# How does the Sense of Smell Work?

The sense of smell, known as olfaction, uses a sensory organ called the nose to pass scent information on to the olfactory cortex in the [brain](https://www.wisegeek.com/how-does-the-brain-work.htm). Diffuse suspensions of relevant molecules, called odors, are analyzed by the nose using a molecular lock-and-key scheme whereby odors are identified by their unique chemical signatures.

The sense evolved as a means of detecting survival-relevant information about the external world, especially appraising food. Smell is the oldest of the senses, with analogues dating all the way back to the first animals 600 million years ago. One of the five primary senses, smell is most intimately associated with the formation of memories.

Olfactory receptor neurons, the cells responsible for smell, are located on a 1-by-2 inch strip of tissue called the olfactory [epithelium](https://www.wisegeek.com/what-is-epithelium.htm), located about 3 inches above and behind the nostrils. The human [olfactory epithelium](https://www.wisegeek.com/what-is-the-olfactory-epithelium.htm) is about 16 cm², contrast with some dogs which have 150 cm².

With advanced color vision, sight can be considered the primary human sense: smell plays a more limited role, primarily related to food and sexual bonding. The olfactory receptor neurons are surrounded by supporter cells which excrete [mucus](https://www.wisegeek.com/what-is-mucus.htm), making it easier to pick up odor molecules. The nostrils are covered in hair to prevent the intrusion of unwanted organisms and inanimate material from the environments.

The olfactory receptor neurons, each of which can detect several molecules, project axons into the brain via the olfactory nerve. These projections converge on a small (~50 micron) structure called the [olfactory bulb](https://www.wisegeek.com/what-is-the-olfactory-bulb.htm), ultimately converging onto only 100 or so neurons.

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