

LESSON 9 & 10

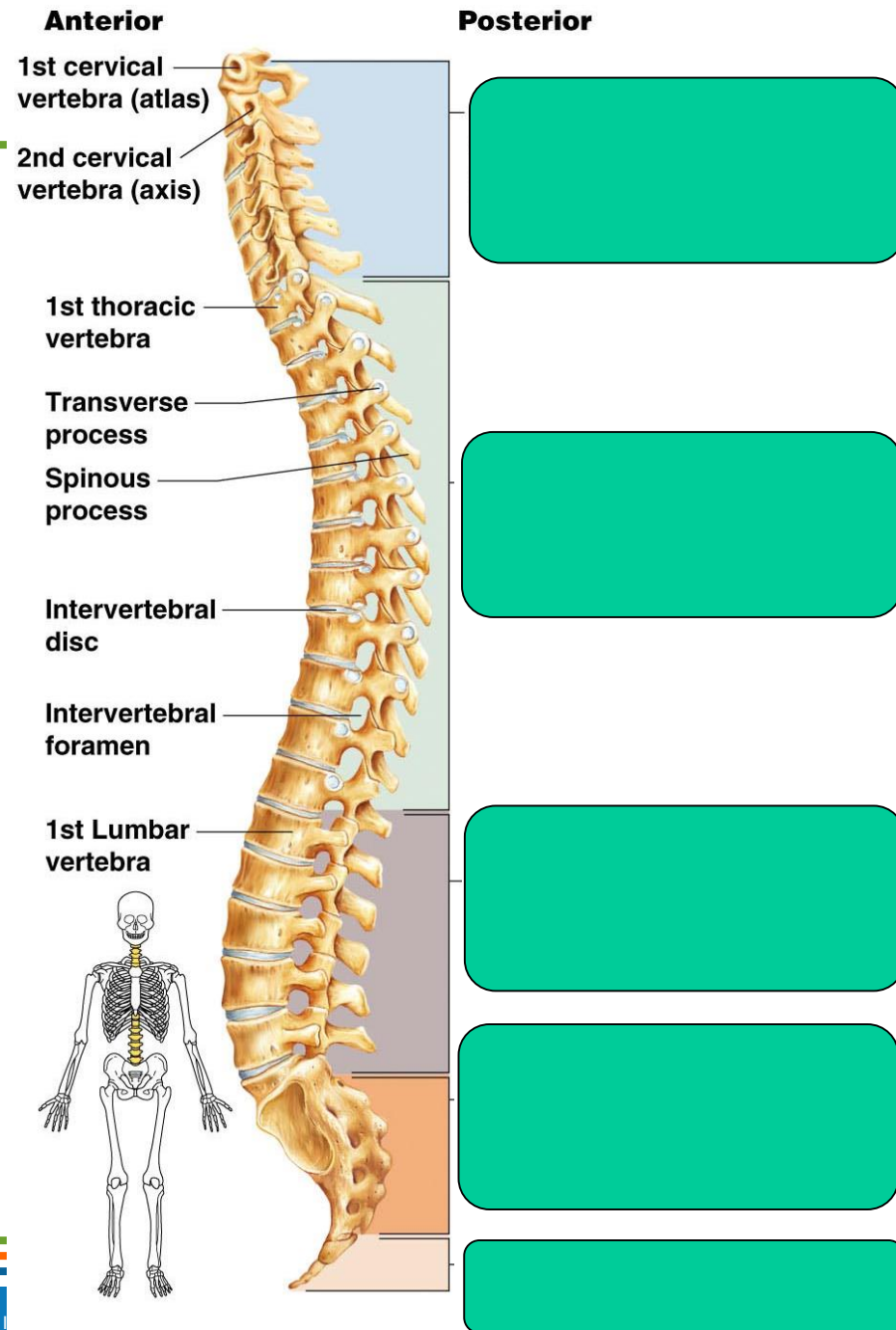
- **Axial Skeleton**
 - **Vertebral Column**
 - **Bony Thorax**

The Vertebral Column

- Each vertebrae is given a name according to its **location**
 - There are **24** single vertebral bones separated by intervertebral **discs** of flexible fibrocartilage
 - **7 cervical** vertebrae are in the **neck** region
 - **12 thoracic** vertebrae are in the **chest** region
 - **5 lumbar** vertebrae in the **lower back** region

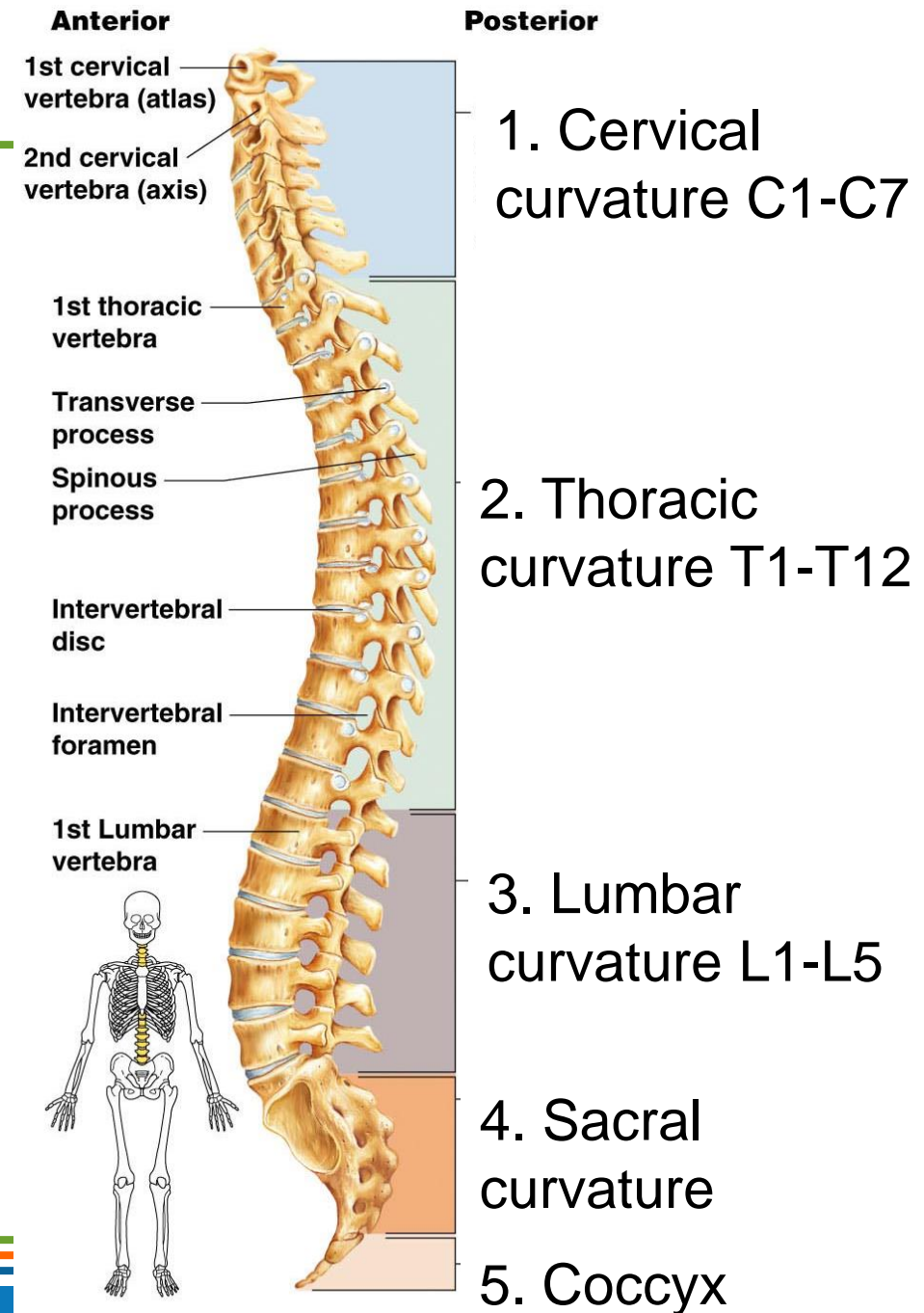
The Vertebral Column

- Nine vertebrae fuse to form two composite bones
 - Sacrum
 - Coccyx



The Vertebral Column

- **Nine vertebrae fuse to form two composite bones**
 - **Sacrum**
 - **Coccyx**



The Vertebral Column

- The spine has a normal curvature
 - **Primary** curvatures are the spinal curvatures of the **thoracic** and **sacral** regions
 - Present from birth
 - **Secondary** curvatures are the spinal curvatures of the **cervical** and **lumbar** regions
 - Develop after birth

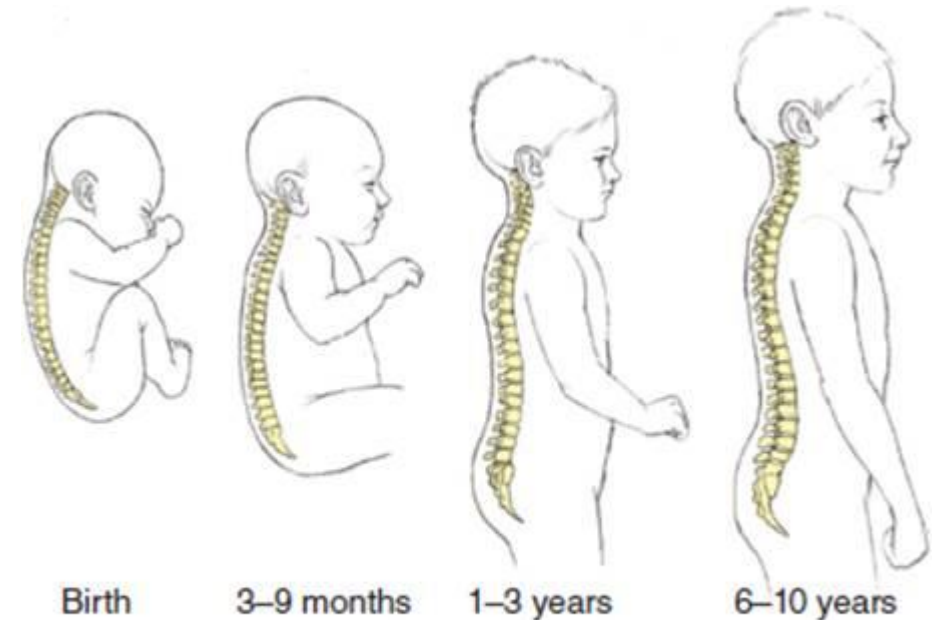
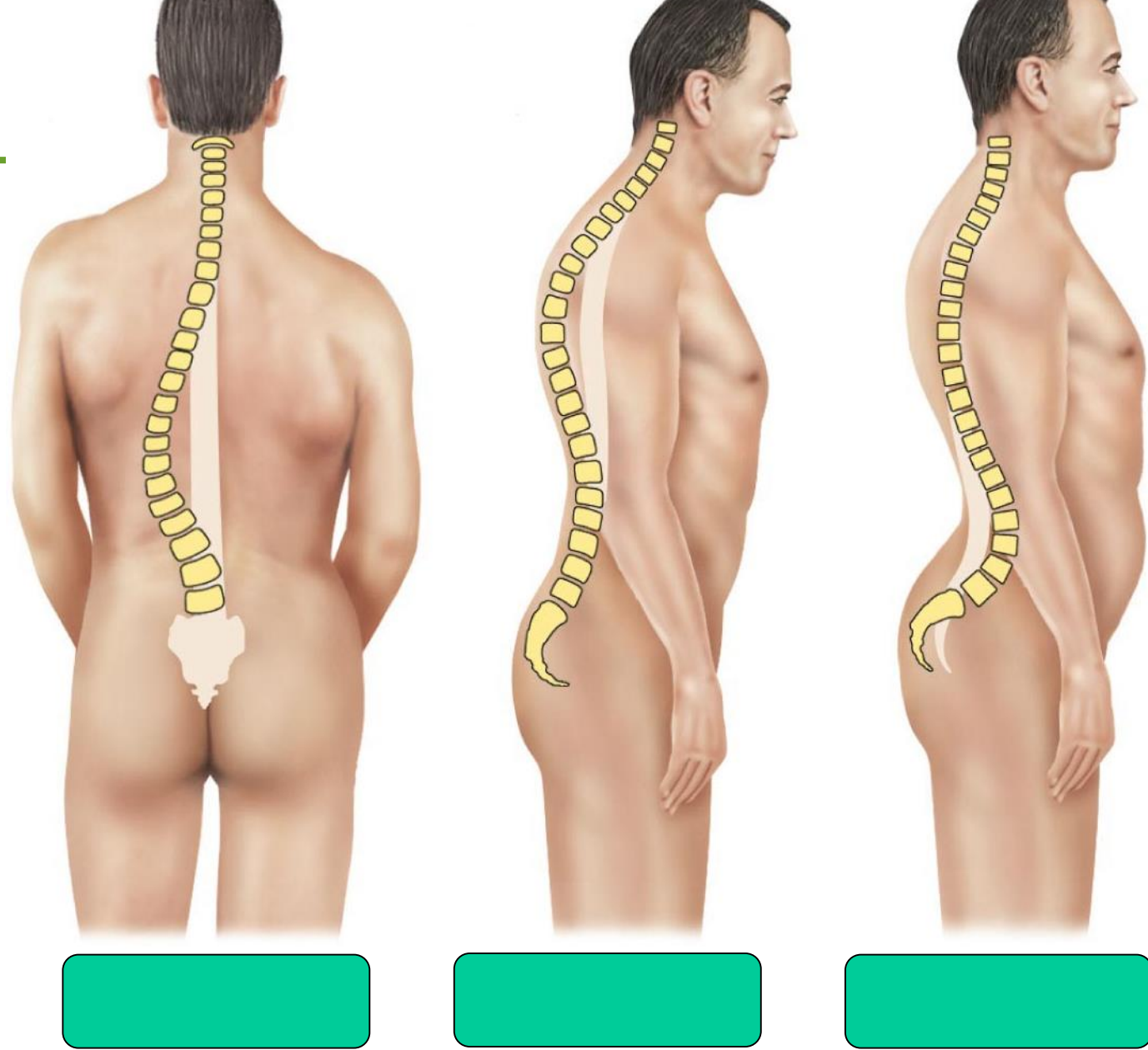


Figure 2.13 Development of primary and secondary curves.

The Vertebral Column

What's different about these spines?

They each have incorrect curvatures



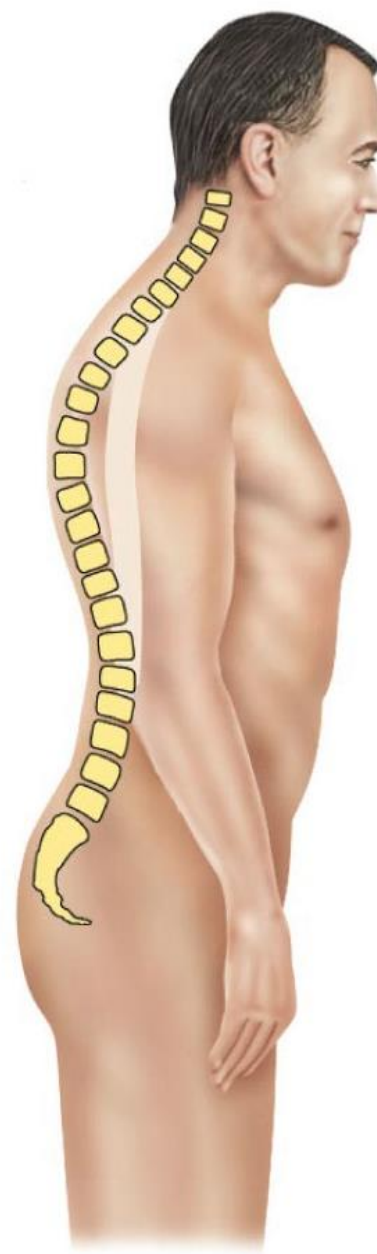
The Vertebral Column

What's different about these spines?

They each have incorrect curvatures



Scoliosis



Kyphosis

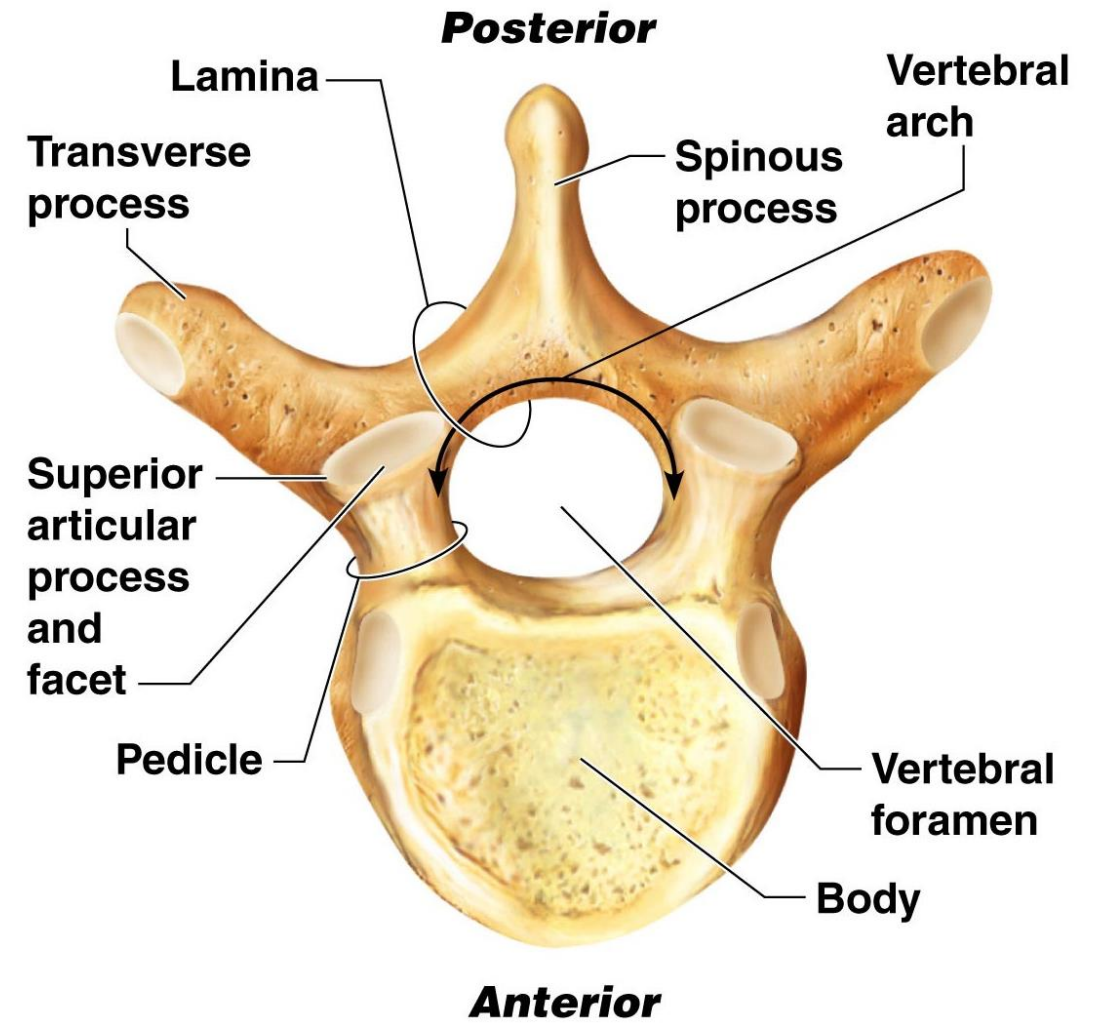


Lordosis

Common Vertebrae Characteristics

Figure 5.17

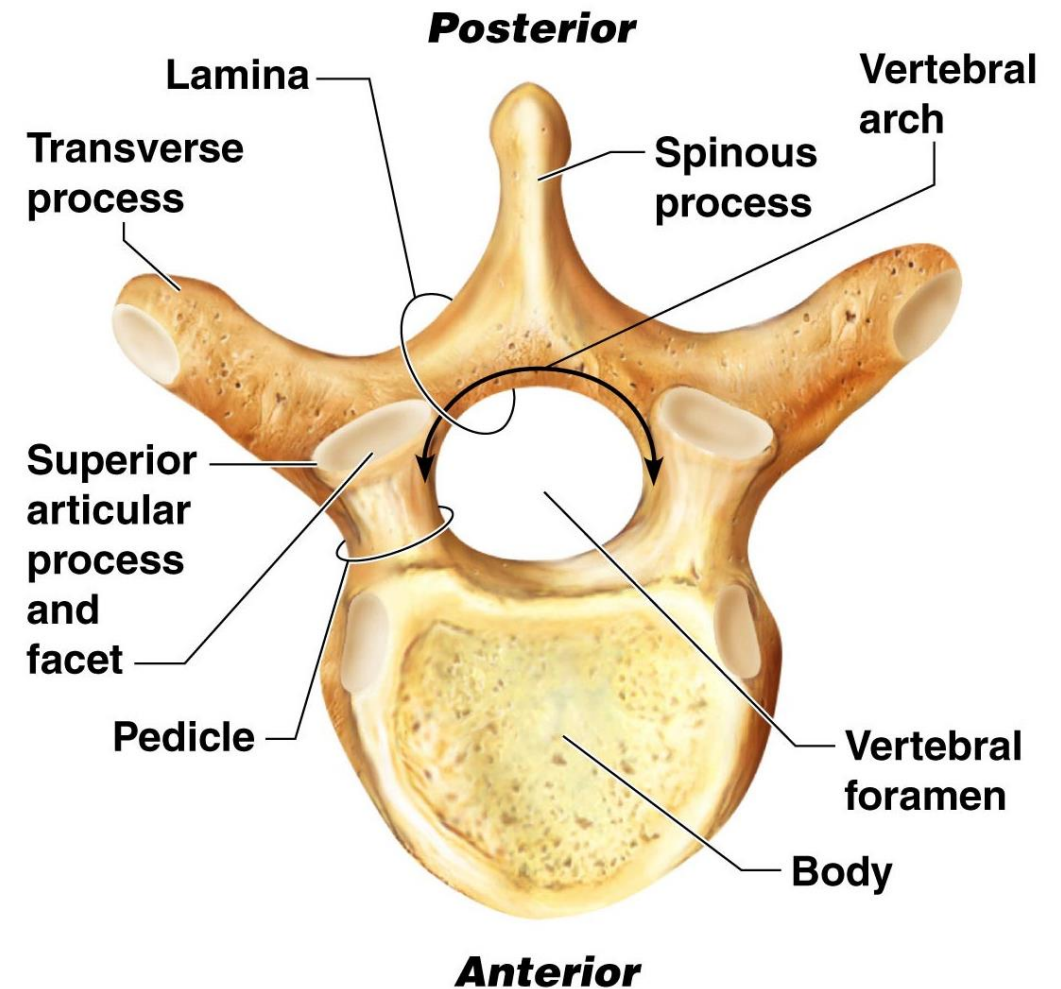
- **Body:** disc like, **weight-bearing** part
- **Vertebral arch:** forms from the joining of all posterior extensions
- **Vertebral foramen:** canal through which **spinal cord** passes



Common Vertebrae Characteristics

Figure 5.17

- Transverse processes: **lateral** projections
- Spinous process: **posterior** projection
- Superior & inferior articular processes: projections lateral to vertebral foramen allowing **articulation** with adjacent vertebrae



Unique Characteristics of Vertebrae

Figure 5.18a

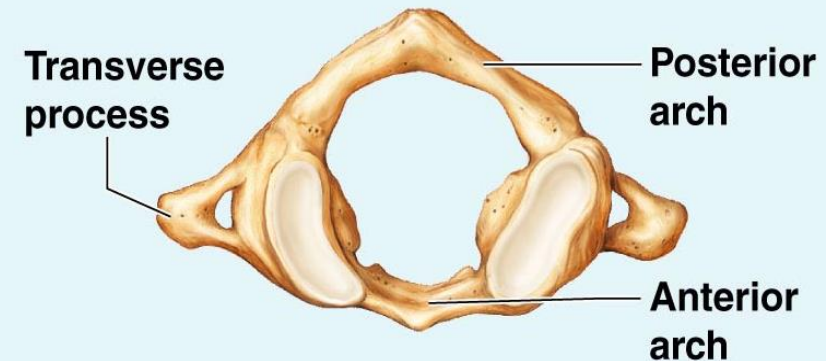
- **Atlas (C1)**

- **1st** vertebra
- **Has no body**
- **Articulates with occipital condyles of skull**

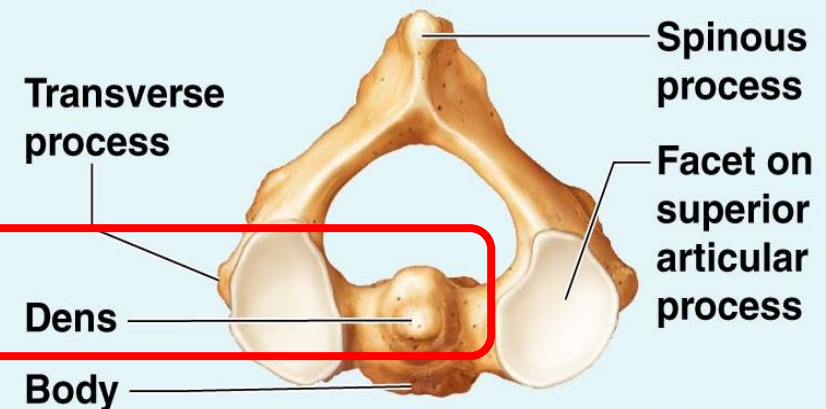
- **Axis (C2)**

- **Dens:** an upright process that acts as **pivot point**; allows **rotation** of the skull

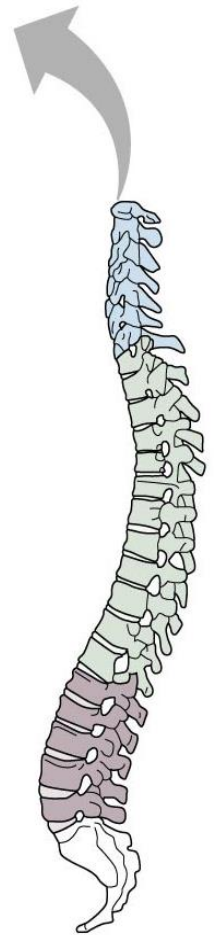
(a) **ATLAS AND AXIS**



Superior view of atlas (C₁)



Superior view of axis (C₂)



Regional Characteristics of Vertebrae (Cervical)

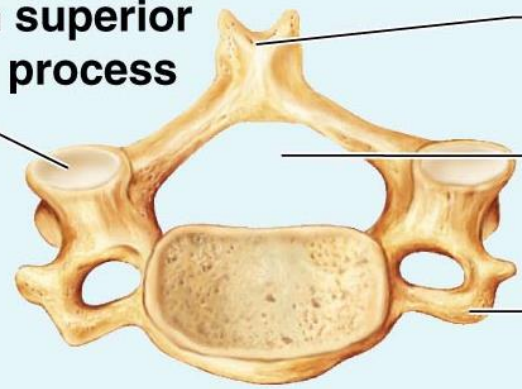
(b) TYPICAL CERVICAL VERTEBRAE

Facet on superior articular process

Spinous process

Vertebral foramen

Transverse process



Superior view

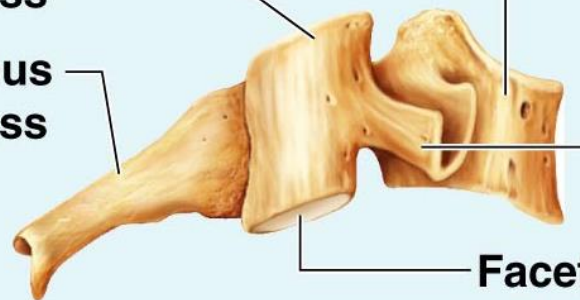
Superior articular process

Spinous process

Body

Transverse process

Facet on inferior articular process



Right lateral view

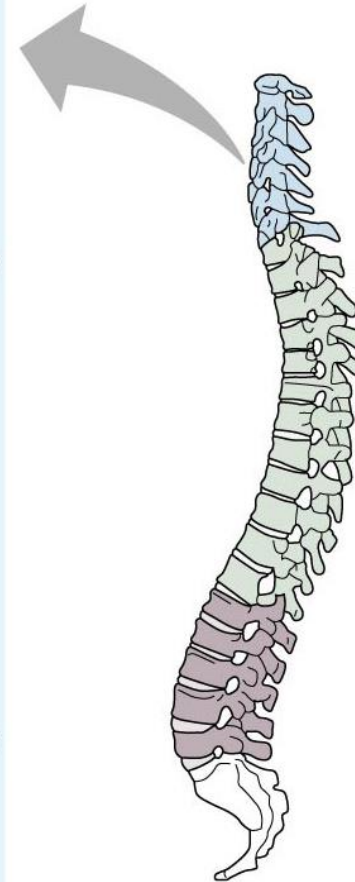
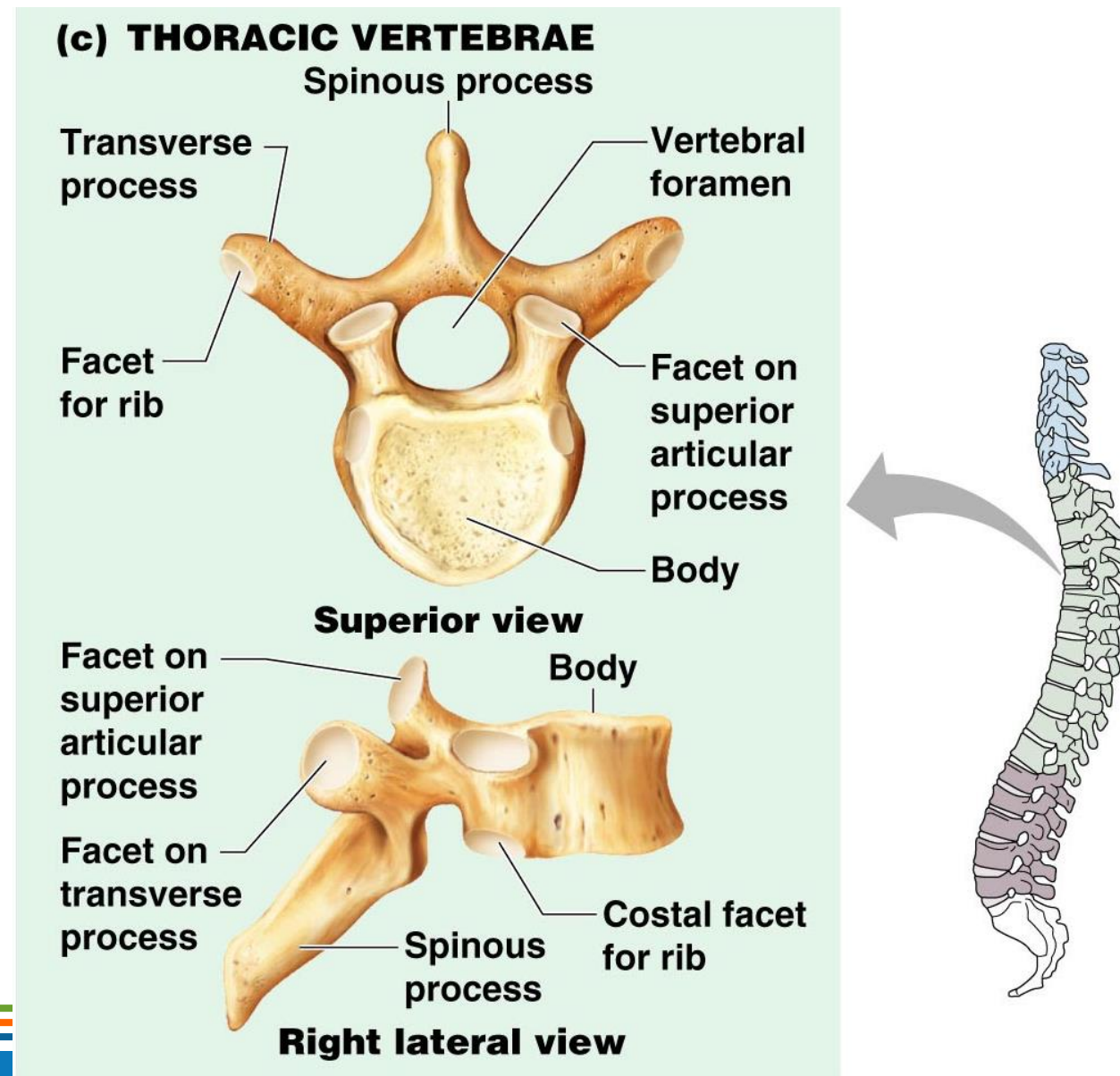


Figure 5.18b

Regional Characteristics of Vertebrae (Thoracic)



Regional Characteristics of Vertebrae (Lumbar)

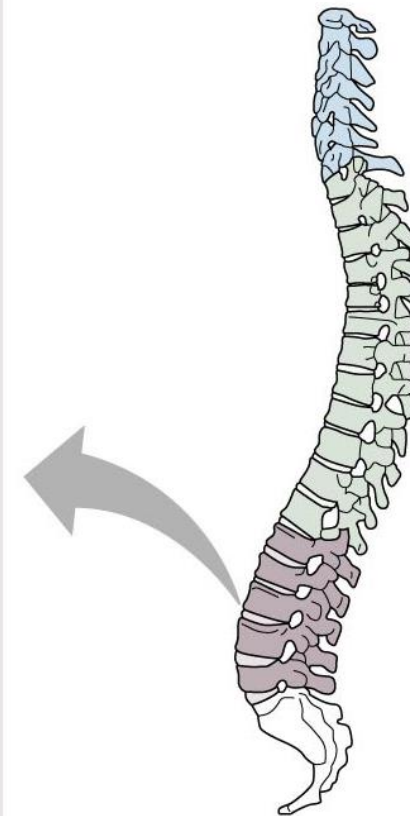
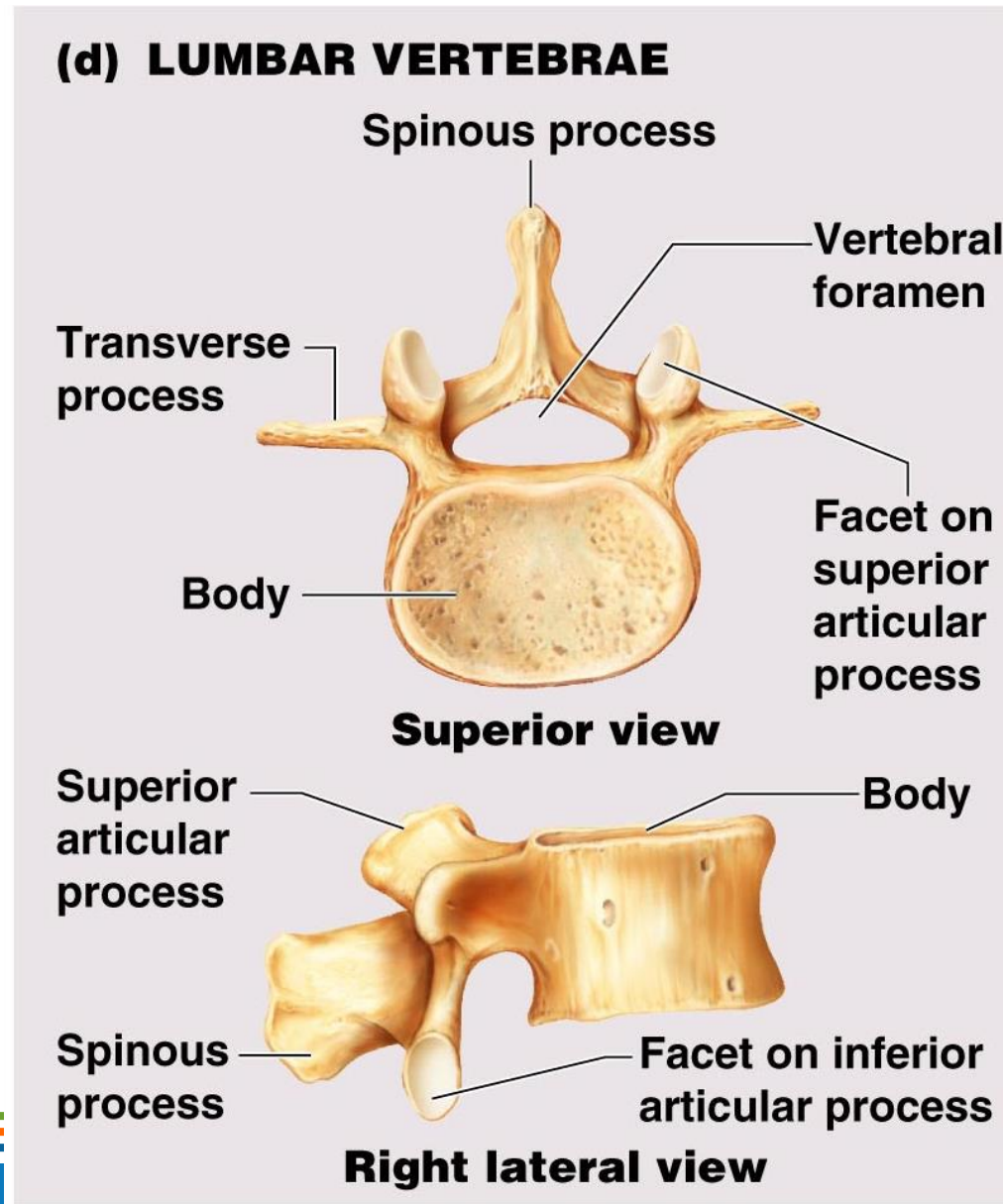


Figure 5.18d

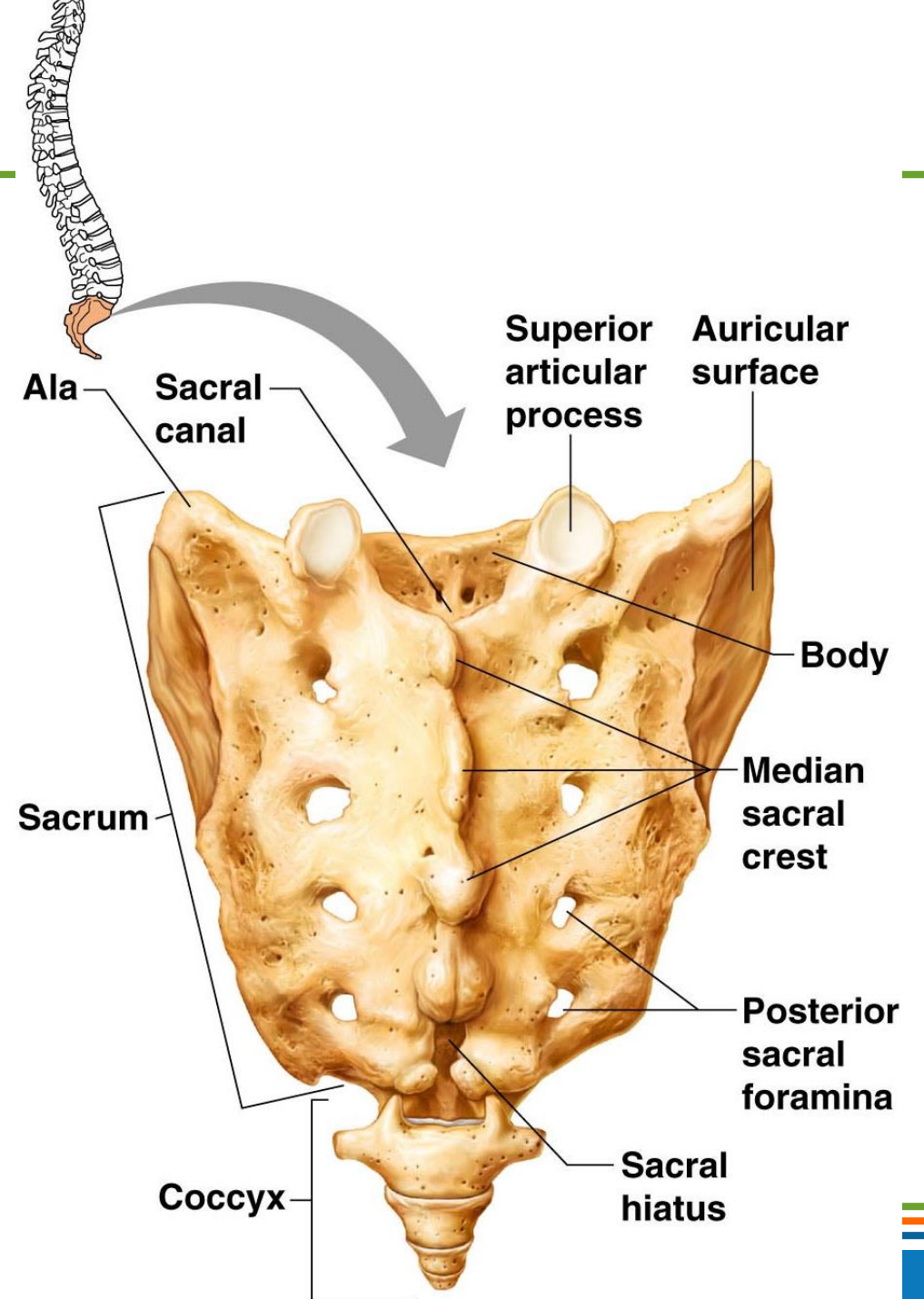
Sacrum and Coccyx

- **Sacrum**

- Formed by the fusion of **5** vertebrae

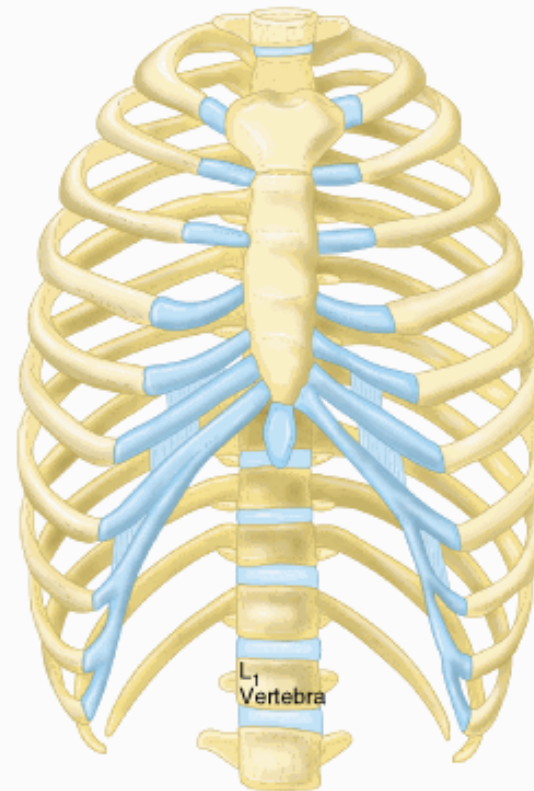
- **Coccyx**

- Formed from the fusion of **3 to 5** vertebrae
- **“Tailbone,”** or remnant of a tail that other vertebrates have



The Bony Thorax (aka Thoracic Cage)

- Forms a cage to **protect** major organs such as the **heart** and **lungs**
- Consists of three parts
 - **Sternum**
 - **Ribs**
 - **True** ribs (pairs 1–7)
 - **False** ribs (pairs 8–12)
 - **Floating** ribs (pairs 11–12)
 - **Thoracic vertebrae**



(a)

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The Bony Thorax

Figure 5.20a

