

**VIRTUAL DISSECTION LABORATORY ASSIGNMENT**  
**THE BONY FRAMEWORK OF RESPIRATION**

The Anatomage© table displays real-life anatomy of virtual cadavers. Keep in mind that these are real people who have donated their bodies for science, so please be respectful as you are using the table. Please only have one person touching the table at a time. No food or drinks are allowed near the table, and do not set anything on top of the table.

**Health and Safety Precautions:** Prior to interacting with the table, please wash your hands and put on gloves. Be sure to touch the table only with gloves or a stylus. Do not wipe or clean the table; your instructor will take care of this.

**General Touch Screen Instructions:** To zoom in on a structure, place two fingers on the structure and pull them apart. To move the entire structure at once, place two fingers on the structure and drag in the desired direction. Use one finger to tilt or rotate the structure. Tap once on an icon to select it.

**Custom Presets:** This laboratory was created using the Anatomage© Clinical Table. Custom presets are required in order to complete this assignment. A preset guide has been included.

**PART 1: VERTEBRAL COLUMN**

Step 1: Open the Table Application.

Step 2: Select “Gross Anatomy”.

Step 3: Tap “Male Full Body (Caucasian)” and select open in the top right corner.

Step 4: Open preset 1.



Step 5: Explore the structures and familiarize yourself with the table features.

Step 6: Once you are familiar with the anatomy and table features, open Preset 2 to obtain a clear view of the spine.



Step 7: Explore and identify the structures by tapping once on the structure (zoom as necessary).

**Question 1:** *What structure is located between every vertebral body anteriorly (not the ligament)?*

Step 8: Zoom and rotate the structures to obtain a posterior view of the spine. You can also tap the “anterior view” icon twice on the left side of the screen to obtain a posterior view. Zoom as needed.



Step 9: Select the “Eye” icon and uncheck the “Spinal Ligs” box located in the second column. Once complete, exit out of the “Eye” icon.



Step 10: Rotate and tilt the structures to answer the following questions. Tap each structure once to display its name.

**Question 2:** *What is the most superior vertebra (C1) also called?* \_\_\_\_\_

**Question 3:** *What cranial bone does it articulate with (superiorly)?* \_\_\_\_\_

**Question 4:** *What is the vertebra called that is directly inferior to C1?* \_\_\_\_\_

**Question 5:** *How many total vertebrae of each type are there? (Fill in below)*

*Cervical* \_\_\_\_\_

*Thoracic* \_\_\_\_\_

*Lumbar* \_\_\_\_\_

*Sacral (think individual vertebra, not 1 fused vertebra)* \_\_\_\_\_

*Coccygeal (think individual vertebra, not 1 fused vertebra)* \_\_\_\_\_

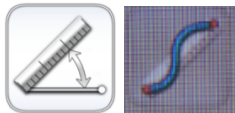
*Total number of vertebrae* \_\_\_\_\_

Step 11: View the spine from a lateral point of view by rotating the entire structure or tapping on the “lateral view” icon on the left side of the screen.



**Question 6:** Draw the curvature of the spine and label (approximately) where the groups/sections of vertebrae are located.

Step 12: Measure the entire length of the spine by selecting the measuring icon followed by the curved measuring icon.



Step 13: Tap along the curvatures of the spine to place multiple points. Once you have placed points along the entire length of the spine, re-tap the curved measuring icon and the total measurement will appear.

**Question 7:** What is the length of the spine (in mm)? \_\_\_\_\_ mm

Step 14: Now we will take a closer look at each vertebrae type. Open preset 3.



Step 15: Preset 3 displays a typical cervical, thoracic, and lumbar vertebra. Tilt and rotate the structures as needed to view all three vertebrae clearly.

Step 16: Select the thoracic vertebra.

Step 17: Select the eye icon. Under the ‘Structure’ column, unselect C4 and L3.

**\*Only** T8 should be selected now.

Step 18: Color coordinate and locate the following specific parts:

- Vertebral body
- Vertebral foramen
- Transverse process
- Spinous process
- Pedicle
- Superior articular facet.

**\*\* To color coordinate any structure:**

1. Tap on the structure. This will highlight the entire structure.
2. Select the eye icon.
3. Select the small green box in the bottom right corner to open the 'Details' column.
4. Select the 'Bony Landmarks' dropdown.
5. Placing a checkmark next to desired structures.
6. Close the icon to view the structure.



**Question 8:** *What is the primary difference between the thoracic and lumbar vertebra? (Circle one)*

- a) The lumbar vertebra has a spinous process, and the thoracic vertebra does not.
- b) The lumbar vertebra is superior to the thoracic vertebra.
- c) The lumbar vertebra has a much larger and broad-based body.
- d) The lumbar vertebra is smaller than the thoracic vertebra.

**Question 9:** *What is/are the primary characteristic(s) of the cervical vertebra?*

- a) It has two transverse foramen on the lateral sides of its body.
- b) It is much smaller than the other vertebral types.
- c) It has a fork-shaped spinous process.
- d) All of the above are correct.

Step 19: Select the "Eye" icon and uncheck T8.

Scroll up and check "2<sup>nd</sup> Cervical Vertebra (Axis or C2)".



Step 20: Color coordinate the 2<sup>nd</sup> Cervical Vertebra to view the following specific parts: Transverse foramen & Dens/Odontoid process (see **\*\*** above for detailed instructions).

**Question 10:** *What does the Axis have that the other vertebrae do not?*

- a) Transverse process
- b) Dens/Odontoid process
- c) Spinous process
- d) Body

**Question 11:** *What do you think is the purpose of this structure (answer to question 10)?*

Step 21: Select the “Eye” icon and uncheck C2.

Check “1<sup>st</sup> Cervical Vertebra (Atlas or C1)” in the third “structure” column.

Exit out of the “Eye” icon.



Step 22: Color coordinate the 1<sup>st</sup> Cervical Vertebra to view the following specific parts:

- Anterior arch
- Posterior arch

(see \*\* above for detailed instructions).

**Question 12:** *What is this vertebra missing that the other vertebrae have?*

- a) Body
- b) A pronounced spinous process
- c) Superior articular facet
- d) a and b are both correct

## **PART 2: RIBS AND PECTORAL GIRDLE:**

### **Ribs:**

Step 23: Select the home icon in the bottom left corner.

Step 24: Select “Gross Anatomy”.

Step 25: Tap “Female Full Body (Caucasian)” and select open in the top right corner.

Step 26: Open preset 1.



Step 27: Tap on each rib once to display its name.

**Question 13:** *How many total sets of ribs are there? \_\_\_\_\_*

Step 28: Tilt and rotate structures as needed to answer the following questions.

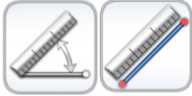
**Question 14:** *Rib sets 11 and 12 are called floating ribs. Why do you think this is? (Hint: think attachments)*

**Question 15:** *Rib sets 1-7 are called true ribs; Rib sets 8, 9, and 10 are called false ribs. Why do you think this is? (Hint: think attachments)*

**Question 16:** *What structure attaches the ribs to the sternum?*

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Step 29: Measure the length of the right 12<sup>th</sup> rib by selecting the measuring icon followed by the first ruler icon.



Step 30: Place your first point at the most medial point of the rib and your second point at the most lateral point of the rib.

**Question 17:** *What is the length of the right 12<sup>th</sup> rib (in mm)?* \_\_\_\_\_ mm

Step 31: Clear the measurement by reselecting the measuring icon followed by the “Clear” icon.



**Sternum:**

Step 32: Locate the sternum and color coordinate it to view its specific parts.  
(see \*\* above for detailed instructions).

Step 33: Locate the neck of the sternum.

**Question 18:** *Which rib set attaches at the sternal angle of the sternum?*

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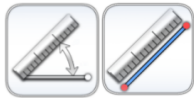
**Question 19:** *Draw your own picture of the sternum and label the following structures: manubrium, body, xyphoid process, and sternal angle.*

Step 34: Locate the xiphoid process of the sternum.

**Question 20:** *What is unique about this xiphoid process? Circle one:*

- a) It is longer than the body of the sternum
- b) It is bifid, meaning it splits into two relative parts
- c) It is absent
- d) Nothing, it is normal

Step 35: Measure the entire length of the sternum by selecting the measuring icon followed by the first ruler icon.



**Question 21:** *What is the total length of the sternum (in mm)? \_\_\_\_\_ mm*

Step 36: Place your first point at the most superior part of the sternum and your second point at the most inferior part of the sternum.

Step 37: Clear the measurement by reselecting the measuring icon followed by the “Clear” icon.



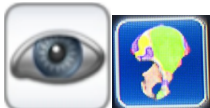
**Question 22:** *What is the purpose of the notches in the body of the sternum? Circle one:*

- a) For muscle attachments
- b) For clavicle attachment
- c) For attachments of the costal cartilages of the ribs
- d) There is no purpose

Step 38: Remove the color coordination from the sternum.

**\*\*\* To remove color coordination from any structure:**

1. Open the “Eye” icon.
2. Tap the color wheel next to the desired structure in the ‘Structure’ column.
3. A new box will appear; deselect the colored pelvic bone button by tapping on it.
4. Exit out of the icon.



**Clavicle:**

Step 39: Locate the clavicle and color coordinate it to view its specific parts.  
(see \*\* above for detailed instructions).

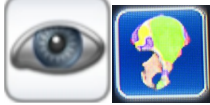
**Question 23:** *What is the lateral end of the clavicle called?*

\_\_\_\_\_

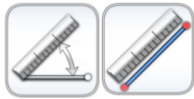
**Question 24:** *What is the medial end of the clavicle called?*

\_\_\_\_\_

Step 40: Remove the color coordination from of the clavicle.  
(see \*\*\* above for detailed instructions).



Step 41: Measure the length of the clavicle by selecting the measuring icon followed by the first ruler icon.



Step 42: Place your first point at the medial end of the clavicle and your second point at the lateral end of the clavicle.

**Question 25:** *What is the length of the clavicle (in mm)?* \_\_\_\_\_ mm

Step 43: Clear the measurement by reselecting the measuring icon followed by the “Clear” icon.



**Question 26:** *What structure does the acromial end of the clavicle articulate with?*

\_\_\_\_\_

**Scapula:**

Step 44: Rotate the body to obtain a posterior view of the scapula. You can also tap the “anterior view” icon twice on the left side of the screen to obtain a posterior view (zoom as needed).





Step 45: Tap on surrounding structures to answer the following questions.

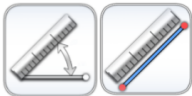
**Question 27:** Besides the clavicle, what other bone does the scapula articulate with?

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**Question 28:** What do you notice about the shape of the scapula? (Rotate the body as needed). Circle one:

- a) It is slightly convex
- b) It is slightly concave
- c) It is completely flat
- d) It has a square shape

Step 46: Measure the width of the scapula at its widest point by selecting the measuring icon followed by the first ruler icon.



Step 47: Place your first point at the medial end of the scapula and your second point at the lateral end of the scapula (not including the scapular spine).

**Question 29:** What is the width of the scapula at its widest point (in mm)? \_\_\_\_\_ mm

Step 48: Clear the measurement by reselecting the measuring icon followed by the “Clear” icon.



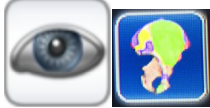
Step 49: Locate the scapula and color coordinate it to view the following specific parts:

- Scapular spine
- Acromion
- Coracoid process
- Inferior angle
- Superior angle
- Infraspinous fossa
- Supraspinous fossa

(see \*\* above for detailed instructions).

**Question 30:** Draw the scapula from the posterior view and use the Anatomage table to help you label the parts listed in Step 49.

Step 50: Remove the color coordination from the scapula.  
(see \*\*\* above for detailed instructions).



### **PART 3: PELVIC GIRDLE**

Step 51: Open preset 2.

Step 52: Locate the right pelvic bone and color coordinate it to view the following specific parts:

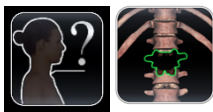
- Iliac crest
- Ischial tuberosity
- Ischial spine
- Acetabular fossa

(see \*\* above for detailed instructions).

Step 53: Select the explore icon to access the removal tool. Once selected, tap on a desired structure to remove it.

Use the removal tool to remove the right femur and obturator membrane to obtain a clear view of the pelvic bone.

Once removed, exit out of the explore icon.



**Question 31:** Draw the right side of the pelvis from the medial view and use the Anatomage table to help you label the following parts: ilium, iliac crest, ischium, ischial tuberosity, ischial spine, acetabulum, pubis, and pubic symphysis.

Step 54: Select the explore icon and tap the “Undo” button until the femur and obturator membrane return. Tilt and rotate structures as needed to answer the following questions.



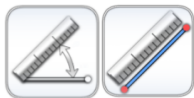
**Question 32:** What is the attachment site of the femur?

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**Question 33:** What structure connects the right and left ilium anteriorly?

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Step 55: Measure the total width of the pelvis at its widest point by selecting the measuring icon followed by the first ruler icon.



Step 56: Place your first point at the antero-lateral end of the right ilium and your second point at the antero-lateral end of the left ilium.

**Question 34:** What is the width of the pelvis at its widest point (in mm)? \_\_\_\_\_ mm

Step 57: Clear the measurement by reselecting the measuring icon and then selecting the “Clear” icon.



Step 58: Press the home icon followed by “Exit Application.” This will take you back to the desktop. Return the stylus but keep your gloves on until you leave the lab.

**Question 35:** *List 1-2 things you found interesting/insightful about the bony framework through completion of this lab.*