Olfactory Nerve

- The sense of smell is detected by olfactory receptors located within the nasal epithelium.
- Their axons named fila olfactoria assemble into small bundles of true olfactory nerves, which penetrate the cribriform plate of ethmoid bone and enter cranial cavity.
- Once olfactory nerves become in the cranial cavity, the fibers enter the olfactory bulb, which lies in the olfactory groove within the anterior cranial fossa.
- The olfactory bulb contains specialized neurons called mitral cells.
- The olfactory nerve fibers synapse with the mitral cells, forming collections known as synaptic glomeruli.
- From the glomeruli, second order nerves pass posteriorly into the olfactory tract.
- The olfactory tract travels posteriorly on the inferior surface of the frontal lobe.
- Posterior and anterior to the optic chiasm, the olfactory tract on both sides divides into medial and lateral olfactory striae.
- The medial stria projects to the anterior commissure to contralateral olfactory structures.
- The lateral stria continues on to structures associated with the olfactory cortex.
- The primary olfactory cortex is vital for the processing and perception of odor.
- It is located in the temporal lobe of the brain, which is involved in organizing sensory input.
- The primary olfactory cortex sends nerve fibers to many other areas of the brain, the piriform cortex, the amygdala, olfactory tubercle and the secondary olfactory cortex.
- These areas are involved in the memory and appreciation of olfactory sensations.

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