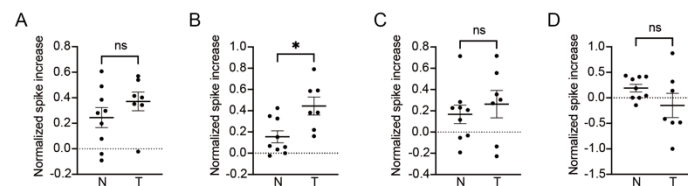


**Supplementary Figure 1. Reconstructed morphology of electrically recorded sOn  $\alpha$ RGCs.** (A) Top- and side-views of reconstructed sOn  $\alpha$ RGCs from the nasal retina, with IPL stratification profiles. Dashed lines indicate On and Off ChAT bands. (B) As in (A) but from the temporal retina.



**Supplementary Figure 2. Changes in sOn  $\alpha$ RGC spiking responses before and after GABAzine and TPMPA administration.** (A) Comparison of normalized spike change in response to 100% local flash after GABAzine and TPMPA administration. (B) Comparison of normalized spike change in response to 100% global flash after GABAzine and TPMPA administration. (C) and (D) As in (A) and (B) respectively, but for 5% light intensity.