

## **Spinal Nerves**

- Thirty-one pairs of mixed nerves arise from the spinal cord and supply all parts of the body except the head
- They are named according to their point of issue
  - 8 cervical (C<sub>1</sub>-C<sub>8</sub>)
  - 12 thoracic (T<sub>1</sub>-T<sub>12</sub>)
  - 5 Lumbar (L<sub>1</sub>-L<sub>5</sub>)
  - 5 Sacral (S<sub>1</sub>-S<sub>5</sub>)
  - 1 Coccygeal (C<sub>0</sub>)

## **Spinal Nerves**

### **Spinal Nerves: Roots**

- Each spinal nerve connects to the spinal cord via two medial roots
- Each root forms a series of rootlets that attach to the spinal cord
- Ventral roots arise from the anterior horn and contain motor (efferent) fibers
- Dorsal roots arise from sensory neurons in the dorsal root ganglion and contain sensory (afferent) fibers

### **Spinal Nerves: Roots**

### **Spinal Nerves: Rami**

- The short spinal nerves branch into three or four mixed, distal rami
  - Small dorsal ramus
  - Larger ventral ramus
  - Tiny meningeal branch
  - Rami communicantes at the base of the ventral rami in the thoracic region

## **Nerve Plexuses**

- All ventral rami except T<sub>2</sub>-T<sub>12</sub> form interlacing nerve networks called plexuses
- Plexuses are found in the cervical, brachial, lumbar, and sacral regions
- Each resulting branch of a plexus contains fibers from several spinal nerves

## **Nerve Plexuses**

- Fibers travel to the periphery via several different routes
- Each muscle receives a nerve supply from more than one spinal nerve
- Damage to one spinal segment cannot completely paralyze a muscle

## **Spinal Nerve Innervation: Back, Anterolateral Thorax, and Abdominal Wall**

- The back is innervated by dorsal rami via several branches

- The thorax is innervated by ventral rami T<sub>1</sub>-T<sub>12</sub> as intercostal nerves
- Intercostal nerves supply muscles of the ribs, anterolateral thorax, and abdominal wall

### **Dermatomes**

- A dermatome is the area of skin innervated by the cutaneous branches of a single spinal nerve
- All spinal nerves except C<sub>1</sub> participate in dermatomes

### **Dermatomes**