

# Pineal Body

Pineal Body, small, cone-shaped projection from the top of the midbrain of most vertebrates, arising embryologically as an outgrowth of the brain. The pineal body is absent in crocodiles and in mammals of the order Xenarthra (anteaters, sloths, armadillos) and consists of only a few cells in whales and elephants. In humans the structure develops until the seventh year, when it is slightly larger than a pea; thereafter, throughout life, small mineral particles, particularly calcium, may be deposited in the pineal body. The mineral deposits can sometimes be seen in skull X-ray photographs.

The functions of the pineal gland are only beginning to be understood. It has both neural and endocrine properties, and in simple vertebrates such as the lamprey the organ is mounted on a stalk close to an opening in the skull and functions as a photoreceptive organ. Photoreceptive structures linked with the pineal body are still observed in higher vertebrates such as reptiles and even some species of birds. In mammals the pineal body is not light-sensitive, but a neural connection remains between the eyes and the gland. Thus the functions of the pineal body in an animal are linked with surrounding light levels.

The isolation of the hormone melatonin in 1958 has led to a further understanding of the pineal body. Animal studies show that the gland synthesizes and secretes melatonin almost entirely at night, and that it ceases this function during the day. Melatonin, in turn, affects the functions of other endocrine organs such as the thyroid, adrenals, and gonads. Further experiments demonstrate that changes in the level of melatonin in the bodies of seasonally breeding animals affect their reproductive cycle, and that decreases in melatonin brought about by artificial lighting can prolong breeding activity. The role of the pineal body in the control of these biorhythms is only beginning to be elaborated, but the suggestion remains that even nonseasonal breeders such as human beings are affected by its daily functions. The onset of puberty may, in fact, be triggered by changes in melatonin level.