

7

Olfactory and gustatory system

**Olfaction and sense of taste are closely interconnected
„chemical senses“**

Olfaction and sense of touch are closely interconnected
“chemical senses“

Odour lasts in time

Olfaction

- Ability to sense chemical compounds dispersed in the air

Olfaction

- Ability to sense chemical compounds dispersed in the air
- Influenced evolution of neocortex

Olfaction

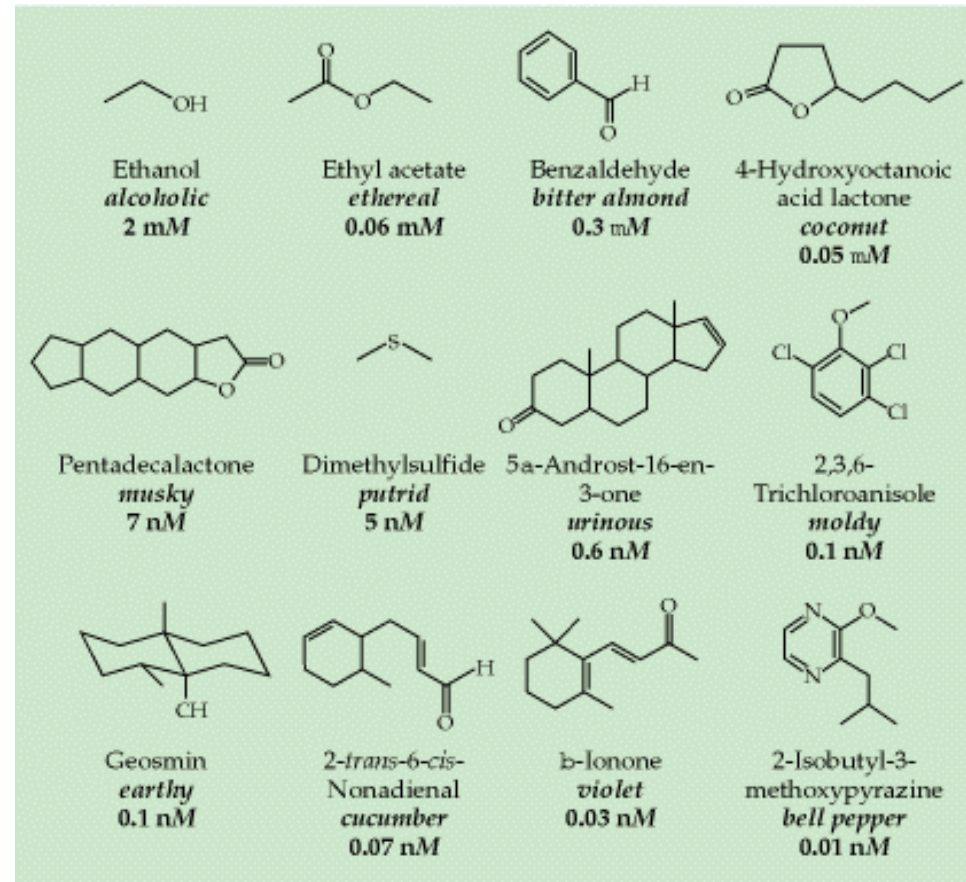
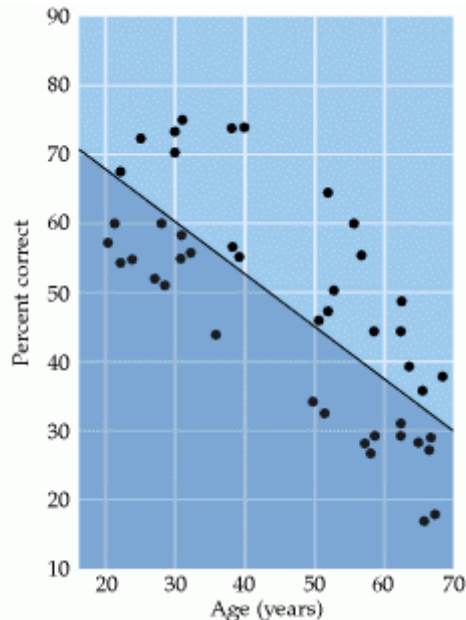
- Ability to sense chemical compounds dispersed in the air
- Influenced evolution of neocortex
- Place identification
- Food identification

Olfaction

- Ability to sense chemical compounds dispersed in the air
- Influenced evolution of neocortex
- Place identification
- Food identification
- Humans are microolfactoric organisms
 - Loss of analytic capabilities led to a relative enhancement of psychological component

Olfaction

- Humans can distinguish about 80 chemicals and 144-10000 odors
- Better sensitivity to liposoluble molecules
- Olfaction degenerates with age



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10 základních kategorií vůní

- ✓ fragrant
- ✓ woody/resinous
- ✓ fruit (other than citrus)
 - ✓ putrid
 - ✓ chemical
- ✓ minty/peppermint
 - ✓ sweet
 - ✓ popcorn
 - ✓ burning
 - ✓ lemon

[Categorical dimensions of human odor descriptor space revealed by non-negative matrix factorization.](#)

Castro JB, Ramanathan A, **Chennubhotla** CS.

PLoS One. 2013 Sep 18;8(9):e73289. doi: 10.1371/journal.pone.0073289. eCollection 2013.

PMID:24058466

10 largest-valued descriptors for each of the 10 basis vectors obtained from non-negative matrix factorization.

W1	W2	W3	W4	W5	W6	W7	W8	W9	W10
FRAGRANT	WOODY, RESINOUS	FRUITY, OTHER THAN CITRUS	SICKENING	CHEMICAL	MINTY, PEPPERMINT	SWEET	POPCORN	SICKENING	LEMON
FLORAL	MUSTY, EARTHY, MOLDY	SWEET	PUTRID, FOUL, DECAYED	ETHERISH, ANAESTHETIC	COOL, COOLING	VANILLA	BURNT, SMOKY	GARLIC, ONION	FRUITY, CITRUS
PERFUMERY	CEDARWOOD	FRAGRANT	RANCID	MEDICINAL	AROMATIC	FRAGRANT	PEANUT BUTTER	HEAVY	FRAGRANT
SWEET	HERBAL, GREEN, CUT GRASS	AROMATIC	SWEATY	DISINFECTANT, CARBOLIC	ANISE (LICORICE)	AROMATIC	NUTTY (WALNUT ETC)	BURNT, SMOKY	ORANGE
ROSE	FRAGRANT	LIGHT	SOUR, VINEGAR	SHARP, PUNGENT, ACID	FRAGRANT	CHOCOLATE	OILY, FATTY	SULFIDIC	LIGHT
AROMATIC	AROMATIC	PINEAPPLE	SHARP, PUNGENT, ACID	GASOLINE, SOLVENT	MEDICINAL	MALTY	ALMOND	SHARP, PUNGENT, ACID	SWEET
LIGHT	LIGHT	CHERRY (BERRY)	FECAL (LIKE MANURE)	PAINT	SPICY	ALMOND	HEAVY	HOUSEHOLD GAS	COOL, COOLING
COLOGNE	HEAVY	STRAWBERRY	SOUR MILK	CLEANING FLUID	SWEET	CARAMEL	WARM	PUTRID, FOUL, DECAYED	AROMATIC
HERBAL, GREEN, CUT GRASS	SPICY	PERFUMERY	MUSTY, EARTHY, MOLDY	ALCOHOLIC	EUCALIPTUS	LIGHT	MUSTY, EARTHY, MOLDY	SEWER	HERBAL, GREEN, CUT GRASS
VIOLETS	BURNT, SMOKY	BANANA	HEAVY	TURPENTINE (PINE OIL)	CAMPHOR	WARM	WOODY, RESINOUS	BURNT RUBBER	SHARP, PUNGENT, ACID

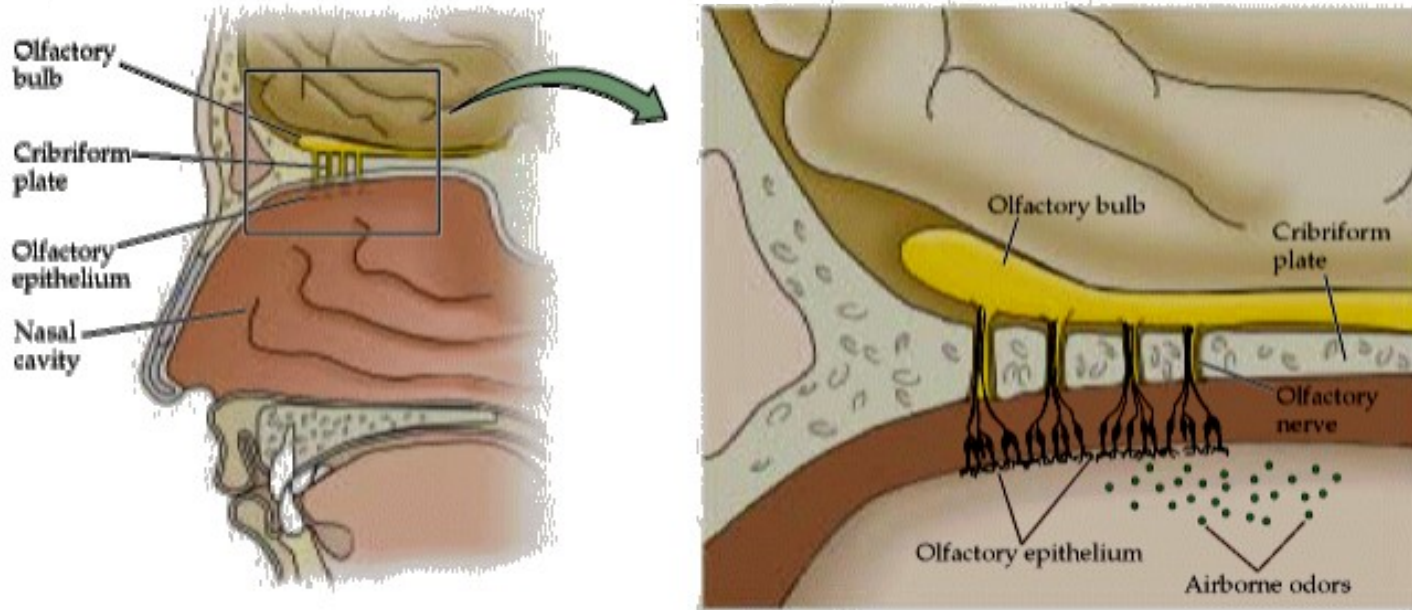
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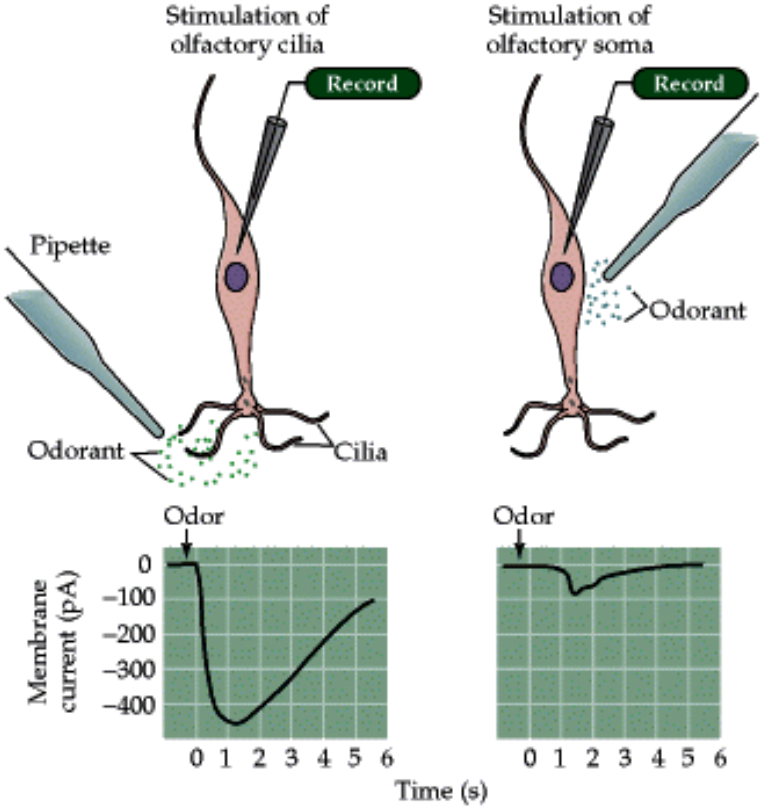
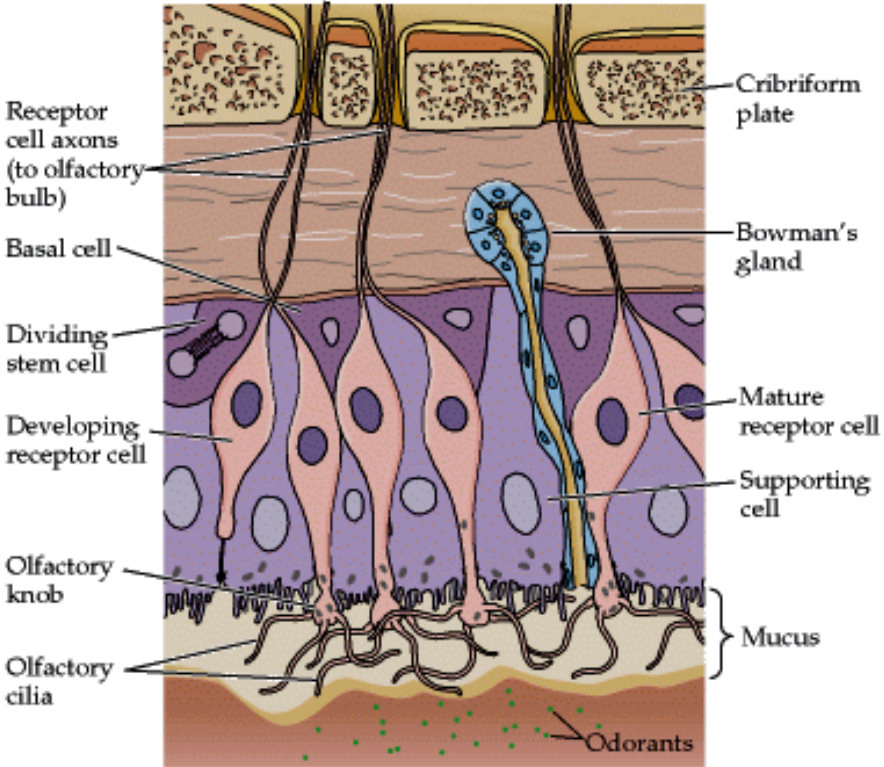
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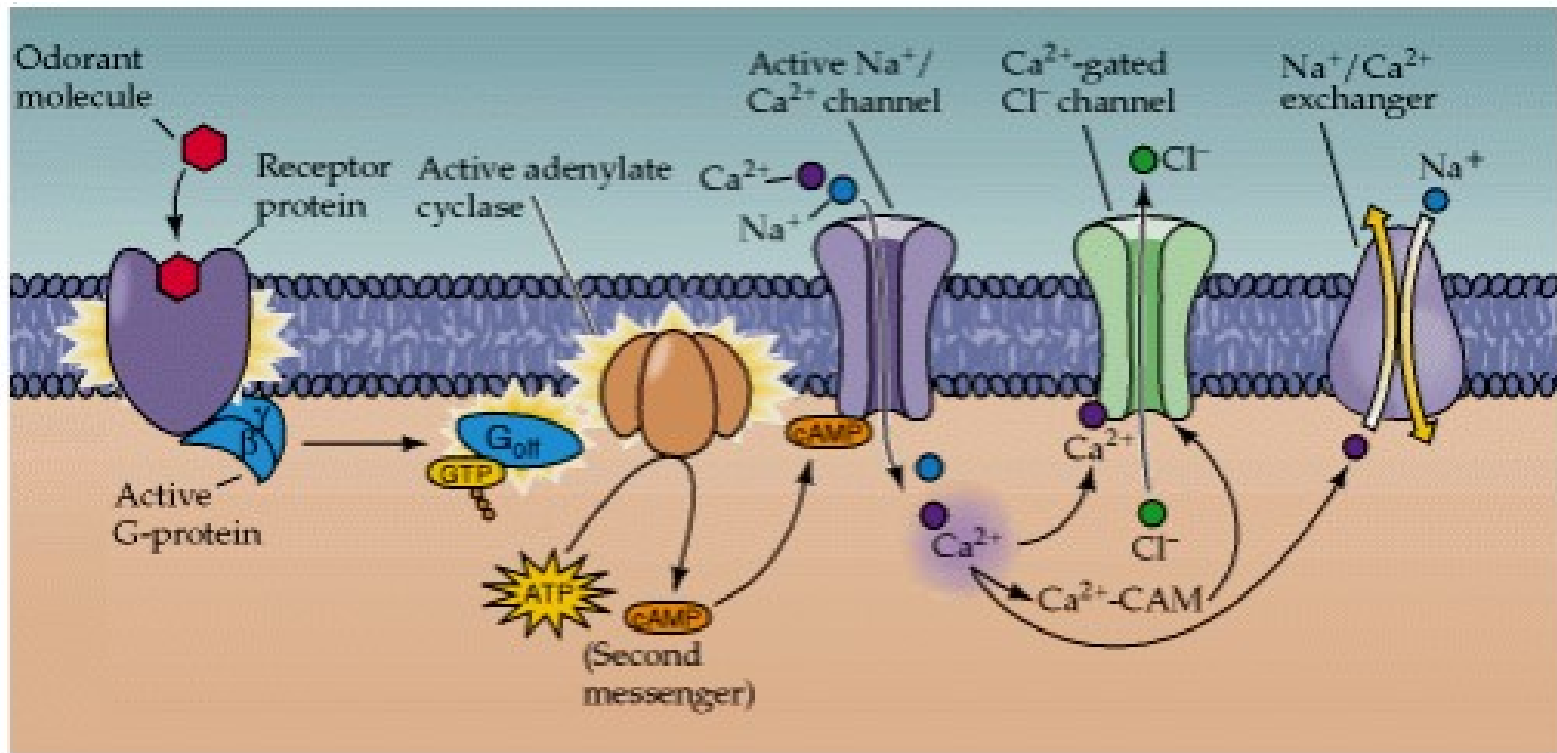
Olfaction



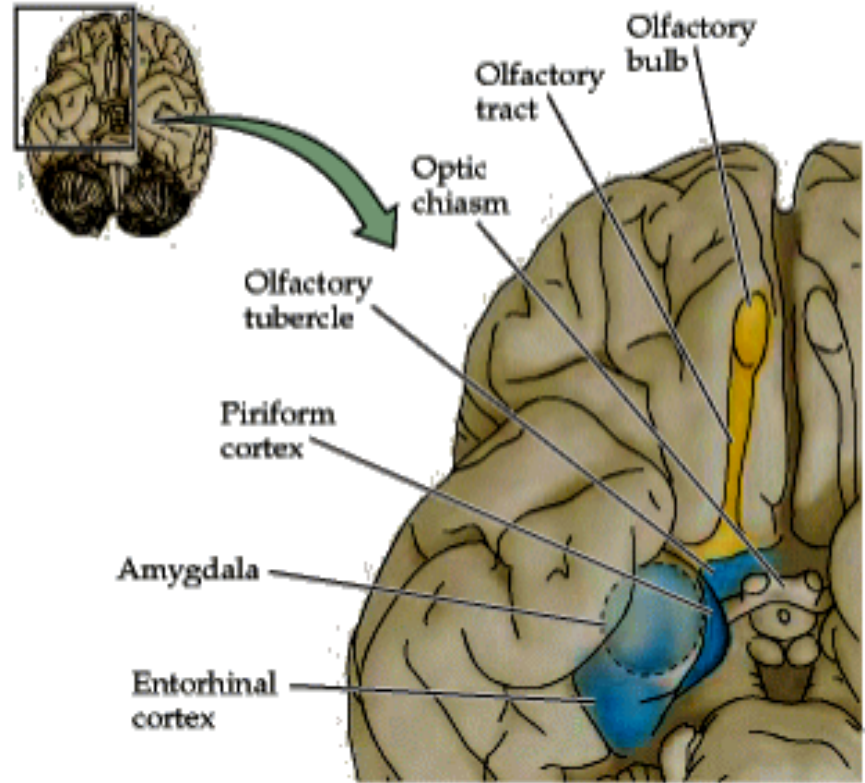
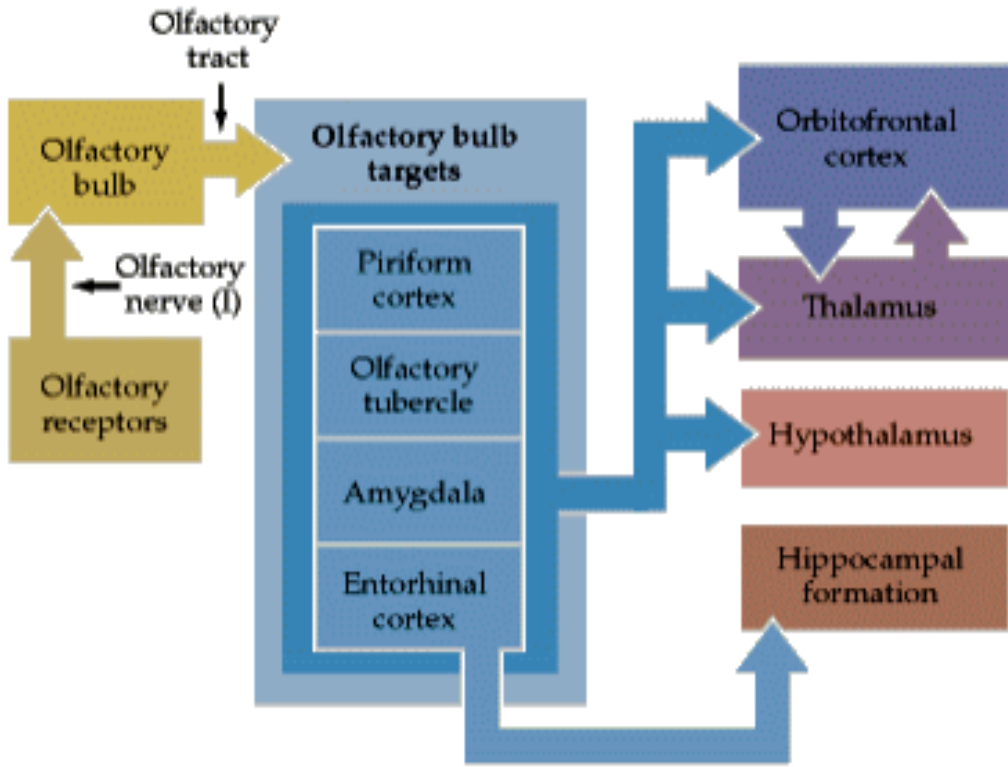
Olfaction



Olfaction



Olfaction



Sense of taste

- Ability to sense chemical compounds dissolved in saliva

Sense of taste

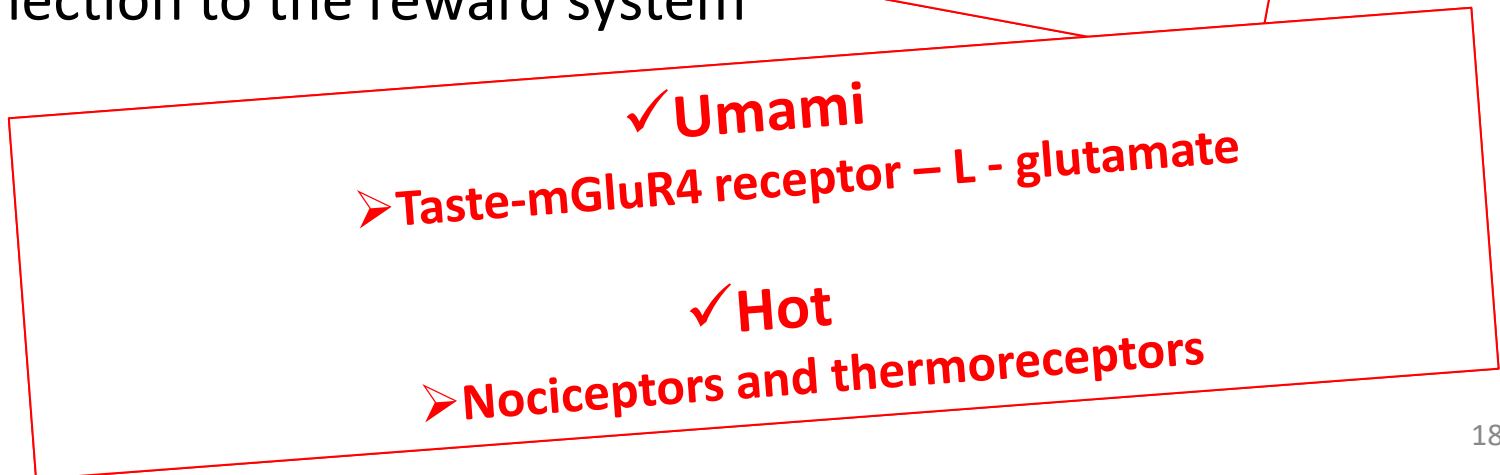
- Ability to sense chemical compounds dissolved in saliva
- Close connection with olfaction
- Food identification

Sense of taste

- Ability to sense chemical compounds dissolved in saliva
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- Connection to the reward system

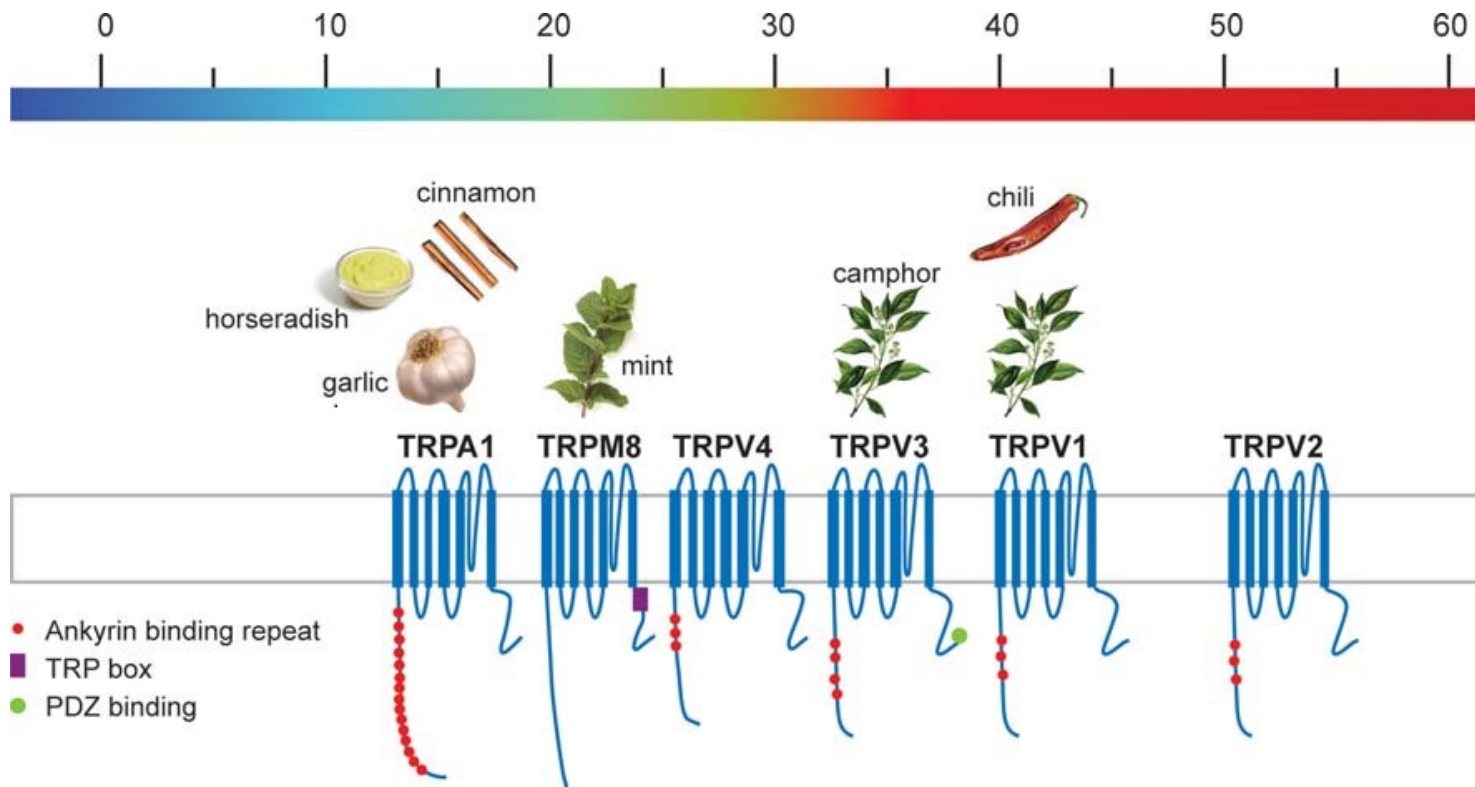
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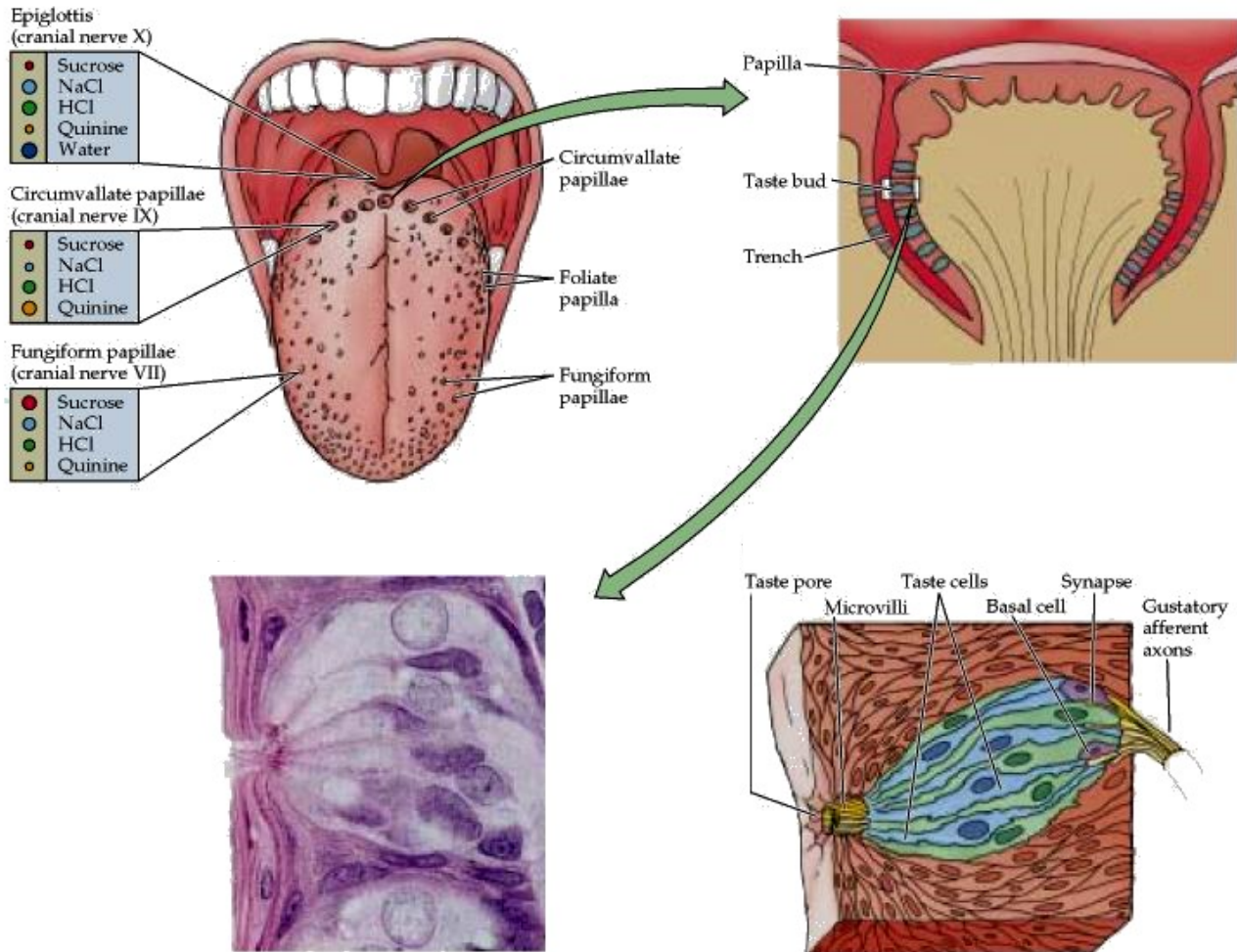


Thermoreceptors

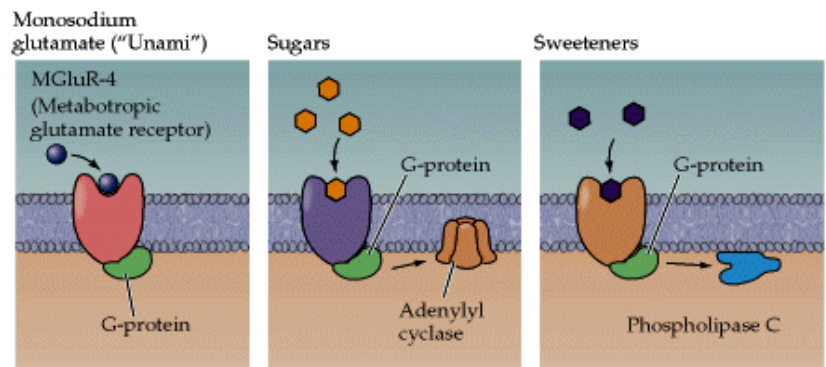
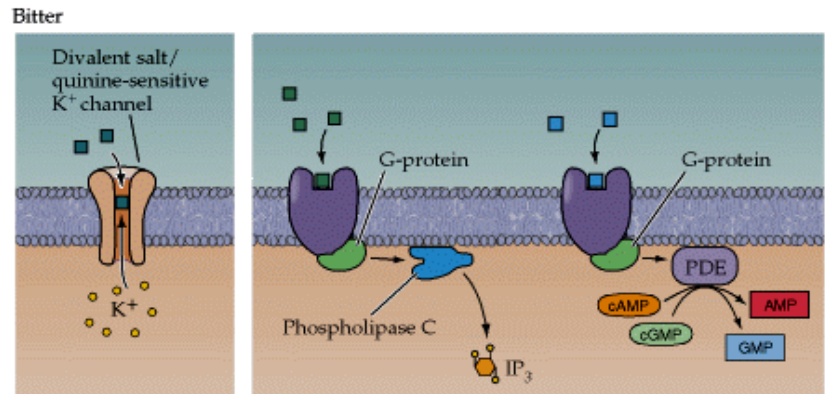
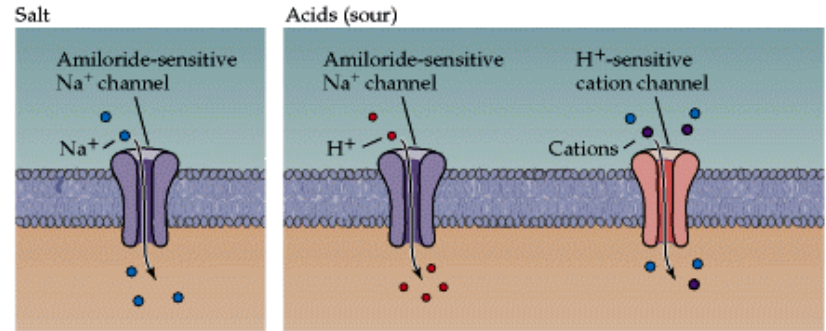
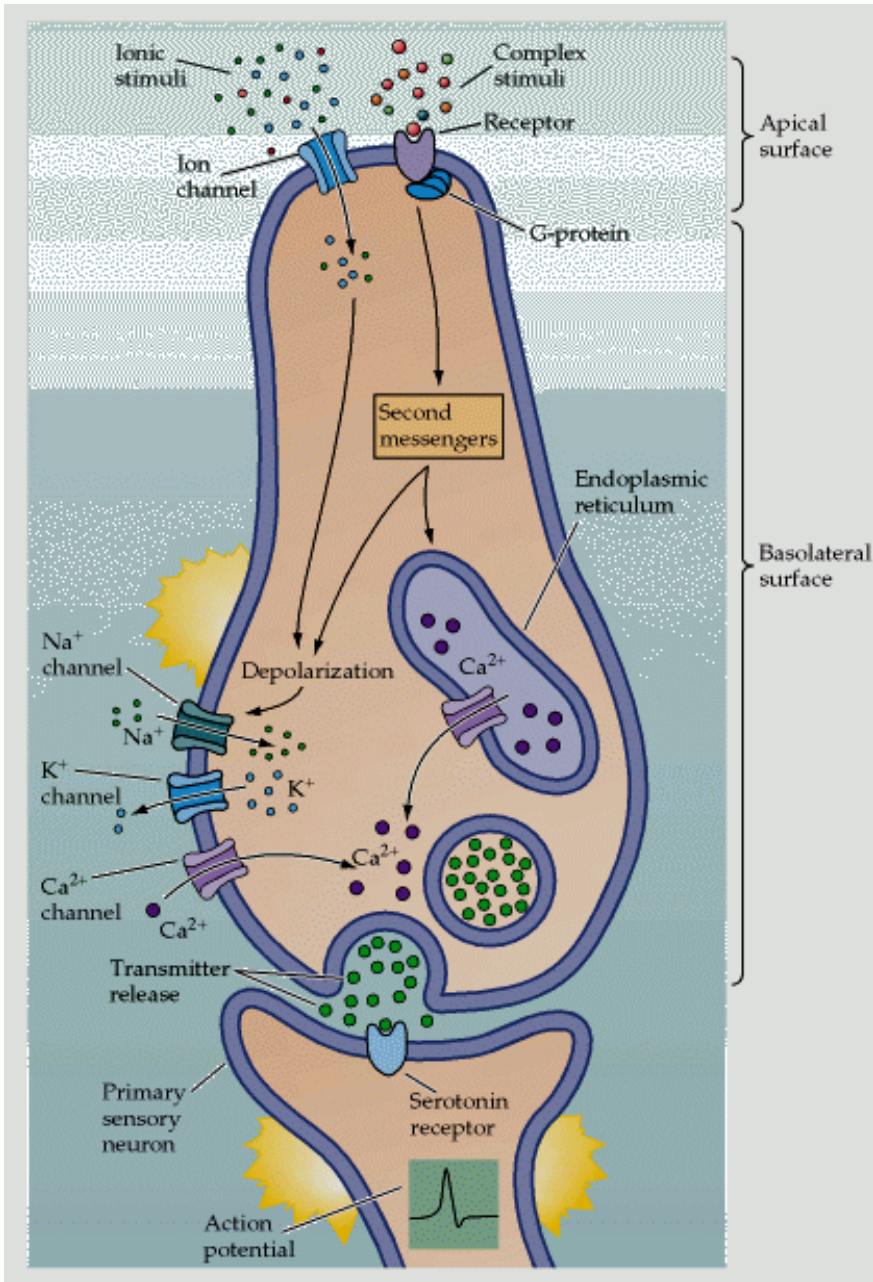
- Free nerve endings sensitive to heat
- TRP channels(transient receptor potential)
- Each subtype of TRP channels is sensitive to a certain temperature and chemical substance



Sense of taste

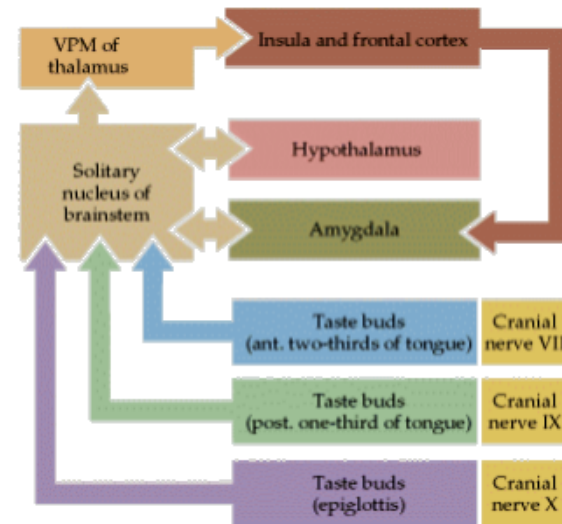
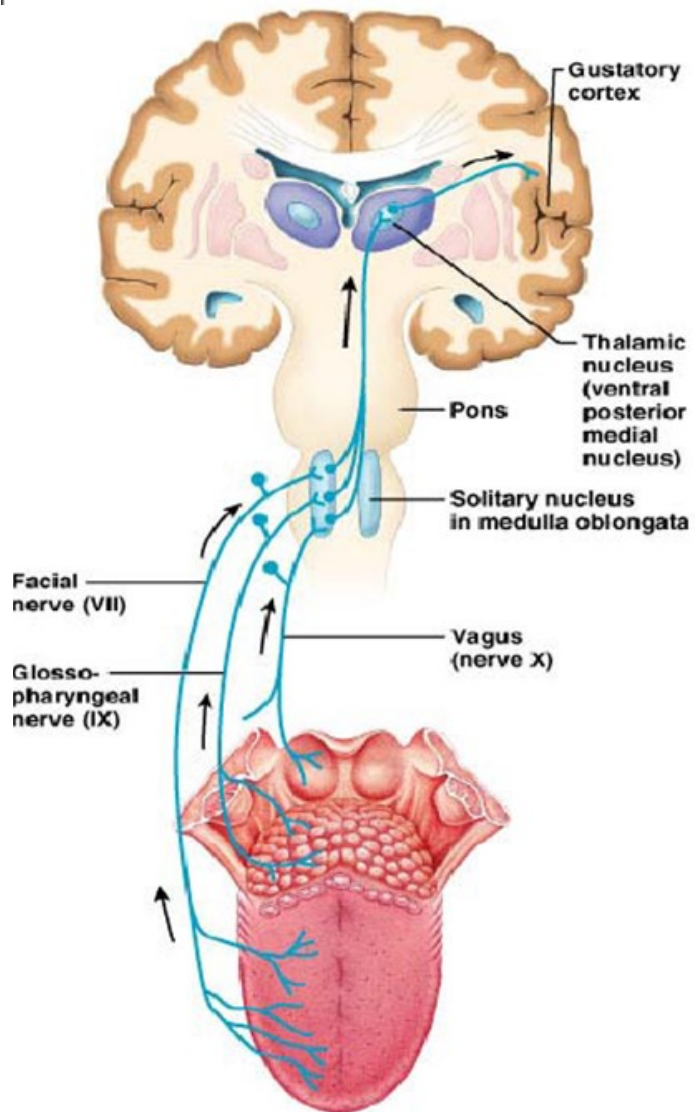


Sense of taste



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