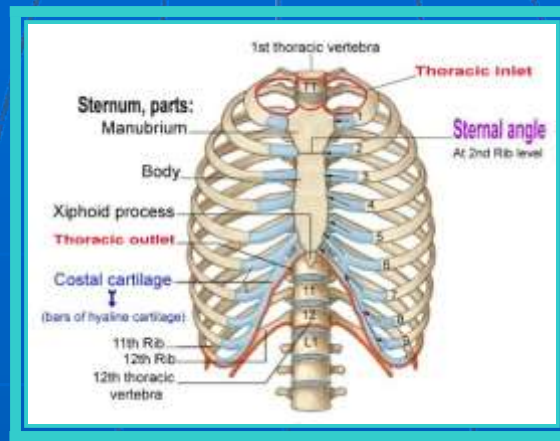


# Slides of Anatomy

**Please note : These slides are Dr. Maher Hadidi's slides of spring 2016 and were edited by our colleague Majid Dardas to fit the slides of spring 2019.**

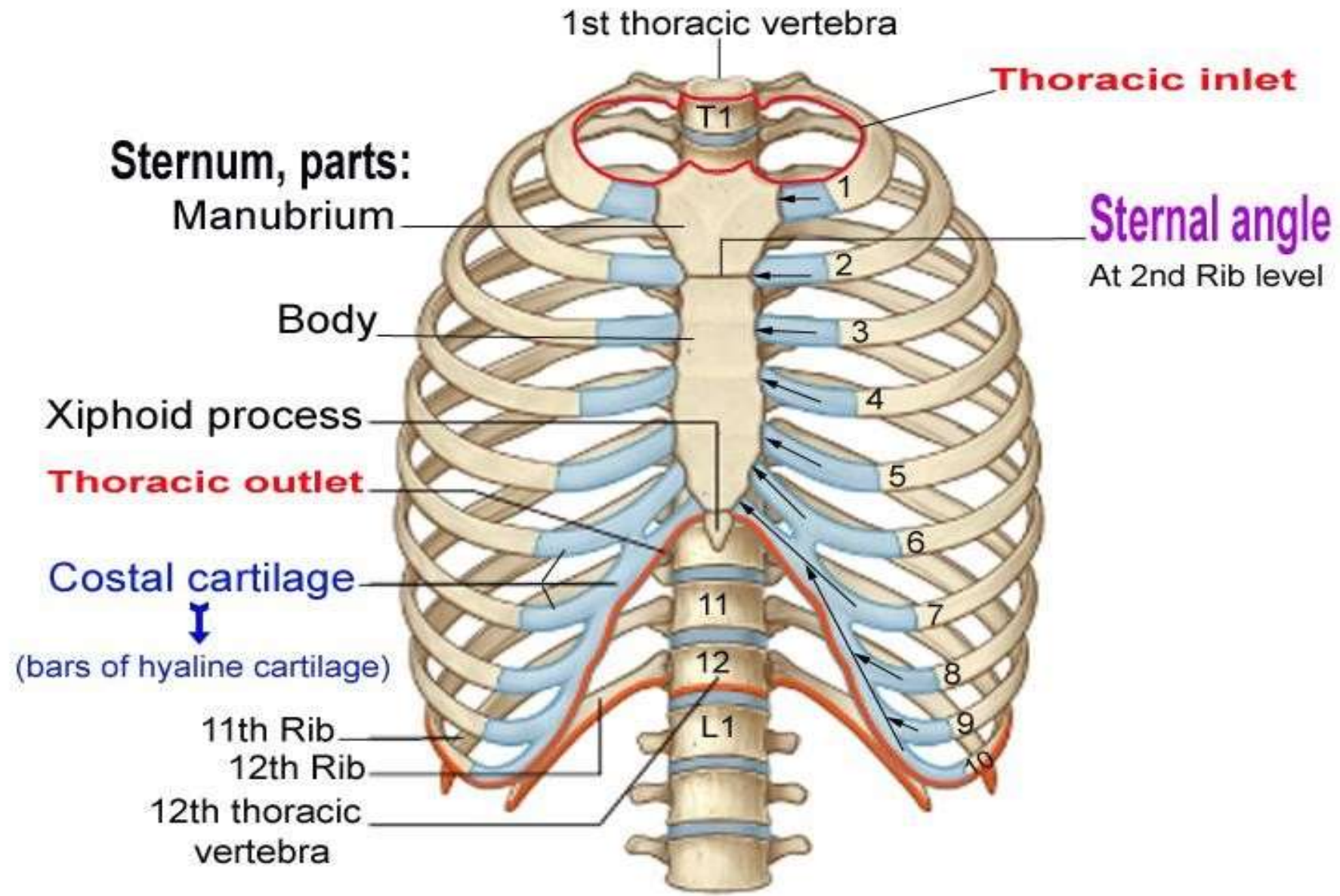


# Thorax

## Lecture (1)

### Parts:

1. Thoracic cage.
2. Thoracic wall.
3. Thoracic cavity.

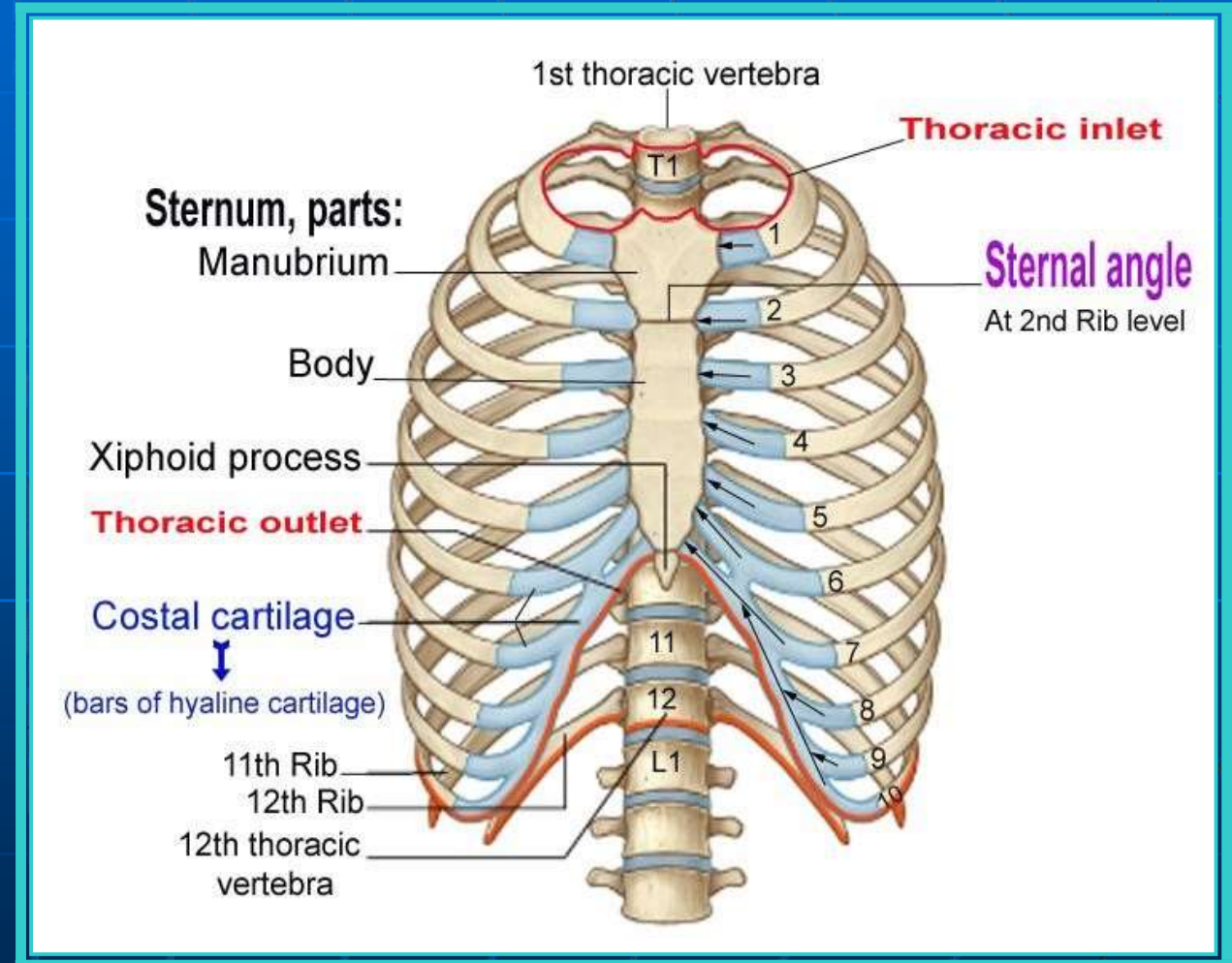




# Thoracic Cage

## Parts

- Sternum → Anterior.
- 12 vertebrae → posterior.
- 12 pairs of ribs → sides.
- 12 pairs of costal cartilages → bars of hyaline cartilage that cap the anterior end of ribs



# Sternum

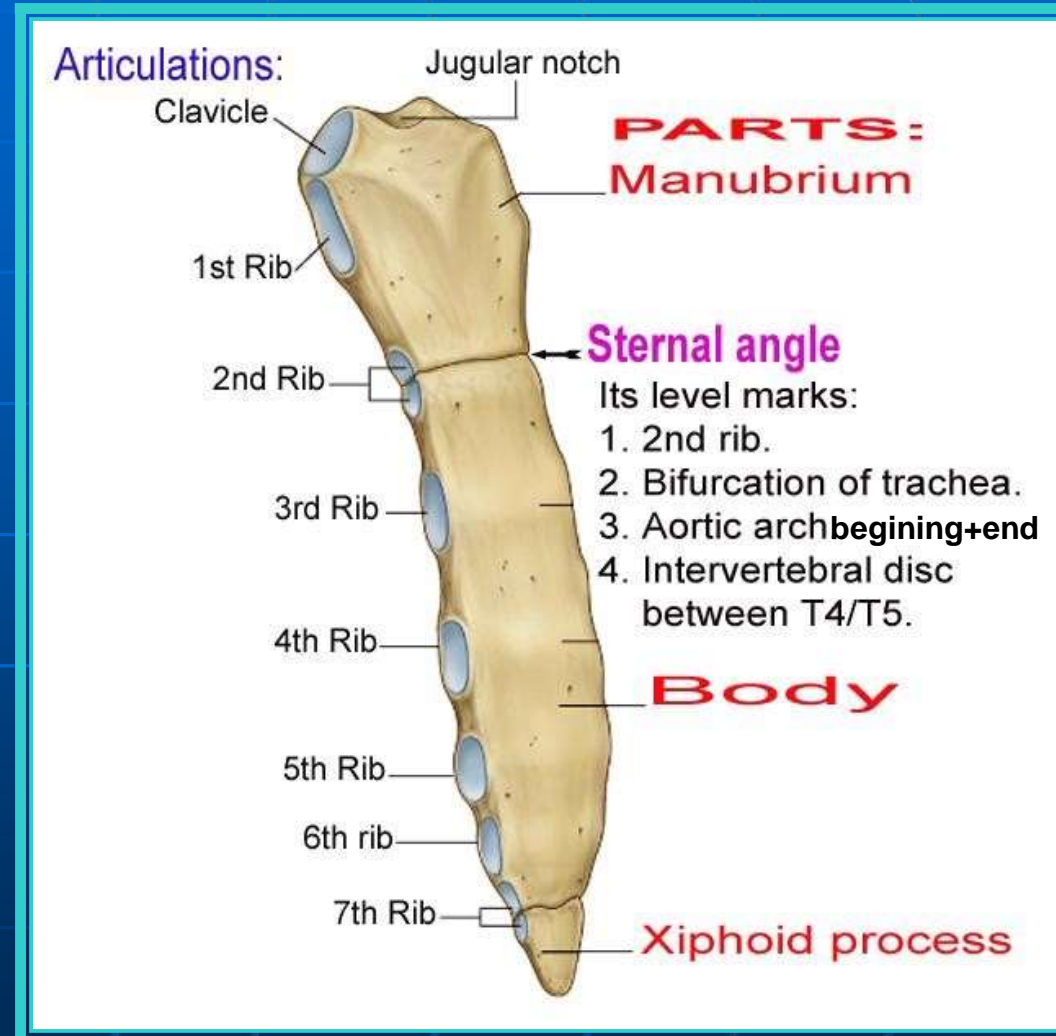
- Flat bone.
- Breast bone.
- Broad & Short in Female.
- Long & narrow in male.

## Has 3 parts:

1. Manubrium.
2. Body.
3. Xiphoid process.

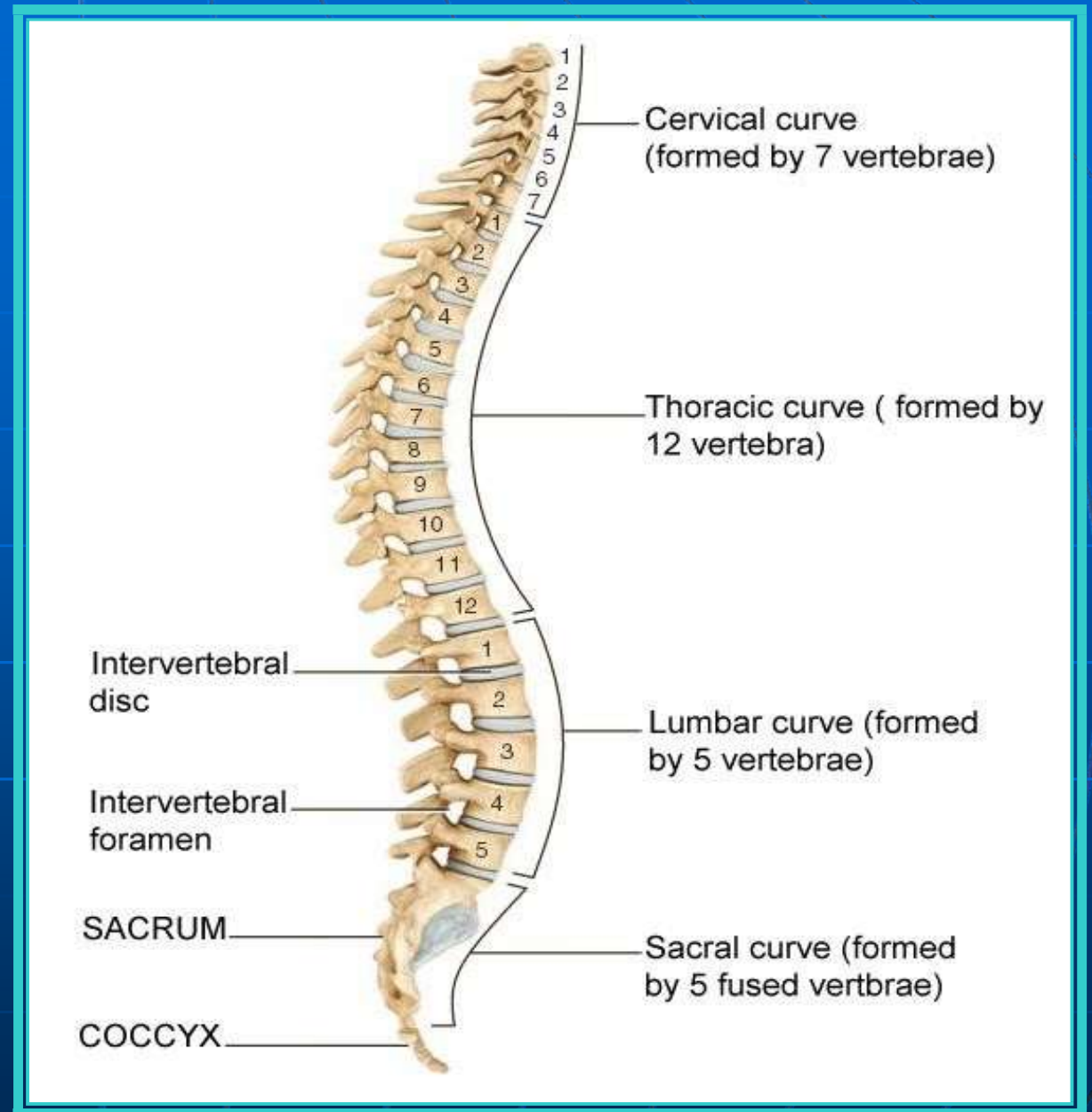
## ➤ Sternal angle:

- Between manubrium and body.
- Important Clinical landmark: it marks the site of structures 1-4.



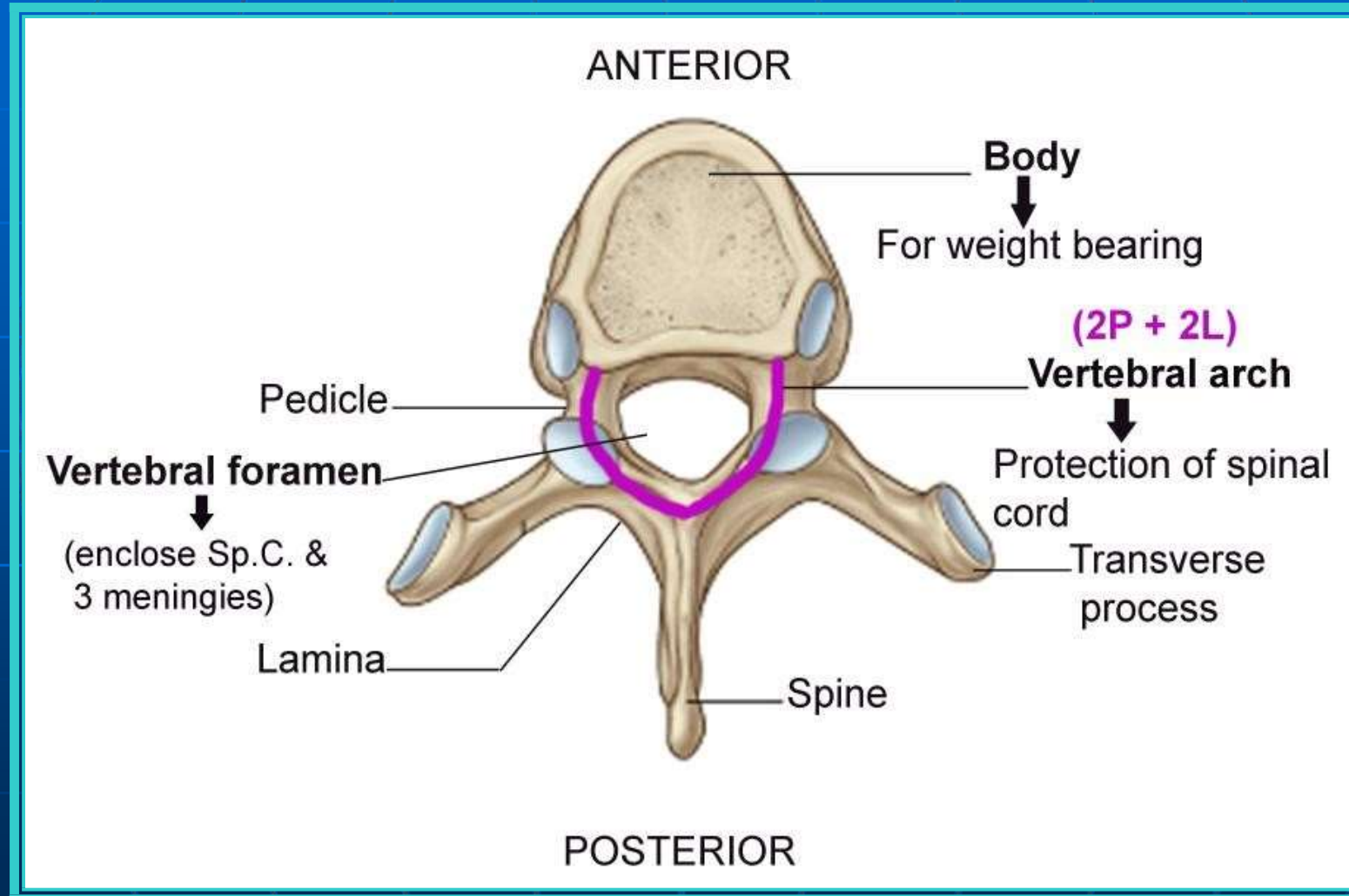
# Vertebral column

- In adult, form of 33 vertebrae.
- Regions:
  - Cervical → 7.
  - Thoracic → 12.
  - Lumbar → 5.
  - Sacrum → 5 fused.
  - Coccyx → 4 fused and rudimentary.

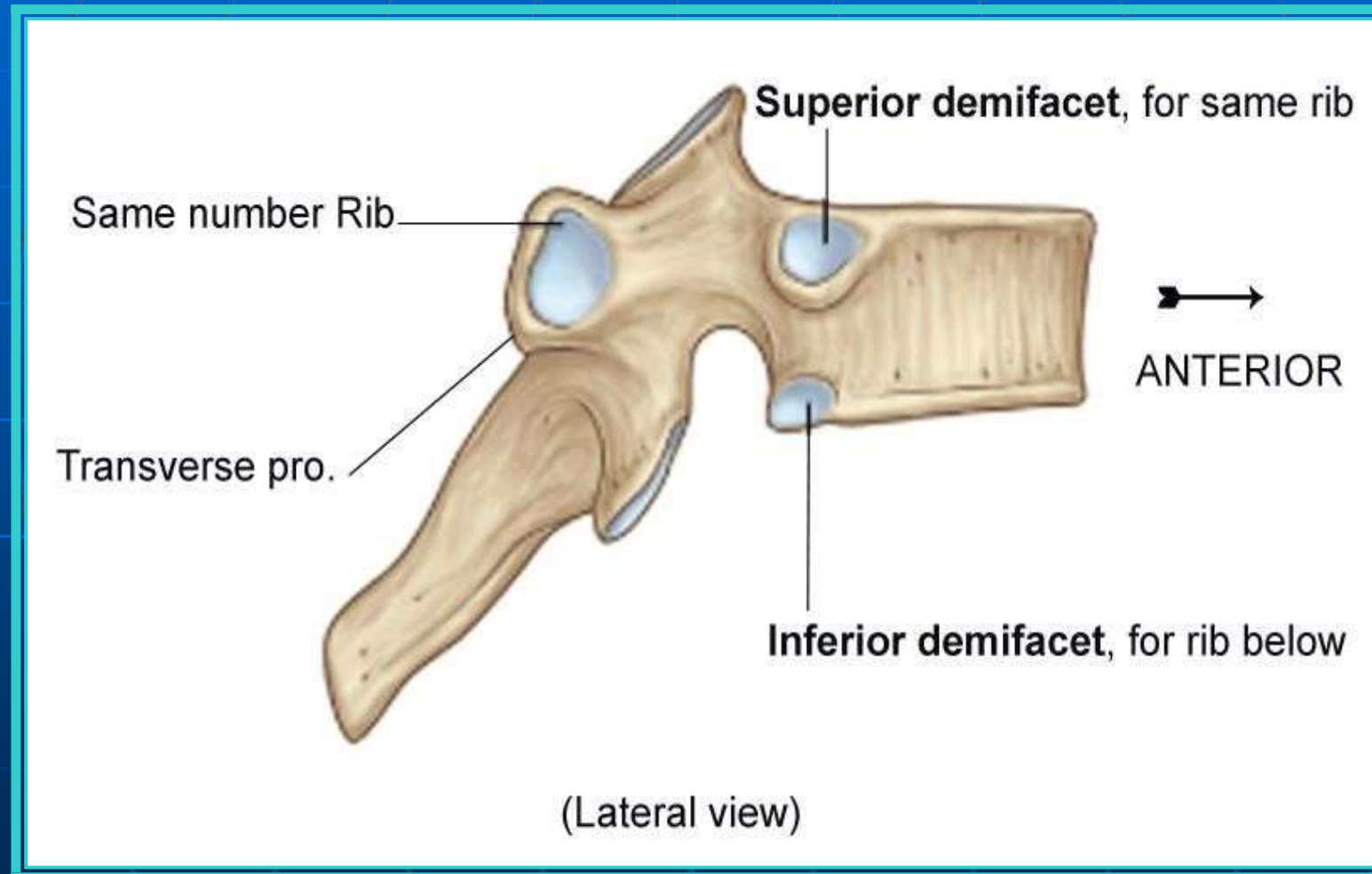




# 3 Parts of vertebra



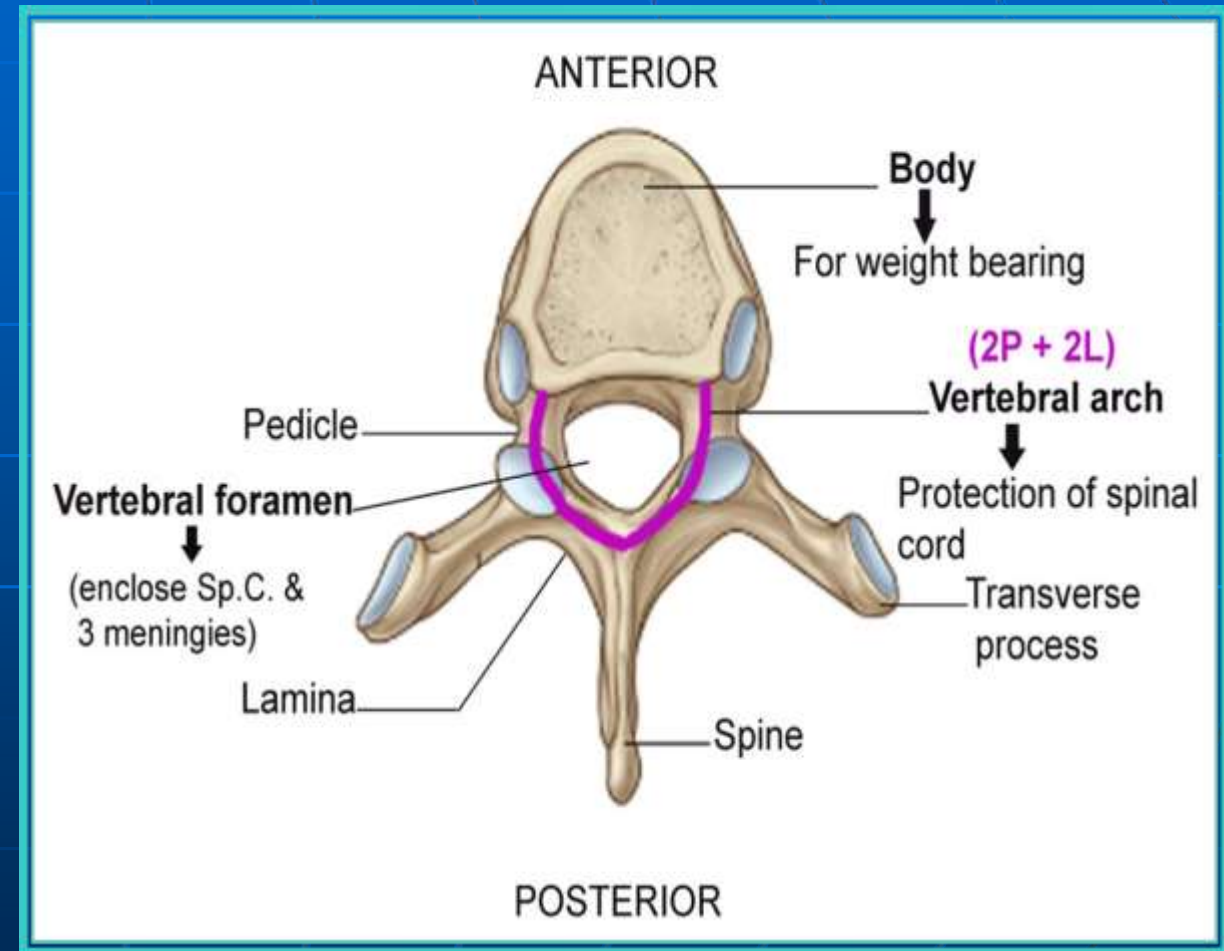
# Thoracic vertebra- Lateral view





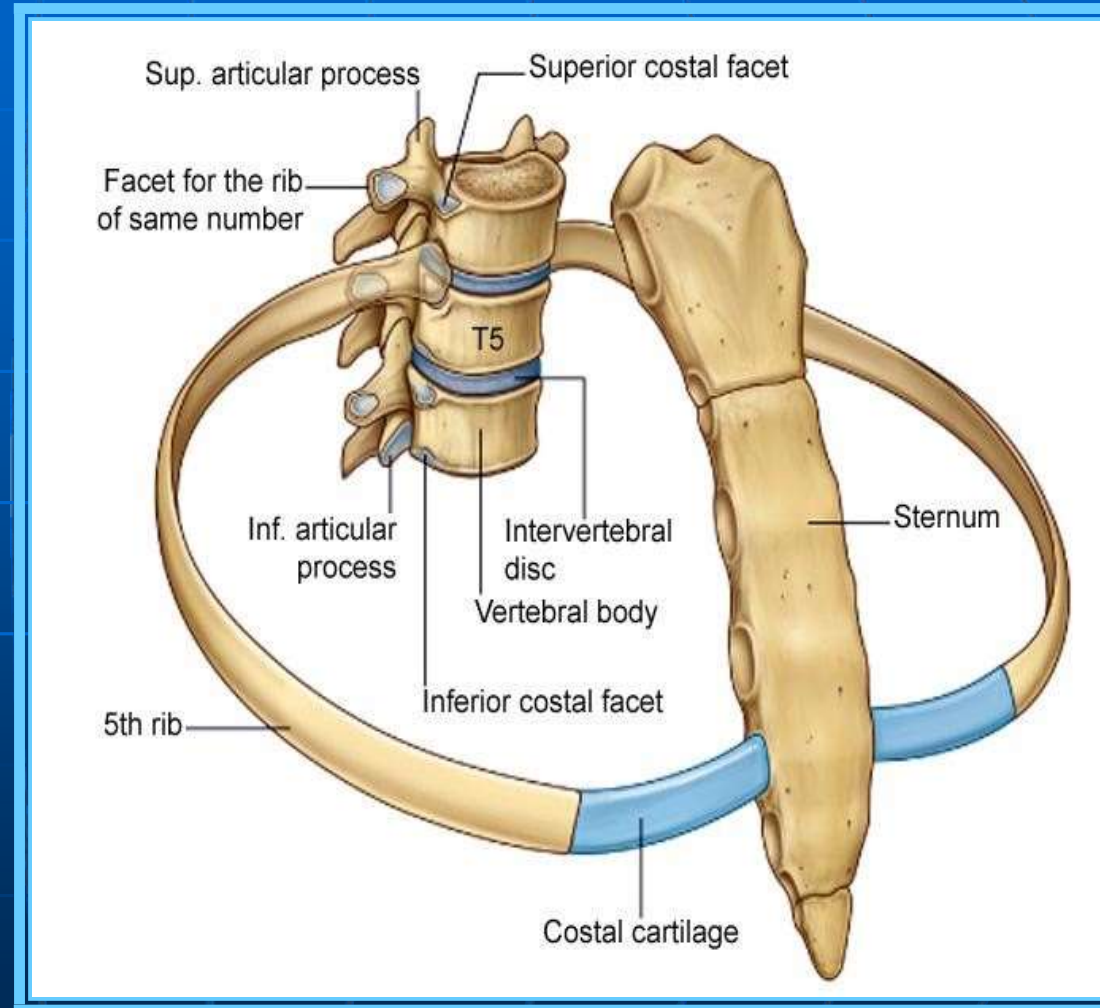
# Special features of thoracic vertebra

1. Body, heart shaped.
2. Foramen, circular.
3. Transverse process has facet to articulate with the rib of the same number.
4. Spine, long and oblique.
5. Body has 4 facets:
  - a. 2 Superior facets, same rib number
  - b. 2 inferior, 4 preceding rib



# RIBS

- Flat curved bones.
- 12 pairs.
- All extending from vertebrae posterior to sternum anterior except 11, 12 that extends anterior to the anterior abdominal wall muscles.
- Oblique in direction → posterior end higher than anterior end.



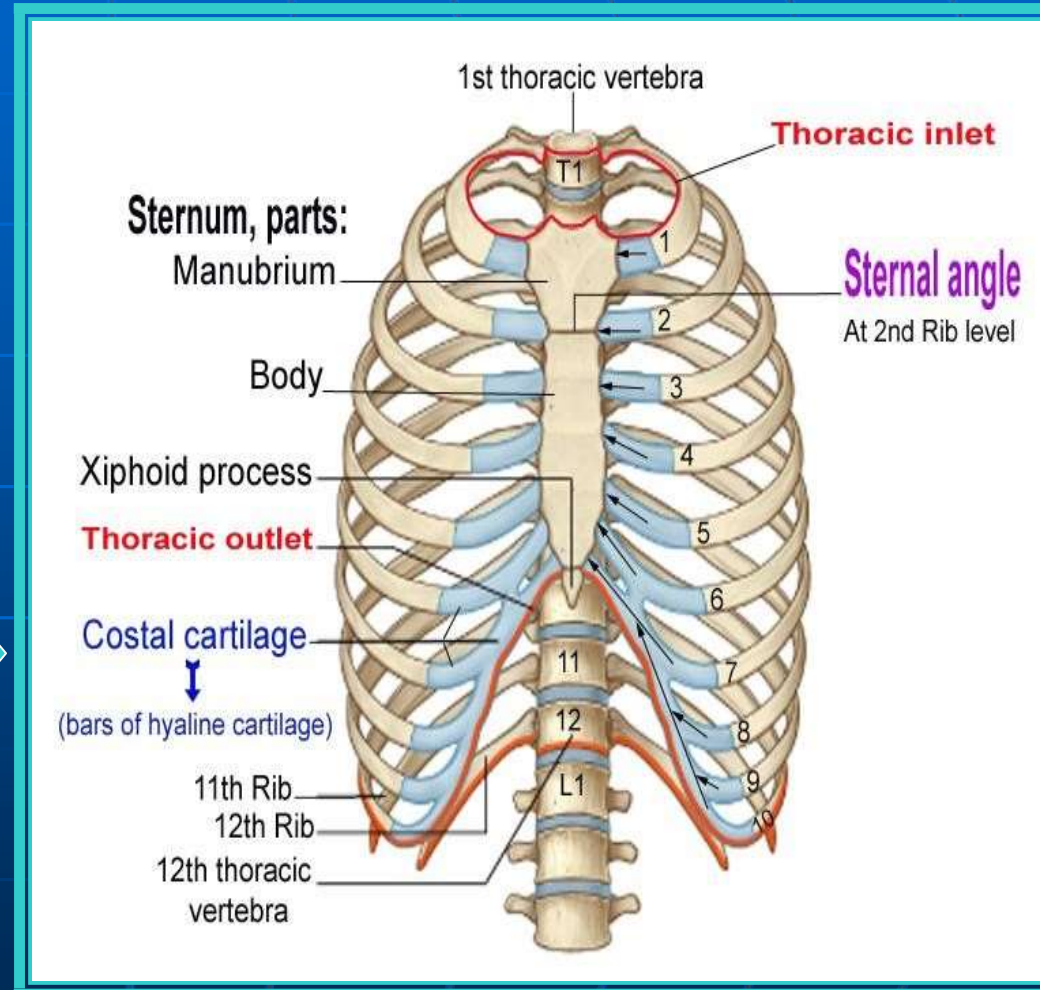
# RIBS- Classification

## 1. According to connection to sternum:

- True ribs (Direct) → 1-7.
- False ribs (Indirect) → 8-10.
- Floating (to muscles) → 11, 12.

## 2. According to parts

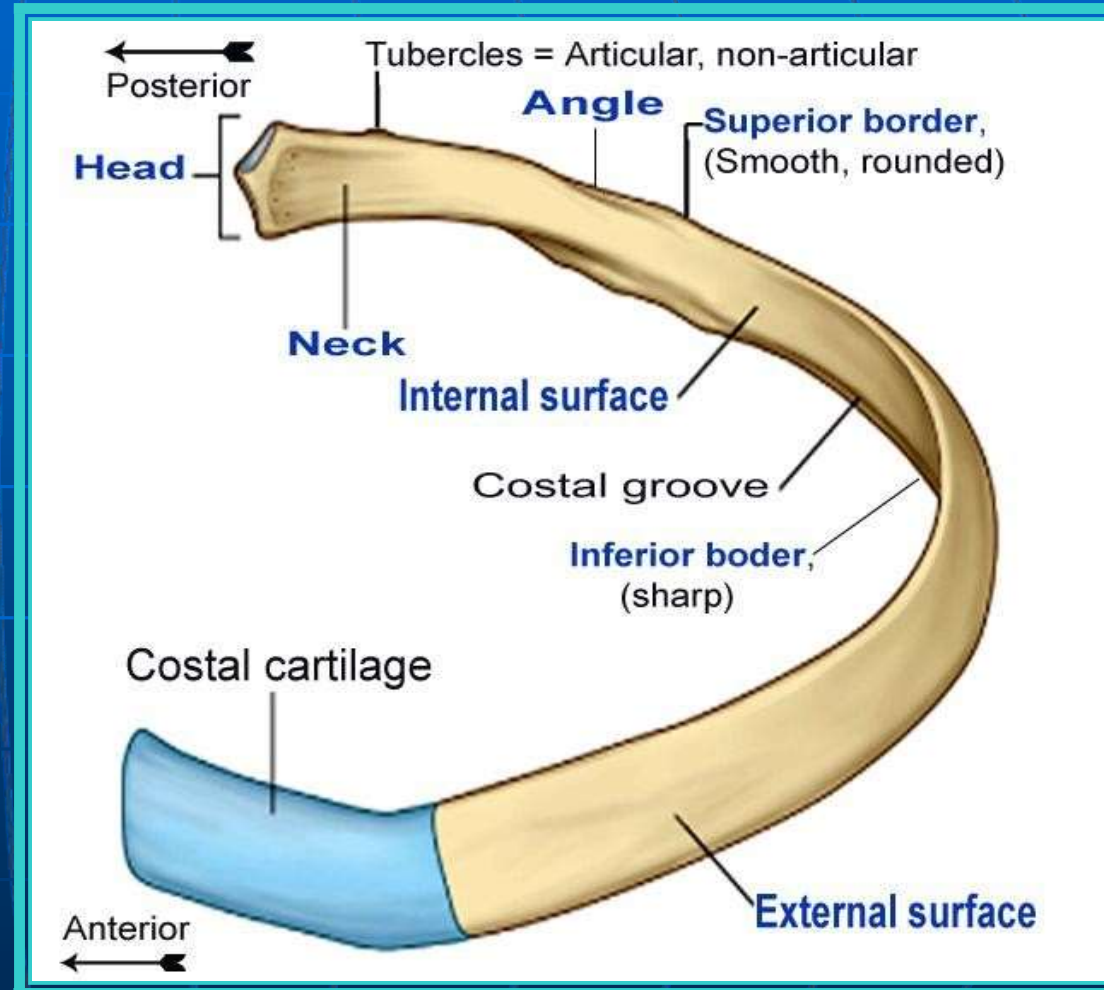
- Typical ribs (all parts) → 3-10.
- Atypical ribs (missing part/s) → 1, 2, 11, 12.





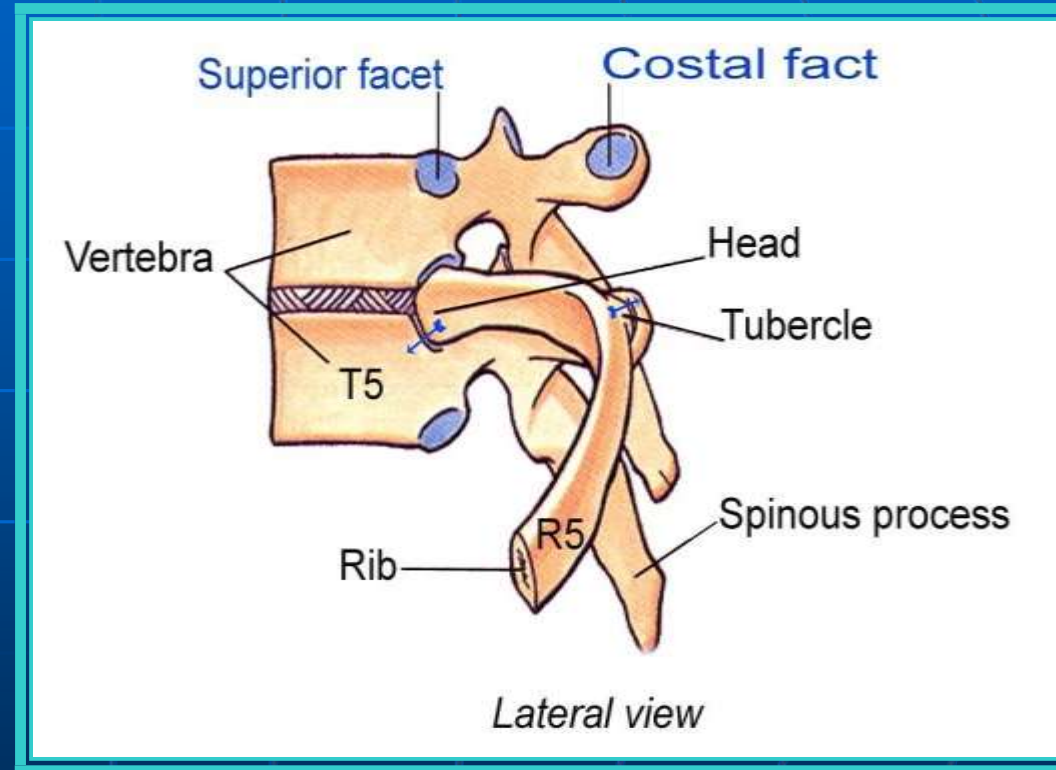
# Parts of Typical Ribs

1. Head with 2 facets.
2. Neck with 2 tubercles.
3. Angle.
4. Body, has:
  - 2 borders.
  - 2 surfaces.
  - Costal groove.



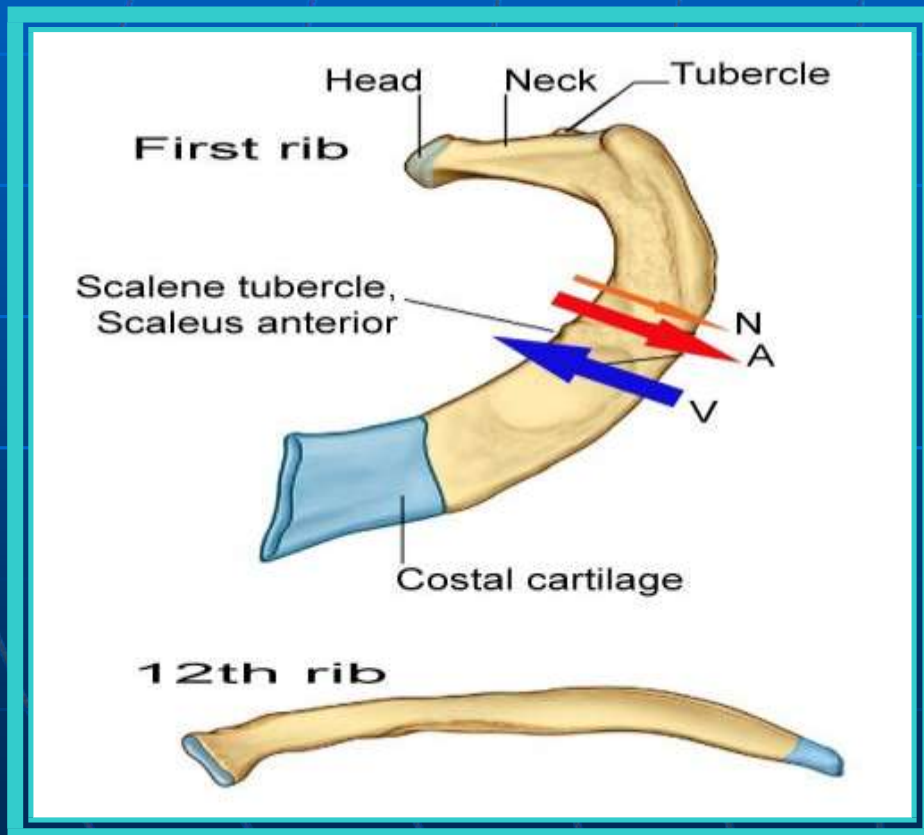
# Articulation with Vertebrae

- Inferior facet, with vertebra of same number.
- Articular tubercle, with transverse process of same the number vertebra.

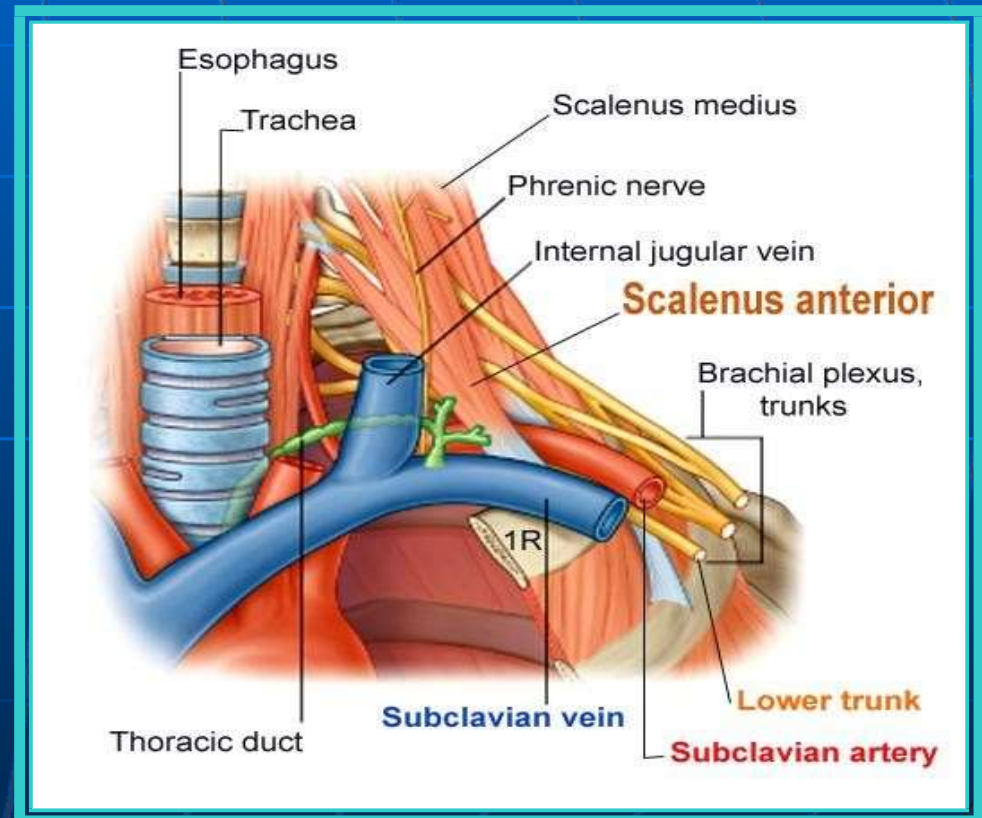


# Atypical ribs 1,2,11,12.

## First rib



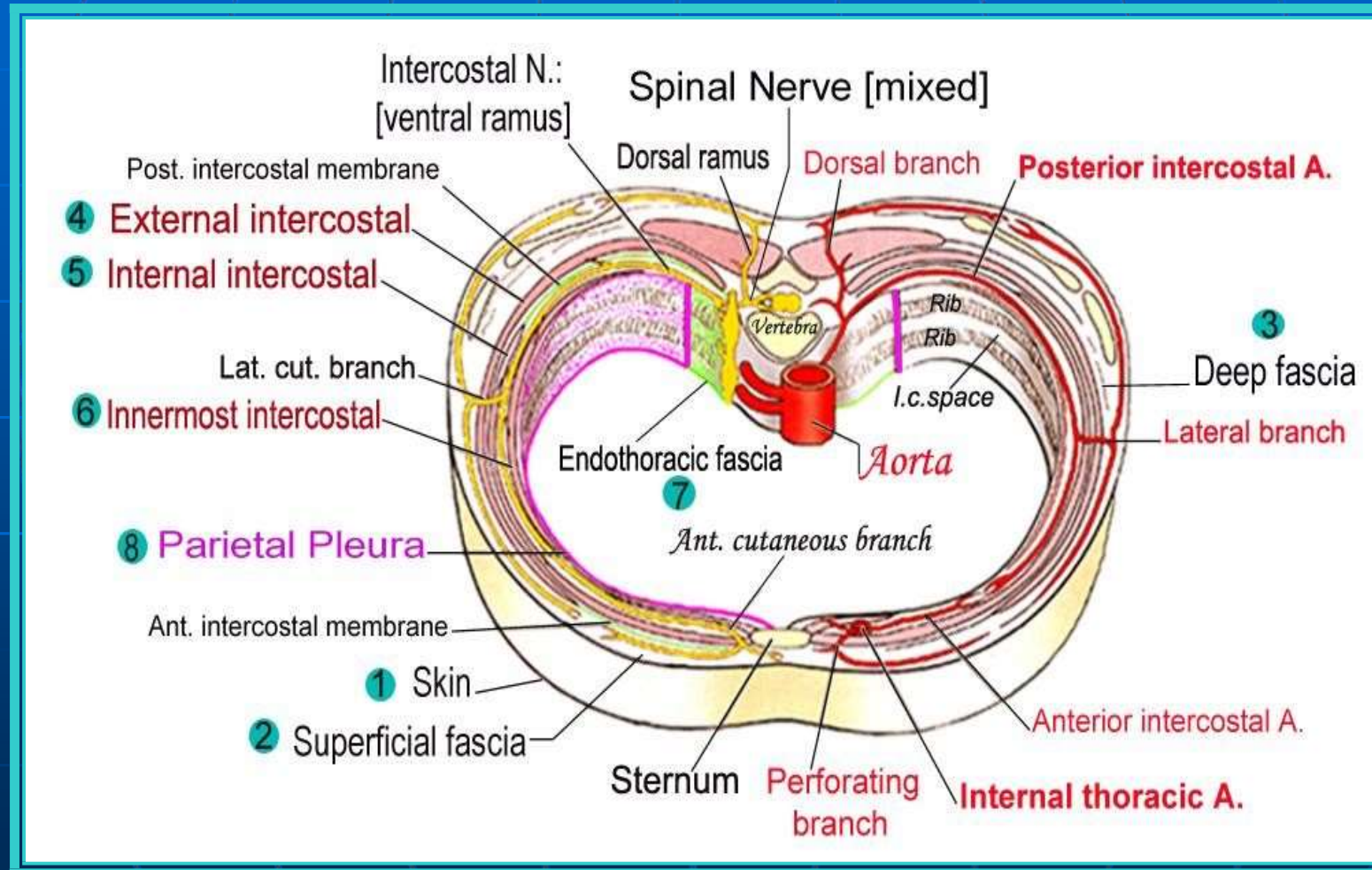
## Relations of the 1<sup>st</sup> rib.





# Thoracic wall

## Form of 8 circular layers



## Intercostal spaces:

Spaces between sequential ribs, 11 in number.

Important for respiration.

Contents: 1-4

1 External intercostal M.

2 Internal intercostal M.

3 Innermost intercostal M.

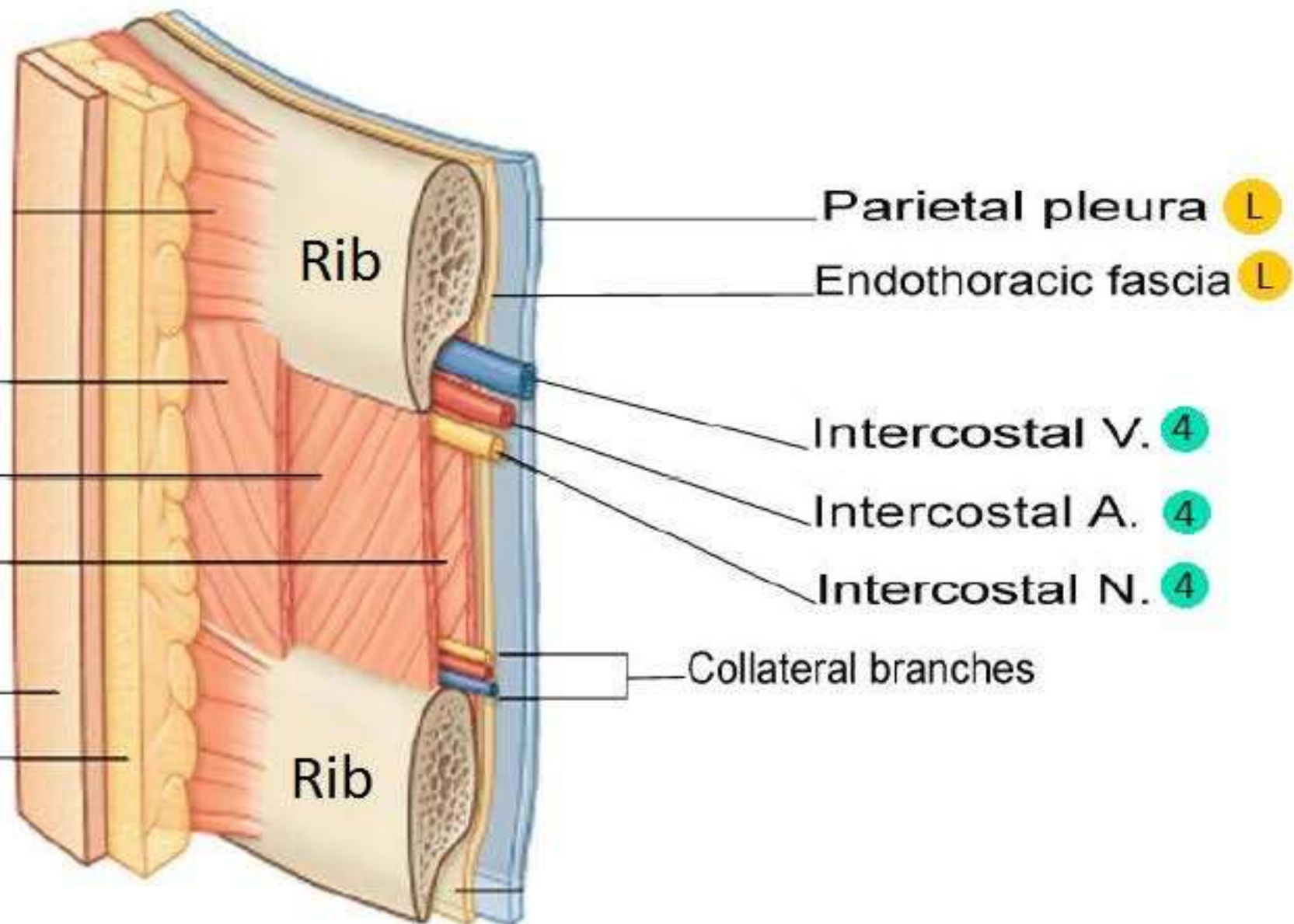
C Skin

C Superficial fascia

Contents

Coverings

Linings



(Intercostal space and related structures)



# Contents of Intercostal space

## ■ 3 Intercostal muscles:

- Arrange in 3 circular layers around thoracic cavity.
- Oriented in 3 different directions (3 ply sheet).
- They reinforce intercostal spaces during inspiration.
- NS: Supplied segmentally by the nerve of its own space.

## ■ Intercostal nerves:

- 11 in number, while the 12th called subcostal nerve.
- Originates from ventral rami of thoracic spinal nerves.
- **M**otor and **S**ensory to: **S**kin, **M**uscles, **P**leura.

## ■ Intercostal Arteries:

- 11 in number, while the 12th called subcostal artery.
- 1st, 2nd originates from the subclavian artery.
- 3rd -12th originates from thoracic Aorta.