

The ultrastructure of monkey foveal photoreceptors, with special reference to the structure, shape, size, and spacing of the foveal cones

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Abstract

A systematic electron microscopic study was made of the structure of foveal cones of *Macaca* spp. Transverse sections of inner (IS) and outer segments (OS) were made in sequence, from the pigment epithelial zone (PEZ) to the outer limiting membrane (OLM). The smallest diameters of hundreds of cone sections were measured from electron micrographs with a Zeiss particle-size analyzer, and analyzed statistically. Some details are also included about *Cebus* photoreceptors. It is claimed in the literature that foveal cones are rod-like (cylindrical) and untapered. Our study shows the foveolar cone to be a tapered structure. There has been some confusion between the foveola, which is rod-free, and the fovea, which has a high concentration of cones, but is not rod-free. Within the fovea, as the ratio of cones to rods falls from infinity to 1, with distance from the central bouquet of cones, the cone center-to-center distances increase, the inner segment diameters increase, and the number of cones/sq mm decreases. The tapered calycal processes are more massive in *M. irus* than *M. mulatta*, and the lateral fins are better developed. Lateral fins are not present in the foveola. The cones are arranged in straight lines.

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