Introduction: Taste and Smell

- Taste and smell are chemical senses.
- They give us information about the chemical composition of our surroundings.
- Taste is an immediate sense - a final checkpoint for the acceptability of food before it enters the body.
- Smell is a more distant sense allowing us to detect small concentrations of airborne substances.

Taste and smell only separated when animals moved to land

- Since in the sea, all chemicals are dissolved in the same medium (water) there is no need for two separate senses.
- Fish and other sea creatures have one general chemical sense.
- Taste is not just in the mouth… catfish have chemoreceptors all along their body (a catfish is like a giant tongue), and flies have receptors on their feet so that they can tell immediately upon landing whether an object is good to eat.

Separate systems for smell and taste

- OLFACTION
  - Molecules in air
  - Lipid-soluble, volatile
  - Locating food, mates, places, etc.

- GUSTATION
  - Molecules in solids and liquids
  - Water-soluble
  - Testing food, drink, etc. before ingesting.

Chemoreception is closely related to basic motivational drives

- Feeding
- Drinking
- Sex
- Emotion

Chemoreception is closely related to memory

Memories of tastes and smells are some of the most persistent and evocative of all sensory memories.

Taste

- Why do we need taste?
  - Taste is a gate-keeper sensory mechanism designed to test food and other substances before they enter the body.
  - Things that are potentially useful for the body tend to taste good, and things that are potentially harmful taste bad.
Anatomy of Taste

• The tongue contains many ridges and valleys called papillae.
• There are four types of papillae:
  – Filiform papillae: cone shaped & found all over the tongue (which is why tongues look rough).
  – Fungiform papillae: mushroom shaped & found at the tip and sides of the tongue.
  – Foliate papillae: a series of folds along the sides of the tongue.
  – Circumvallate papillae: shaped like flat mounds surrounded by a trench & found at the back of the tongue.

Tongue

• All papillae except filiform contain taste buds (so the very center of your tongue which only has filiform papillae is "taste-blind").
• Each taste bud contains a number of taste cells which have tips that protrude into the taste pore.

Different types of papillae are located on different parts of the tongue.

This observation has contributed to the theory (not entirely correct) that different parts of the tongue are specific to different taste qualities.