



Spinal Cord

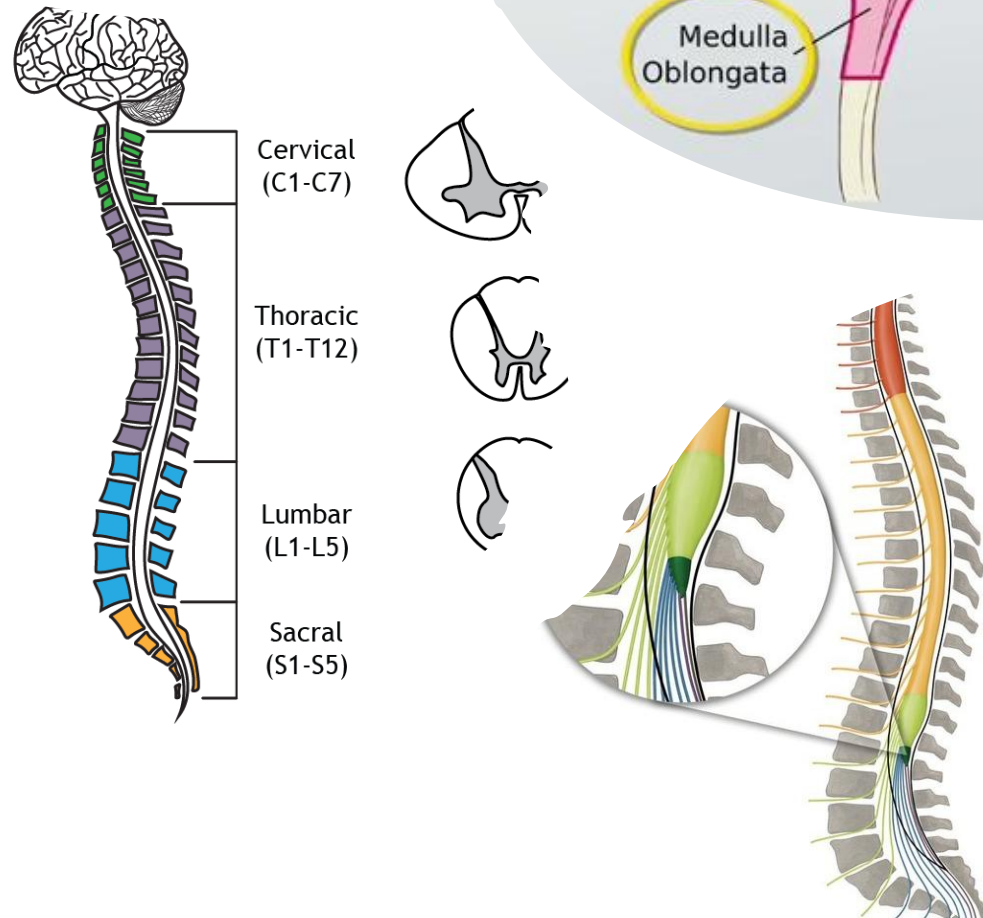
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Location and Length

Begins at the bottom of the **brain stem (medulla oblongata)**.

Extends to the lower back, tapering into the **conus medullaris**.

Length: Approximately **18 inches (45 centimeters)**.



Protective measures

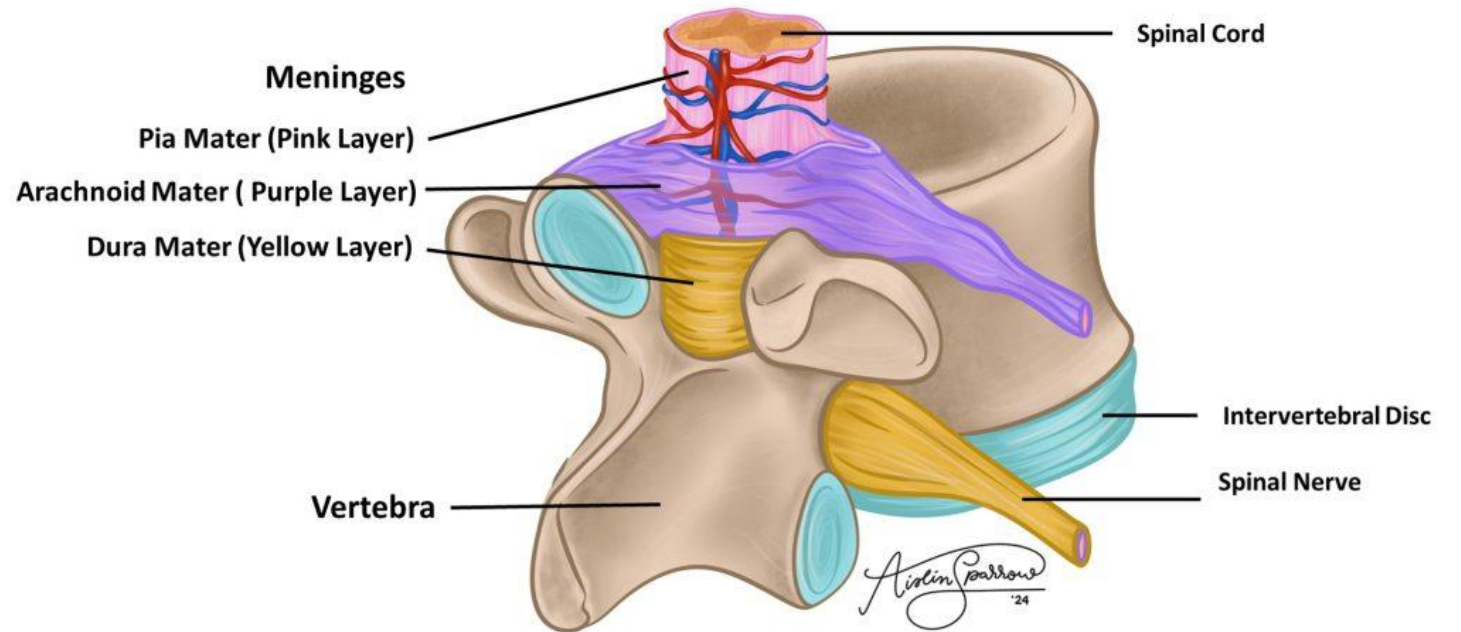
Surrounding cerebrospinal fluid (CSF).

Shielded by three layers of meninges:

Dura mater: Outermost layer, tough and fibrous, providing structural support and protection.

Arachnoid mater: Middle layer, delicate and web-like, containing CSF and blood vessels.

Pia mater: Innermost layer, thin and transparent, closely adhering to the surface of the spinal cord, supplying it with blood vessels.



Spinal Column and Vertebrae

Spinal cord housed within the **spinal column**.

33 vertebrae composing the spinal column.

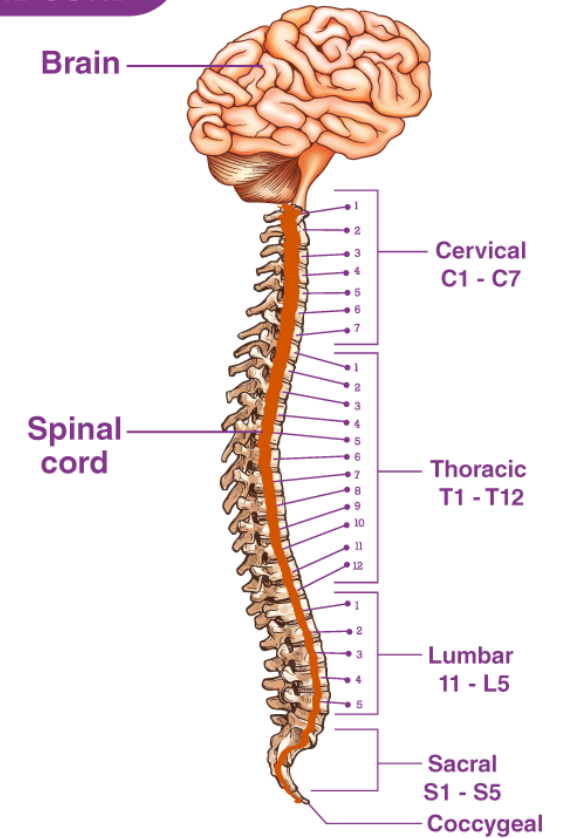
Four sections of the spine:

Cervical (7)

Thoracic (12)

Lumbar (5)

Sacral. (5)

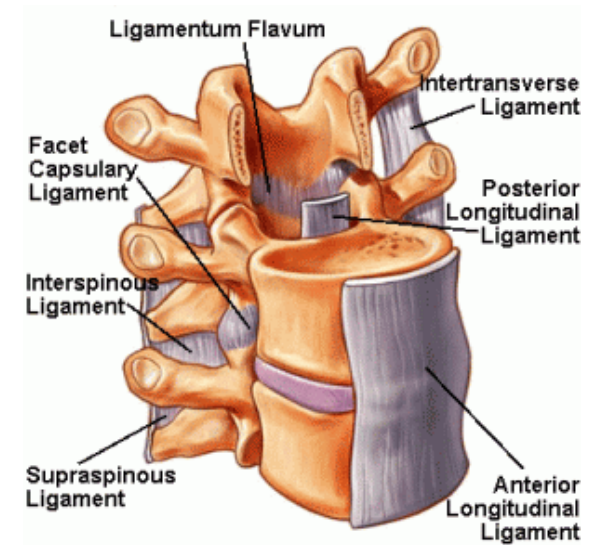
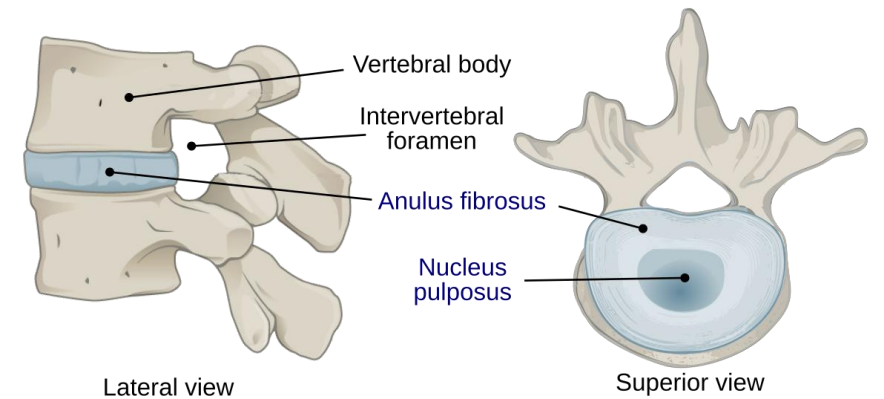


Discs and Ligaments

Intervertebral discs between vertebral bodies.

Structure: **Tough outer layer (annulus fibrosus)** and softer **nucleus pulposus**.

Ligaments providing support to the vertebrae.



Spinal nerves and Roots

31 pairs of **spinal nerves** and **roots**.

Exit points and distribution:


Eight pairs of cervical nerves.

Twelve pairs of thoracic nerves.

Five pairs of lumbar nerves.

Five pairs of sacral nerves.

One pair of coccygeal (Co1) nerves.



VERTEBRAL LEVEL	NERVE ROOT*	INNERVATION	POSSIBLE SYMPTOMS
C1	C1	Intracranial Blood Vessels	Headaches • Migraine Headaches
C2	C2	• Eyes • Lacrimal Gland	• Dizziness • Sinus Problems
C3	C3	• Parotid Gland • Scalp	• Allergies • Head Colds • Fatigue
C4	C4	• Base of Skull • Neck	• Vision Problems • Runny Nose
C5	C5	Muscles • Diaphragm	• Sore Throat • Stiff Neck
C6	C6	• Neck Muscles • Shoulders	• Cough • Croup • Arm Pain
C7	C7	• Elbows • Arms • Wrists	• Hand and Finger Numbness or Tingling • Asthma • Heart Conditions • High Blood Pressure
C8	C8	• Hands • Fingers • Esophagus • Heart • Lungs • Chest	
T1	T1	Arms • Esophagus	Wrist, Hand and Finger Numbness or Pain • Middle Back Pain • Congestion • Difficulty Breathing • Asthma • High Blood Pressure • Heart Conditions
T2	T2	• Heart • Lungs • Chest	
T3	T3	• Larynx • Trachea	
T4	T4		
T5	T5	Gallbladder • Liver	• Bronchitis • Pneumonia
T6	T6	• Diaphragm • Stomach	• Gallbladder Conditions
T7	T7	• Pancreas • Spleen	• Jaundice • Liver Conditions
T8	T8	• Kidneys • Small Intestine	• Stomach Problems • Ulcers
T9	T9	• Appendix • Adrenals	• Gastritis • Kidney Problems
T10	T10	Small Intestines • Colon • Uterus	
T11	T11	Uterus • Colon • Buttocks	
T12	T12		
L1	L1	Large Intestines	Constipation • Colitis • Diarrhea
L2	L2	• Buttocks • Groin	• Gas Pain • Irritable Bowel
L3	L3	• Reproductive Organs	• Bladder Problems • Menstrual Problems • Low Back Pain
L4	L4	• Colon • Thighs • Knees	• Pain or Numbness in Legs
L5	L5	• Legs • Feet	
SACRAL	SACRAL	Buttocks • Reproductive Organs • Bladder • Prostate Gland • Legs • Ankles • Feet • Toes	Constipation • Diarrhea • Bladder Problems • Menstrual Problems • Lower Back Pain • Pain or Numbness in Legs

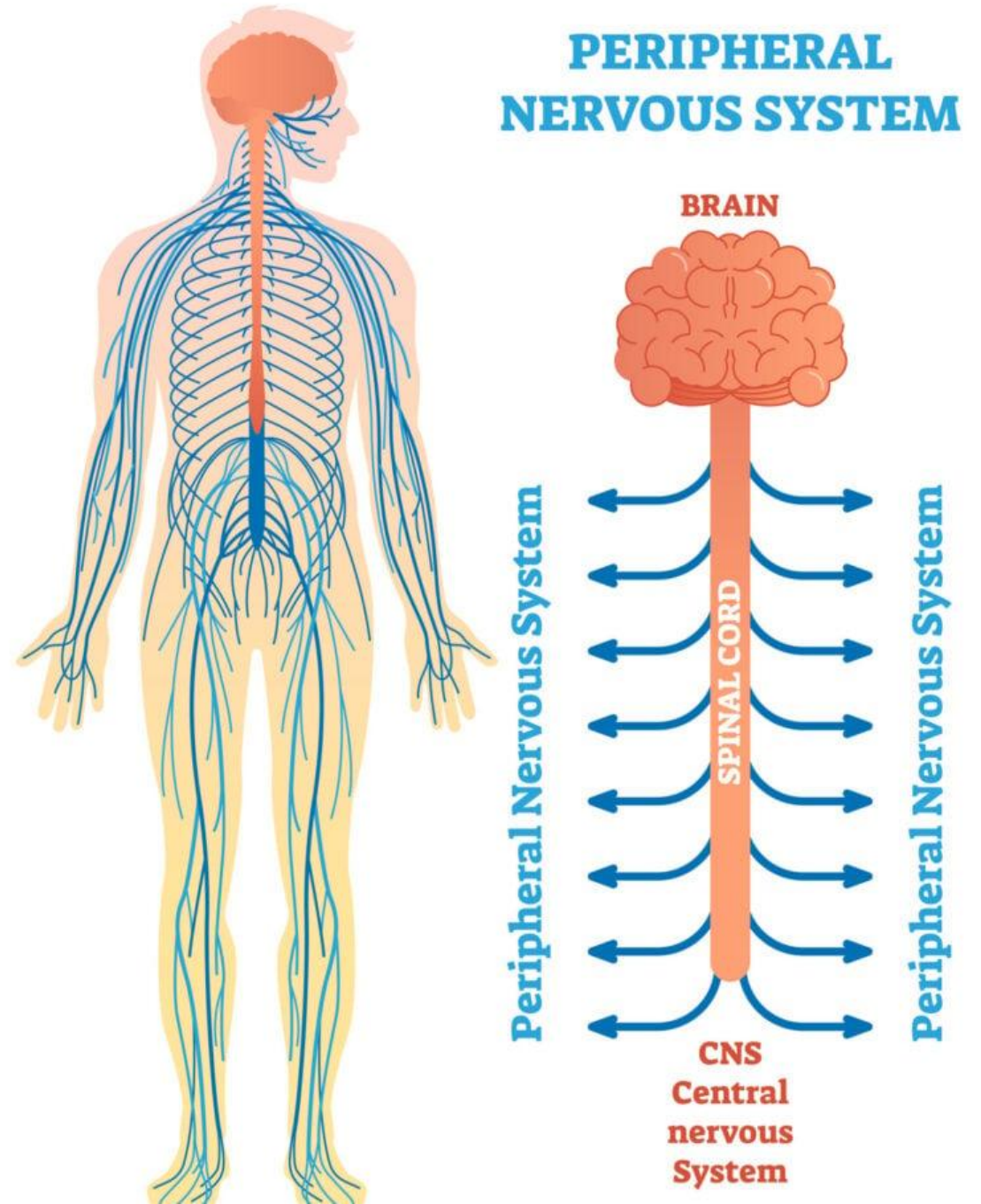
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Peripheral Nervous System

Branches off from spinal nerve roots.

Complex system of nerves reaching various parts of the body.

Functions: **Transmitting nerve impulses to and from the brain.**



Video

https://www.youtube.com/watch?v=sZD_2mtKPrE