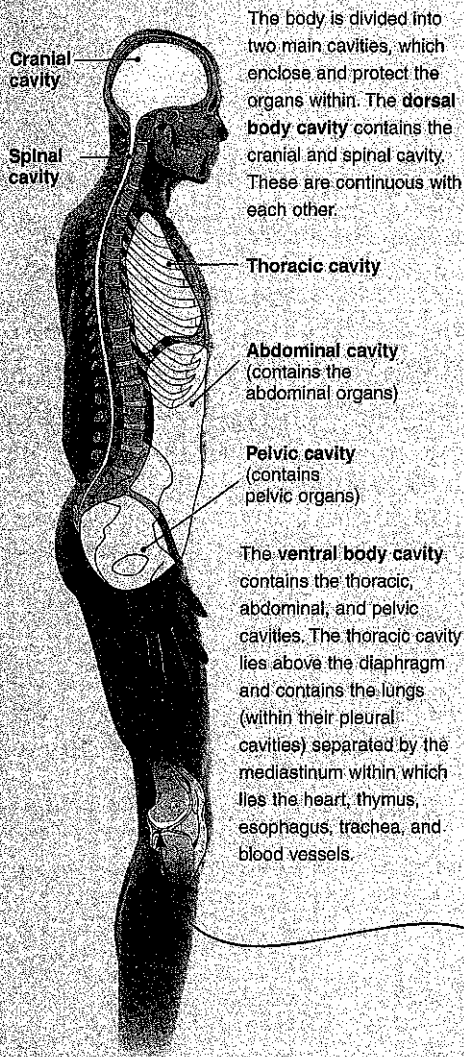


Body Membranes and Cavities

The study of anatomy and physiology requires a basic understanding of anatomical terms, including the directional (e.g. distal) and regional (e.g. pelvic) terms used to describe the position of body parts, the location of the body's **cavities** (dorsal and ventral), and the way in which the body's **membranes** line those cavities and protect the organs within. A membrane is a thin layer of tissue that covers a structure or lines a cavity. The body's membranes fall into two broad categories: **epithelial**

membranes (the skin, mucosa, and serosa), and **synovial membranes**, which lack epithelium. Membranes line and cover the internal and external surfaces of the body, protecting and, in some cases, lubricating them. Epithelial membranes are formed from epithelium and the connective tissue on which it rests. Whereas the skin (**cutaneous membrane**) is exposed to air and is a dry membrane, **mucous membranes** (mucosa) and **serous membranes** (serosa) are moist and bathed in secretions.

Body Cavities



The body is divided into two main cavities, which enclose and protect the organs within. The **dorsal body cavity** contains the cranial and spinal cavity. These are continuous with each other.

Thoracic cavity

Abdominal cavity (contains the abdominal organs)

Pelvic cavity (contains pelvic organs)

The **ventral body cavity** contains the thoracic, abdominal, and pelvic cavities. The thoracic cavity lies above the diaphragm and contains the lungs (within their pleural cavities) separated by the mediastinum within which lies the heart, thymus, esophagus, trachea, and blood vessels.

Fig. 1: Location of dorsal and ventral body cavities in the human body. A knee joint shows a typical location of connective tissue (synovial) membranes.

Body Membranes

Cutaneous membrane

- The **skin** forms a protective covering over the surface of the body.
- It is made up of an epidermis of stratified squamous epithelium and an underlying dermis of connective tissue.

Mucous membranes (mucosa)

- The **mucosa** lines all body cavities that open to the exterior, i.e. the hollow organs of the respiratory, digestive, urinary, and reproductive tracts.
- It is composed of some type of simple epithelium (e.g. columnar or squamous) resting on loose connective tissue.
- The epithelium of mucosae is often absorptive or secretory.
- Many of them, but not all, produce mucus.

Serous membranes (serosa)

- Serous membranes line internal body cavities that are closed to the exterior.
- They are made of a thin layer of squamous epithelium resting on a thin layer of loose connective tissue.
- They occur in pairs: the **parietal layer** lines the body wall and the **visceral layer** lines the organ within that cavity.
- The membranes are separated by a thin film of **serous fluid**.
- They are named according to location in the body: **peritoneum** (abdomen), **pleura** (lungs), **pericardium** (heart).

Synovial membranes

- Synovial membranes line the capsules around joints and secrete a lubricating synovial fluid (see the activity 'Joints').
- They are composed of connective tissue and contain no epithelial cells.
- They provide a smooth surface and cushion moving structures.

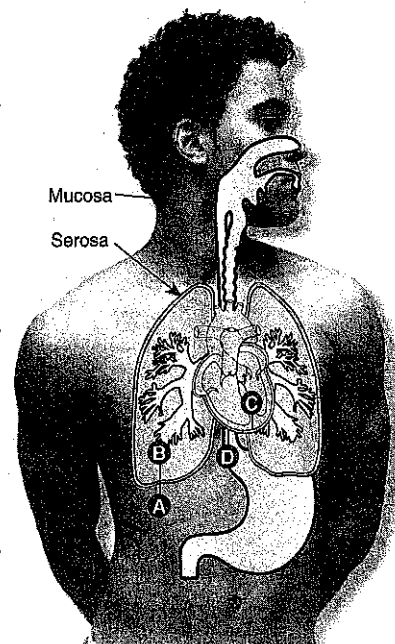


Fig. 2: Location of the mucous and serous membranes in the thorax.

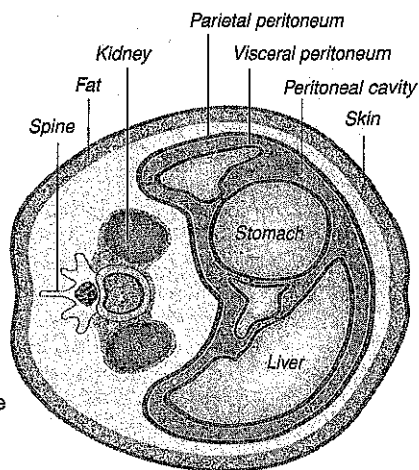


Fig. 3: Relationship of parietal and visceral peritoneal membranes in the abdomen (TS)

1. Use the information given above to name the **serous membranes** labeled A-D in Fig. 2:

- (a) A: _____ (c) C: _____
 (b) B: _____ (d) D: _____

2. (a) Describe the general role of epithelial membranes in the body: _____

 (b) Explain how epithelial membranes differ from synovial membranes: _____
