

Central Roles of Bipolar Cells in Retinal Neuronal Circuits

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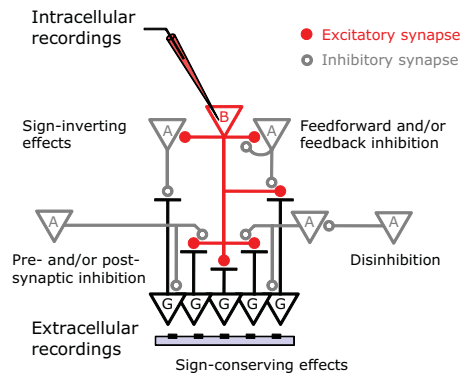
Center for Brain Science, Harvard University



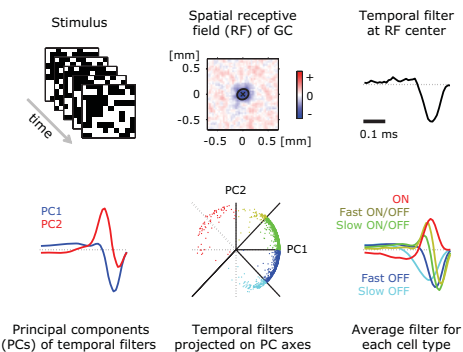
Question

How are the signals from individual bipolar cells (BCs) distributed to the various types of ganglion cells (GCs)?

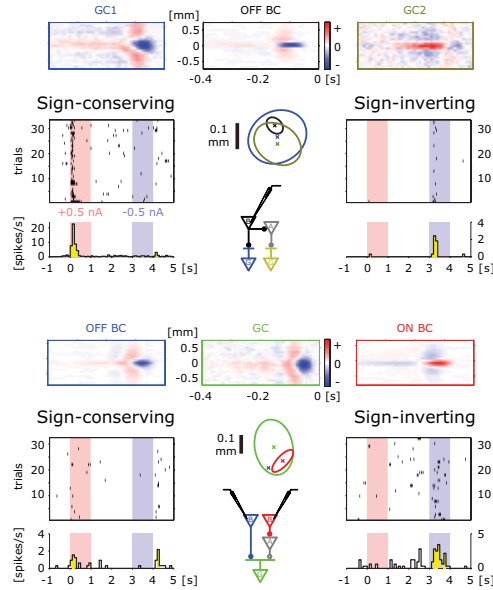
Methods



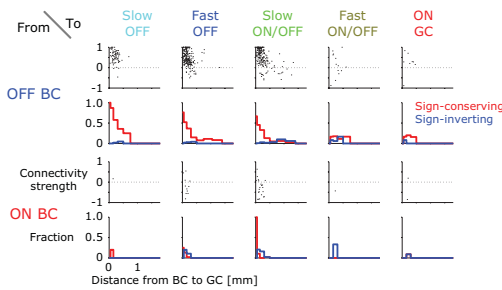
Cell-type classification



Connectivity



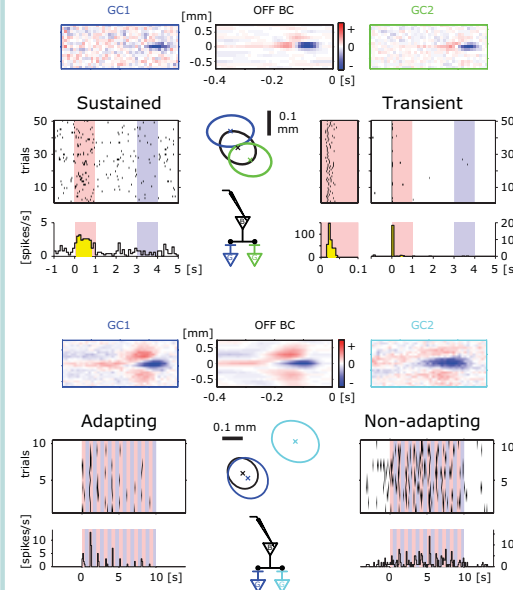
BC projective field on GCs



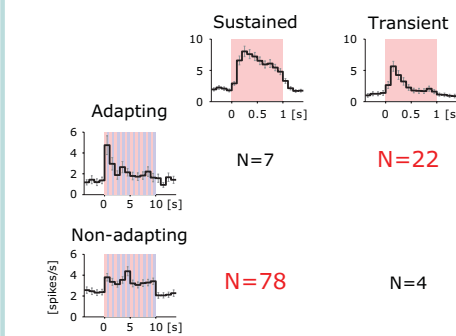
Summary 1

- Sign-conserving effects:
 - The closer, the stronger and denser.
- Sign-inverting effects:
 - Weaker and longer working distance
- Cell-type specificity:
 - Denser for those w/ similar response polarity
 - Broader and denser for OFF BCs

Dynamics



Summary 2

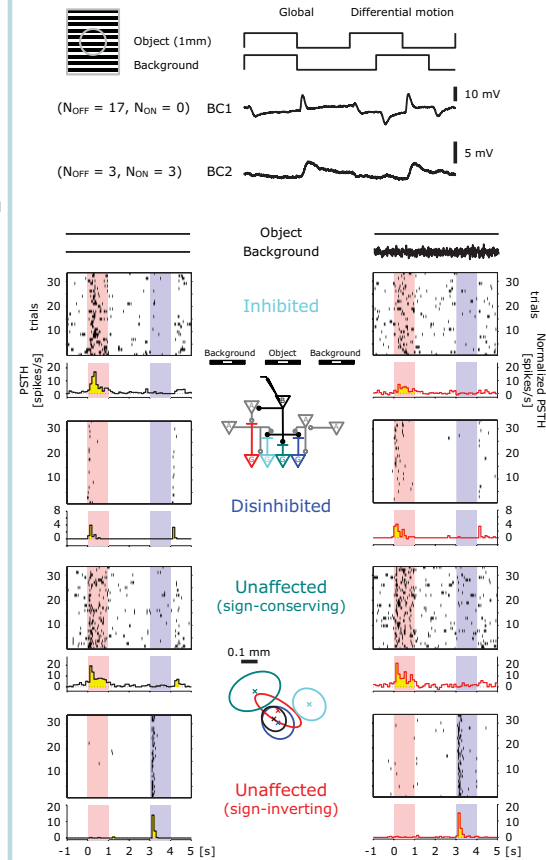


Future plans

- Examine contributions of:
 - Amacrine cells (ACs)
 - GC intrinsic mechanisms
- Kinetics of ON and OFF pathways

Gating

Presynaptic inhibition by background, wide-field ACs



Summary 3

