

SMELL AND PAROSMIA

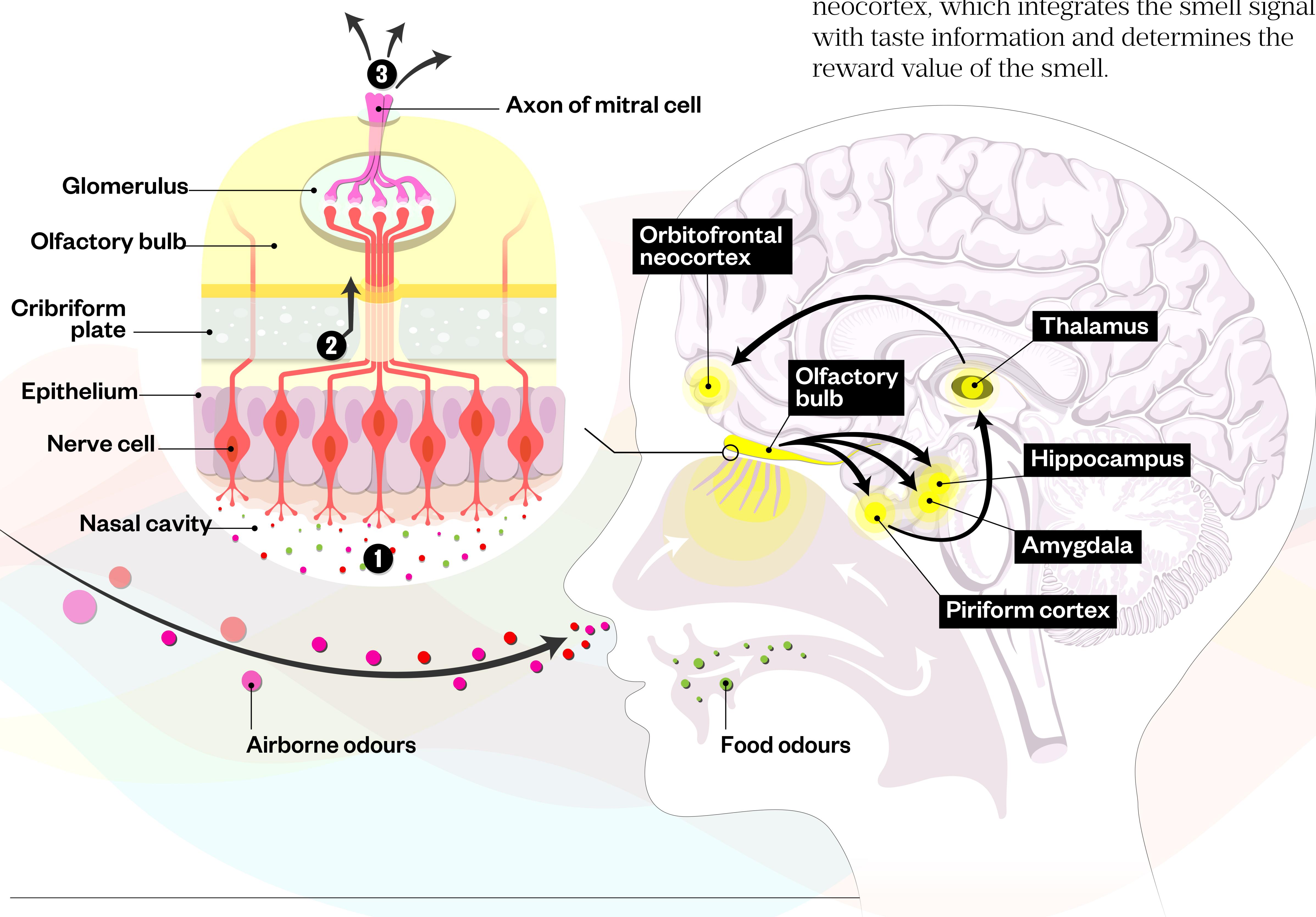
A single smell is actually a combination of many odour molecules acting on a variety of olfactory receptors, creating a complex neural code that our brain identifies as a particular scent. SARS-CoV-2 is thought to damage the olfactory neurones, causing smell loss. As the neurones begin to regenerate, parosmia can develop.

Smell

1 Odour molecules travel through the nasal passage or mouth and bind with olfactory receptors in the olfactory epithelium.

2 A complex signal is generated according to the combination of receptors that are activated, and their relative strength of activation, and this passes along the sensory neurons up to the olfactory bulb.

3 The olfactory bulb processes the signal and passes the information to other parts of the brain, including the piriform cortex, which works to recognise the smell; the limbic system, including the amygdala and the hippocampus, which connects odours to our memories and emotions; and the orbitofrontal neocortex, which integrates the smell signal with taste information and determines the reward value of the smell.



Parosmia

Smell loss is thought to develop when SARS-CoV-2 enters and kills sustentacular cells in the olfactory epithelium that support and nourish olfactory receptor neurones, which can lead to neuronal damage.

There are several theories as to why parosmia develops. One is that some neurones regenerate quicker than others, leading to incomplete detection of odours, and another is that there is incorrect rewiring of the neurones as they regenerate. It has also been suggested that SARS-CoV-2 is associated with tissue damage in brain areas related to smell.

