# 動物生理学 III　Handout No. 8

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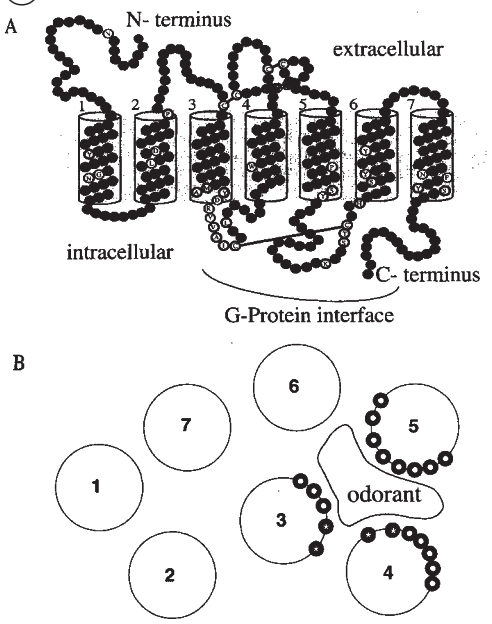


FIGURE 5. (A) Schematic flattened diagram of the OR protein. The set of the 20 variable positions that constitute the putative CDR on transmembrane segments 3, 4, and 5 are shown in dark. These positions are mainly clustered along one side of each helix. Highly conserved positions are either unique to ORs (encircled in black) or conserved in all GPCRs (encircled in gray). Putative cycteins bridges are marked in black line (unique to ORs) or gray line (conserved in all GPCRs). (B) A two-dimensional schematic representation of the OR protein, an extracellular view. The putative CDR residues are shown by circles. Positions populated mainly by hydrophobic side chains are marked with white circles, while positions populated mainly by hydrophylic side chains are marked with "*". A schematic odorant is shown on the putative binding site.

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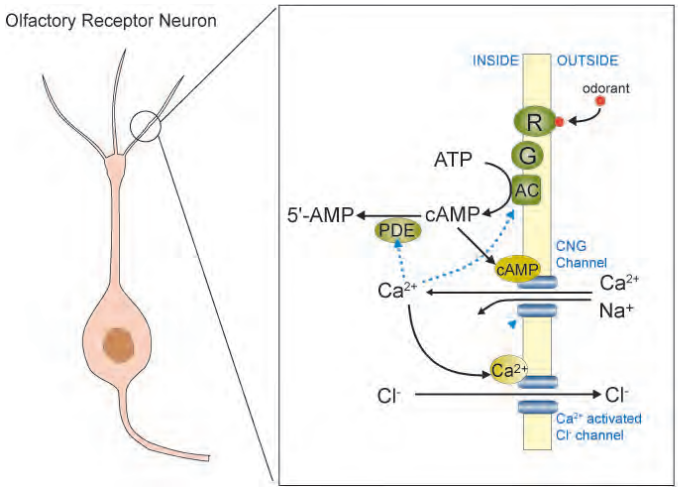


**Figure**
**Schematic diagram of olfactory transduction**

AC: adenylate cyclase
CNG channel:
cyclic nucleotide-gated channel
G: G-protein
PDE: phosphodiesterase
R: odorant receptor

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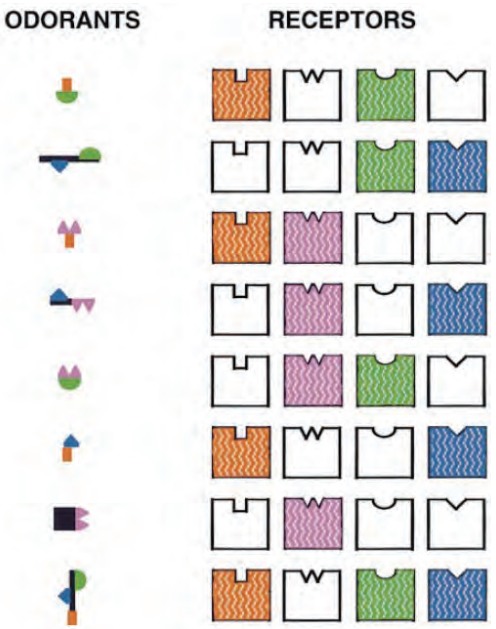


Figure 8. Combinatorial Receptor Codes for Odorants
In this model, the receptors shown in color are those that recognize the odorant on the left. The identities of different odorants are encoded by different combinations of receptors. However, each OR can serve as one component of the combinatorial receptor codes for many odorants. Given the immense number of possible combinations of ORs, this scheme could allow for the discrimination of an almost unlimited number and variety of different odorants. (Malnic et al. *Cell* 96:713-723 (1999))

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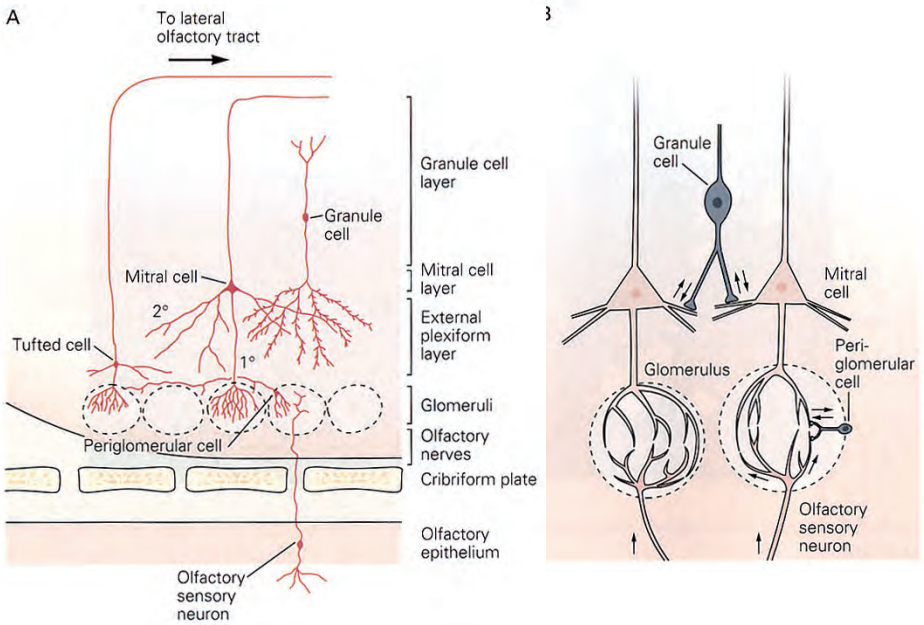


Figure 32-7 The olfactory bulb receives signals from olfactory sensory neurons. (Adapted from Shepherd and Greer 1990.)
A. Each sensory axon terminates in a single glomerulus, forming synapses with the dendrites of periglomerular interneurons and mural and tufted relay neurons. The primary dendrite of each mural and tufted cell enters a single glomerulus, where it arborizes extensively. Mural and tufted cells also extend secondary dendrites into the external plexiform layer, where granule cell interneurons make reciprocal synapses with these secondary dendrites. The output of the bulb is carried by the mural cells and the tufted cells, whose axons project in the lateral olfactorytract.
B. Within each glomerulus periglomerular cells form inhibitory dendrodendritic synapses with mural cell dendrites. The periglomerular cells also sometimes make inhibitory contacts with mural cells that receive input in nearby glomeruli. The secondary dendrites of mural and tufted cells form excitatory synapses on the dendrites of granule cell interneurons, which form inhibitory synapses on numerous secondary dendrites. These inhibitory connections may provide a curtain of inhibition that must be penetrated by the peaks of excitation generated by odorant stimuli. They may also serve to sharpen or refine sensory information prior to transmission to the olfactory cortex.

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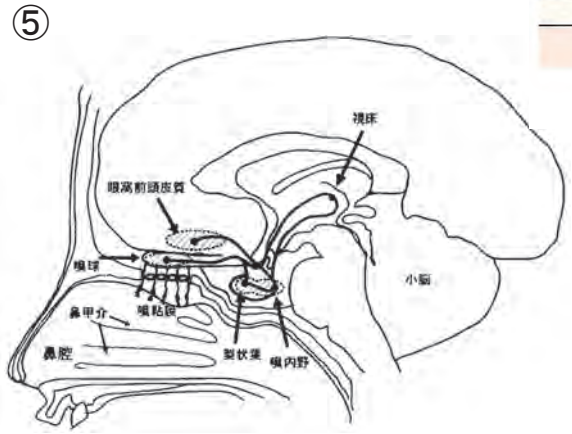


図 ヒトの嗅覚神経系の模式図