In this "Lab Exercise Guide", we will be looking at the important features found in the vertebral column, and thoracic cage. Use these sections in your lecture book:
   Axial Skeleton Chapter: Bony Thorax - articulated only!
   Axial Skeleton Chapter: Vertebrae

The vertebral column is a series of individual bones called vertebrae. Inside the column, within the spinal cavity, sits the spinal cord.

We will look at structures of the entire column, as well as structures of the individual vertebrae.

The bony thorax, or thoracic cage, includes the bony structures surrounding the thoracic cavity. Inside the bony thorax, we find the heart & lungs.

*It is not necessary to do these steps in order*
Team Assessment of Pre-lab Material

Using the articulated skeleton at your station, identify the following terms. IF AVAILABLE: bring one of the models pictured below to your station, and study these terms on the model(s), too!

Make sure everyone in your team can identify all of the terms on all the available lab models.

Vertebral Column
Individual Vertebrae
Sacrum
Coccyx
Cervical Curvature
Thoracic Curvature
Lumbar Curvature
Sacral Curve
Vertebral Canal
Spinal Cord
Intervertebral Foramen
Spinal Nerves
Spine
Intervertebral Discs

Models which might be available to you, depending on availability:

Articulated skeleton
Vertebral Column with nerves
Vertebras Types
Vertebras with nerves
Step 1. Understand the Individual Vertebrae

Your instructor will want you to know various features of an individual vertebrae. However, different instructors will focus on different features.

Also, some features are found on ALL vertebrae, while others are found just on specific types!

Q1. Start off by making a list of the parts you need to know that are found on ALL vertebrae, using a separate piece of paper.

In your lecture and lab book, there are images that identify the parts of an individual vertebrae.

Q2. Now, label the photos below using the above terms, while examining a disarticulated vertebrae from your "skeleton box".

However, make sure you know the ENTIRE feature. For example, do not just draw a line to the "arch" exactly where the book photo shows it. Instead, indicate the entire "arch" on the image, showing where it starts & stops!! To help, you can "shade in" certain parts on the photos.

Repeat the terms if necessary (for example, you can see the "body" on both photos).
Q3. Special Features of Some Vertebrae.

DO THIS ONLY IF IT APPLIES TO YOUR CLASS!

Some instructors make their students know some "specialty features" found on some vertebrae.

Q3. Make a list of special parts you need to know off individual vertebrae:

Q4. Now, label the images below using the above terms. We have included images of vertebrae that are often focused on in lab. If you instructor does not cover one or more of these, simply cross it off:

Special Parts of a Generalized Cervical Vertebrae:

Special Parts of the Atlas Vertebrae:

Special Parts of the Axis Vertebrae:
### Q5. Identify the 3 types of vertebrae. Fill out this table:

<table>
<thead>
<tr>
<th>Superior view</th>
<th>Example 1</th>
<th>Example 2</th>
<th>Example 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral View</td>
<td><img src="example1.png" alt="Image" /></td>
<td><img src="example2.png" alt="Image" /></td>
<td><img src="example3.png" alt="Image" /></td>
</tr>
<tr>
<td>Vertebral Type:</td>
<td><img src="example1.png" alt="Image" /></td>
<td><img src="example2.png" alt="Image" /></td>
<td><img src="example3.png" alt="Image" /></td>
</tr>
<tr>
<td>List the features that you used to determine type:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#1 Instructors differ greatly in what they want you to know on these structures. We will identify what your instructor wants you to know, and then label diagrams for each:

#2 Anatomy of the Sacrum and Coccyx

Q6. While examining both the articulated skeleton and disarticulated bones, label this diagram with all the features your instructor wants you to know:
Q7. While examining both the articulated skeleton and disarticulated bones, label this diagram with any terms your instructor wants you to know. Include the "types of vertebrae":

Lateral Thoracic Cage

Anterior Thoracic Cage

Individual Rib (Costae)
# Team Assessment for STEPS 1 & 2

Before leaving the lab, make sure everyone in your group gets at least a "75%" on this assessment. That means they have to get 7 - 8 out of 10 on the score-sheet below.

Repeat this procedure in a couple of days...but before the next lab session. You will find that through this process you will do much less "cramming" for the quiz or exam. Instead...you will simply know the material!

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Using the diagrams you labeled in STEPS 1 & 2 as a key, quiz your teammates on the parts of the vertebrae, vertebral column, and bony thorax. Point at every feature, and ask "name this bone", "name this bump", "name this hole", etc.

Only give them a few seconds to answer. If they haven't in 5 seconds, say "time's up!" and give them the answer. Then RE-ASK THE SAME FEATURE in a few questions.

If they haven't gotten it correct the third time you return to a bone, make them write it out 5 times on a piece of paper. Then, ask them again later.

Score Sheet:

<table>
<thead>
<tr>
<th>How many did they get right?:</th>
<th>Teammate #1</th>
<th>Teammate #2</th>
<th>Teammate #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words they are struggling with:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent Correct: