Eyes, vision and the origins and early evolution of snakes

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Supplementary Appendix 15.S1

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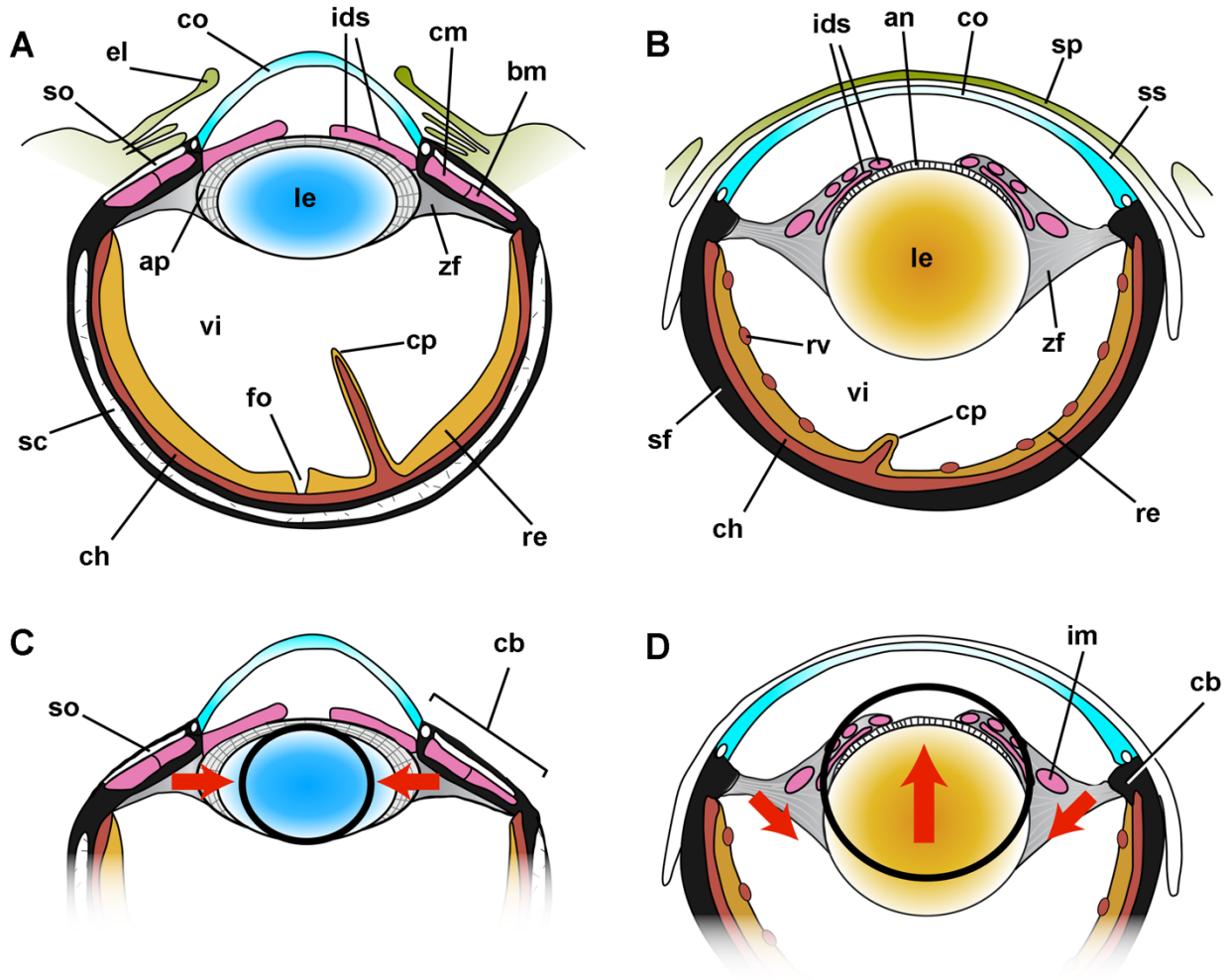
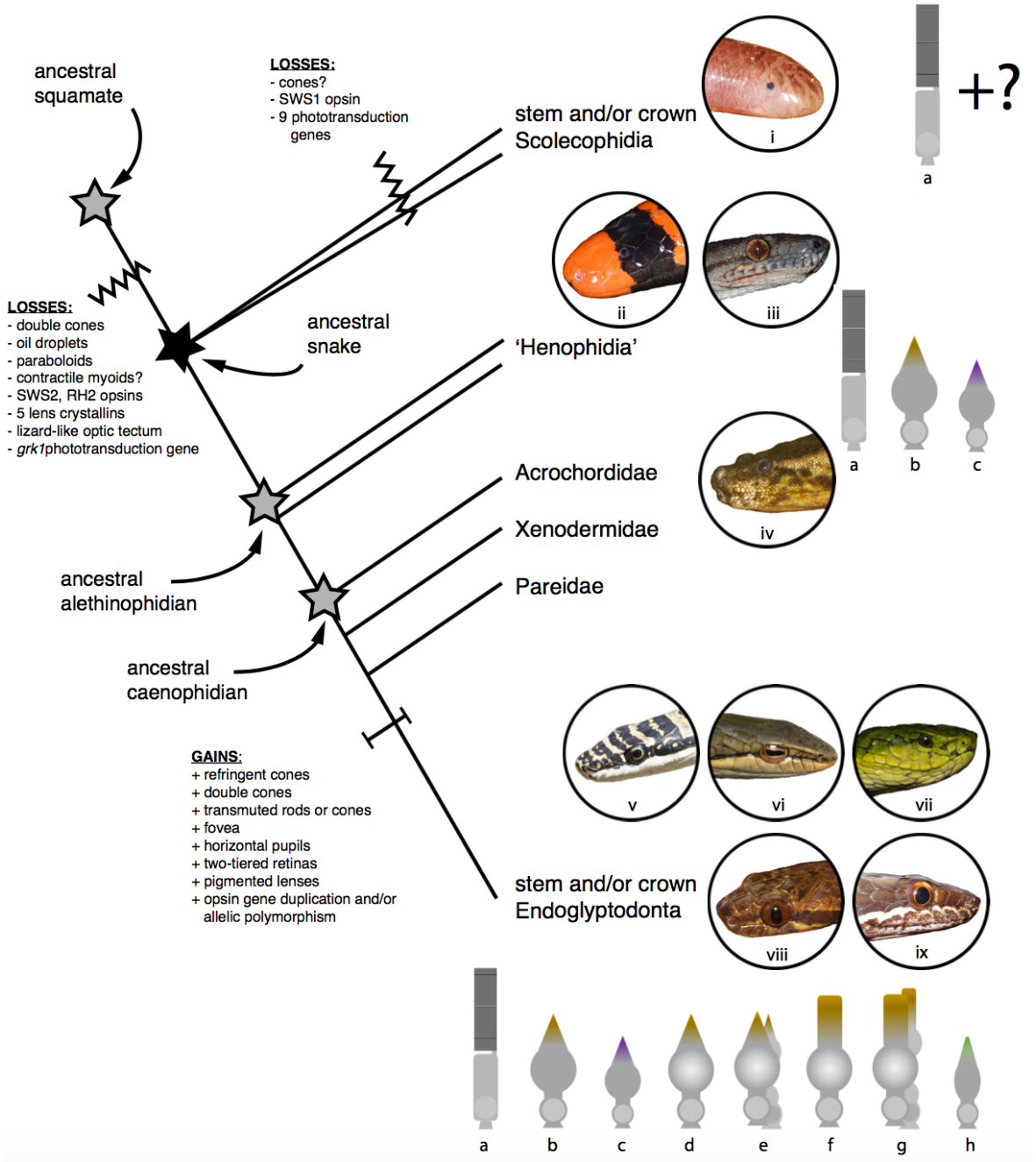


(2) Figure 15.2 (colour version) Differences between the eyes of typical lizards (A, C) and snakes (B, D), redrawn from Caprette et al (2004: [4]; based on [23]). Lower pair of images show method of accommodation: lizards focus by deforming the lens via contraction of ciliary body muscles (bm, cm); snakes focus by moving their hard lens using changes in vitreous pressure controlled by contraction of iris muscles (im) (though see § 15.4.2). Abbreviations: ap, annular pad (Ringwulst); bm, Brücke's ciliary muscle; cb, ciliary body; ch, choroid; cm, Crompton's ciliary muscle; co, cornea; cp, conus papiliaris; el, eyelid; fo, fovea; ids, iris dilator and sphincter muscles; im, iris muscle; le, lens; sc, scleral cartilage; sf, sclera (fibrous); so, scleral ossicle; re, retina; rv, retinal blood vessels; sp, spectacle (Brille); ss, subspectacular space; vi, vitreous; zf, zonular fibres.



(3) Figure 15.5 (colour version) Summary of inferred evolutionary events in snake vision plotted onto a phylogeny (see Fig. 15.1). Cartoon photoreceptors show main rod and cone types found in major lineages: a = rod, b = large single cone, c = small single cone, d = large single refringent cone, e = double refringent cone, f = transmuted, rod-like cone, g = transmuted, rod-like double cone, h = transmuted, cone-like rod. Other photoreceptor types in Endoglyptodonta that might be recognized (e.g., those with elongated myoids in two-tiered retinas) are not shown. The precise branch on which changes occurred is not always clear; for example, a spectacle (not listed here) might have been acquired in stem snakes and been lost in scolecophidians and some henophidians, or might have arisen in stem or later alethinophidians. Note also that scolecophidians might be paraphyletic. Representative taxa of major lineages depicted in circles (photographers in parentheses): i = *Indotyphlops* sp. (Mendis Wickramasinghe), ii = *Anilius scytale* and iii = *Corallus hortulanus* (both: Gabriela Bittencourt), iv = *Acrochordus javanicus* (David Gower), v = Chrysopelea taprobanica, vi = *Ahaetulla perroteti* and vii = *Trimeresurus macrolepis* (all three: V. Deepak), viii = *Leptodeira annulata* and ix = *Lycognathophis seychellensis* (both: David Gower).