- **Mechanical receptors** respond to mechanical forces (touch, hearing, balance)
    - Ion channels open and release neurotransmitter or generate an action potential (because receptors are ionotropic)
- The rate of the action potentials tells the CNS the strength of the stimulus
    - More stimulus = more action potentials
- **Merkel's discs** are one of the most important tactile receptors
    - Adapt slowly and provide continuous information about anything touching the skin
- **Meissner's corpuscles** are found primarily in non hairy skin
    - Very sensitive
    - Adapt rapidly
    - Provide information about changes in things touching the skin
- **Ruffini endings** are deeper in the skin
    - Adapt slowly
    - Provide information about vibrating stimuli or low frequency stimuli
- **Pacinian corpuscles** adapt rapidly and provide information of higher frequency vibrations
- Dendrites of neurons wrap around hair follicles deep in the skin
    - These neurons are stimulated when surface hairs are displaced
- Receptor density is different throughout the body
    - If two different things touch you right next to each other and you can discern that there are two things, then receptor density is high
- Mechanoreceptors continuously supply information to the CNS about position of limbs and muscles and joint stress
    - Controls posture and coordination
- **Muscle spindles** are mechanoreceptors found in skeletal muscle
    - They are embedded in connective tissue inside the muscle and innervated with neurons
    - When the muscles stretches, the spindle stretches and sends an action potential to the CNS, which then alters the strength of the muscle contraction
- The **golgi tendon organ** is the mechanoreceptor in the tendons and ligaments
    - Provides information about the force generated by contracting a muscle
    - If contraction is too forceful, the GTO inhibits the spinal cord motor neurons, causing the muscle to relax
- Hair cells are the mechanoreceptors for the vertebrate auditory system and vestibular system
- **Stereocilia** protect the surface of each hair cell and bend in response to pressure waves
    - Bending in one direction depolarizes hair and the other direction hyperpolarizes hair
        - Bending creates local electric currents near the tips because the ion channels are at the tips
- Each stereocilia is connected to its taller neighbor by filaments that act like springs that open and close the channels
    - Bent toward taller = relaxed and closed
    - Bent away from taller = tight and open ****potassium flows in