

# Fragrance Effects

- **Pleasant scents** may trigger pleasant moods and give a boost to **workers' performance**.
- Social psychologist Robert Baron, who has studied these fragrance effects, has patented and is marketing a device that emits pleasant scents called **PPS (Personal Productivity/Privacy System)** it combines fragrance release with a whitenoise generator and an air filter.
- After **testing dozens of smells**, Baron found that lemon and light floral had broad appeal (pine was the least popular odor), and is marketing discs producing these odors with the PPS.

# Pheromones

- In many animals, the sense of smell is used for communication.
- For example, insects such as **ants and termites** and vertebrates such as **dogs and cats** communicate with each other by secreting and detecting odorous signals called **pheromones** – especially to signal sexual receptivity, danger, territorial boundaries, and food sources.
- We **humans** seem to use the sense of **smell** primarily in conjunction with **taste** to seek and sample food, but some evidence exists to suggest that people may also use **sexual pheromones** as well as pheromones that help us **identify family members** by smell.

## Pheromones in humans exist

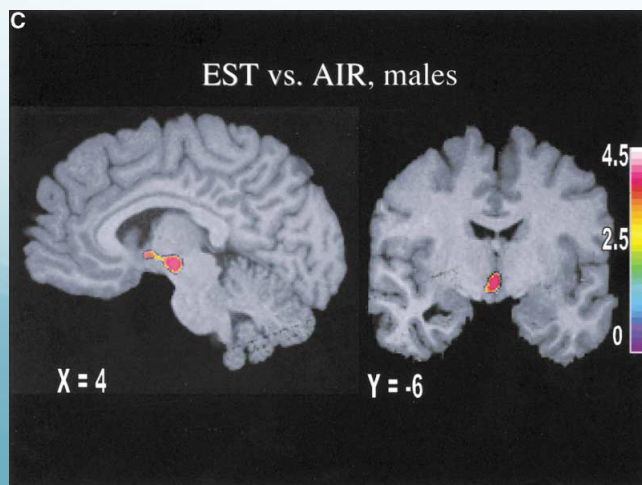
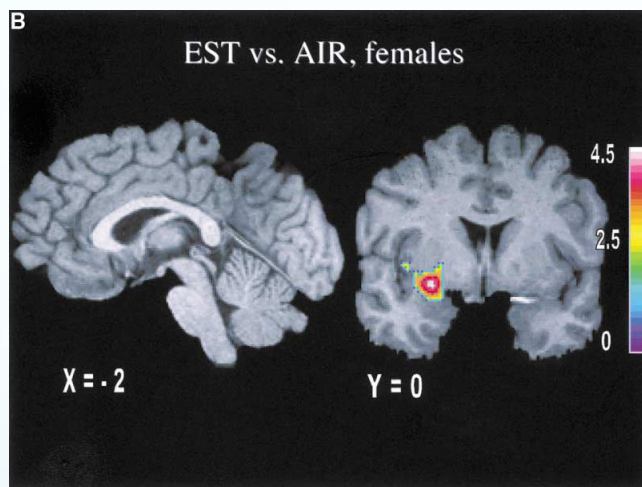
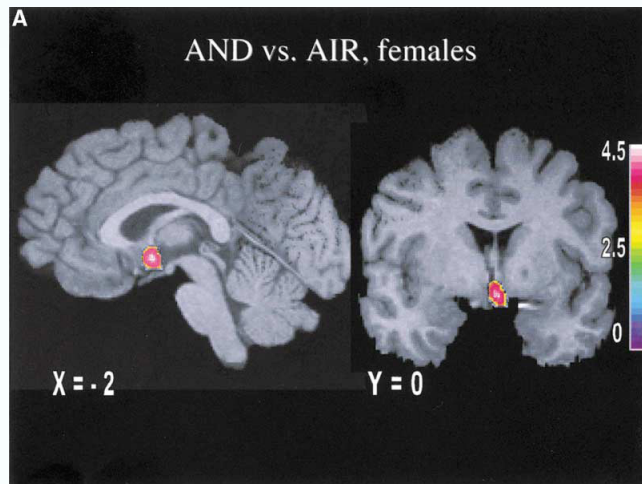
PET scans of brain activation in females and males smelling hormone-like synthesized compounds after components present in human sweat.

AND – androgen-like compound (derivative of testosterone, male hormone)

EST – estrogen-like substance (female hormone).

Women smelling AND and Men smelling EST activate the hypothalamus but not olfactory regions (amygdala, piriform cortex). When females smelled EST amygdala, piriform cortex were activated.

Strong hypothalamic response is seldom seen with ordinary odorants, and such an extreme sex difference is never seen with ordinary odorants. Hypothalamus mediates pheromonal effects in animals.



# Highly Diverse Smell Thresholds

(micrograms/Liter or PPB)

Musk	0.00007	PPTrillion
Lemon	0.003	
Vanilla	0.002	
Rotten eggs	0.2	
Bitter almond	3.0	
Perspiration	9.0	
Banana	39.0	
Wintergreen	100.0	

Million-fold difference between most and least sensitive thresholds.

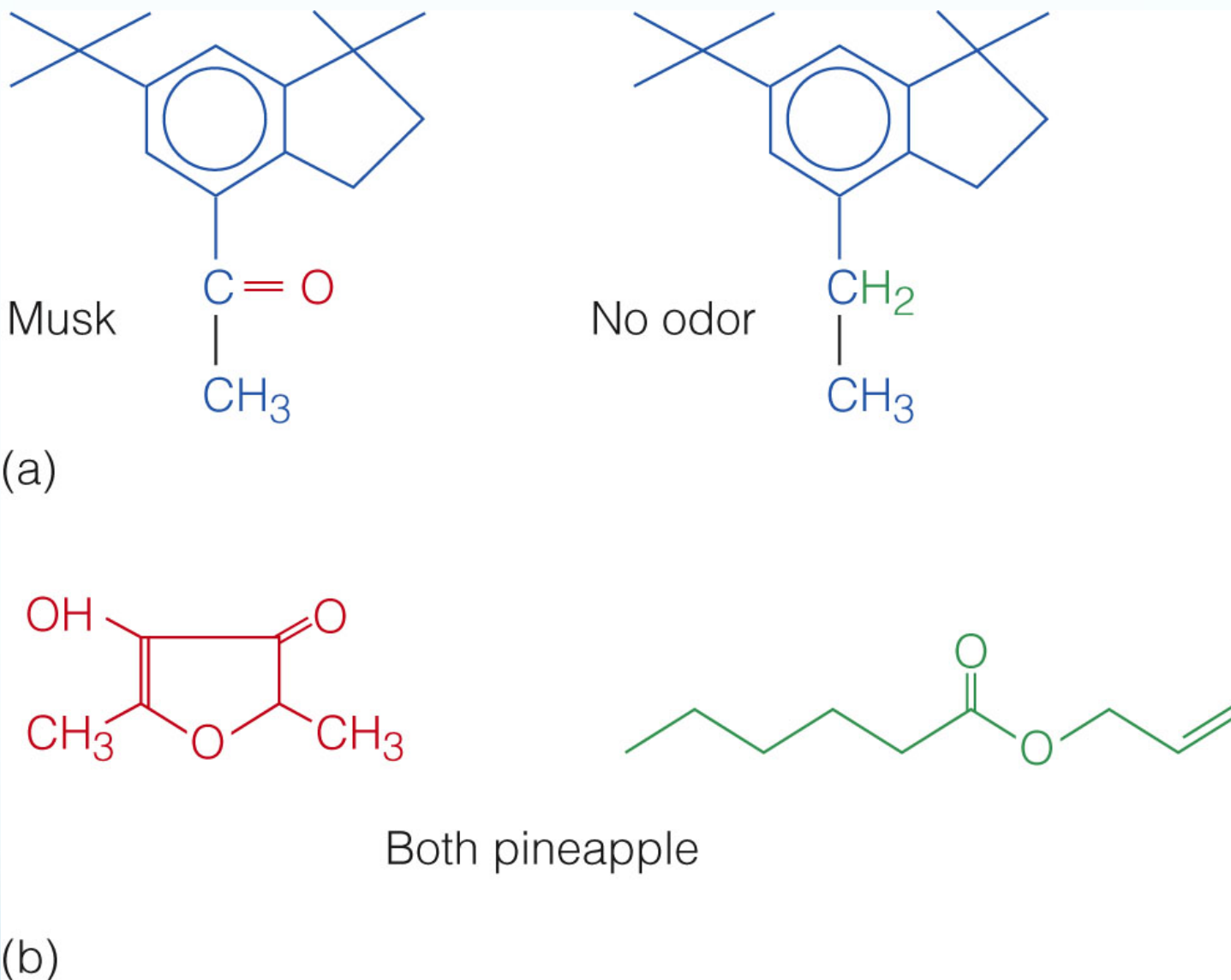


Figure 15.2 (a) Two molecules that have the same structures, but one smells like musk and the other is odorless. (b) Two molecules with different structures but similar odors.

# Taste

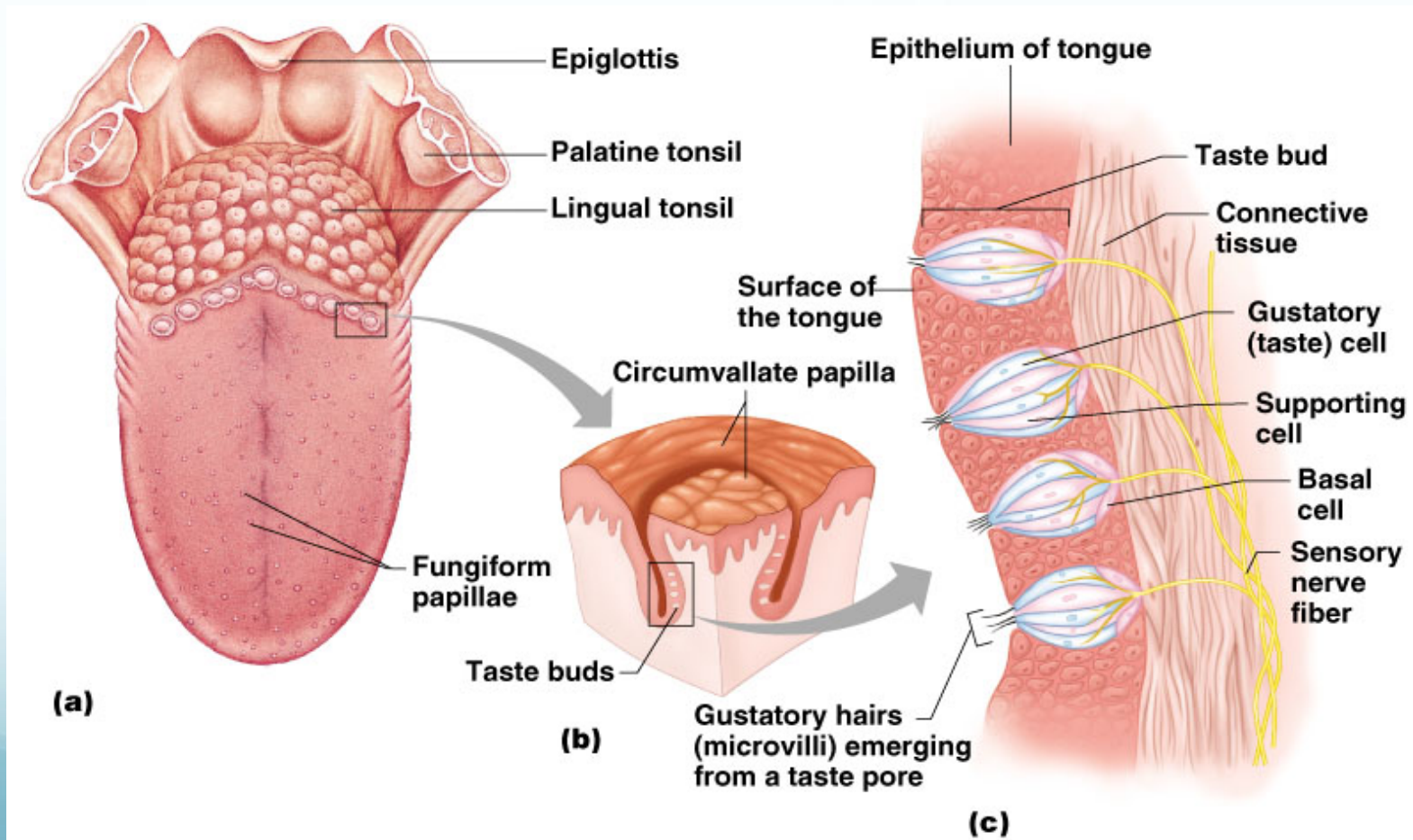
- The sense of taste is also known as **gustation**
- Often **works with smell** to gain a complete analysis of the sensation
- Special organs of taste are known as “**taste buds**” and approximately **10,000** are located on the surface of the tongue within **small elevations known as papillae**
- Other taste buds may be found **on the roof of the mouth** and **walls of the pharynx**

# Taste

- Each taste bud has **several taste receptors**, known as **gustatory cells**
- The **free ends of gustatory cells** have microvilli, called **taste hairs** that project through an opening in the taste bud known as a taste pore
- At the **base of the gustatory cells** is a network of sensory nerve fiber endings

# Gustation - the sense of taste

- **Sense organs:** tongue & throat, taste buds
- **Receptor type:** non-neuronal

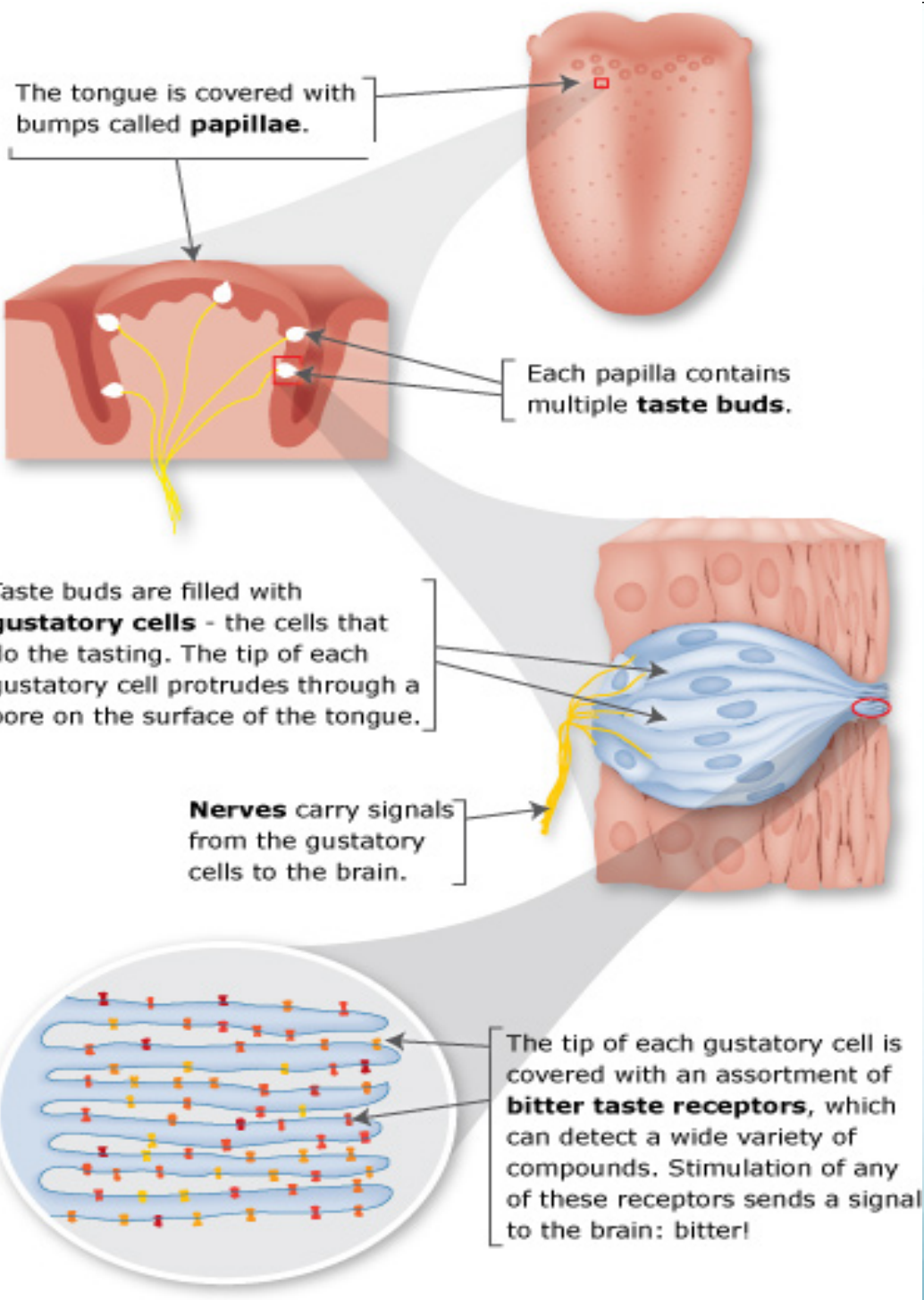




# Papillae

- Those bumps on our tongue are called **papillae**.
- Papillae **help grip food** while your teeth are chewing.
- Individuals **vary in their sensitivity** to taste sensations, a function of the density of these papillae on the tongue.





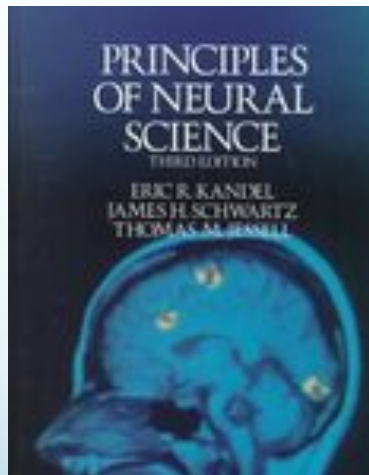
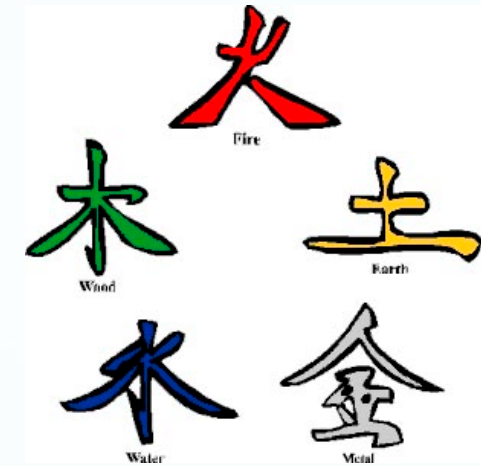
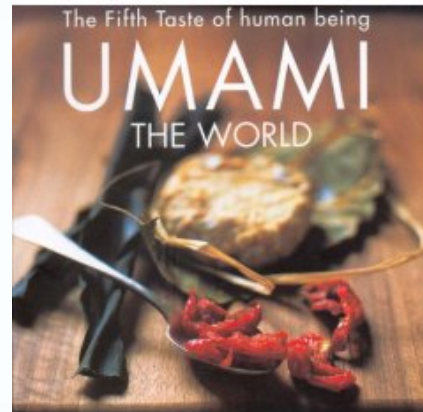
# Five Distinct Tastes:

- **Five Distinct Tastes:**
  - Each of these tastes developed as survival functions, according to **evolutionary psychology**.
    - Sweet - energy source
    - Sour – potentially toxic acid
    - Bitter – potential poisons
    - Salty – sodium essential to physiological processes
    - Umami – proteins to grow and repair tissue

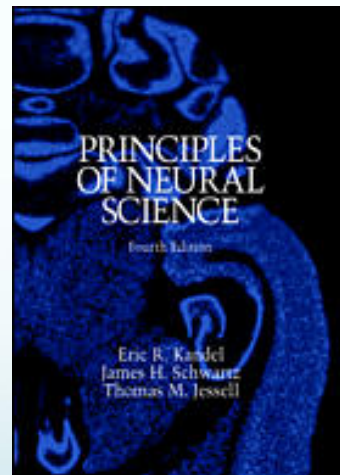
# Umami



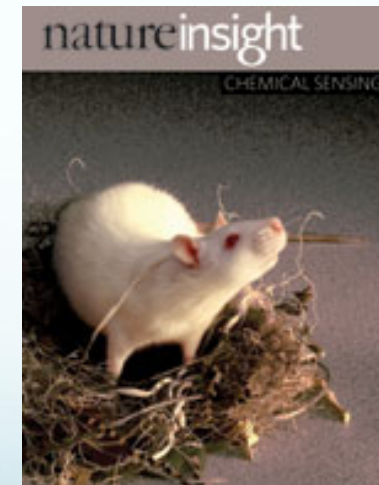
Prof. Kikunae Ikeda



III edition, 1992: „...*Monosodium glutamate may represent a fifth category, but this is controversial*”.



IV edition, 2000: „...*Some consider the taste of monosodium glutamate to represent a fifth category of taste stimuli, umami.*”



Nature, 444, 287 (16 November 2006): „*The sense of taste comprises at least five distinct qualities: sweet, bitter, sour, salty, and umami, the taste of glutamate.*”