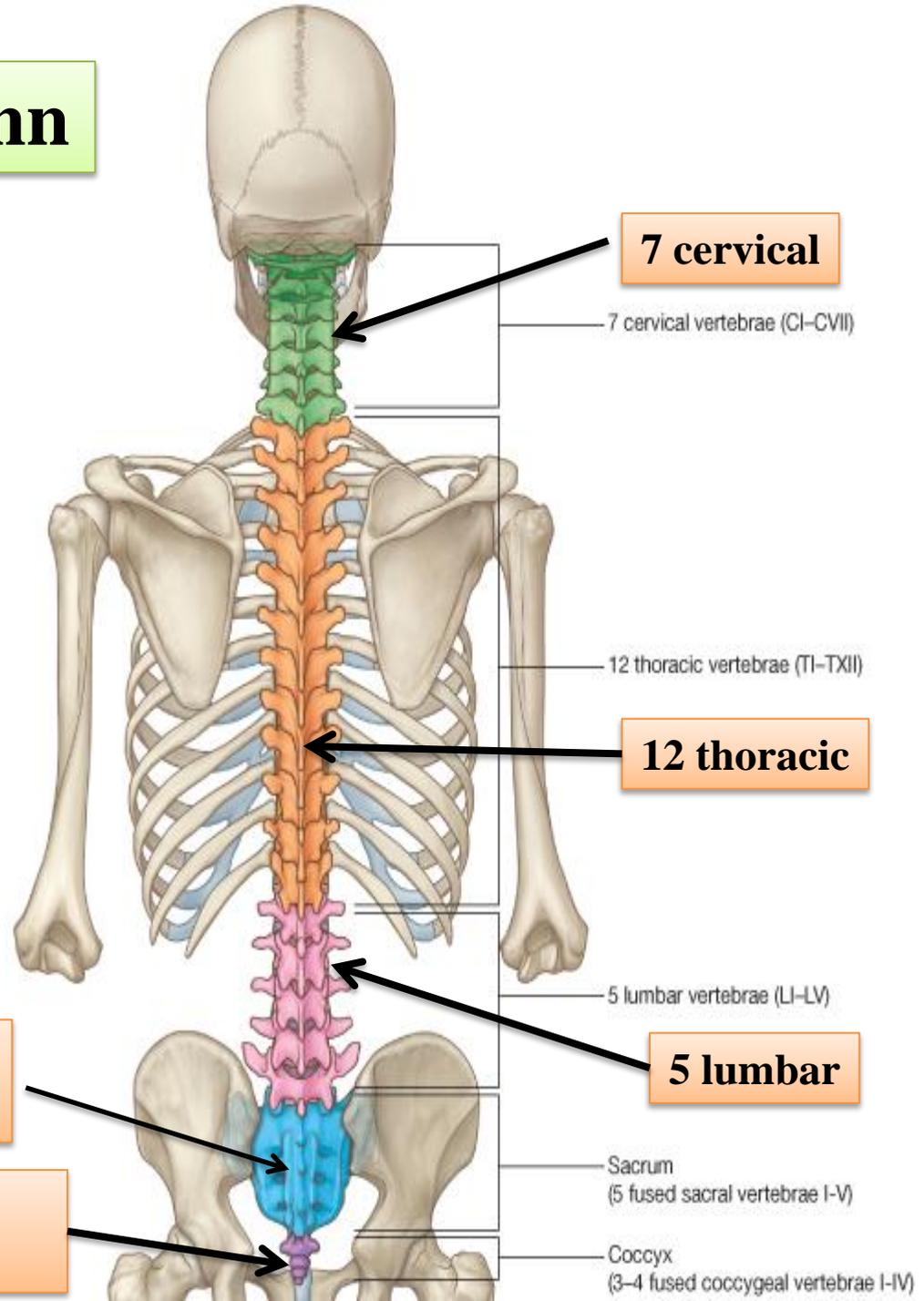


The Vertebral Column

Is composed of 33 vertebrae



5 sacral
(fused to form the sacrum)

4 coccygeal
(the lower 3 are commonly fused)

A typical vertebra consists of:

1-a rounded body anteriorly

2-a vertebral arch posteriorly.

They enclose a space called

The vertebral foramen

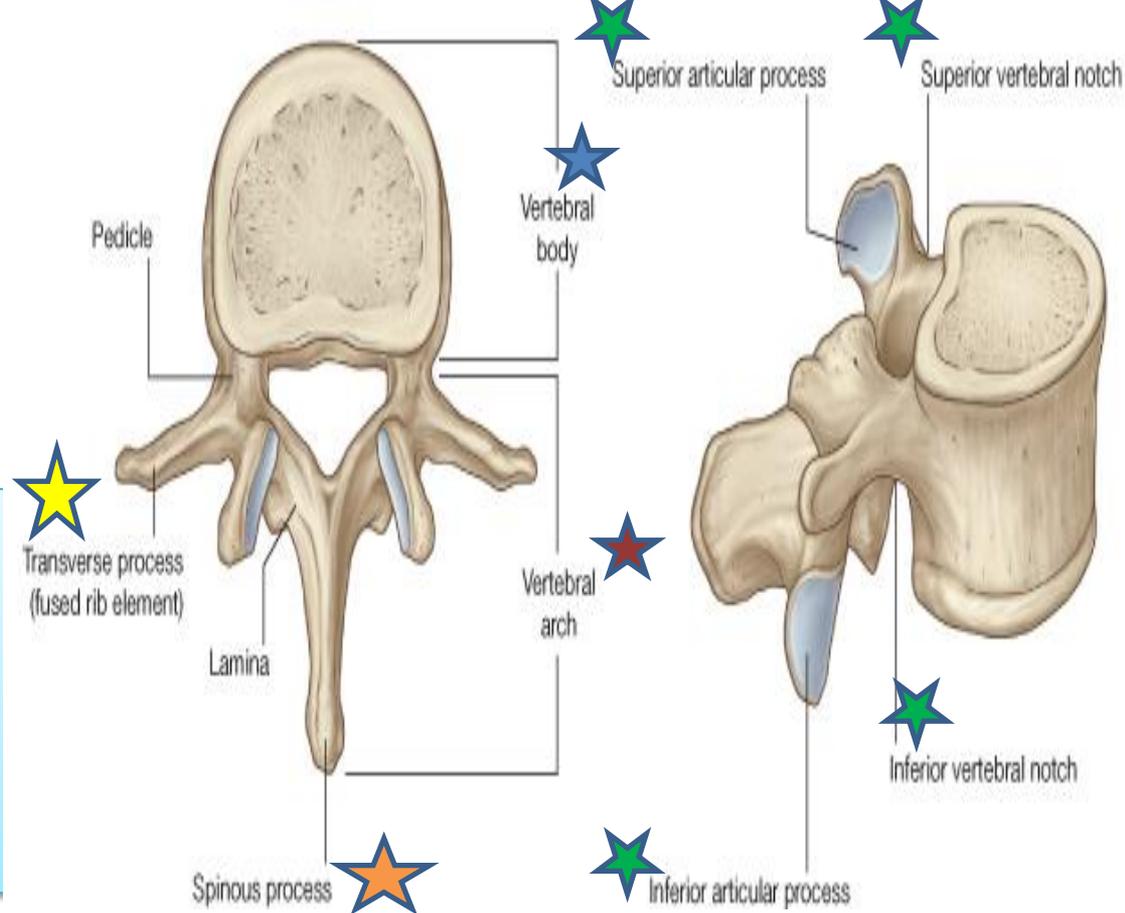
through which run the spinal cord
and its coverings

The vertebral arch gives rise to seven
processes:

a-One spinous

b-Two transverse

c- Four articular



❖ The spinous process is directed posteriorly
from the junction of the two laminae.

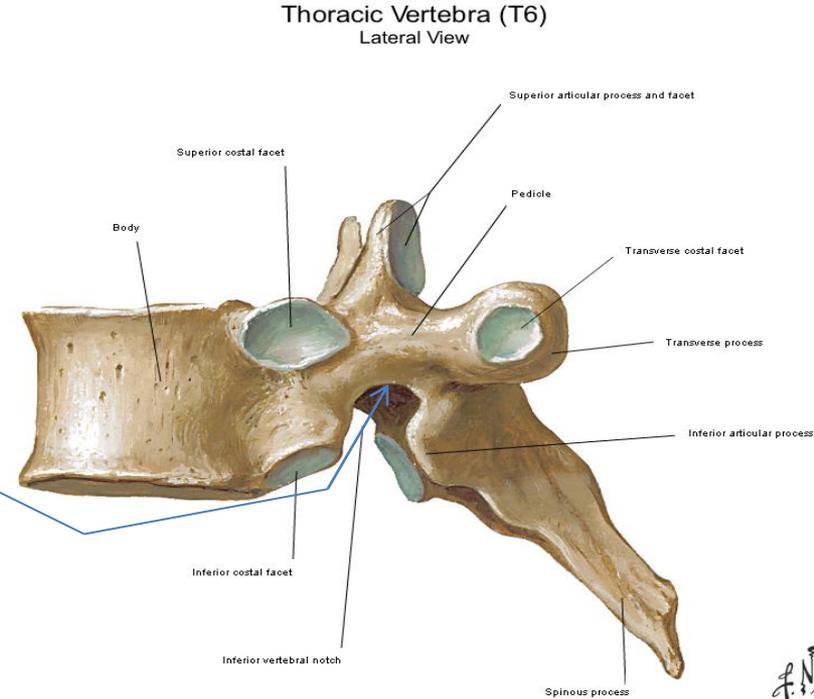
❖ The transverse processes are directed laterally
from the junction of the laminae and the pedicles

The articular processes are vertically arranged and consist of:

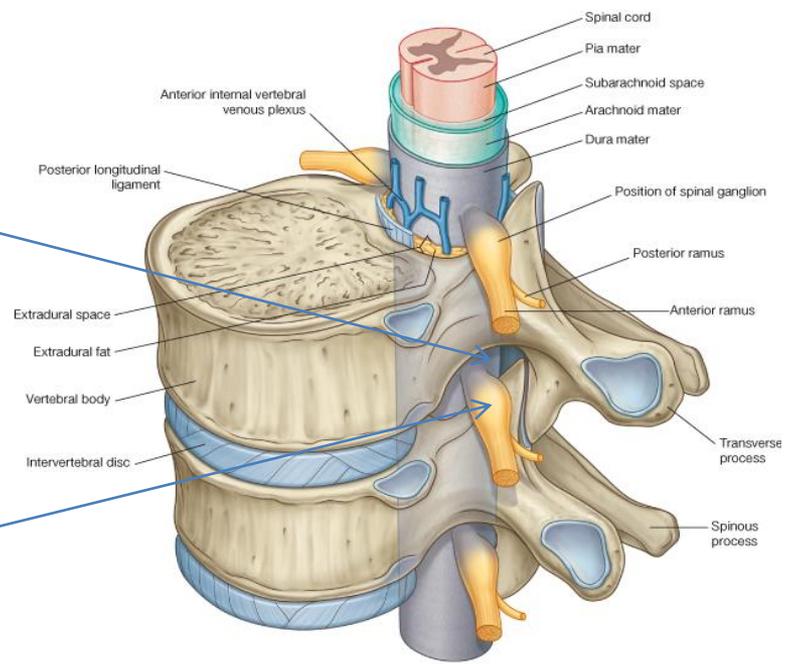
Two superior & Two inferior processes

They arise from the junction of the laminae and the pedicles

❖ **The pedicles are notched on their upper and lower borders forming the superior and inferior vertebral notches.**



On each side the superior notch of one vertebra and the inferior notch of an adjacent vertebra together form an intervertebral foramen.



These foramina, in an articulated skeleton, serve to transmit the spinal nerves and blood vessels.

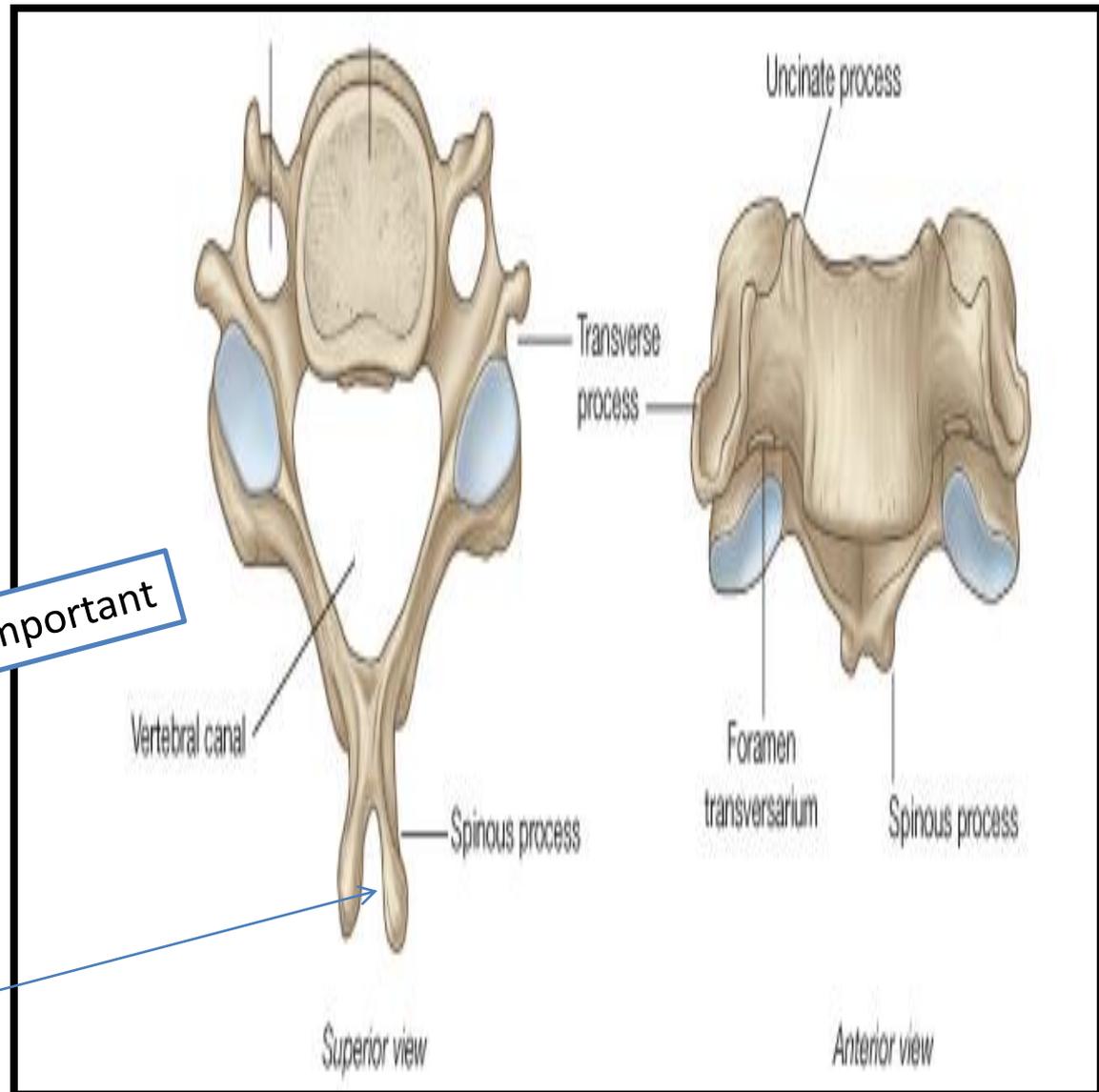
Characteristics of a Typical Cervical Vertebra

- The transverse processes possess **a foramen transversarium** for the passage of the **vertebral artery and veins**

(note that the vertebral artery passes through the transverse processes C6 to 1 and not through C7).

- The spines are small and **bifid**
- The vertebral foramen is large and **triangular**

important



Characteristics of the Atypical Cervical Vertebrae

The first, second, and seventh cervical vertebrae are atypical.

The first cervical vertebra

THE ATLAS

➤ does not possess
a body or a spinous process

➤ It has

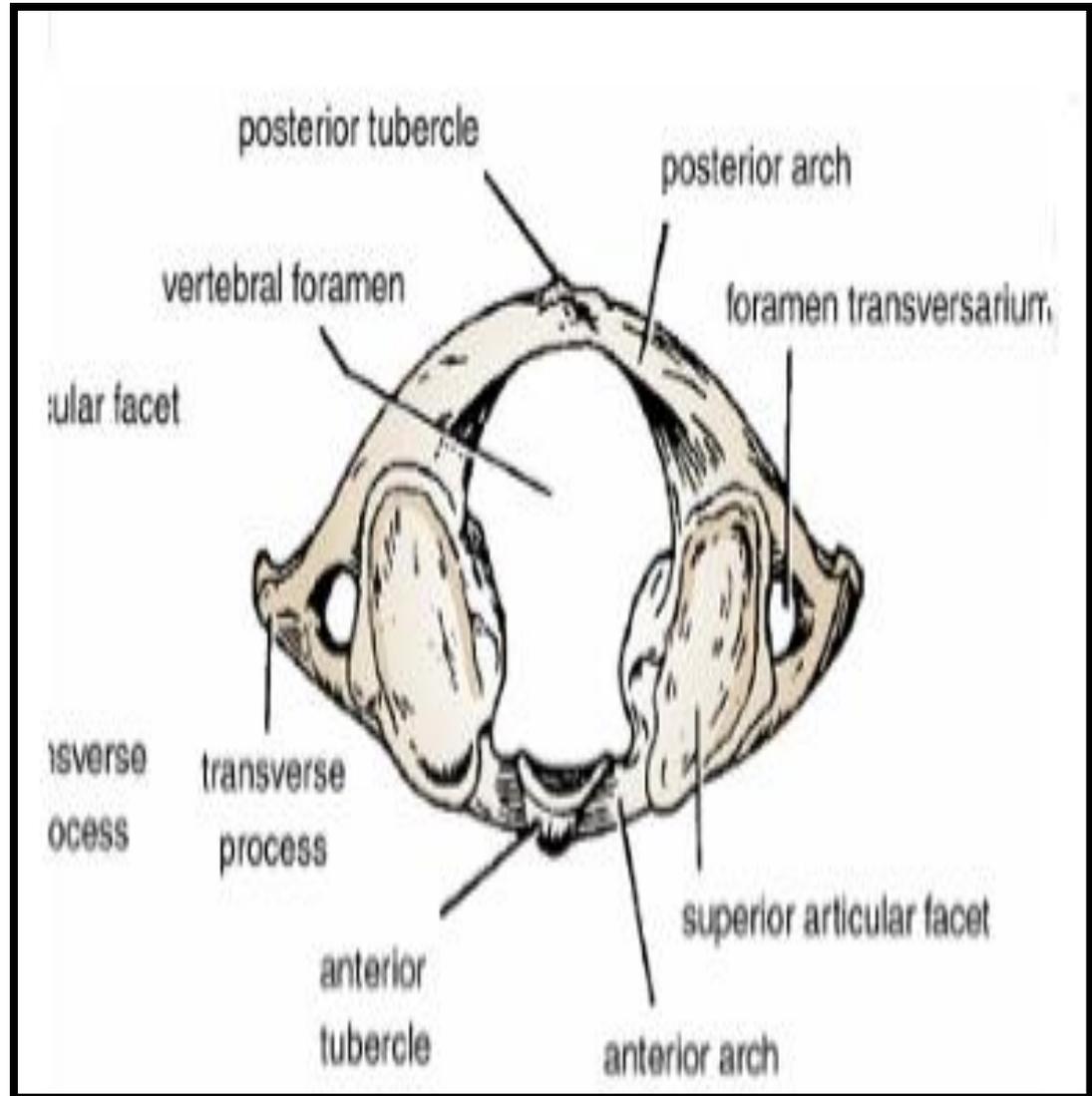
➤ an *anterior and posterior arch*

➤ It has a *lateral mass* on each side with articular surfaces on its *upper surface* for articulation with the *occipital condyles* (atlanto-occipital joints)

and

articular surfaces on its *lower surface*

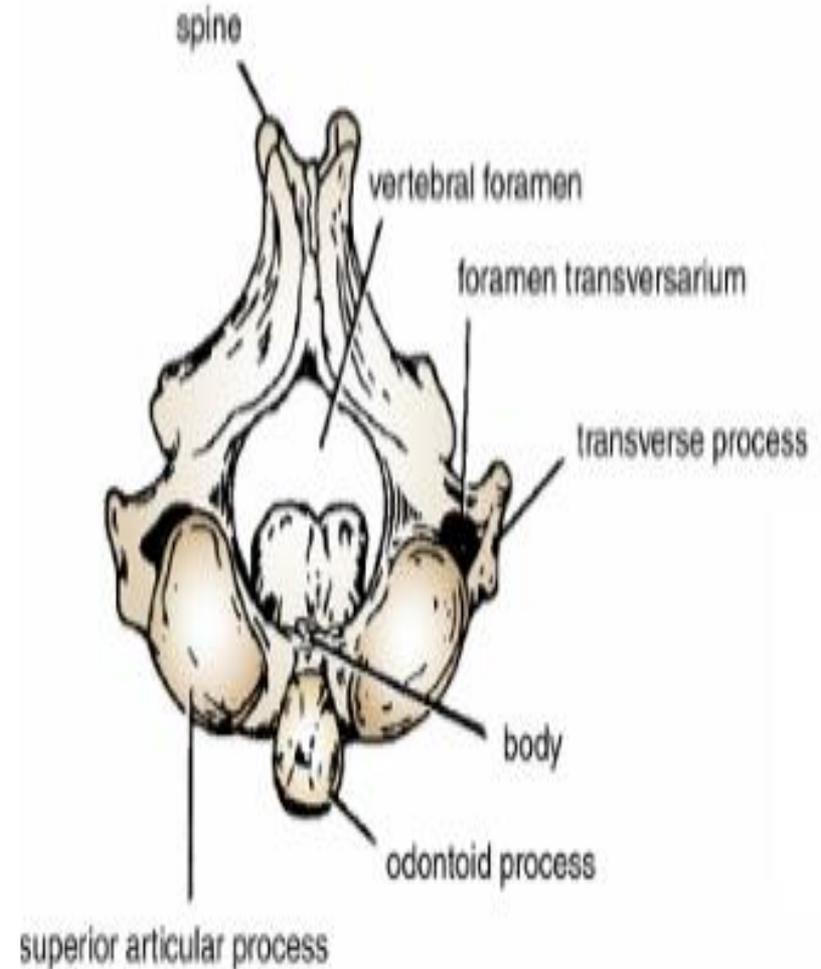
for articulation with *the axis* (atlantoaxial joints)



The second cervical vertebra

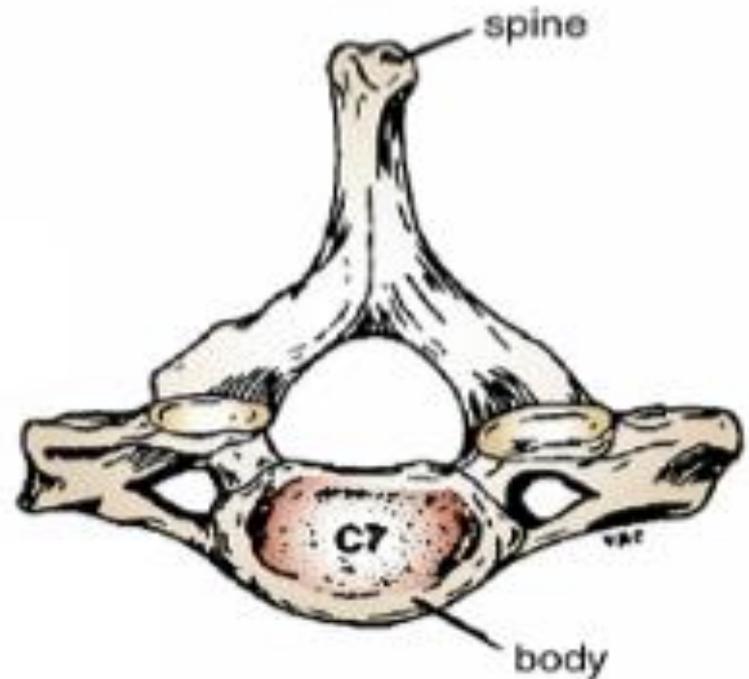
The AXIS

has a odontoid process that projects from the superior surface of the body (representing the body of the atlas that has fused with the body of the axis).



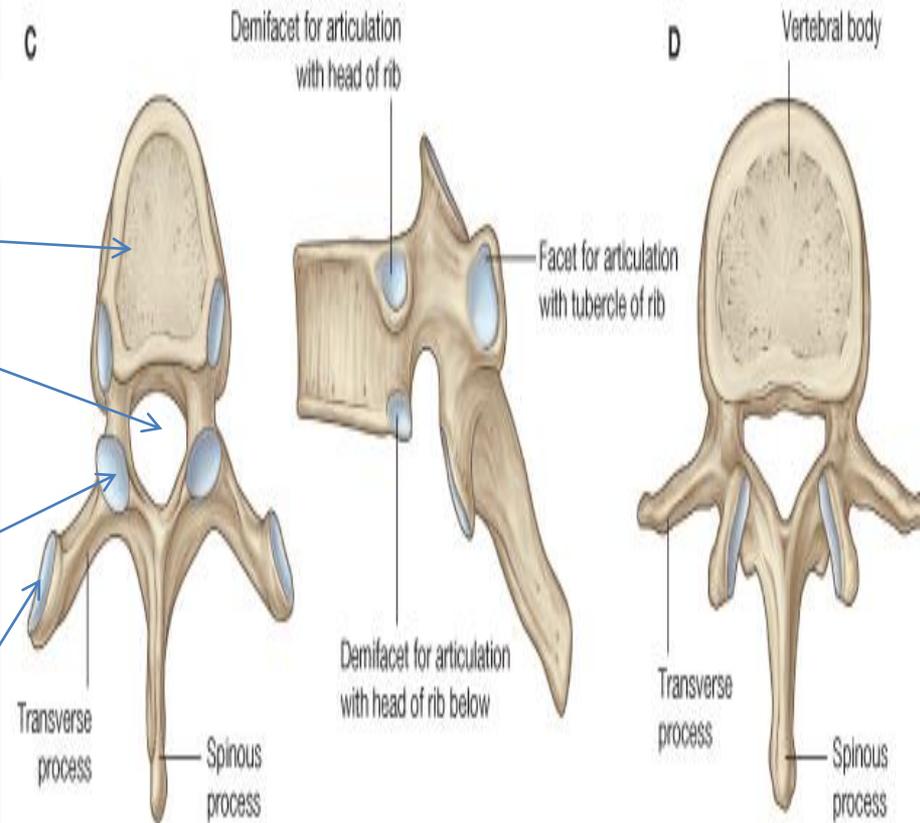
The seventh cervical vertebra

or vertebra **prominens**
is so named because it has the
longest spinous process,
and the process is not bifid.
The transverse process is large,
but the foramen transversarium is
small and
transmits the vertebral vein



Characteristics of a Typical Thoracic Vertebra

- The body is **heart shaped**
- The vertebral foramen is small and **circular**
- The spines are **long and inclined downward**
- **Costal facets are present on the sides of the bodies for articulation with the heads of the ribs**
- **Costal facets are present on the transverse processes for articulation with the tubercles of the ribs**



(T11 and 12 have no facets on the transverse processes)

Characteristics of a Typical Lumbar Vertebra

Lumbar Vertebra (L2)
Superior View

❖ The body is large **and kidney shaped**

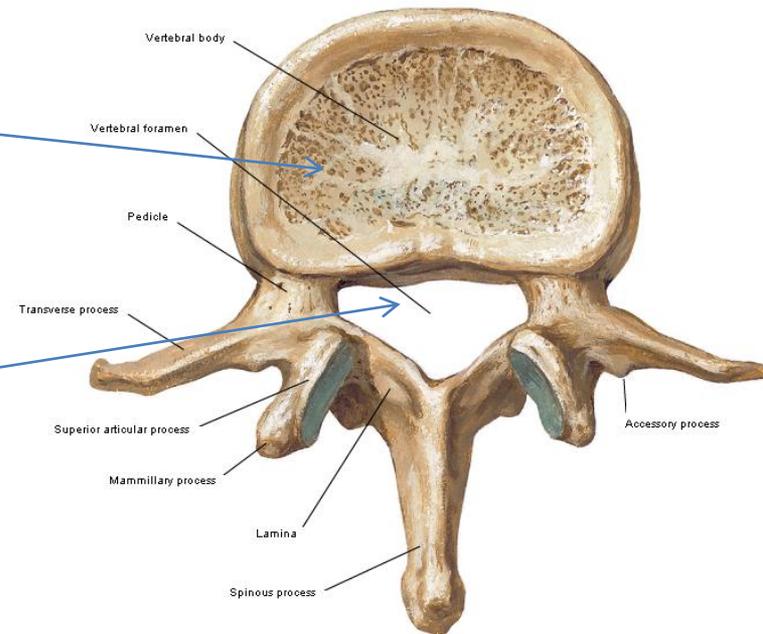
❖ The laminae are thick

❖ The vertebral foramina are triangular.

❖ The transverse processes are long and slender.

❖ The spinous processes are short, flat, and quadrangular and project backward.

❖ The articular surfaces of the superior articular processes face medially, and those of the inferior articular processes face laterally.



The sacrum

consists of five rudimentary vertebrae fused together

Articulations

1-The upper border, or base, of the bone articulates with **the fifth lumbar vertebra**

2-The narrow inferior border articulates with **the coccyx**.

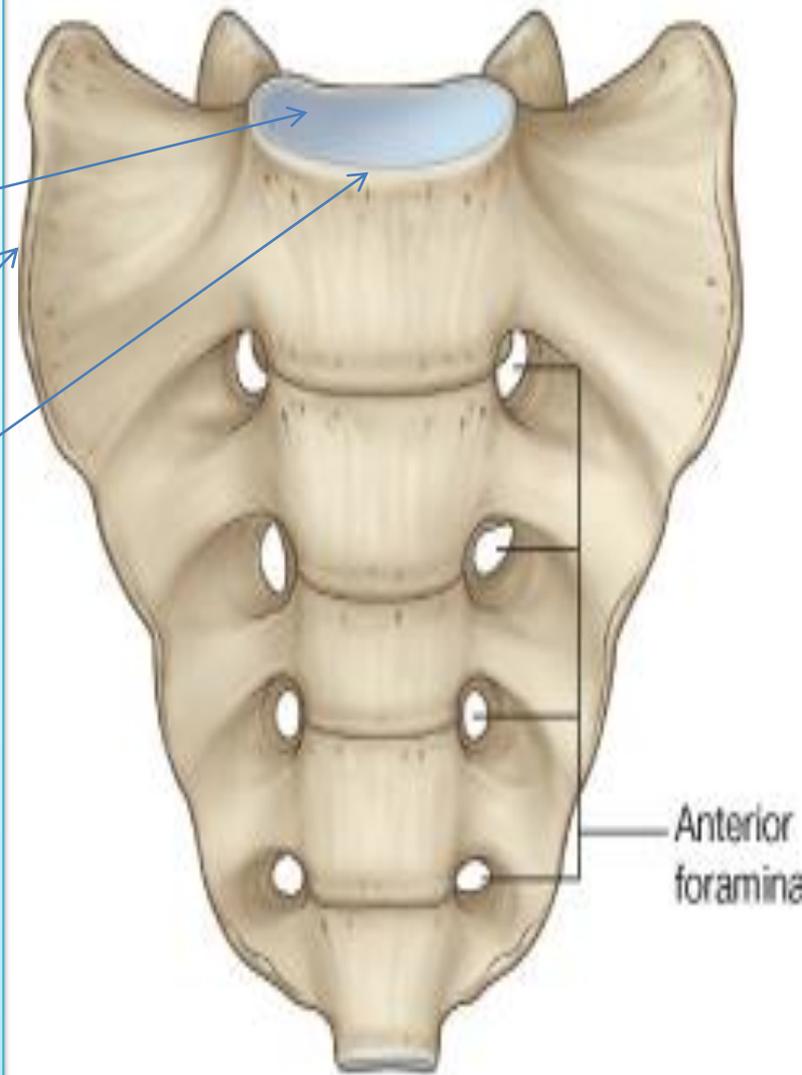
3-Laterally, the sacrum articulates with the two iliac bones to form the **sacroiliac joints**

The anterior and upper margin of the first sacral vertebra bulges forward and is known as **the sacral promontory**

➤The sacral promontory in the female is of considerable obstetric importance and is used when measuring the size of the pelvis.

The laminae of the fifth sacral vertebra, and sometimes those of the fourth also, fail to meet in the midline, forming **THE SACRAL HIATUS**

The anterior and posterior surfaces of the sacrum each have four foramina on each side for the passage of the anterior and posterior rami of the **sacral nerves**



Anterior view

COCCYX

The coccyx consists of four vertebrae fused together to form a single, small triangular bone that articulates at its base with the lower end of the sacrum

The first coccygeal vertebra is usually not fused or is incompletely fused with the second vertebra.

A typical ribs

For example, ***Rib I***

- ❖ It is flat in the horizontal plane
- ❖ Has broad superior and inferior surfaces
- ❖ The head articulates *only with the body of vertebra T1 and therefore has only one articular surface.*

- ❖ The superior surface of the rib is characterized by a distinct tubercle, **THE SCALENE TUBERCLE**, which separates two smooth grooves. The anterior groove is caused by **THE SUBCLAVIAN VEIN** and the posterior groove is caused by the **SUBCLAVIAN ARTERY**.

Rib I

Head Neck Tubercle

Scalene tubercle

Grooves

Costal cartilage

Posterior

Anterior

