The spinal nerves branch off from the spinal cord. They contain sensory and motor axons and serve as a vital link between the peripheral nervous system (PNS) and central nervous system (CNS).
The average human spinal cord is about 45 cm long. It is encased in connective tissue and supported by the vertebrae.

The vertebral column is around 71 cm long in men and 61 cm long in women.

There are 33 vertebrae:

- 7 cervical
- 12 thoracic
- 5 lumbar
- 5 sacral (fused to form the sacrum)
- 4 coccygeal (fused to form the tailbone)
The Spinal Nerves

There are 31 pairs of spinal nerves.

- 8 cervical spinal nerves (C01–C08)
- 12 thoracic spinal nerves (T01–T012)
- 5 lumbar spinal nerves (L01–L05)
- 5 sacral spinal nerves (S01–S05)
- 1 coccygeal spinal nerve (coccygeal nerve)

Spinal nerves "peek out" from between the vertebrae, through spaces called foramina. The nerves are named for the vertebra located below them.

The anterior/ventral rami (branches) of many spinal nerves form plexuses.
The right and left cervical plexuses are made up of the ventral rami from cervical spinal nerves C01–C04. Parts of C05 also contribute to the cervical plexus, but C05 isn’t generally considered to be part of the plexus.

The cervical plexuses innervate anterior neck muscles as well as skin on the neck, head, and shoulder(s).
The brachial plexuses are made up of the ventral rami of spinal nerves C05-T01.

Ultimately, the nerves of the brachial plexus innervate the arms and the pectoral girdle, but they divide and reunify a few times before reaching their destinations.

First, the spinal nerves form trunks. C05 and C06 make up the upper trunk, C07 serves as the middle trunk, and C08 joins with T01 to form the lower trunk.

**FUN FACT!**
The name of this plexus comes from the word "brachium", which means "arm".
As they dip under the clavicle, the trunks each split and reunify to form the lateral, medial, and posterior cords.

The posterior cord is made up of portions of C05-T01.

Parts of C08-T01 make up the medial cord.

Portions of C05-C07 form the lateral cord.

**FUN FACT!**
"Lateral" refers to parts of the body that are further from its center line, while "medial" refers to parts of the body that are closer.
The posterior cord’s terminal branches are the axillary nerve and the radial nerve.

The medial cord has two(ish) terminal branches. The first is the ulnar nerve, and the second is the median nerve, which also contains portions of the lateral cord.

The lateral cord’s terminal branches are the median and musculocutaneous nerves.

**FUN FACT!**
The ulnar nerve is responsible for the unpleasant feeling you get when you bump something with your elbow’s "funny bone".
The ventral rami of L0–L4 form the right and left lumbar plexuses.

The femoral nerve is the main branch of the anterior division of the lumbar plexus. It innervates the hip flexors and quadriceps femoris.

The obturator nerve, which innervates the thigh adductors (medial thigh muscles), is the main branch of the posterior division of the lumbar plexus.

**FUN FACT!**
The lumbar and sacral plexuses are sometimes collectively referred to as the lumbosacral plexus.
The ventral rami of L04–S04 form the right and left sacral plexus. Nerves branching from the sacral plexuses innervate the pelvis, gluteal region, perineum, and much of the rest of the leg.

One of the sacral plexus' most notable branches is the sciatic nerve, the longest and largest nerve in the body. It originates from L04–S03.

It has two divisions as it travels down the posterior thigh: the tibial division and the common fibular division. The tibial division innervates the hamstrings, with the exception of the short head of the biceps femoris.
The portions of the sciatic nerve split just above the back of the knee.

The anterior (tibial) portion of the sciatic nerve forms the tibial nerve and the posterior (common fibular) portion forms the common fibular nerve.

The common fibular nerve goes on to split into the deep and superficial fibular nerves.
Sciatica (pictured), also known as lumbar radiculopathy, occurs when a slipped or herniated disc presses on the root of the sciatic nerve. This typically causes pain in the buttck and thigh of the affected side of the body.

Similarly, cervical radiculopathy involves a compressed spinal root. The nerve-pinching simply occurs in the cervical region of the spine instead of the lumbar region.
Each spinal nerve is responsible for the innervation of a particular region of skin. These regions are called dermatomes.

Did you know that individuals affected with shingles (herpes zoster) often get rashes in regions corresponding to dermatomes?

Why? Shingles happens when the chicken pox virus (varicella-zoster) gets into the posterior root ganglion of one or more spinal nerves and lies dormant in the body, often for many years. When the virus becomes active again, the dermatomes of the affected spinal nerves develop a painful, itchy rash.
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