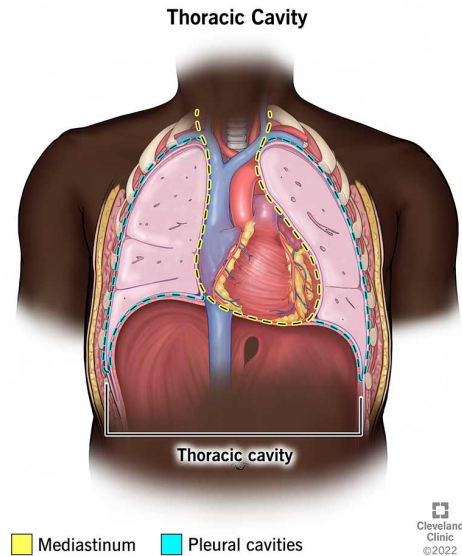


# Thorax

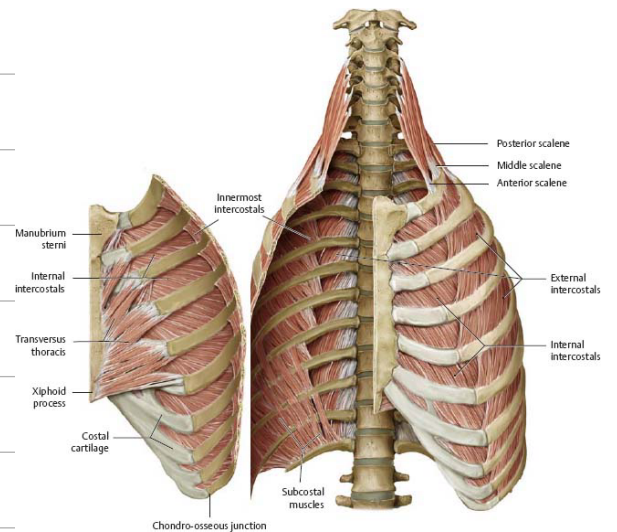
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سبحان الله العظيم

\* we will talk about :-

1) Thoracic cavity.



2) Thoracic wall.



# Openings of the Thorax.

→ **Thoracic outlet**: It is an opening between chest cavity and the root of the neck.

→ **Boundries:**

Anteriorly: superior border manubrium sterni

posteriorly: first thoracic vertebra

laterally: medial borders of the first ribs and their costal cartilages.

→ **structure passing:**

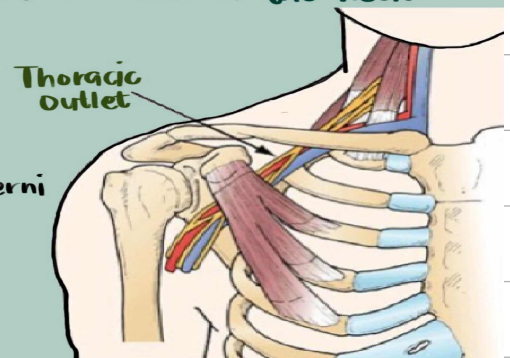
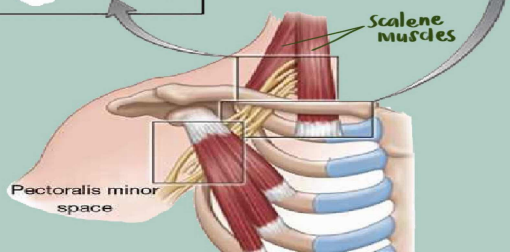
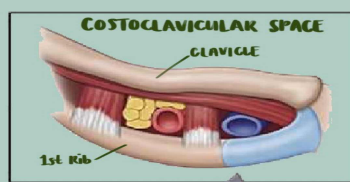
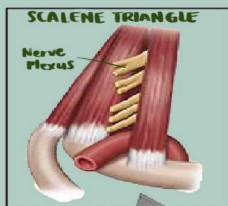
Esophagus, trachea and many vessels and nerves.

## Thoracic Outlet

- communication of the chest cavity with the root of the neck.

### BOUNDARIES:

- ▷ Posterior: T1 Vertebra
- ▷ Lateral: Medial border of the 1st rib and costal cartilages
- ▷ Anterior: Superior border of manubrium sterni



### 3 LOCATIONS:

1. Scalene Triangle
- ii. Costoclavicular Space
- iii. Under Pectoralis Minor and Coracoid Process

# Openings of the thorax

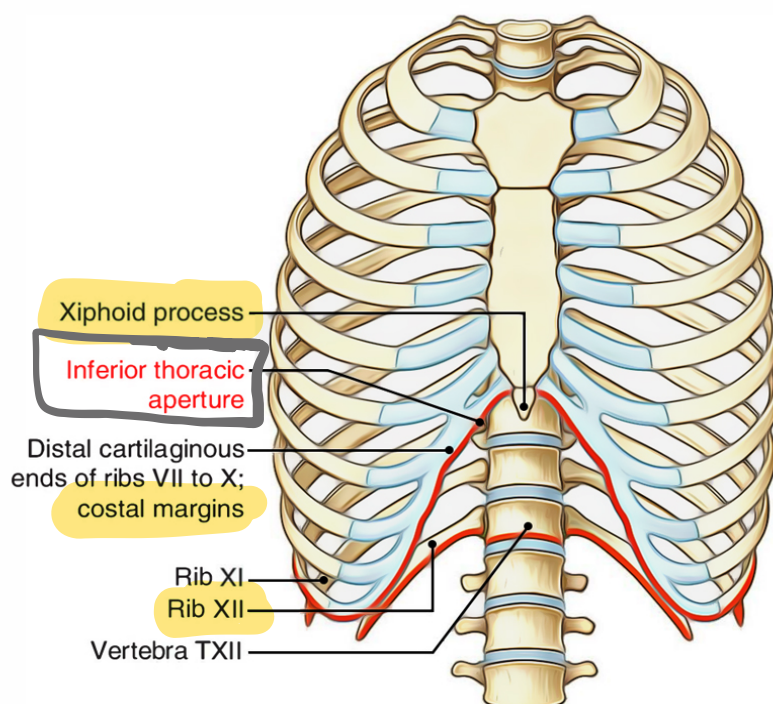
→ **Inferior thoracic aperture:** the thoracic cavity communicates with the abdomen through a large opening.

→ **Boundaries:**

Anteriorly: xiphisternal joint.

Posteriorly: 12th thoracic vertebra.

Laterally: costal margin.



# Intercostal muscles

## 1 External intercostal muscles

> It's fibers are directed downward and forward.

> It extends from the inferior border of the rib above to the superior border of the rib below.

## 2 Internal intercostal muscle

> it's fibers are directed downward and backward

> It extends from the subcostal groove of the rib above to the upper border of the rib below

> responsible for expiration.

## 3 Innermost intercostal muscle

## 4 subcostal muscle

## 5 transverseus thoracis muscles

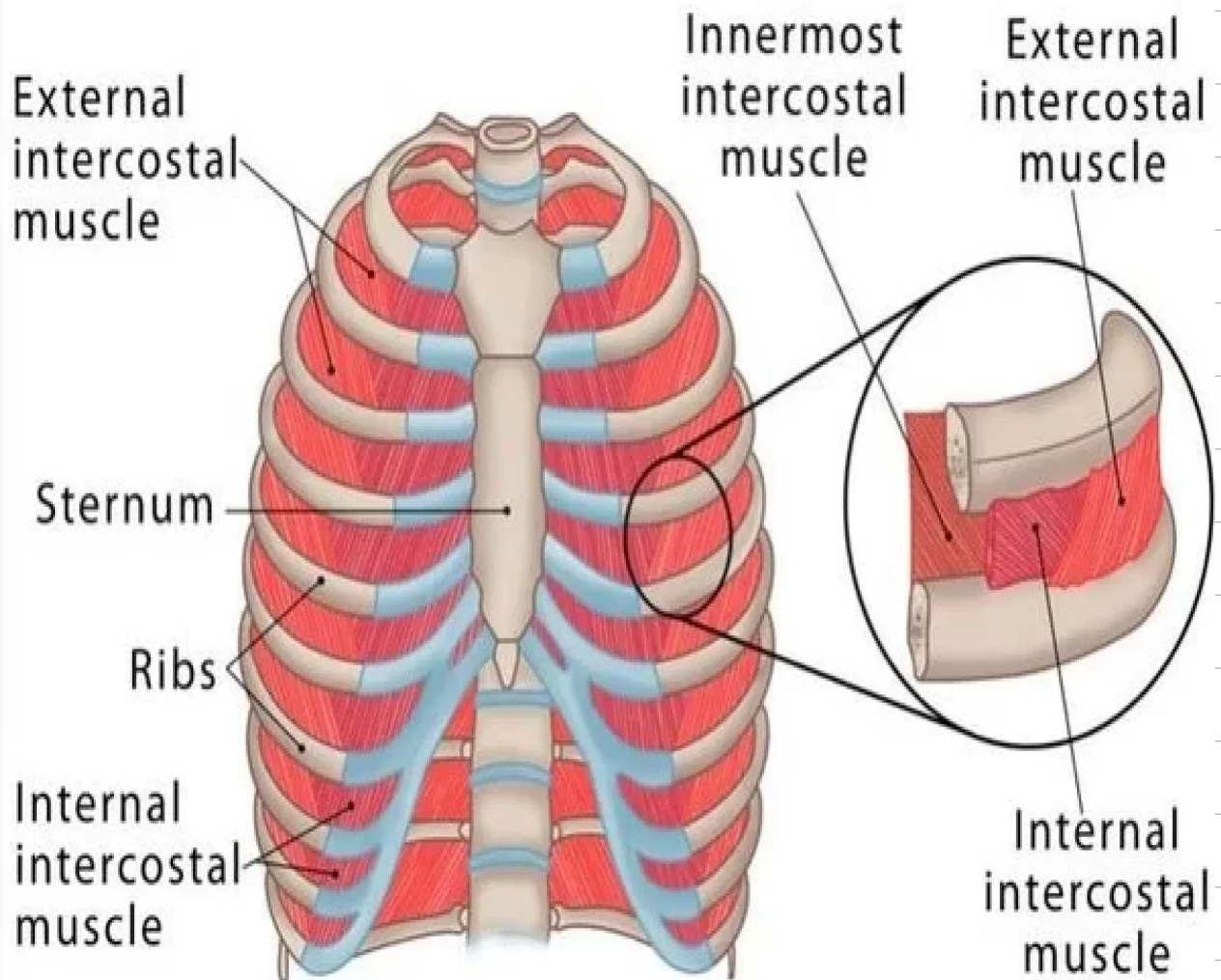
\* Nerve supply for all of these muscles:- ↑

Intercostal nerves

\* Action for all of these muscles:- ↑

- 1) respiration.
- 2) strengthen the intercostal spaces.

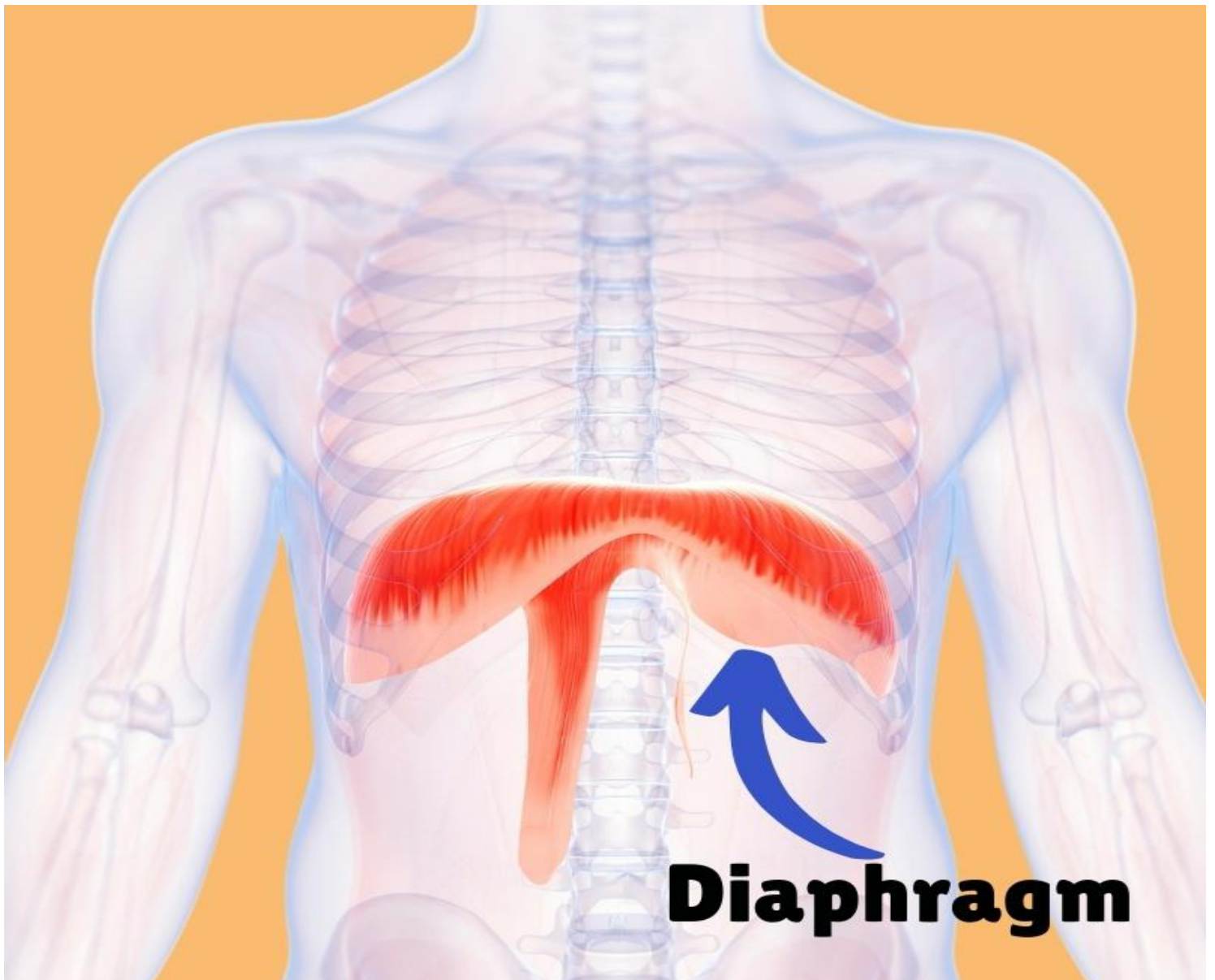
## Intercostal Muscles



# Diaphragm

It is a thin muscular and tendinous septum that separates the chest cavity above from the abdominal cavity below.

\*Nerve supply :- Motor nerve supply: the right and left phrenic nerves (C<sub>3</sub>, 4, 5).



# Function of the diaphragm

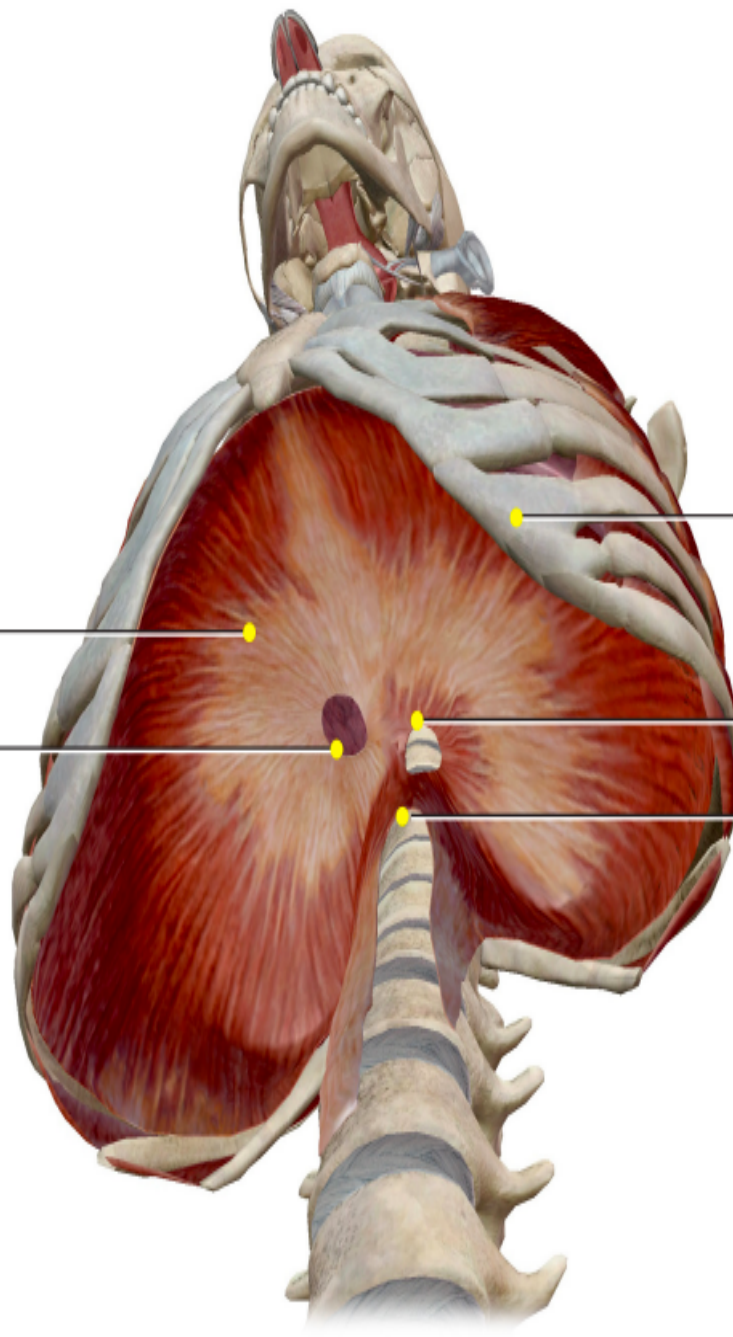
1) respiration

2) muscle of abdominal straining: the contraction of the diaphragm is raising the intra-abdominal pressure

3) weight-lifting muscle.

4) Thoracoabdominal pump: Pump for blood and lymph.

Opening	Level	structures passing through it
Vena caval	8 <sup>th</sup> thoracic vertebra	It transmits the inferior vena cava and terminal branches of the right phrenic nerve
Oesophageal (oesophagus) opening	10 <sup>th</sup> thoracic vertebra	oesophagus, the right and left vagus nerves
Thoracic	12 <sup>th</sup> thoracic vertebra	aorta, the thoracic duct, and the azygos vein



Diaphragm

Opening for inferior  
vena cava

Rib cage

Opening for  
esophagus

Opening for  
abdominal aorta



# Intercostal nerves

It is a ventral ramus of thoracic nerves.

There are 11 nerves on each side.

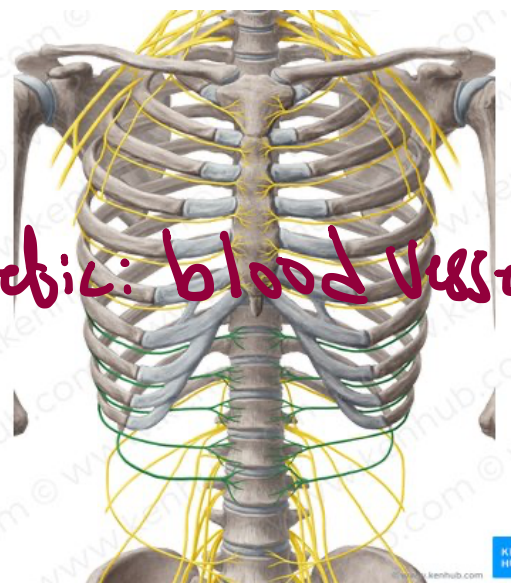
the last one called subcostal nerve.

function of intercostal nerve :-

\* sensory: skin - parietal layer of pleura and peritoneum.

\* Motor: muscles of anterior thoracic and abdominal walls.

\* Postganglionic sympathetic: blood vessels, sweat glands.



## Blood supply of thoracic wall

### Anterior wall

9 on each side.

2 in each space.

Upper 6 from **internal thoracic artery**.

7,8,9 from **musculophrenic artery**

### Posterior wall

11 on each side.

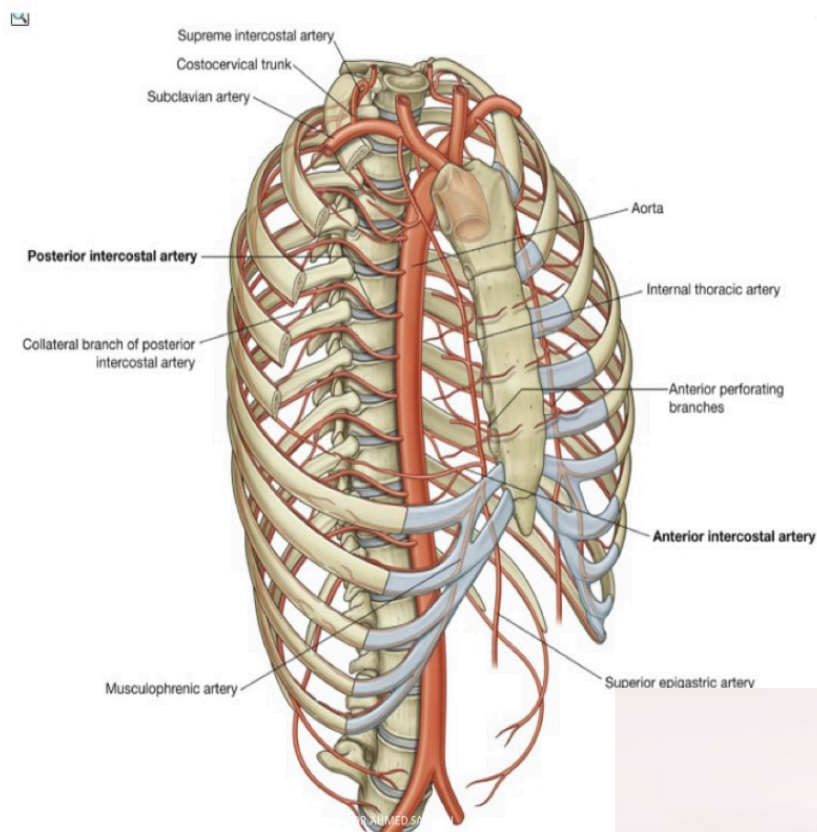
One in each space.

1<sup>st</sup>, 2<sup>nd</sup> from **superior intercostal artery**.

3 -11 from **descending thoracic aorta**.

DR.AHMED SALMAN

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الله أكبر