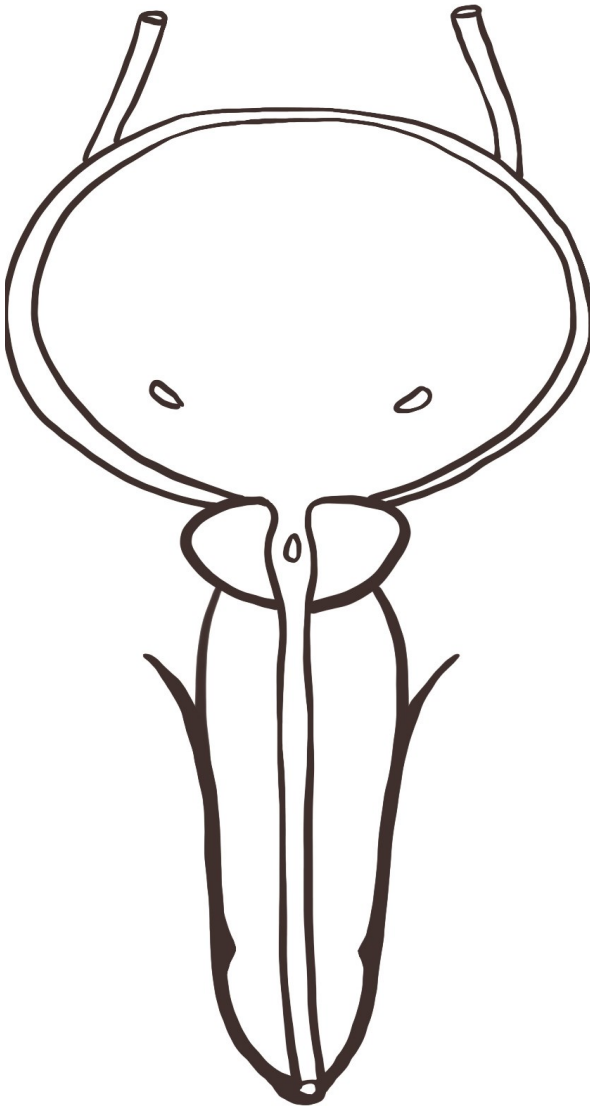


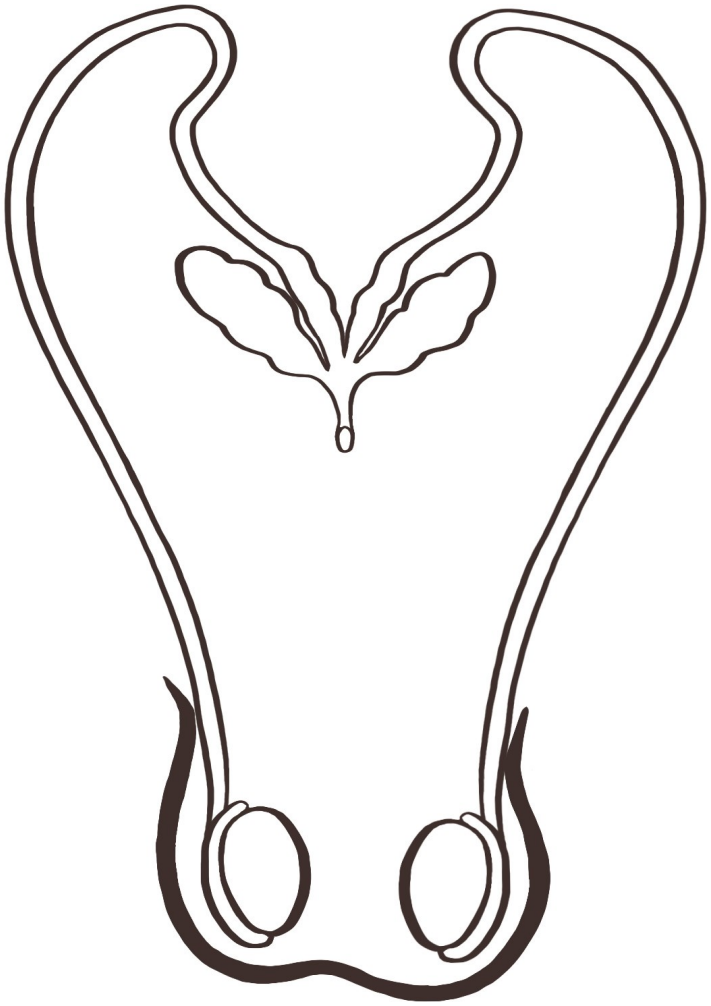
Reproductive System: Male



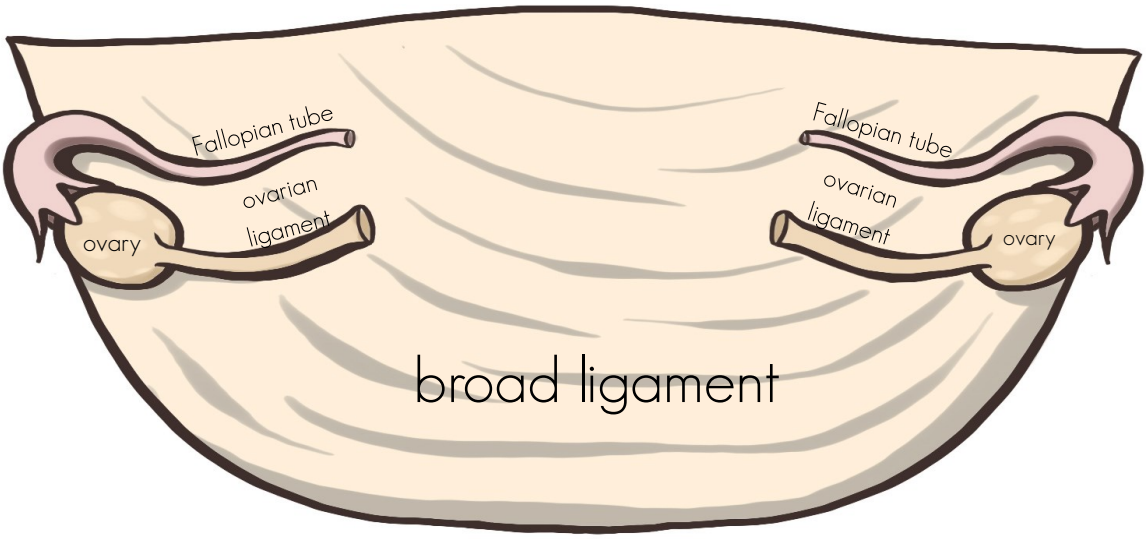


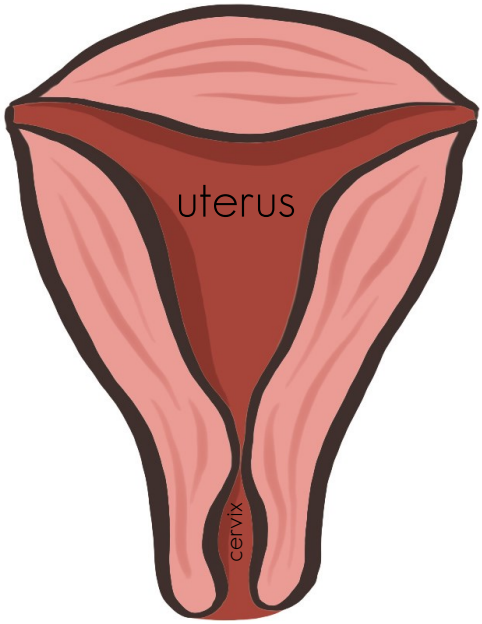
Reproductive System: Male



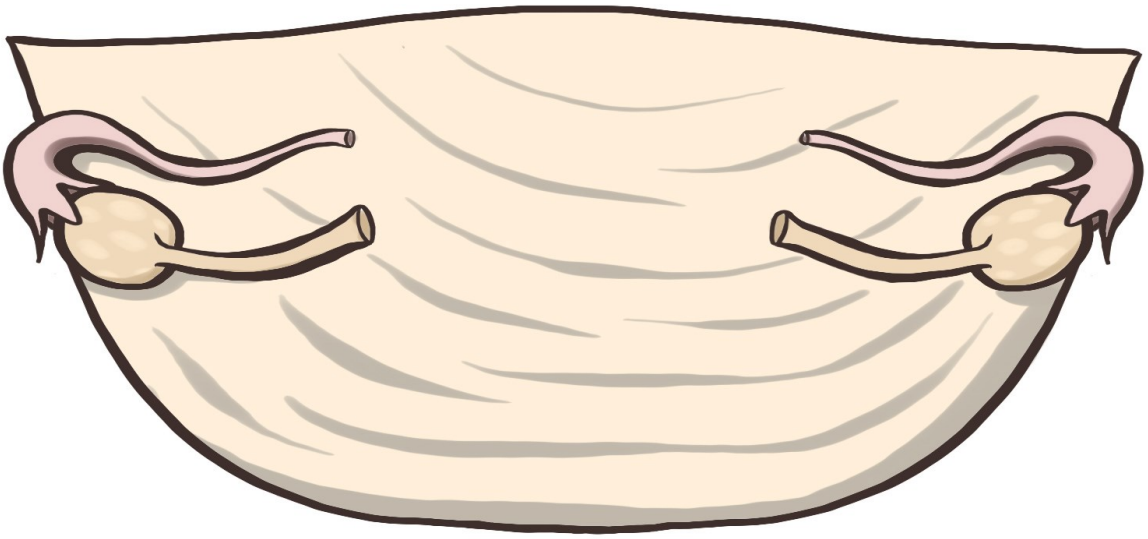


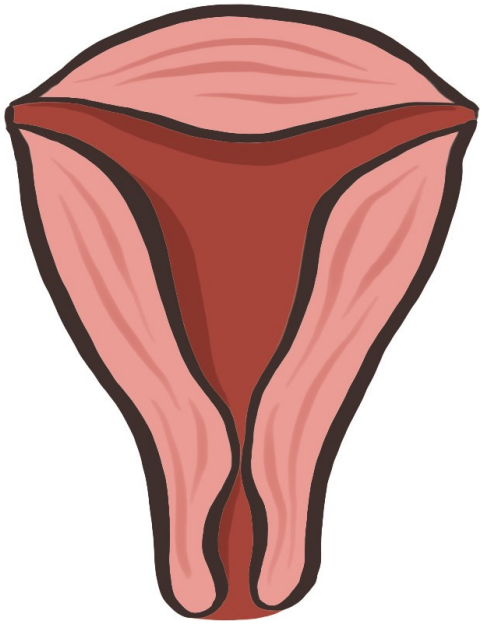
Reproductive System: Female

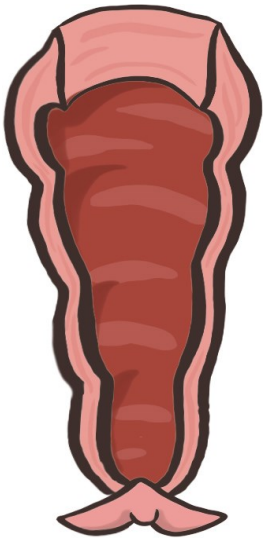




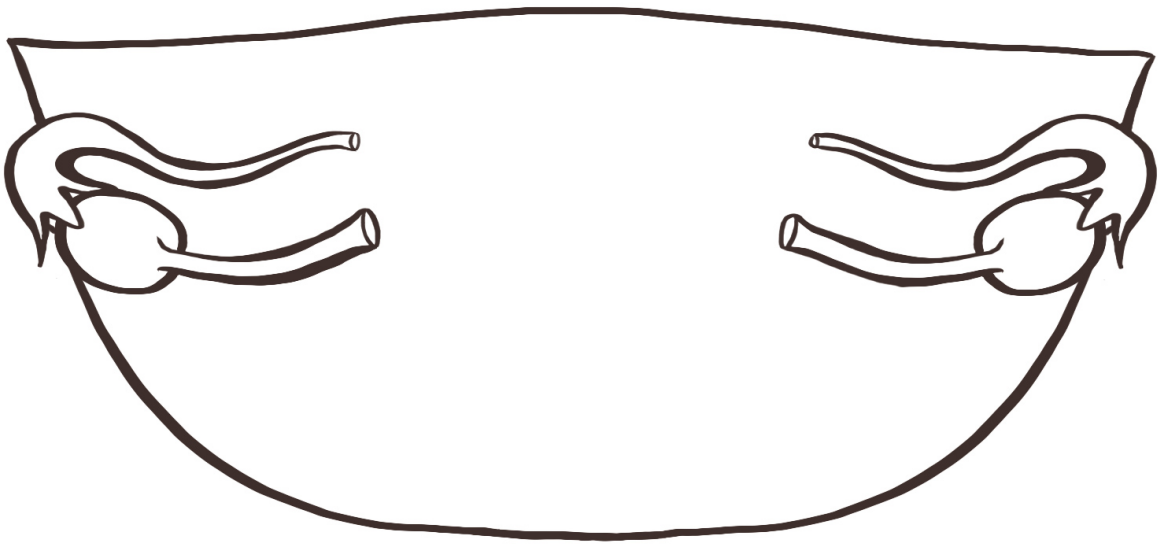
Reproductive System: Female

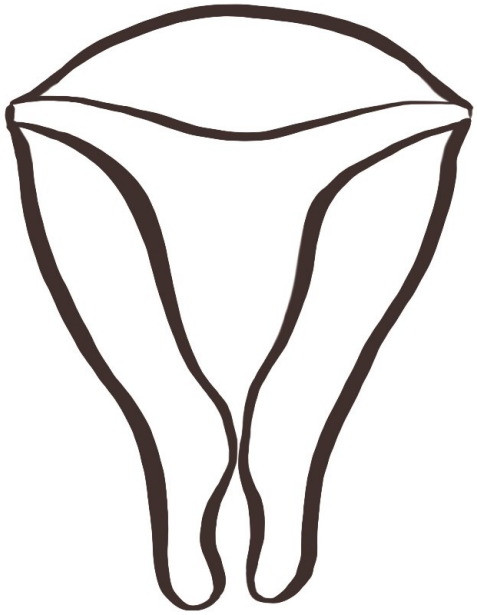


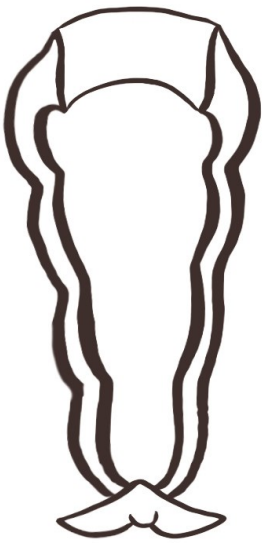




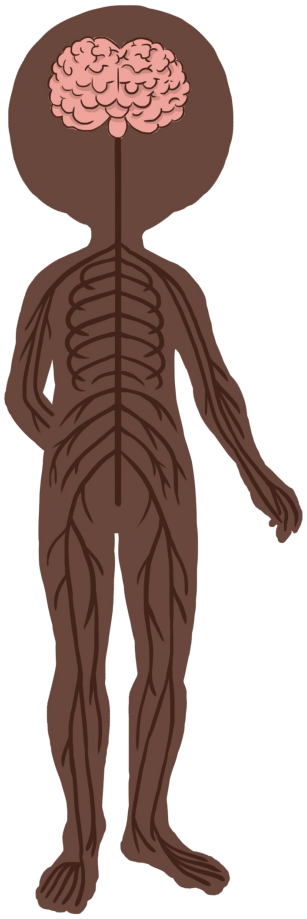
Reproductive System: Female



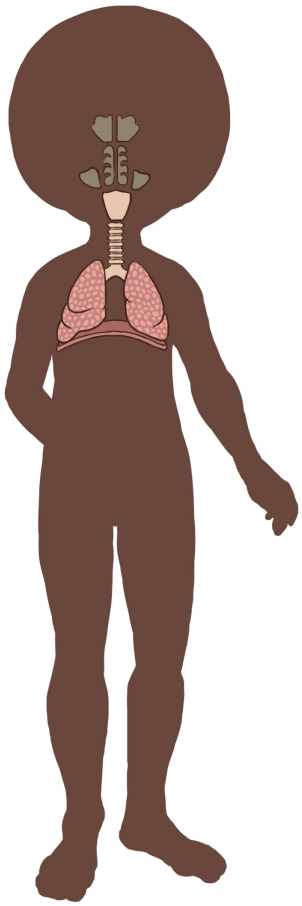




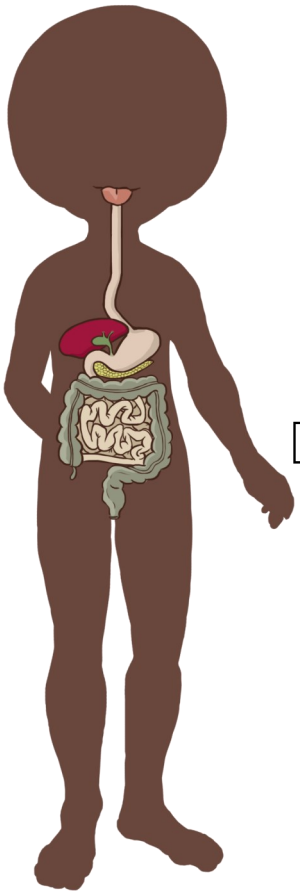
CHALLENGE CARDS



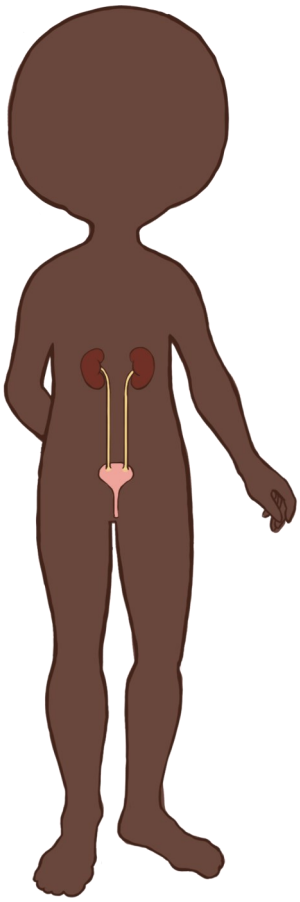
Can you build a NERVOUS SYSTEM? (use string for nerves)



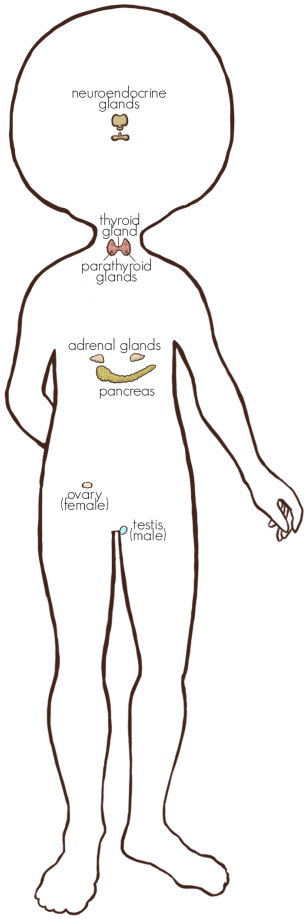
Can you build a RESPIRATORY SYSTEM?



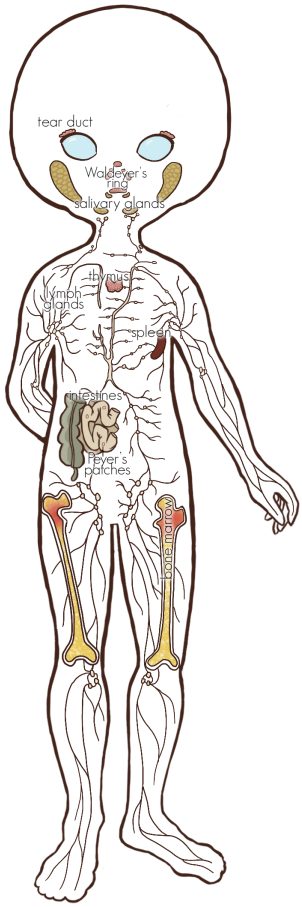
Can you build a DIGESTIVE SYSTEM?



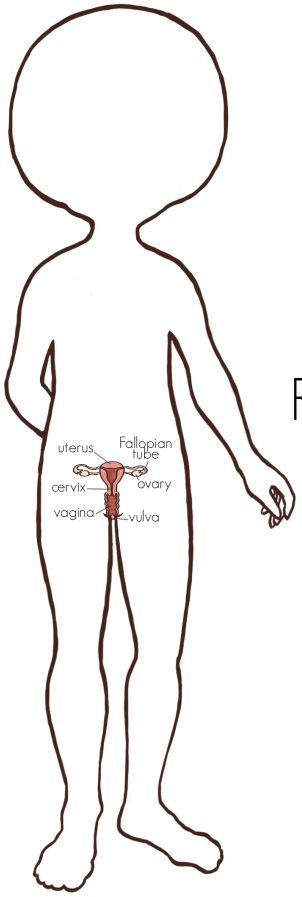
Can you build a URINARY SYSTEM?



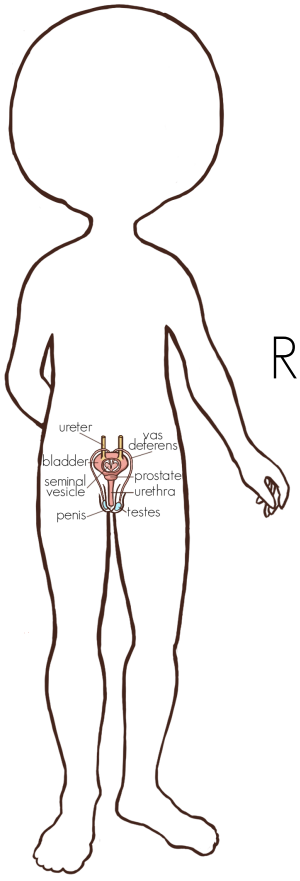
Can you build an ENDOCRINE SYSTEM?



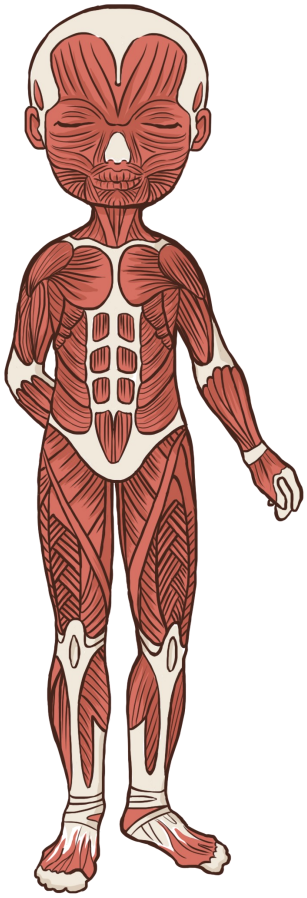
Can you build an IMMUNE SYSTEM (use strings for the lymphatic system)?



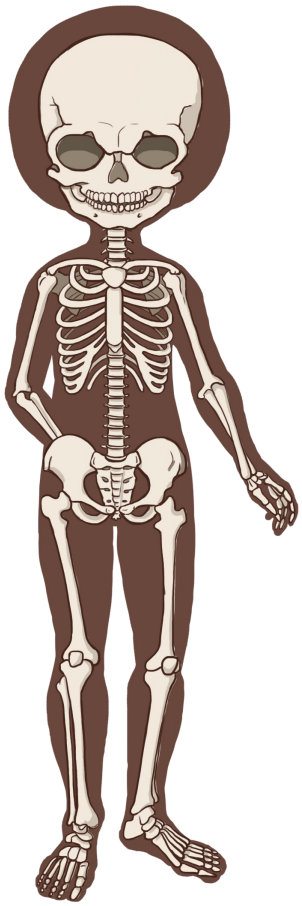
Can you build a FEMALE REPRODUCTIVE SYSTEM?



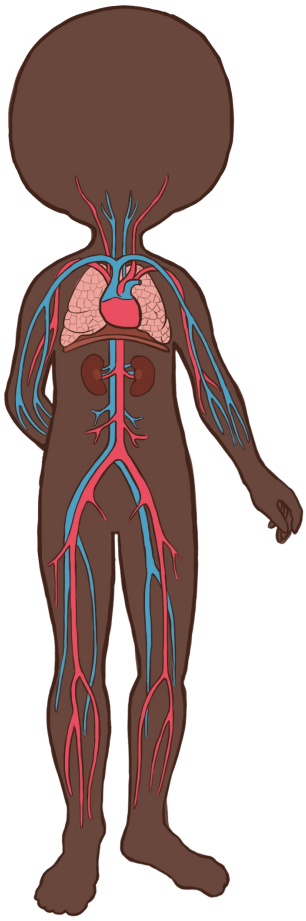
Can you build a MALE REPRODUCTIVE SYSTEM?



Can you build a MUSCULAR SYSTEM?



Can you build a SKELETAL SYSTEM?



Can you build a CIRCULATORY SYSTEM? (use red and blue strings for arteries and veins)

Want more anatomy activities?

Try our bundles - Anatomy for Kids and Anatomy for Kids Addon! Following this hands-on anatomy unit study, children get to build life-size anatomy models of themselves, play with anatomy dress-up dolls, complete anatomy puzzles, build organs from play-dough, colour, draw and play games!

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