**Introduction**

The Brahminy blind snake, *Ramphotyphlops braminus*, is an ancestral, subterranean species. It is well studied as a triploid, all female, parthenogenic species, but essentially nothing is known about its eyes and brain. A brain atlas for snakes in general is nonexistent. Therefore, identification of this minute organism’s brain and eye architecture was the first step toward investigating the neural pathways related to photoreceptive mechanisms retained in the subcutaneous eyes.

**Methods**

Preserved heads were cryosectioned and attached to gelatin-coated slides, then stained with cresyl violet. The 13 μm transverse sections were viewed with a bright field microscope.

**Results**

The rostral to caudal (left to right) sections exhibited the nasal cavities (nc), Jacobson’s organ (J), olfactory bulb (OB), cerebrum (cb), and anterior dorsal ventricular ridge (aDVR).

The R. braminus eye contained beneath the skin and scales exhibited a fully formed retina with rods (r), cones (c), and retinal ganglion cells (g) that filled the entire eye. The optic nerve (on) was also visible.

Major brain structures involved in nonvisual and visual photoreception were identified.

**Discussion**

The identification of *R. braminus brain and eye* cytoarchitecture provides a vital framework for further research into the unique microstructure of this species. The neuroanatomical results presented here provide a foundation for studies of visual and nonvisual pathways using neural tract tracing methods. Non-visual retinal projections and the nature of brain clocks are poorly understood in non-mammals. *R. braminus* provides an important opportunity to investigate the neurobiology of biological timing in snakes, whose evolutionary light history is more similar to mammals than to most other major animal taxa. This work will help elucidate the evolution of visual and non-visual photoreception in a fascinating group of organisms with a strong fossorial history, and may help identify the site(s) of light-responsive circadian clock(s) in the reptilian brain.

**Acknowledgements**

Sigma Xi, the Scientific Research Society for funding (Sigma Xi Grant-in-Aid of Research to K. Gallman

Gayle Duncombe, Lori Schweikert for technical support and helpful discussions

**References**

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