Sensing sound

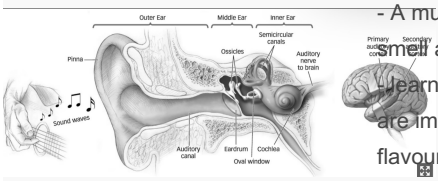
Pure tone:	A simple wave that consists of regularly alternating regions of higher and lower air pressure.
frequency:	The sound wave depends on how often the peak in air pressure passes the ear or microphone, measured in cycles per second.
Pitch:	How high or low a sound is.
amplitude:	Sound wave refers to its intensity, relative to the threshold for human hearing. It's perceived as loudness.
complexity:	Sound waves or the mixture of frequencies influenced by perception of timbre.
timbre:	The quality of sound that allows you to distinguish two sources with the same pitch and loudness.

How we experience taste

Stimuli:	When you bite into something, molecules dissolve in fluid on your tongue.
Receptors:	They are received by taste receptors in taste buds on your tongue and in your mouth and throat.
Pathway to the brain:	The taste buds transmits the single along a cranial nerve, through the thalamus to other areas of your brain.

Perceiving taste:
- Individual differences in taste perception:
~ Super-tasters
~ Non tasters
~ Learning, culture and experiences
- Many portions of what we commonly think of as taste actually comes from the sense of smell
- 5 basic tastes:
~ Salt, sour, bitter, sweet, savoury (umami)

Outer ear funnels:



- the outer ear collects sound waves and funnels them towards the middle ear
- the middle ear transmits the vibrations to the inner ear
- the inner ear is where they are transduce into neural impulses
- the middle of the ear behind the eardrum contains three small bones called ossicles
- the outer area of the ear is called the pinna

Sensing touch

- touch receptors under the skins surface enable us to sense pain, pressure, texture, patterns or vibrations
- stimuli: registers the temperature and pressure
- receptors: temperature and pressure in your skin transmit that signal
- pathway to the brain: along the cranial nerve through the thalamus to the area of the somatosensory cortex that processes the body parts that were touched

Food perception

- A multi sensory involving taste, smell and texture.
- Learned preferences in food are important in determining flavour and taste experiences dramatically vary widely across individuals

Sound into neural impulses

Cochlea:	A fluid-filled tube containing cells that transduce sound vibrations into neural impulses.
Basilar membrane:	A structure in the inner ear that moves up and down in time with the vibrations relayed from the ossicles.
Travelling wave:	The up and down movement that sound causes in the basilar membrane.
Inner hair cells:	Specialized auditory receptor neurons embedded in the basilar membrane.

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Somatosensation

The body senses are referred to as the somatosenses

Haptic perception:	Active exploration of the environment by touching and grasping objects with our hands.

Body position

Proprioception:	Sense of the body position.
Vestibular system:	Three fluid-filled semicircular canals and adjacent organs located next to the cochlea in each inner ear; used with visual feedback to maintain balance.

Neural impulses to the brain

- Action potentials in the auditory nerve travel to several regions of the brain stem in turn.
- Cerebral called area A1 - there is some evidence that the auditory cortex is composed of two distinct streams. Roughly analogous to the dorsal and ventral streams of the visual system.

Neural impulses to the brain (cont)

~ Area A1: the primary auditory cortex in the temporal lobe

Sensation to perception

Sensation:	Pressure waves in the cochlea move the basilar membrane stimulating the sensory receptors called hair cells.
Transduction:	When the hair cells bend, they convert the pressure waves into signals that are sent to the brain by the auditory nerve.
Perception:	The auditory nerve carries the neural signal first to the thalamus and then to the primary auditory cortex, which processes your perception of the sound.

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