Supporting Information

Zhang et al. 10.1073/pnas.1211547109

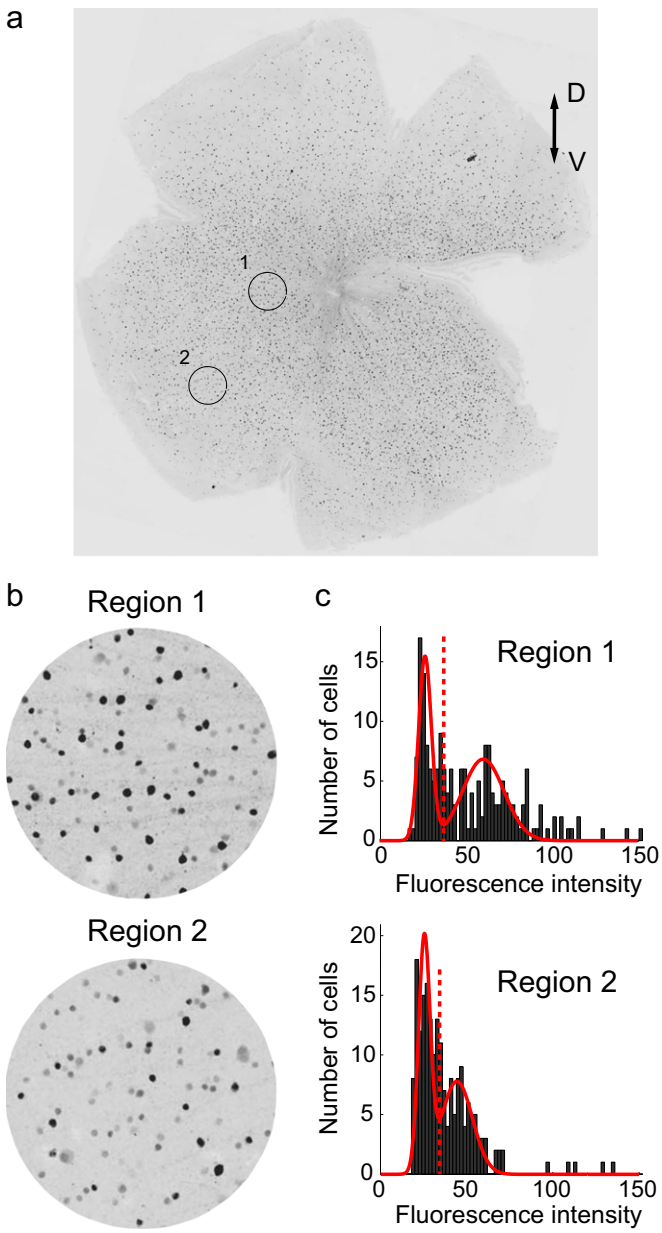

Fig. S1. YFP fluorescence intensity in W3 retinas. (*A*) Whole-mount YFP fluorescence image of a W3 retina, displayed with inverted contrast. (*B*) Enlargements of the two regions in *A*. Note that cells in region 1 are brighter; generally the fluorescence intensity decreases with increasing eccentricity. (*C*) Histograms of the cell soma fluorescence intensity within the two regions indicated in *A*. The red curves are the sum of two Gaussians fit to the histograms. Cells in the high-intensity portion (intensity to the right of the dotted lines) are defined as W3-RGCs and used for DRP analysis (Fig. 1*E*).

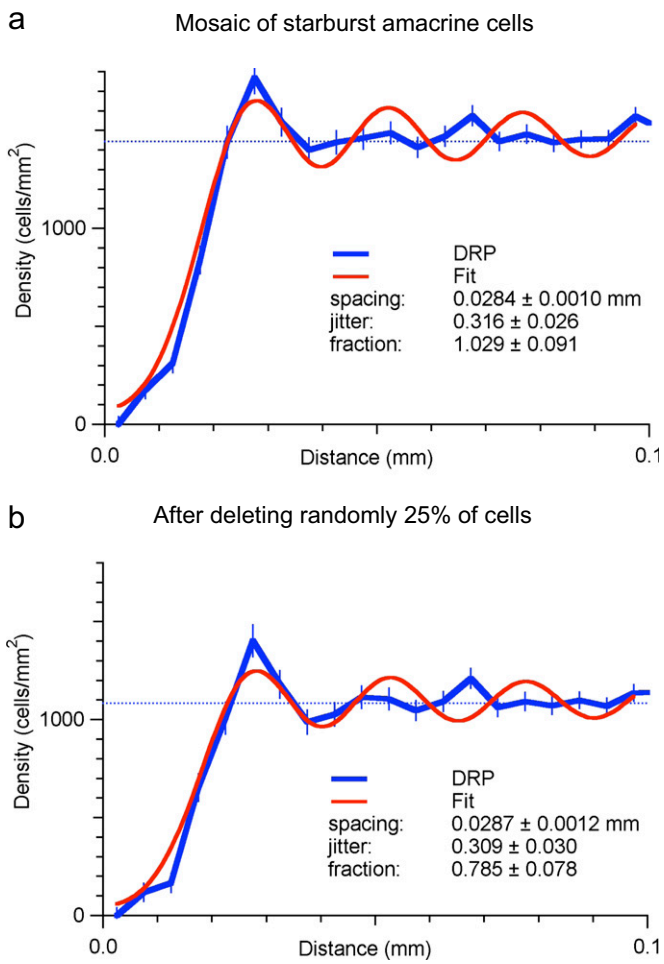

Fig. S2. Test of the mosaic distribution model. (*A*) Application of the density recovery profile (DRP) analysis to a mosaic of starburst amacrine cells from a whole-mount mouse retina immunostained for choline acetyl transferase (ChAT). Here one expects that every cell in the population is labeled. DRP was computed according to Eq. **3** and fitted with the model of Eq. **4**. *Inset* shows the derived parameter values and 95% confidence intervals for the spacing of the hexagonal array, the relative jitter at each location, and the fraction of cells labeled. Note the fraction labeled is estimated at 1.029 ± 0.091, within a confidence interval of the true fraction, 1.0. (*B*) We deleted a random 25% of the cells from the mosaic in *A*, recomputed the DRP, and fitted the result again with the model. Note the parameters for spacing and jitter are unchanged, but the fraction of cells labeled is estimated at 0.785, within a confidence interval of the true fraction, 0.75.

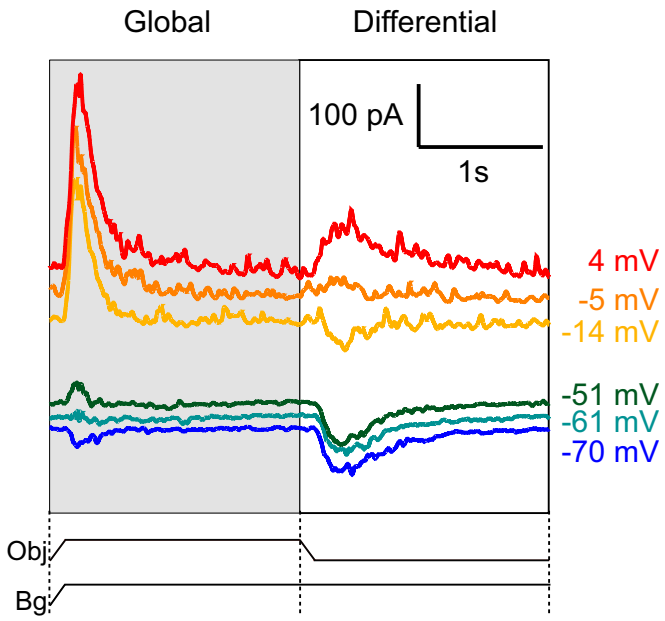

Fig. S3. Representative voltage-clamp traces used for conductance analysis. Shown is whole-cell membrane current of a W3 cell under stimulation with moving grating stimuli as in Fig. 5 *E* and *F*. Note the currents in response to differential motion reverse polarity at a membrane voltage near 0 mV, suggesting they are predominantly excitatory currents through glutamate receptors. The currents in response to global motion reverse near –60 mV, suggesting they are predominantly inhibitory currents through chloride channels. The quantitative extraction of excitatory and inhibitory currents proceeded as described in *Materials and Methods*.