

BMP4 and Trigeminal Ganglion Neurons

The trigeminal ganglion has three peripheral axon bundles that innervate the eye regions, the upper jaw, and the lower jaw (Figure 1); these include the neurons dentists “put to sleep” with novocaine while filling cavities. BMP4 from the target organs causes the differential growth and differentiation of these neurons, but intrinsic differences in transcription factors enable them to respond differently to this signal and allow their axons to migrate in their particular ways (Hodge et al. 2007).

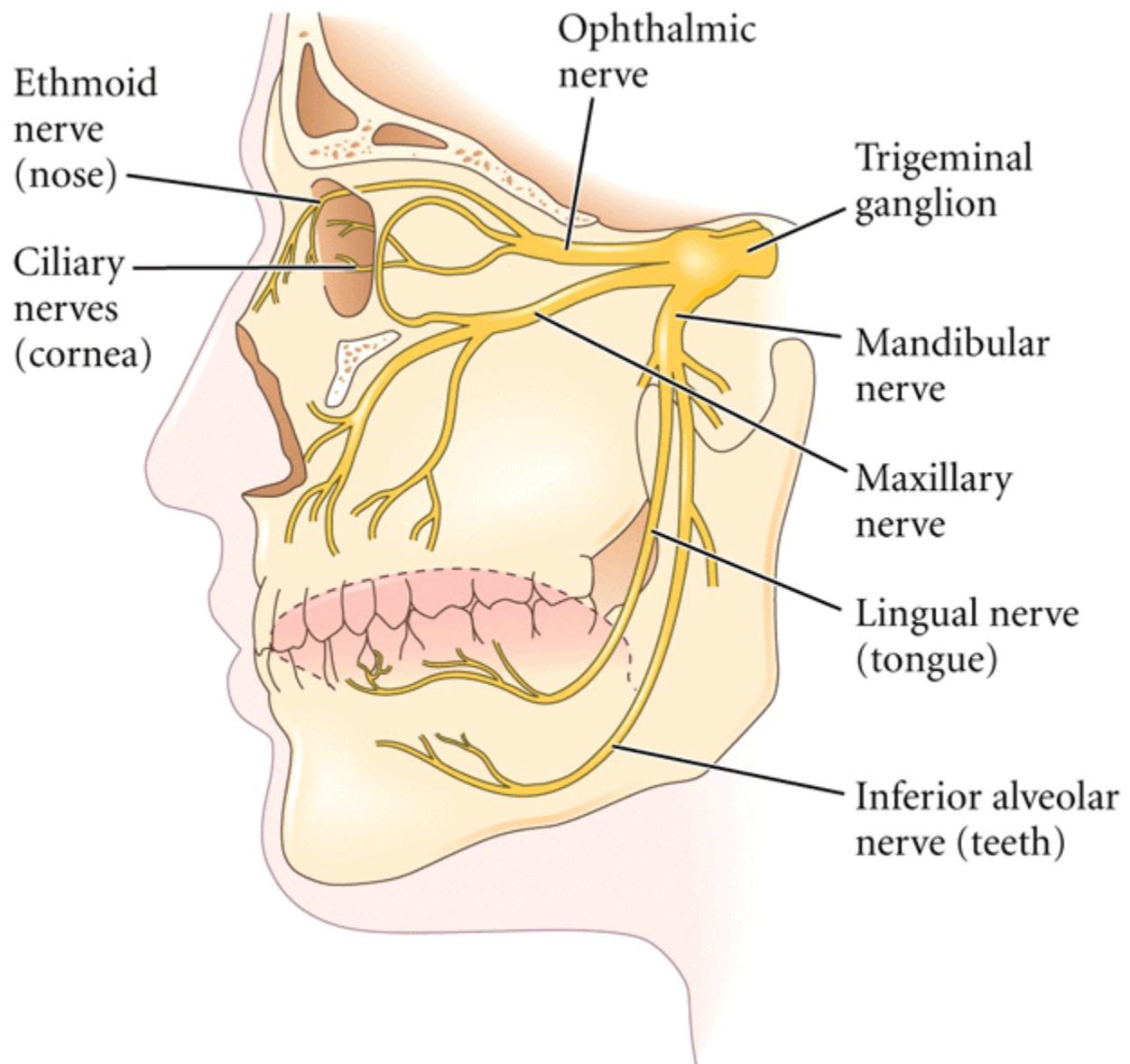


Figure 1 The trigeminal ganglion has three main branches: the ophthalmic (to the eyes), the maxillary (to the upper jaw), and the mandibular (to the lower jaw). The growth of these nerves is regulated by BMP4 from the target tissues combined with differential receptors for the BMPs on the neurons.

Literature Cited

Hodge, L. K. and 9 others. 2007. Retrograde BMP signaling regulates trigeminal sensory neuron identities and the formation of precise face maps. *Neuron* 55: 572–586.

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