**Supplementary Movie S1:** Animation of multiple cross-section images collected perpendicular to the surface of the mouse eye. Animation begins at the surface and proceeds toward the photoreceptor cell layer, encompassing a total of 51 μm. The animation contains a total of 51 cross-sections spaced 1 μm apart. Signal from the forward coherent anti-Stokes Raman scattering detector (F-CARS, red), epi-detector (E-CARS, green) and two-photon autofluorescence (TPAF, blue) are shown.

**Supplementary Movie S2:** 3D rendering of S1.