Introduction 11.000

The body monitors itself and its surroundings through receptors - nerve endings specialized in registering specific stimuli. internal proprioceptors and interoceptors detect changes inside the body. Hundreds of thousands of exteroceptor units on the body surface detect changes in touch, pressure, pain, heat, cold, light, sound, and scent. Exteroceptors are concentrated in skin, eyes, ears, nose, and tongue.

Skin This body covering has a thin outer layer (epidermis) and a thicker, deeper layer (dermis or corium) overlying subcutaneous fat. Skin contains mechanoreceptors sensitive to touch etc, and thermoreceptors sensitive to temperature. Nails, hairs, sweat glands, and sebaceous glands are appendages of skin.

Eyes Eyes are two jelly-filled balls in the front of the skull. Light entering an eye passes through the cornea, aqueous humor, pupil, and lens to the retina, comprising about 130 million photoreceptor cells. From the retina impulses travel via thick optic nerves to the back of the cerebral hemispheres.

Ears Sound waves reaching an ear pass from its fleshy auricle through the external auditory canal to the middle ear, vibrating in sequence the eardrum and ossicles (malleus, incus, and stapes). These bones agitate fluid in the inner ear where the vibrating basilar membrane agitates the organ of Corti. From there nerve impulses go to the brain's temporal lobes. The inner ear's vestibular system (featuring semicircular ducts, saccule, and utricle) registers the head's attitude and so helps to control body balance.

Nose Chemoreceptors in two olfactory membranes one in each nasal cavity - register scent molecules, triggering nerve signals to olfactory bulbs linked with the brain's limbic system.

Tongue Taste chemoreceptors on tongue papillae (also on palate, throat, and nostrils) register combinations of tastes. Nerves transmit "taste" signals to the brain's thalamus and cortex.