Topographic Organization Of The Ganglion Cell Layer And Intraocular Vascularization In The Retinae Of Two Reef Teleosts

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Vision Research (1989) 29 (7): 765-775.

Abstract

The retinae of two species of teleosts, the rippled blenny *Istiblennius edentulus* and the blue tusk fish *Choerodon albigena* are examined in wholemount. The retinal topography of Nissl-stained cells within the ganglion cell layer in each species reveals a temporal (4.32×10^4 cells per mm^2) and a nasal (3.83×10^4 cells per mm^2) area centralis in the rippled blenny and two temporal areae centrales (8.30×10^4 and 8.00×10^4 cells per mm^2) and a horizontal streak (5.00×10^4 cells per mm^2) in the tusk fish. These areas are thought to subserve higher spatial resolution. Transcardial perfusions of indian ink reveal an extensive network of vitreal blood vessels which are supplied by the hyaloid artery and overlie the retina in each species. This rich network of vitreal vessels supplies areas of increased ganglion cell density although areas of maximum cell density are devoid of vessels to preserve the high spatial resolving power of the eye within this region. Unique blood vessel plexuses overlying the optic disc and falciform process in the tusk fish are also described. The diameter of the overlying vitreal vessels is compared to the soma sizes of cells within the ganglion cell layer.

Keywords:

teleost retina; topography; vascularization; ganglion cell layer

Citation: Shaun P. Collin (1989) Topographic organization of the ganglion cell layer and intraocular vascularization in the retinae of two reef teleosts, *Vision Research* 29 (7): 765-775. doi:10.1016/0042-6989(89)90089-8