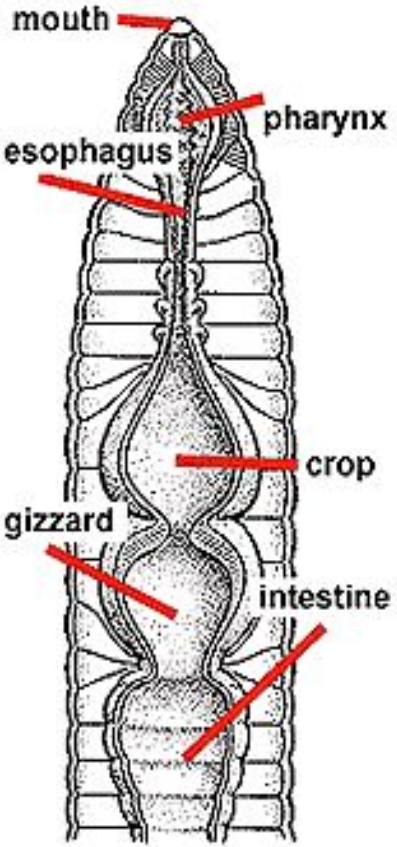
Digestive System Presentation

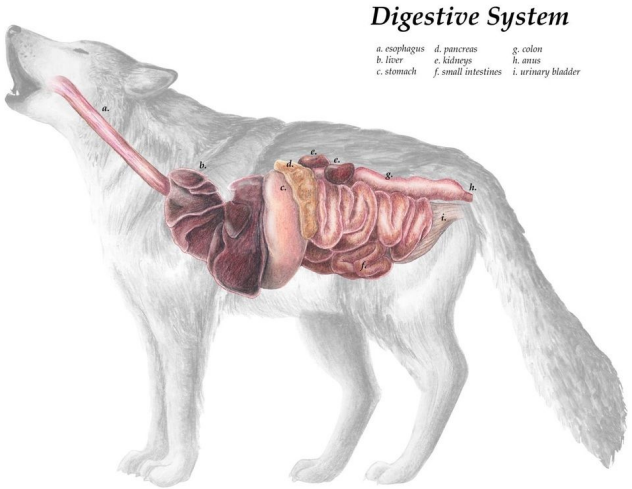
By: Samantha, Jy'Aire, Tianna

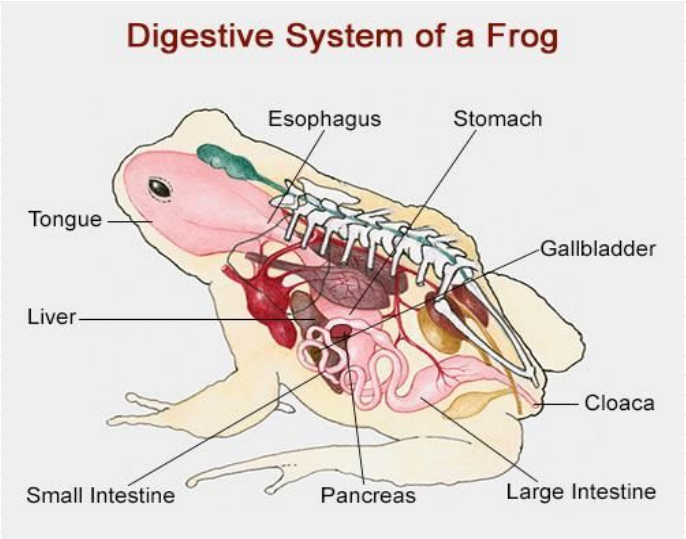
Introduction

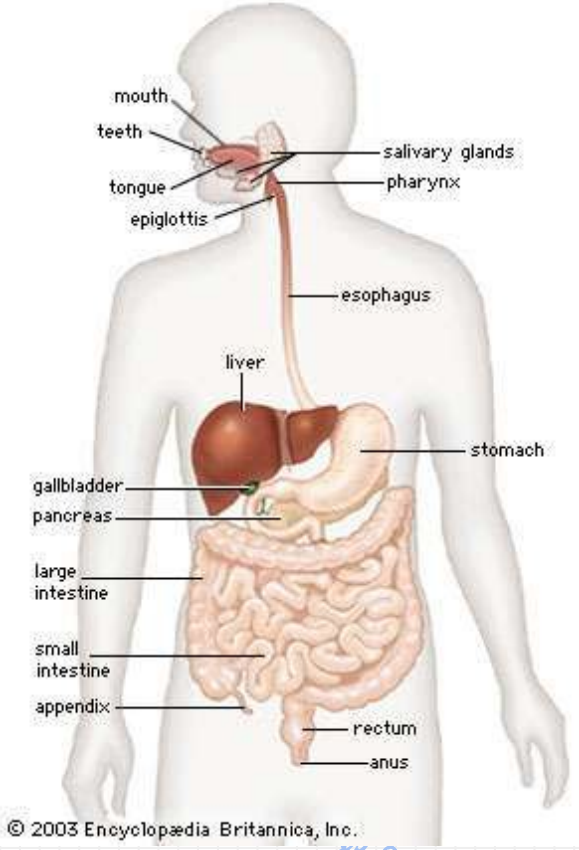
The digestive system allows food to pass through the body starting from the mouth and then exit through the anus as waste. Different species have different digestive systems and structural components that allows their food to enter and exit. There are visual and structural components that show you the relationship between all of these organisms.

Visual Comparisons

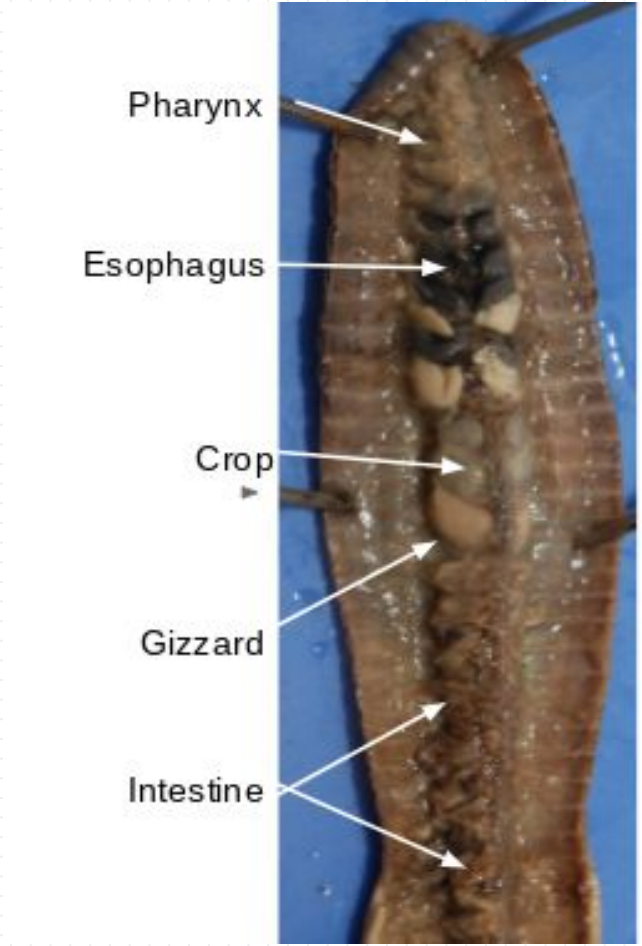


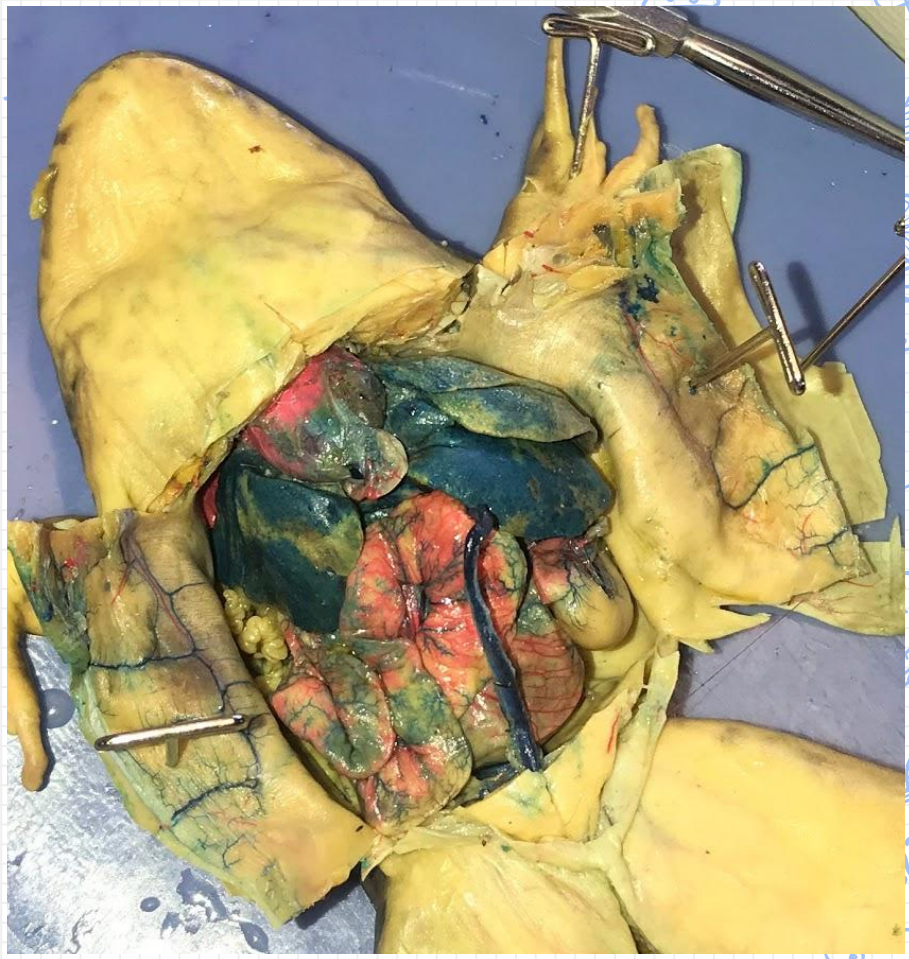




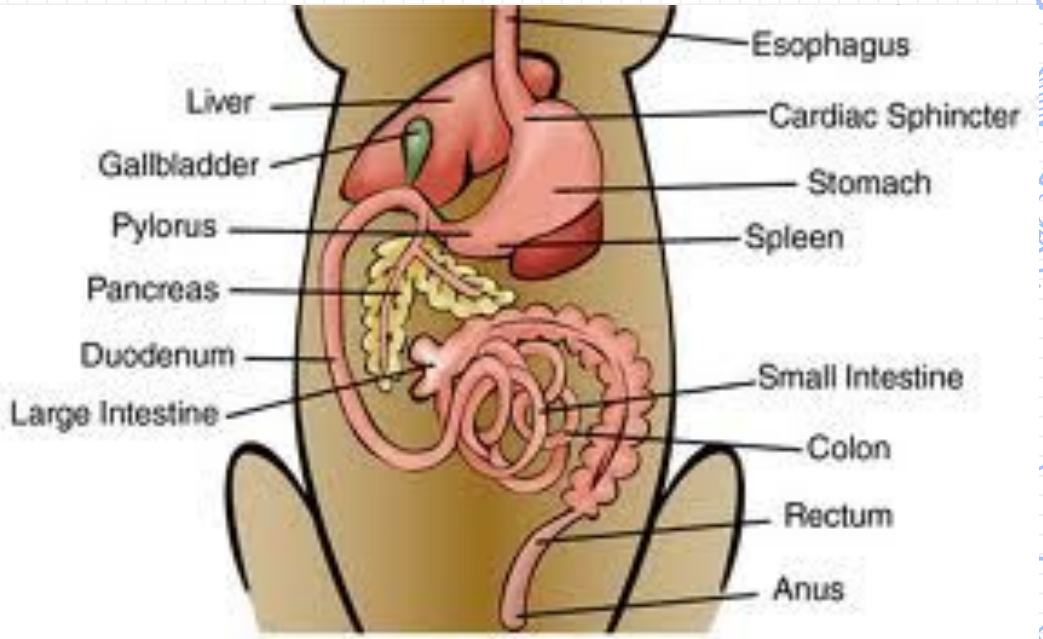


Structural and Functional Comparisons

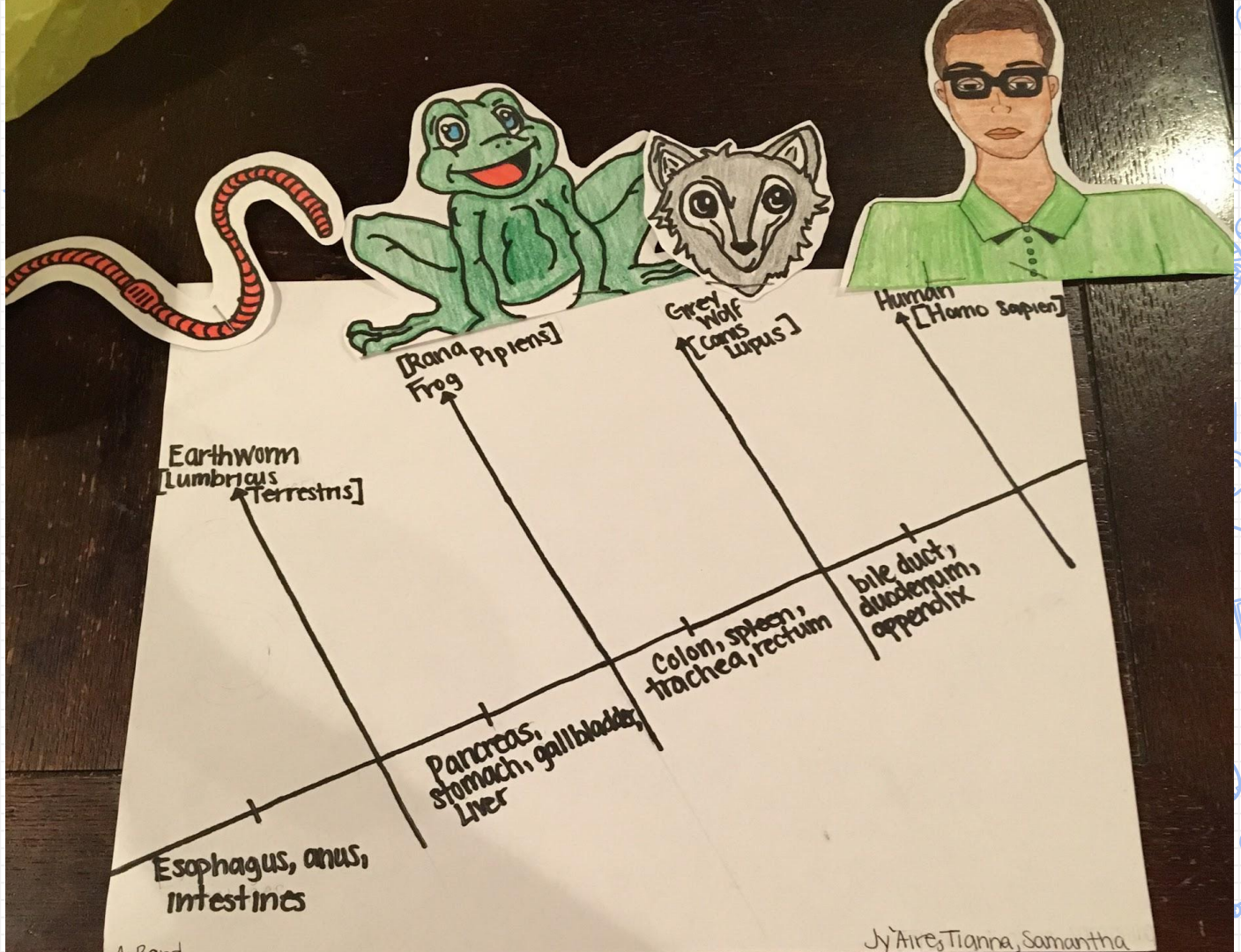




Structural and Functional Comparisons Cont'd



CLADOGRAM

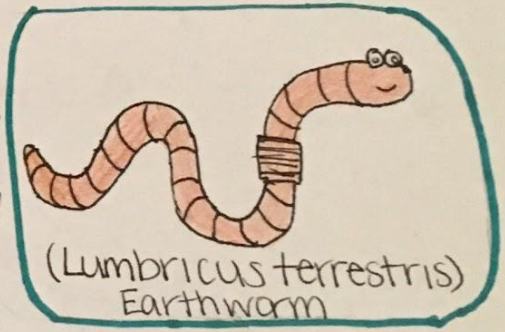

[Rana Pipiens]
Frog
Grey Wolf
[Canis Lupus]
Human
[Homo Sapien]
Earthworm
[Lumbricus Terrestris]
Esophagus, anus, intestines
Pancreas, stomach, gallbladder, Liver
Colon, spleen, trachea, rectum
bile duct, duodenum, appendix
Jy'Aire, Tianna, Samantha

Venn Diagram: Digestive System

Human
(Homo sapien)

Grey Wolf
(Canis lupus)

Frog
(Rana pipiens)



(Lumbricus terrestris)
Earthworm

BIOCHEM A BAND

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How the Digestive System Evolved

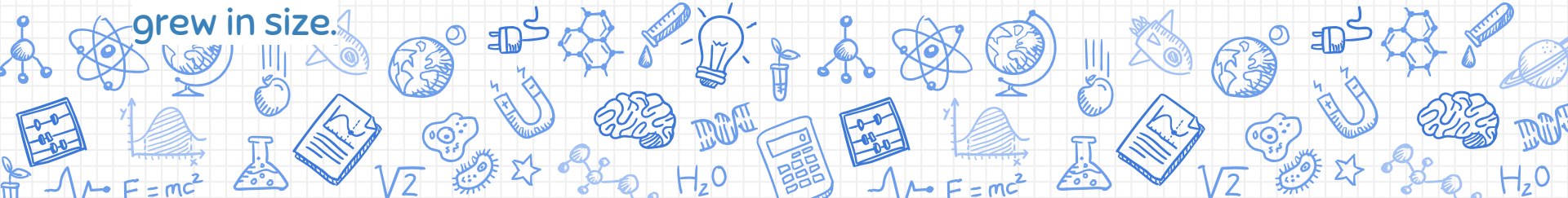
- 600 m.y.a. Multicell animals (i.e. hydra or jellyfish) ate food through mouth and waste came out mouth
- 548 m.y.a. Tiny roundworms ate through mouths, food left anus
- 545 m.y.a. Segmented worms had digestive tube of 3 parts [crop, gizzard, intestine]
- 542 m.y.a. Arthropods [i.e. millipedes and spiders] develop complex digestive systems
- This means the food enters mouth, then stomach, then to the midgut (similar to intestines), and finally out the anus

How the Digestive System Evolved Cont'd

- 420 m.y.a. Fish have teeth and jaws, means they can chew larger foods
- The fish had kidneys and livers [removes poisons]
- Frogs, reptiles, birds, and mammals had tongues that helped "pre-digest" foods
- The organisms developed gallbladders, pancreases, 2 intestines
- Humans "pre-digested" foods by cooking them

Structural Evolution

- Worm: The structural evolution of a worm is their very soft and moist based off the habitat that they live in their structure keeps them away from their predators. As well as there sectioned off organs.
- Frog: The structural evolution of the frog is the rubbery skin texture , as well as the cold blood that runs through their veins. Based off their climate and small shaped body the organs are small/clumped together making travel easier.
- Human: The structural evolution is based off the proteins that, the human intake as well as the genes passed down. Also because we weren't once bipedal our organ system shifted with our stance.
- Wolf: The structural evolution has to do with their climate, as well as there body shape. Due to their body structure and their environment there innards grew in size.



Structure and Functional differences.

Worm
Bristles
Lengthy Body
Segmented Organs
Gizzard
Crop
Pharynx

Frog
Arms
Legs
Cloaca
Gallbladder
Stomach
Cold blooded
Veins
2 sets of teeth
Pancreas
Large Intestine
Small Intestine
Liver

Cloaca – a common cavity at the end of the digestive tract for the release of both excretory and genital products in vertebrates

Wolf
42 sets of teeth
Esophagus
Liver
Stomach
Pancreas
Kidneys
Small Intestine
Large Intestine
Cecum
Duodenum
Tongue
Salivary Glands
Colon
Anus
Urinary bladder

Human
Appendix
Pharynx
32 sets of teeth
Liver
Anus
Rectum
L intestine
S intestine
GallBladder
Pancreas
Epiglottis
Stomach

Pharynx – the membrane-lined cavity behind the nose and mouth, connecting them to the esophagus

Selective Pressure

- ✘ More Canine teeth developed for carnivores (meat) eaters
- ✘ More Canines and maulers developed for omnivores (plant/meat) eaters
- ✘ More Maulers developed for herbivores (plant) eaters
- ✘ Lengthy bodies had wider and longer esophaguses for fast an easy food travel
- ✘ Size of stomach increased making it easier to store more food
- ✘ Location of Digestion system varies on body shape of organism
- ✘ Large and Small intestine grew in size for carnivores/omnivores for easy travel of defecation/urination.
- ✘ Liver was introduced later on to clean blood
- ✘ More body fat/fur added to protect the organisms from freezing
- ✘ Blood temperature changes (depends on specimen)
- ✘ Dietary state

Theory of Organ System Development via Cladogram

- The frog : the digestive system of a frog consists of the organs that allow the frog to capture food. It helps certain enzymes and the removal of the waste of food.
- The wolf : wolves have the same organs that humans do. They have a mouth where food gets swallowed and then waste comes out through the anus.
- The earthworm : earthworms have the main organs [pharynx, crop, gizzard, intestine, anus, and esophagus]. In humans, we have the same as the worm except a crop. Even the worm, a decomposer, needs all these organs to digest their foods.
- The human : humans have more organs that take part. All the organisms have an anus, an esophagus, and intestines. The human (in the cladogram), is the only organism that has a bile duct, a duodenum, and an appendix.

Conclusion

To conclude, we learned the different anatomies of our organisms. We noticed that our animals were similar but very different. As a whole, the digestive system has changed greatly over time. From starting off with very simple digestive systems that weren't exactly digestive systems to the very complex and dynamic systems that many organisms have today.

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