Remote Learning Packet

NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.

April 20 - 24, 2020

Course: 7 Science

Teacher(s): Miss Weisse natalie.weisse@greatheartsirving.org
Mrs. Voltin mary.voltin@greatheartsirving.org

Weekly Plan:

Monday, April 20

☐ Poem
☐ Attempt to fill out all anatomies.
☐ Review all anatomies

Tuesday, April 21

☐ Poem
☐ Introduction to Disease
☐ Field Notebook Entry — Description of a Disease

Wednesday, April 22

☐ Poem
☐ Introduction to the Immune System
☐ Immune System Terms

Thursday, April 23

☐ Poem
☐ Read Chapter 14 Section 1
☐ Complete "Sharpen Your Skills" Activity
☐ Complete Chapter 14 Section 1 Questions

Friday, April 24

☐ Poem
☐ Review All Notes From the Week
☐ Read Article "Smallest Thing"
☐ Answer Questions on the Article "Smallest Thing"

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

_____
Student Signature

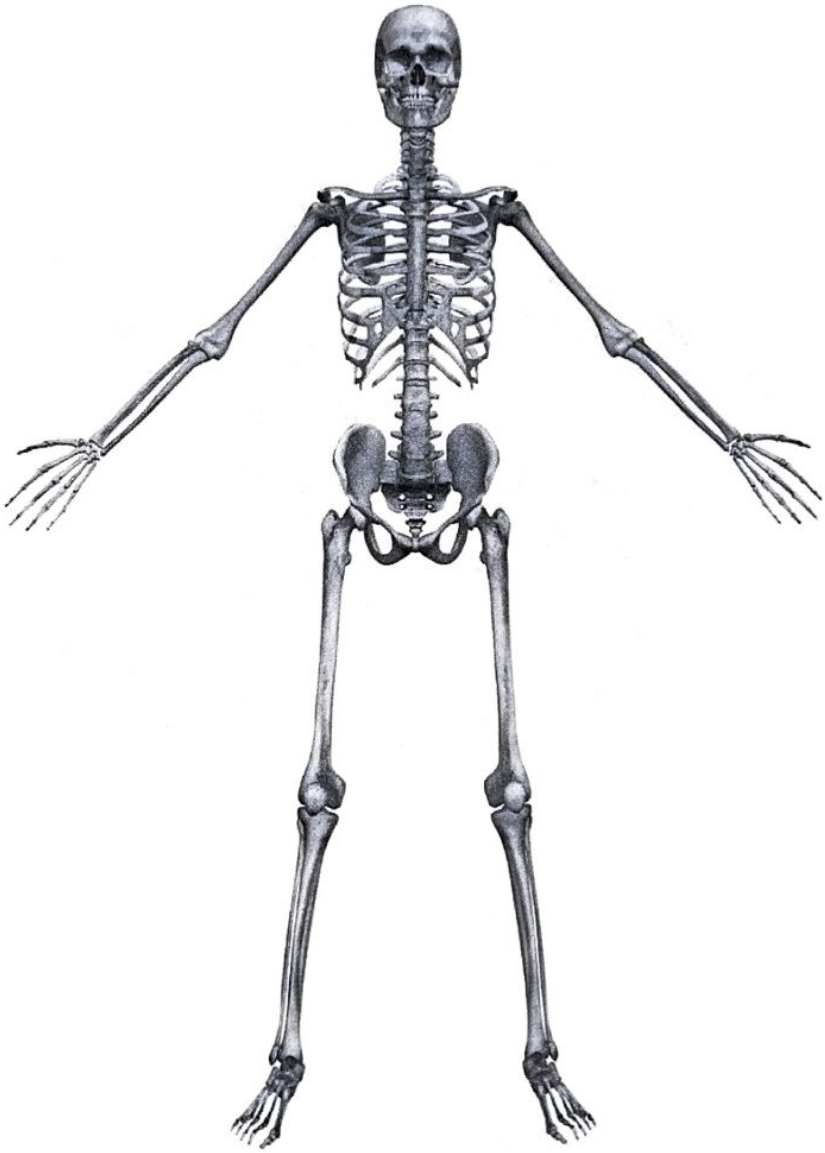
I affirm that, to the best of my knowledge, my child completed this work independently

_____
Parent Signature

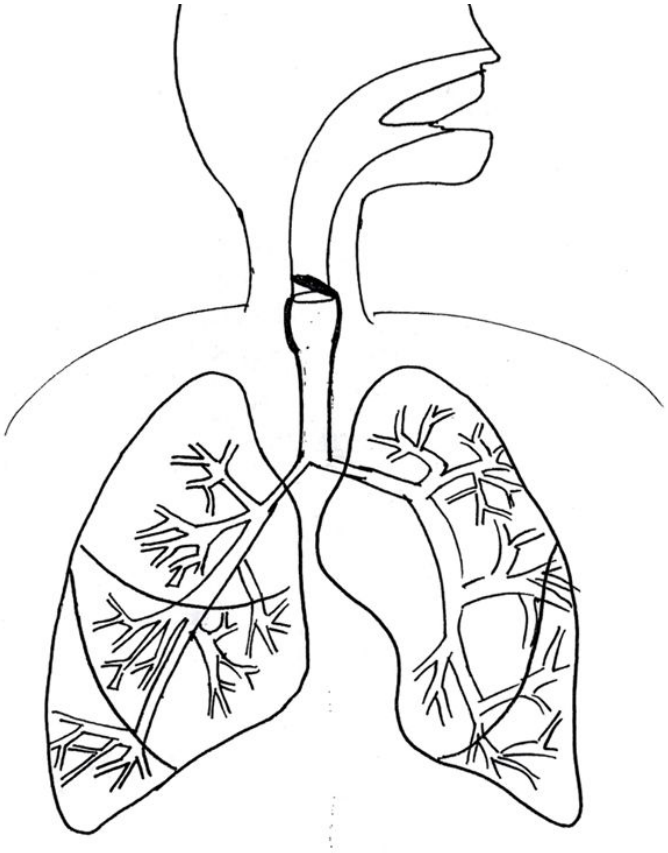
Monday, April 20

- ➔ We are returning to Goethe's *The Metamorphosis of Plants* Poem! You can find the poem at the end of the packet.
  - ◆ Attempt to recite as much of the poem as we already know.
  - ◆ Learn 2-3 more lines by repeating each line to yourself over and over again.
- ➔ Attempt to fill out all anatomies (and as many etymologies as you can remember).
- ➔ Check your anatomy answers. Filled in anatomies can be found at the end of the packet before the poem.
  - ◆ How many did you get right?
  - ◆ Use the blank anatomies to quiz yourself again on anatomies you did not do well on.

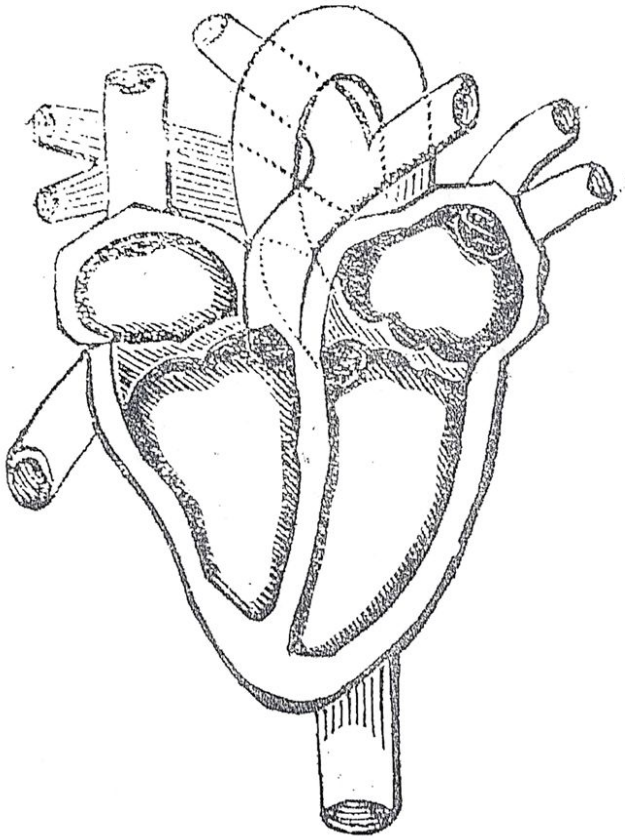
Skeletal Anatomy (20 parts)



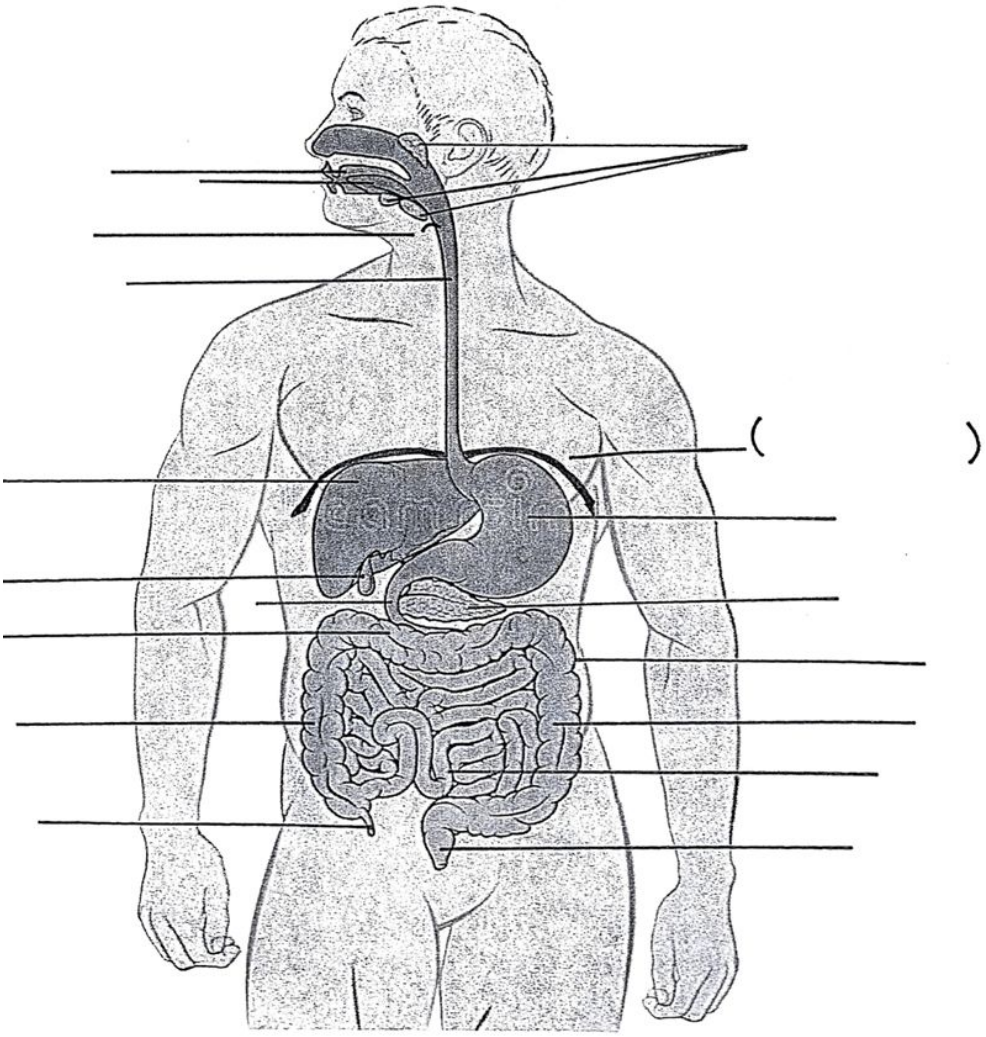
Respiratory Anatomy (20 parts)



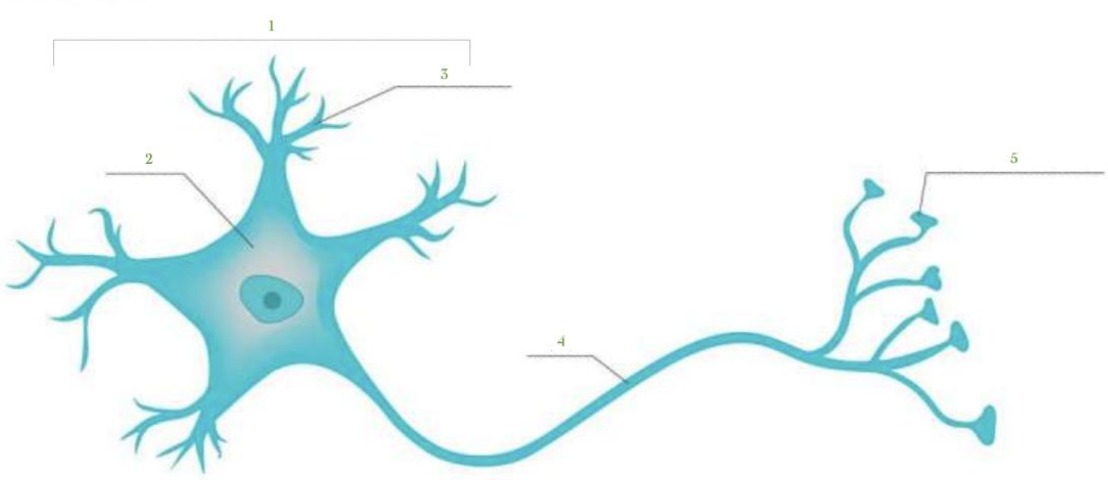
Heart Anatomy (15 parts)



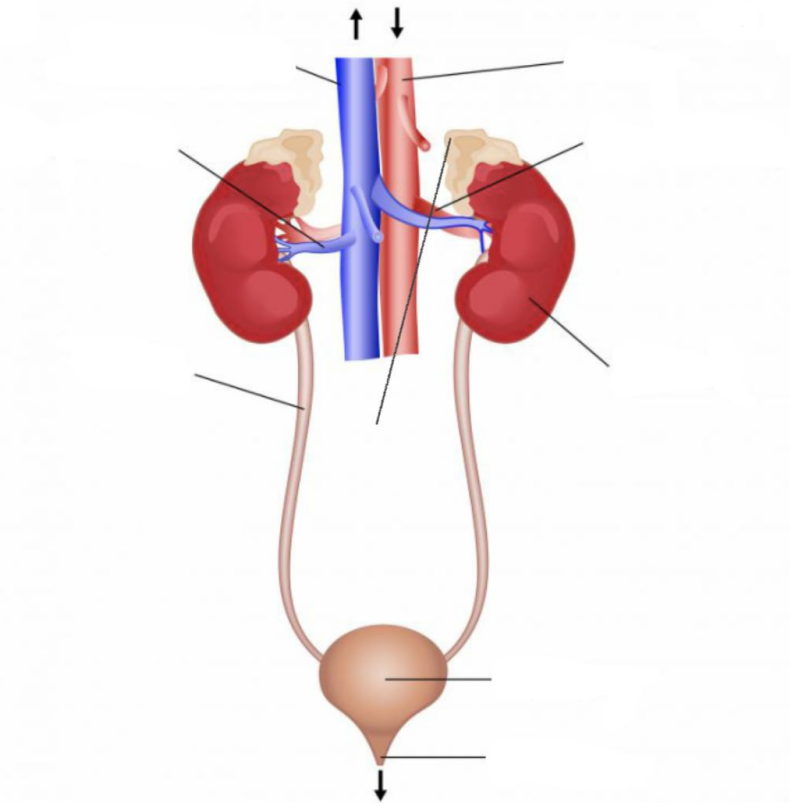
Digestive System Anatomy (18 parts)



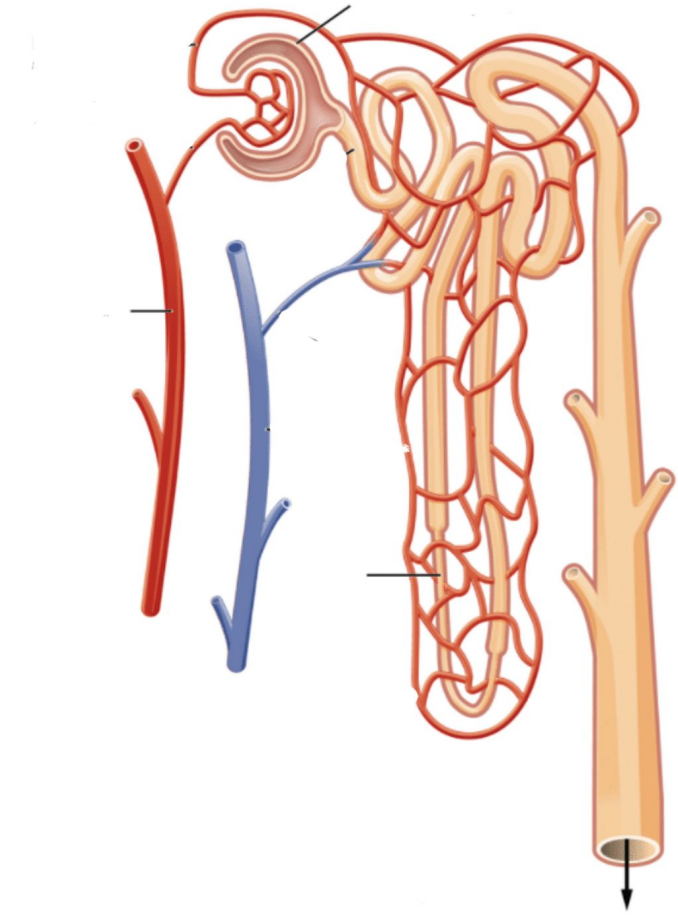
Neuron Anatomy (5 parts)



Excretory System Anatomy (9 parts)



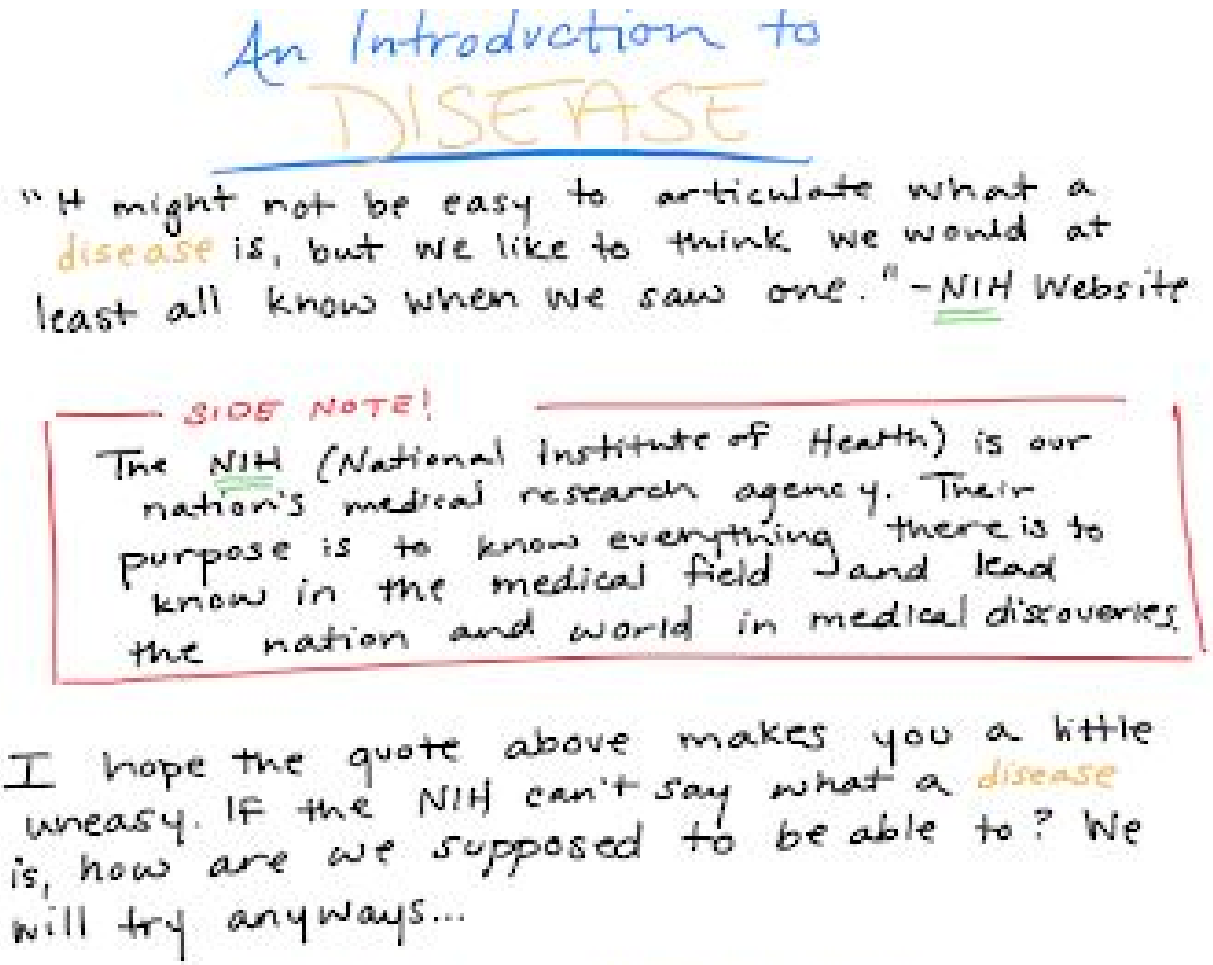
Nephron Anatomy (9 parts)



Tuesday, April 21

- ➔ Continue learning Goethe's *The Metamorphosis of Plants* Poem!
  - ◆ Practice reciting the lines you studied yesterday.
  - ◆ Learn 2-3 more lines by repeating each line to yourself over and over again.
  - ◆ Add the new lines to the lines you learned yesterday. Make sure you can recite them together.
- ➔ Read and take notes from *The Teacher Notes* below on the *Introduction to Disease*
- ➔ Create a Field Notebook Entry Description of Disease

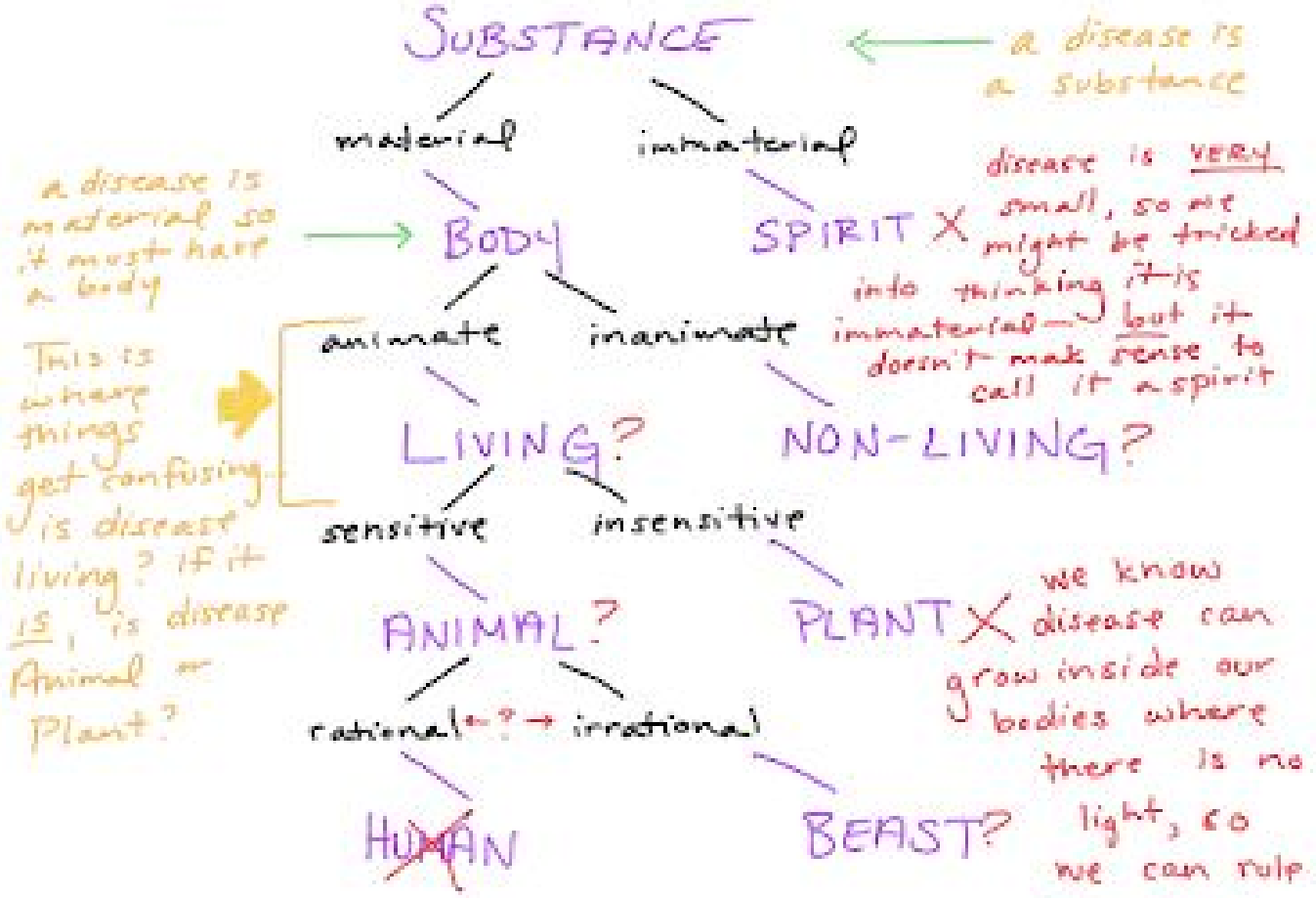
TEACHER NOTES



What is a disease like? How can we categorize it?

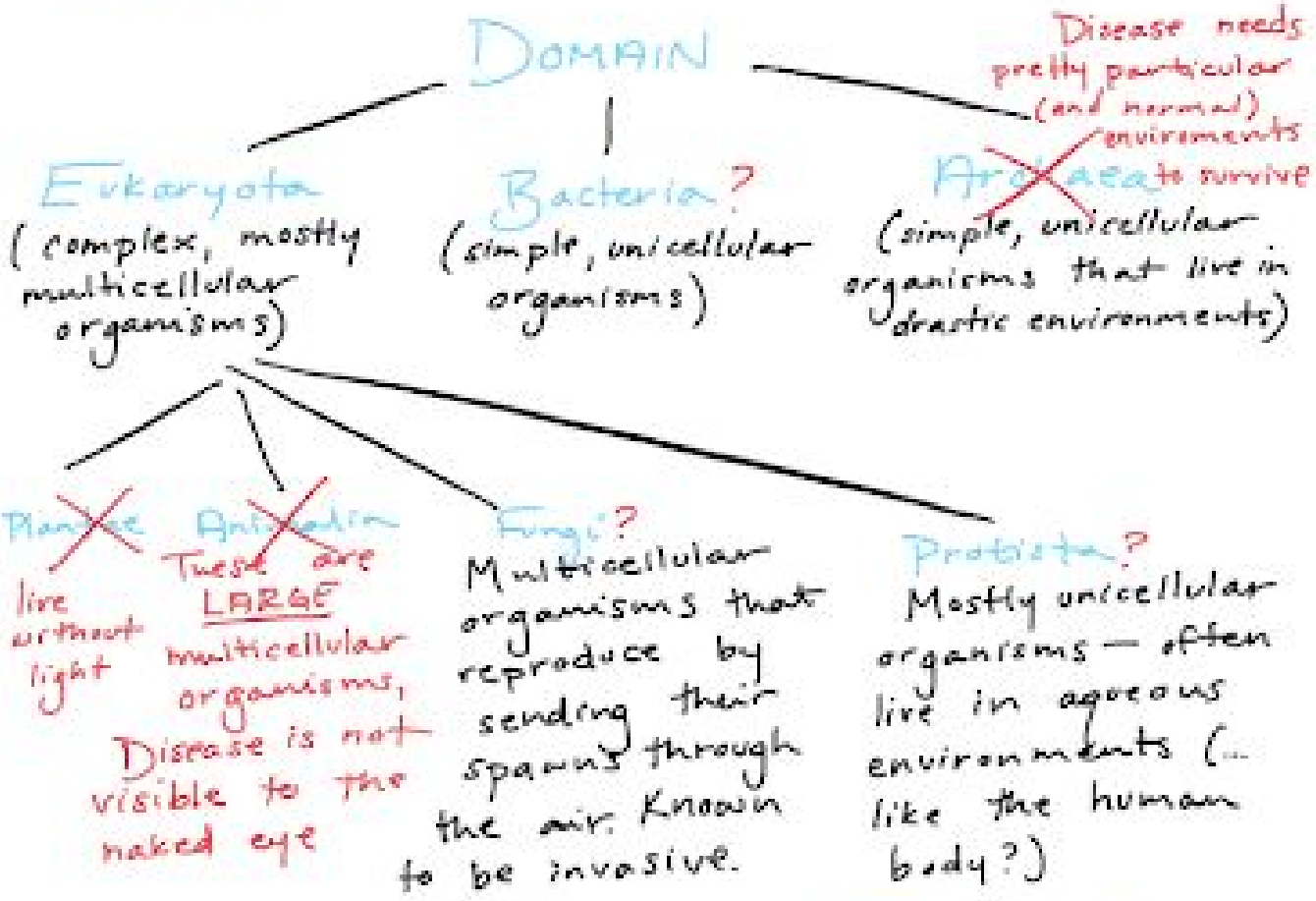
Well, if you think back to AUGUST (may be September) you will remember we know two schemes of categorization — The Porphyrean Tree and The Linnaean Taxonomy.

Where in the Porphyryan Tree (the classification of ALL substances) do you think DISEASE belongs?



The Porphyryan Tree breaks down at living vs. non-living — where does disease belong? Even working backwards, although we know disease is no human and therefore not rational — does disease seem to fit into the category of Animal? Let's check the Linnaean Taxonomy to find out!

It is first important to remember that the Linnaean Taxonomy only includes living substances. Using the Porphyryan Tree we hadn't 100% decided disease is living, but we're going to make that assumption as we look at the Linnaean Taxonomy.



In reviewing the Linnaean Taxonomy, I think we can rule out animal, but now we have more questions —

- Is disease living?
- Is disease bacteria (simple & unicellular)?
- Is disease Fungus (complex & multicellular)?
- Is disease Protista (complex & unicellular)?

We have made progress! But, like the NIH, we have not yet been able to articulate what disease is. We'll give it one more try today, using ARISTOTLE'S 10 CATEGORIES.

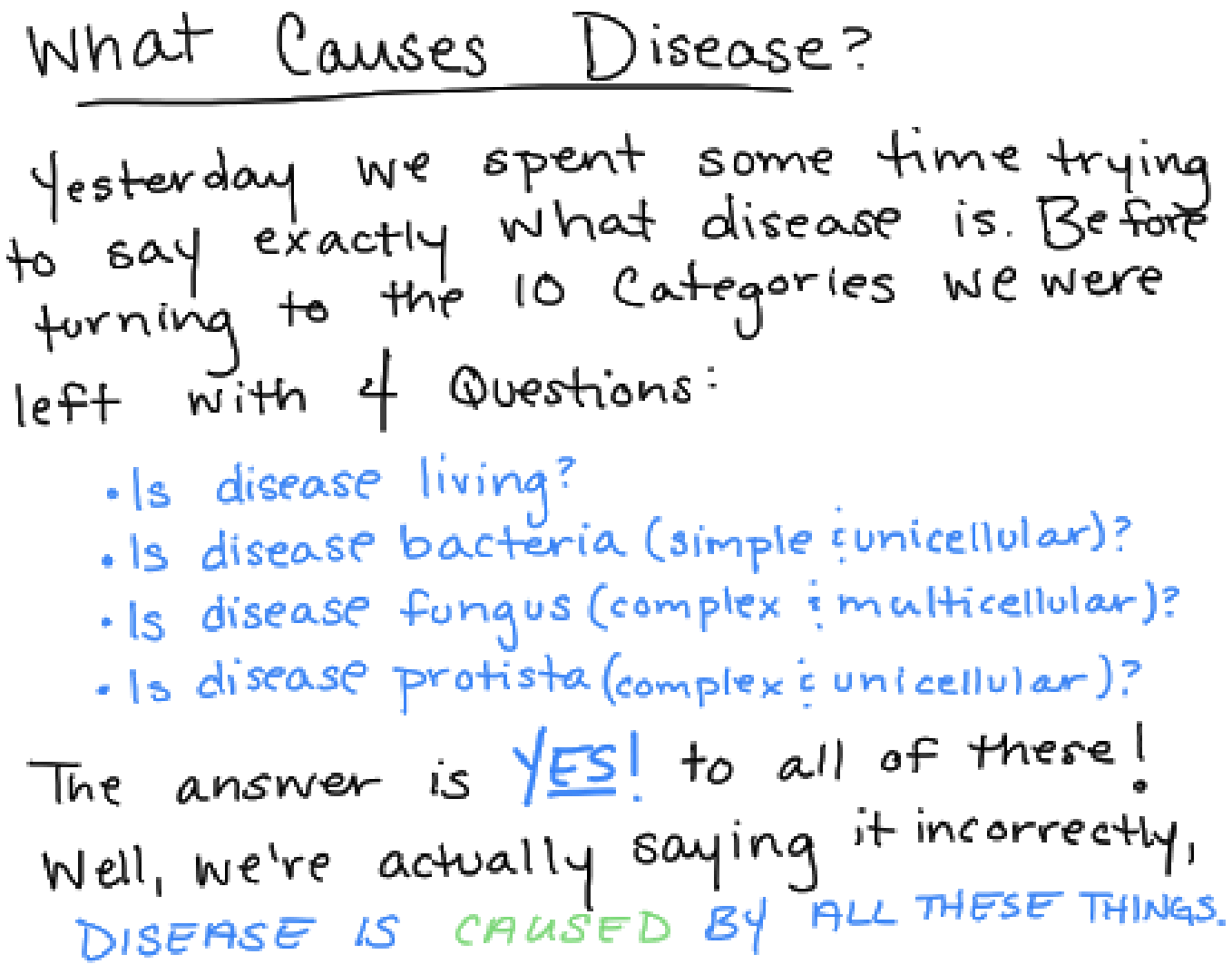
1. SUBSTANCE - name it
2. Quantity - how much?
3. Quality - what kind?
4. Place - where?
5. Possession - what does it have?
6. Position - how/where are its parts?
7. Passion - what is being done to it?
8. Relation - how does it compare?
9. Action - what does it do?
10. Time - when does it do what it is doing or is something done to it?

Read the next direction in the lesson plan to know what to do with the 10 Categories.

Wednesday, April 22

- ➔ Review the lines of the MoP Poem you memorized on Monday and Tuesday.
  - ◆ *Be sure to add a few lines before the lines you memorized so you are practicing the transition to the new lines as well.*
- ➔ Read and take notes from *The Teacher Notes* below on *What Causes Disease*
- ➔ Create a Foldable for the following Immune System Terms. See directions at the end of today's *Teacher Notes.*
  - ◆ Infectious Disease
  - ◆ Pathogen
  - ◆ Microorganism
  - ◆ Virus

TEACHER NOTES



DISEASE, or more specifically, INFECTIOUS DISEASE is caused by microorganisms (very small organisms) like bacteria, fungus, protists, and viruses. Viruses are distinct from bacteria, fungus, and protists because viruses are not living.

These four things that cause infectious diseases are called PATHOGENS.

These diseases are called infectious because the pathogens can move from one organism to another organism.

Here are some ways pathogens (and therefore infectious diseases) spread:

→ exchange of body fluids
- sharing drinks
- blood
- sneezing or coughing

→ bug bites and animal bites

→ contact with contaminated objects
- this includes shaking hands with someone with an infectious disease

→ rotting foods - especially meats

Here are some ways to PREVENT infectious disease from spreading:

→ Wash your hands! Especially if you are sick or are around sick people.

→ Be weary of public objects
- water fountains
- restrooms
- door handles
- student desks...

→ Get enough sleep at night
- this keeps your immune system strong to fight invading pathogens

→ Eat a nutritious diet
- this helps your body maintain homeostasis

→ Vaccines
- provide your body with antibodies to fight foreign pathogens... we'll talk more about this next week

Immune System Terms

1. PATHOGENS are living and non-living organisms that can enter the body to attack cells, causing sickness (bacteria, protista, fungi, and viruses)

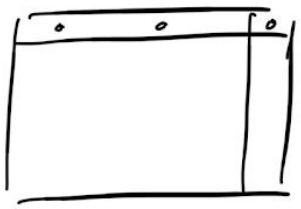
2. INFECTIOUS DISEASES are diseases that can pass from one organism to another caused by pathogens.

3. MICROORGANISMS are very small organisms (small enough you need a microscope to see them). Three important microorganisms are bacteria, protista, and fungi — the microorganisms can also be classified as PATHOGENS.

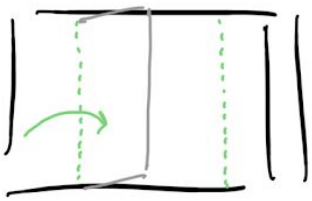
4. VIRUSES are also Pathogens but they are NOT living. Viruses are simply a strand of DNA or RNA that can infect a cell causing sickness.

How To MAKE YOUR FOLDABLE

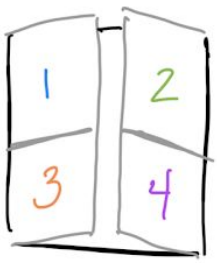
Take a piece of paper and set it sideways.



Fold the sides into the center.



Draw (or cut) one line horizontally, halfway down each flap. Now you have four sections. Put the words on the outside and definitions on the inside.



Thursday, April 23

- ➔ Continue learning Goethe's *The Metamorphosis of Plants* Poem!
    - ◆ Practice reciting the lines you studied Monday and Tuesday.
    - ◆ Learn 2-3 more lines by repeating each line to yourself over and over again.
    - ◆ Add the new lines to the lines you learned earlier this week. Make sure you can recite them together.
- ➔ Read Chapter 14 Section 1
    - ◆ As you read, think about the definitions you already learned this week to help make sense of the material.
- ➔ Complete the "Sharpen Your Skills" Activity on the left side of page 458.
    - ◆ Use a new sheet of paper with a full heading. At the top of the page write "Chapter 14 Section 1"
    - ◆ Underneath of the big title at the top of the page, write the title "Sharpen Your Skills"
- ➔ Complete Chapter 14 Section 1 Questions
    - ◆ Your answers to these questions will go on the same page as the "Sharpen Your Skills" activity. Under the work you've already done, or on the back of the sheet, write the title "Chapter 14.1 Questions".

Friday, April 24

- ➔ Review the lines of the MoP Poem you memorized this week.
    - ◆ *Be sure to add a few lines before the lines you memorized so you are practicing the transition to the new lines as well.*
- ➔ Review all *Teacher Notes* from the week
- ➔ Read the article "Smallest Thing" and answer the questions that follow the article.
    - ◆ Please include a full heading on your sheet of paper.

Smallest Things

MAKING SENSE OF THE RESEARCH

In order to answer this question, you need to know the definition of life. The challenge is that there is no universally accepted definition. That's why there are several possible answers.

Scientists generally agree that living things have certain characteristics that distinguish them from non-living things. Among them are: living things are composed of one or more cells; they metabolize (produce and use energy); they can grow; they can respond to external stimuli; they can adapt to their environment; and they can reproduce.

Obviously, a human, a plant, or even a bacterium can do all of these things, while a rock can't. But are viruses alive? They can certainly grow and reproduce, and they use genetic material found in other forms of life. They can adapt to their environment—for example, by developing resistance to certain drugs.

However, unlike bacteria, viruses lack the internal machinery that would allow them to metabolize and reproduce on their own. Instead, they hijack the host cell and use its metabolic processes to make more viruses. Outside of a host cell, a virus can't do anything at all; it's an inanimate bag of genetic material. So, although viruses have some characteristics of life when they're inside their hosts, they're not at all lifelike on their own. A step down even from viruses are viroids, which are just naked strands of genetic material—in other words, a virus without the bag. They're known only to cause diseases in plants, and they can be as small as 10 nanometers (20 times smaller than *Mycoplasma*).

What about *prions*? They're even smaller and simpler than viruses or viroids. They're misshapen strands of protein that can somehow cause neighboring proteins to bend out of shape themselves. Prions cause BSE (mad cow disease), and the human Creutzfeldt-Jakob disease, which has been linked to BSE. So, in a sense, they can reproduce, in that they can make more proteins like themselves. They're also made of a component of life (protein), they may adapt to their environment (for example, by jumping from cows to people), and by causing infections, they behave in a way that most inanimate objects can't.

Yet prions don't reproduce the way living things do, using genetic material; they're more like zombies in horror movies that turn their human victims into zombies as well. They're not made up of cells, and they don't have any kind of metabolism. Because they lack genetic material and a cellular structure, prions are less often grouped in with living things than viruses.

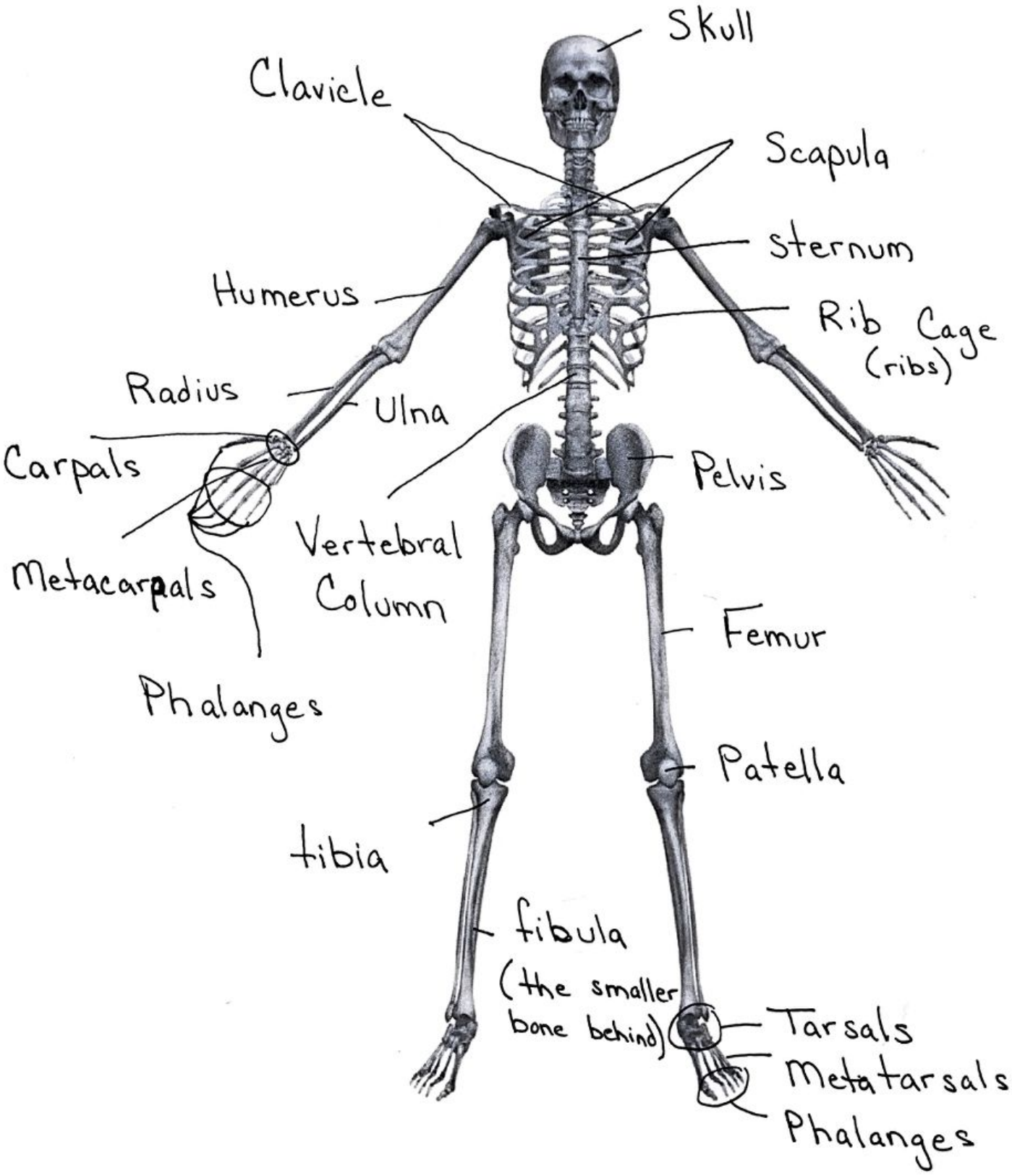
Some scientists classify viruses, viroids, and prions in a separate category, sometimes called "proto-life." This category covers anything that is not truly alive but not quite inanimate either. As time goes on, we may find still other kinds of proto-life that challenge our definition of life itself.

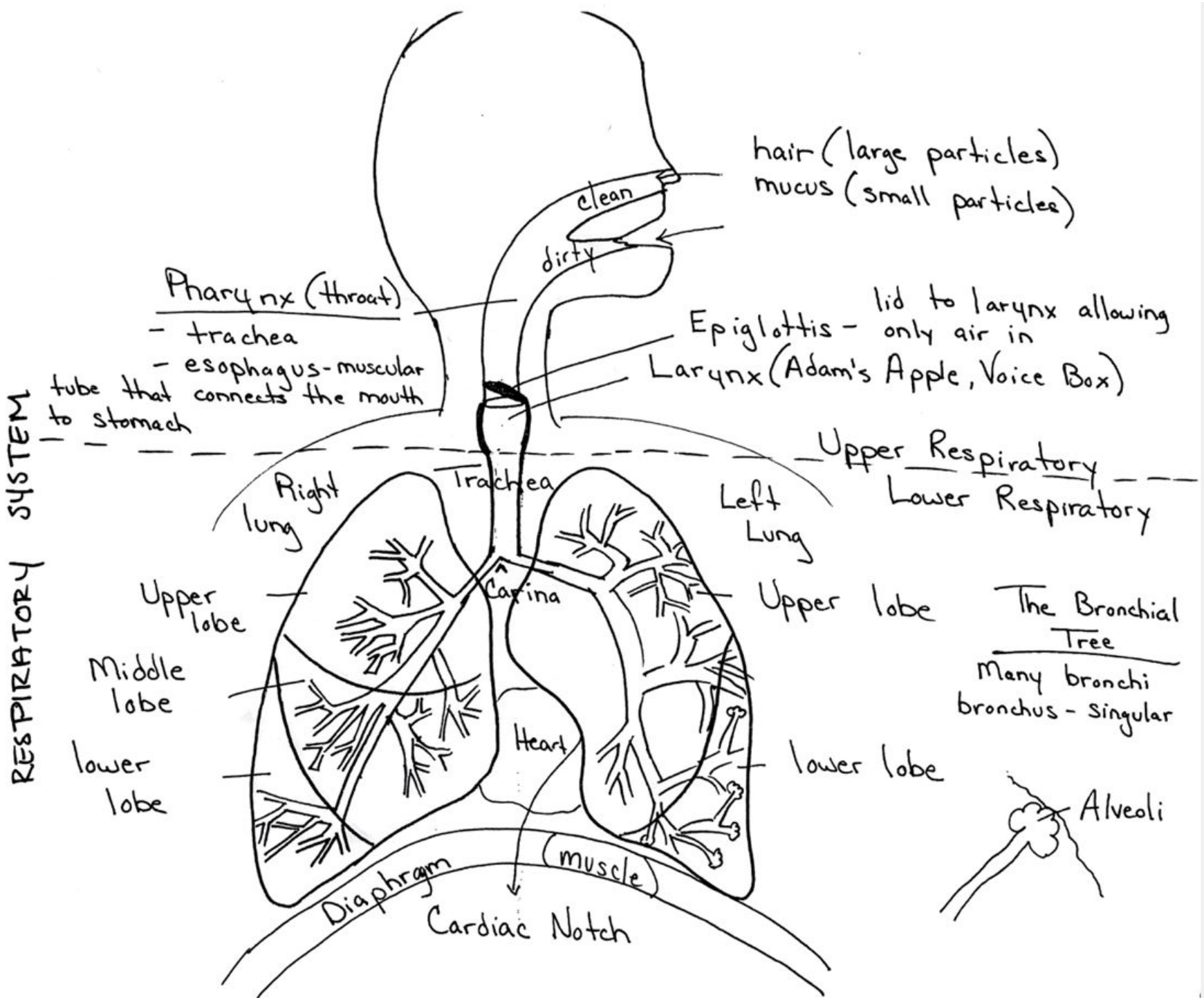
Questions:

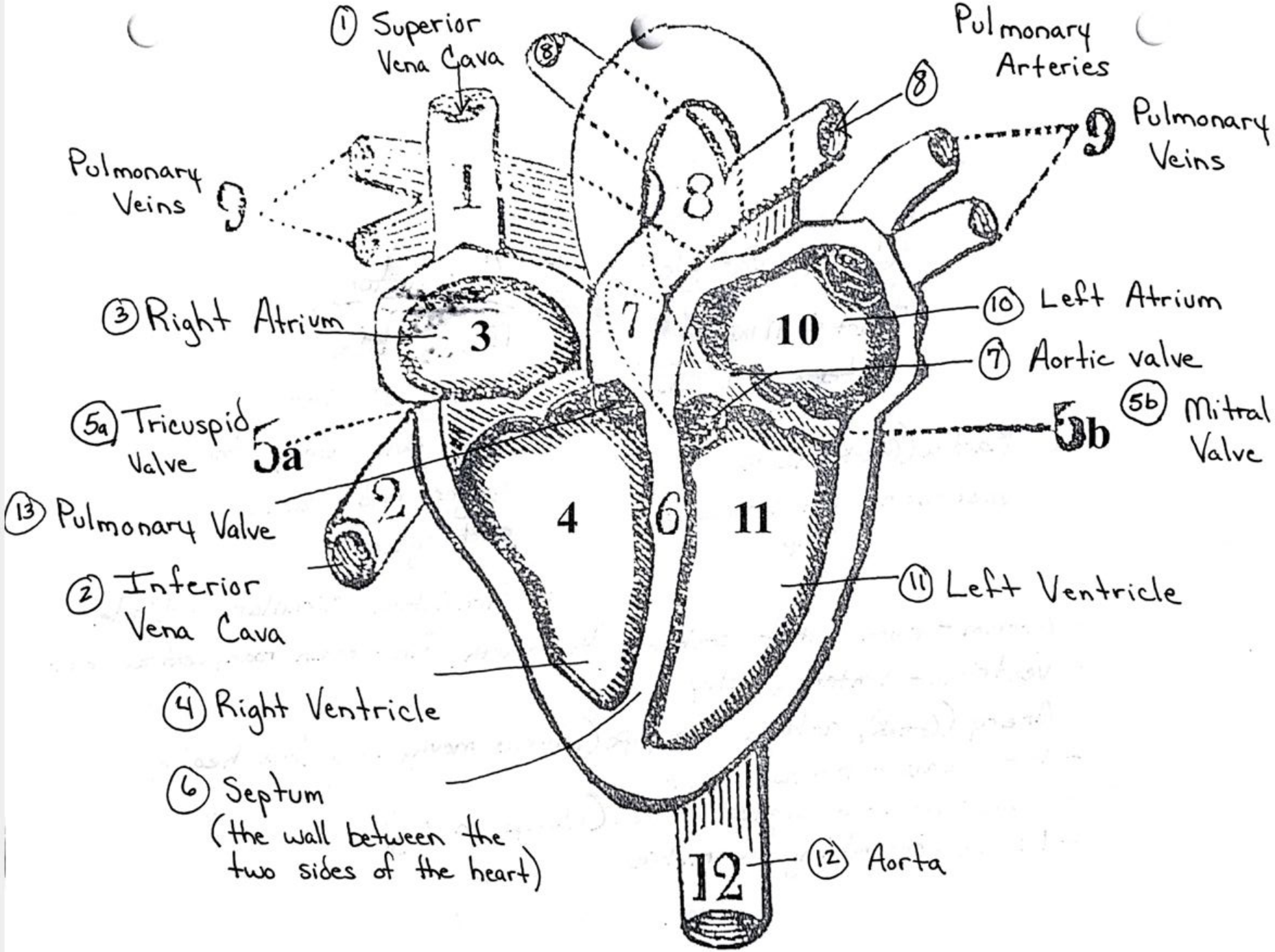
1. **Why is asking "what is the smallest living thing" difficult to answer?**
2. **What is the case for viruses being alive? What is the case against classifying them as life forms?**
3. **What about prions?**
4. **Is it important for science to come up with a formal definition of life? Why or why not?**

Adapted From http://sciencenetlinks.com/science-news/science-updates/smallest-thing/

Human Skeletal Anatomy



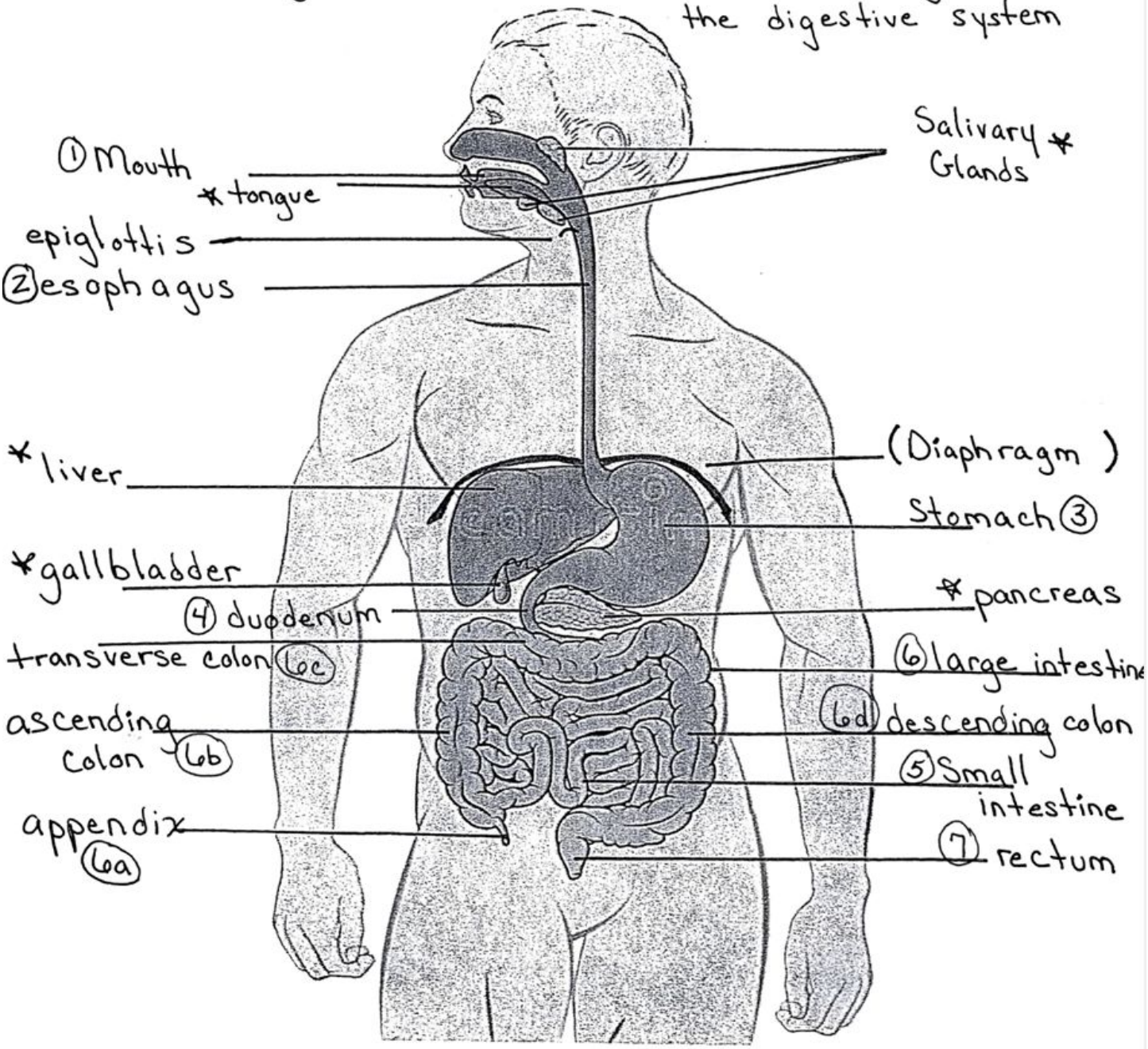

RESPIRATORY SYSTEM
hair (large particles)
mucus (small particles)
clean
dirty
Pharynx (throat)
- trachea
- esophagus - muscular tube that connects the mouth to stomach
Epiglottis - lid to larynx allowing only air in
Larynx (Adam's Apple, Voice Box)
Upper Respiratory
Lower Respiratory
Right lung
Trachea
Left Lung
Upper lobe
Middle lobe
lower lobe
Carina
Upper lobe
lower lobe
Heart
Diaphragm
muscle
Cardiac Notch
The Bronchial Tree
Many bronchi
bronchus - singular
Alveoli

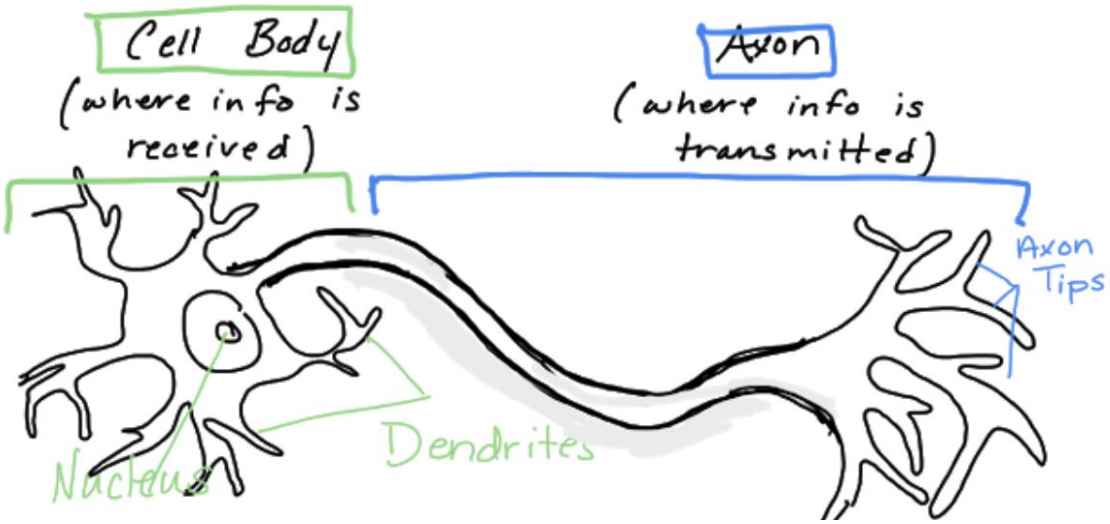

(1) Superior Vena Cava
Pulmonary Arteries
(8)
(8)
9 Pulmonary Veins
Pulmonary Veins 9
1
8
(3) Right Atrium
3
7
10
(10) Left Atrium
(7) Aortic valve
(5a) Tricuspid Valve
5a
5b
(5b) Mitral Valve
(13) Pulmonary Valve
2
4
6
11
(2) Inferior Vena Cava
(11) Left Ventricle
(4) Right Ventricle
(6) Septum
(the wall between the two sides of the heart)
12
(12) Aorta

Digestive System Anatomy

#1-7 = the path of food through the body

* Solid organs - unlike all the other hollow organs of the digestive system





Vena Cava

Carries blood to the heart.

Aorta

Carries blood from the heart to the body.

Renal Vein

The Renal Vein carries blood away from the kidneys.

Renal Artery

(Latin "renalis" = belonging to the kidney)
The Renal Artery brings blood to the Kidney.

Ureter

The duct from the kidney to the bladder. There are two ureters – one for each kidney.

Adrenal Gland

(Latin "ad" + "renes" = near to kidney)
The Adrenal Glands are part of the ENDOCRINE SYSTEM, creating hormones.

Kidney

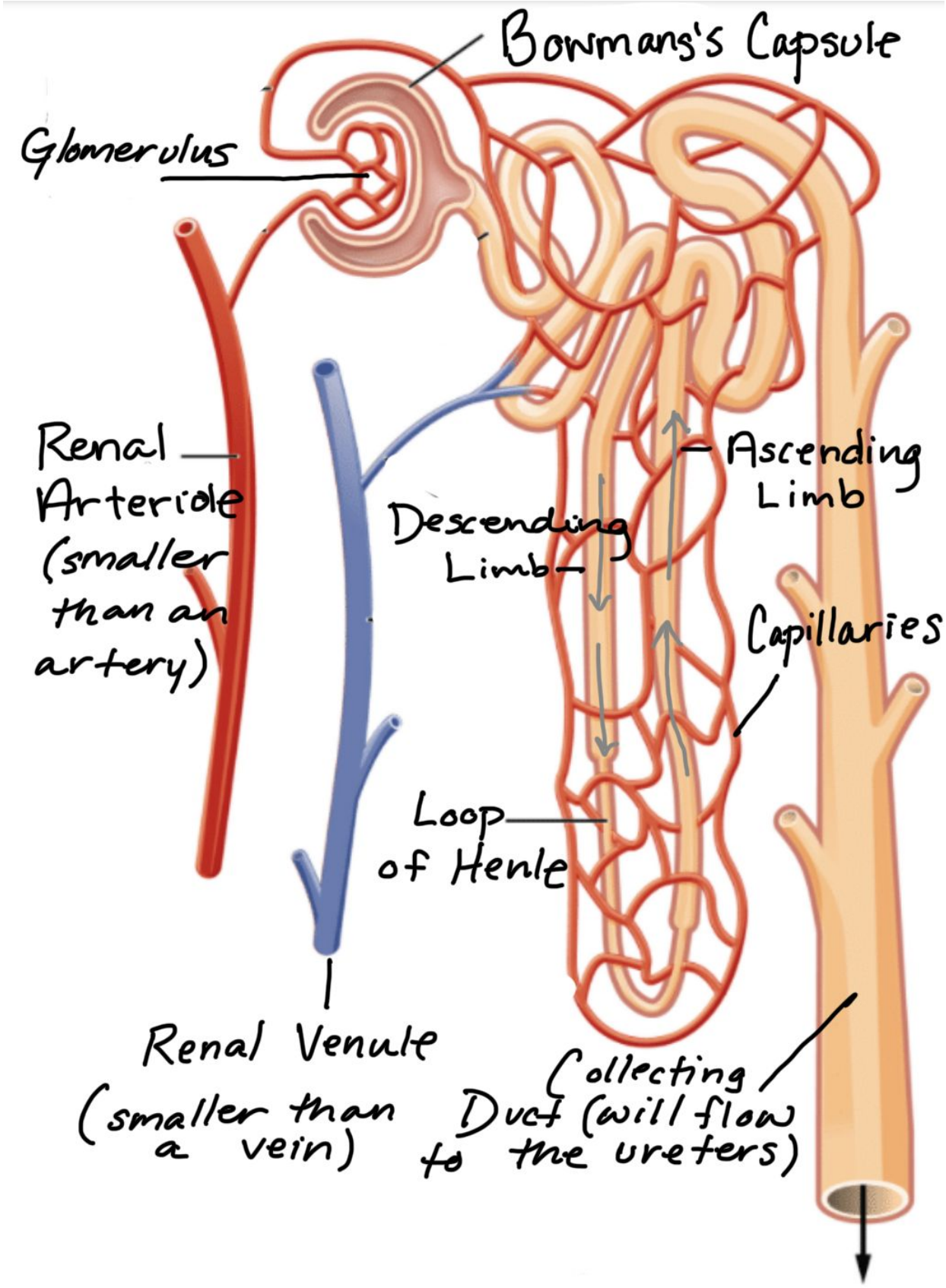
- Helps the body maintain homeostasis by excreting waste as urine.
- Filters blood before sending it back to the heart.

Bladder

A muscular sac in the pelvis
- shaped like a pear when empty
- stores urine so urination can be infrequent and voluntary

Urethra

Urine's path out of the body.


Bowmans's Capsule
Glomerulus
Renal Arteriole (smaller than an artery)
Descending Limb
Ascending Limb
Capillaries
Loop of Henle
Renal Venule (smaller than a vein)
Collecting Duct (will flow to the ureters)

Johann Wolfgang von Goethe's

The Metamorphosis of Plants

*The rich **profusion** thee **confounds**, my love,*

*Of flowers, spread **athwart** the garden. Aye,*

*Name upon name **assails** thy ears, and each*

More barbarous-sounding than the one before—

Like unto each the form, yet none alike;

And so the choir hints a secret law,

*A sacred mystery. Ah, love could I **vouchsafe***

*In sweet **felicity** a simple answer!*

Gaze on them as they grow, see how the plant

***Burgeons** by stages into flower and fruit,*

Bursts from the seed so soon as fertile earth

Sends it to life from her sweet bosom, and

***Commends** the unfolding of the delicate leaf*

*To the sacred **goad** of ever-moving light!*

Asleep within the seed the power lies,

Foreshadowed pattern, folded in the shell,

Root, leaf, and germ, pale and half-formed.

*The nub of **tranquil** life, kept safe and dry,*

Swells upward, trusting to the gentle dew,

*Soaring **apace** from out the enfolding night.*

Artless the shape that first bursts into light—

profusion— an abundance or large quantity of something

confounds— causes surprise or confusion in (someone), esp. by acting against their expectations

athwart— from side to side of; across

assails— makes a concerted or violent attack on

vouchsafe— to give or grant (something) to (someone) in a gracious or condescending manner; to reveal or disclose

felicity— the state of being happy, especially in a high degree; bliss

burgeons— to begin to grow or increase rapidly; flourish; to put forth young shoots

commends— to praise formally or officially

goad— a spiked stick used for driving cattle; a thing that stimulates someone into action

tranquil— free from disturbance; calm

apace— swiftly; quickly

The plant-child, like unto the human kind—

Sends forth its rising shoot that gathers limb

To limb, itself repeating, recreating,

In infinite variety; 'tis plain

To see, each leaf elaborates the last—

Serrated margins, scalloped fingers, spikes

That rested, webbed, within the nether organ—

At length attaining preordained fulfillment.

Oft the beholder marvels at the wealth

Of shape and structure shown in ***succulent*** *surface—*

The infinite freedom of the growing leaf.

Yet nature ***bids*** *a halt; her mighty hands,*

Gently directing even higher perfection,

Narrow the vessels, moderate the sap;

And soon the form exhibits subtle change.

The spreading fringes quietly withdraw,

Letting the leafless stalk rise up alone.

More delicate the stem that carries now

A wondrous growth. Enchanted is the eye.

In careful number or in wild ***profusion***

Lesser leaf brethren circle here the core.

The crowded guardian ***chalice*** *clasps the stem,*

Soon to release the blazing topmost crown.

So nature glories in her highest growth,

succulent— (of a plant) having thick fleshy leaves or stems adapted to storing water

bids— commands or orders; invites (someone to do something)

profusion— an abundance or large quantity of something

chalice— a large cup or goblet, typically used for drinking wine

Showing her endless forms in orderly array.

None but most marvel as the blossom stirs

Above the slender framework of its leaves.

Yet is this splendor but the ***heralding***

Of new creation, as the many-hued petals

Now feel God's hand and swiftly shrink. Twin forms

Spring forth, most delicate, destined for union.

In intimacy they stand, the tender pairs,

Displayed about the consecrated altar,

While ***Hymen*** *hovers above. A swooning scent*

Pervades *the air, its savor carrying life.*

Deep in the bosom of the swelling fruit

A ***germ*** *begins to burgeon here and there,*

As nature welds her ring of ageless power,

Joining another cycle to the last,

Flinging the chain unto the end of time—

The whole reflected in each separate part.

Turn now thine eyes again, love, to the teeming

Profusion. See its bafflement ***dispelled****.*

Each plant thee heralds now the iron laws.

In rising voices hear the flowers declaim;

And, once deciphered, the eternal law

Opens to thee, no matter what the ***guise****—*

Slow caterpillar or quick butterfly,

heralding— acting as a sign that (something) is about to happen

Hymen— the Greek god of marriage

pervades— is present and apparent throughout (something)

germ— a beginning, a seed

dispelled— is made to disappear, is driven away

guise— an external form, appearance, or manner of presentation, typically concealing the true nature of a thing

Let man himself the ordained image alter!

Ah, think thou also how from sweet acquaintance

The power of friendship grew within our hearts,

To ripen at long last to fruitful love!

Think how our tender sentiments, unfolding,

Took now this form, now that, in swift succession!

Rejoice the light of day! Love ***sanctified,***

Strives for the highest fruit—to look at life

In the same light, that lovers may together

In harmony seek out the higher world!

sanctified— made sacred or holy