

Figure 1: Examples of various possible single-opponent receptive field configurations, many others could be designed. All function to describe color properties of surfaces, though their response patterns to similar stimuli vary slightly.

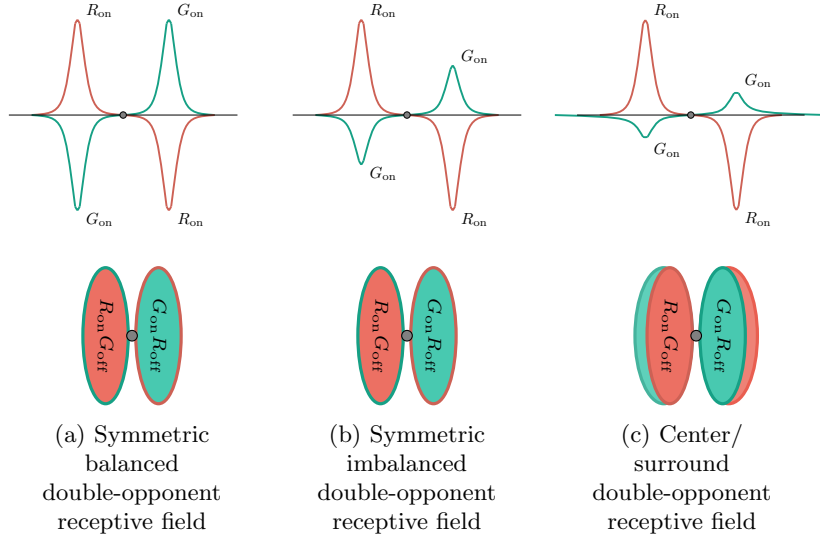


Figure 2: Examples of various possible double-opponent receptive field configurations, many others could be designed. All function to describe color properties of borders, though their response patterns to similar stimuli vary slightly.

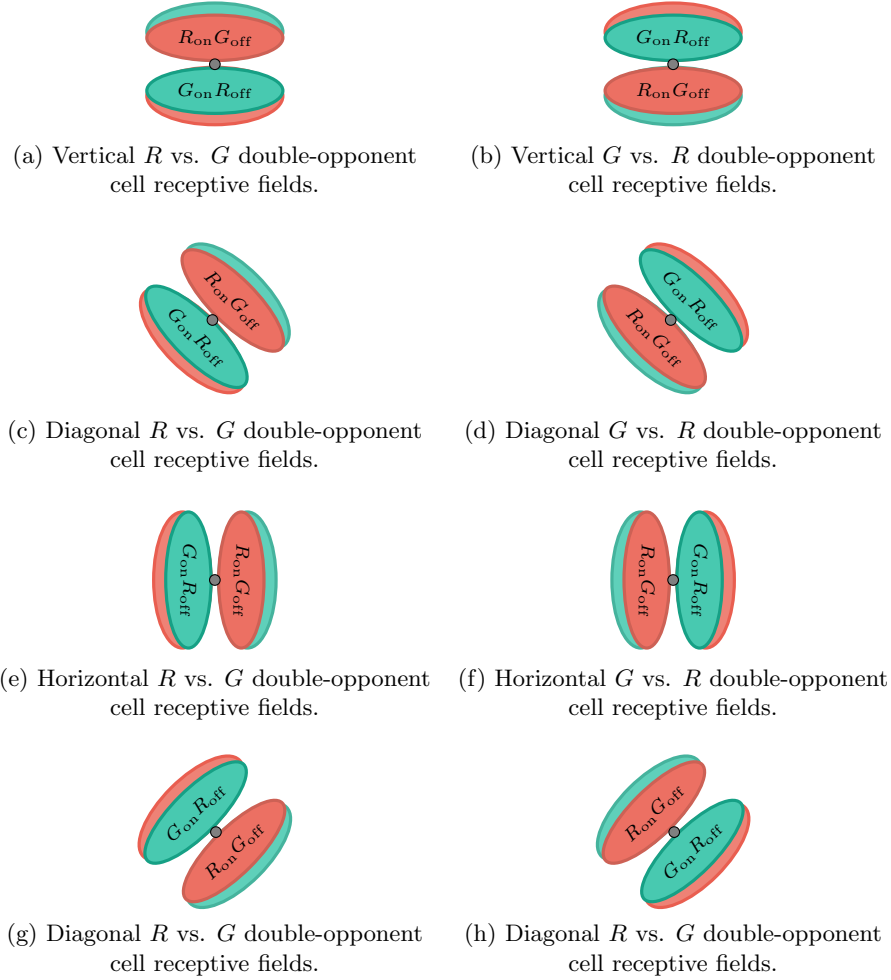


Figure 3: Schematic of orientation selectivity in double-opponent receptive field configurations. Any single double-opponent neuron only has one receptive field hard wired into it. By having collections of neurons, each selective to a different orientation at the same retinotopic location, we obtain a degree of rotation invariance.

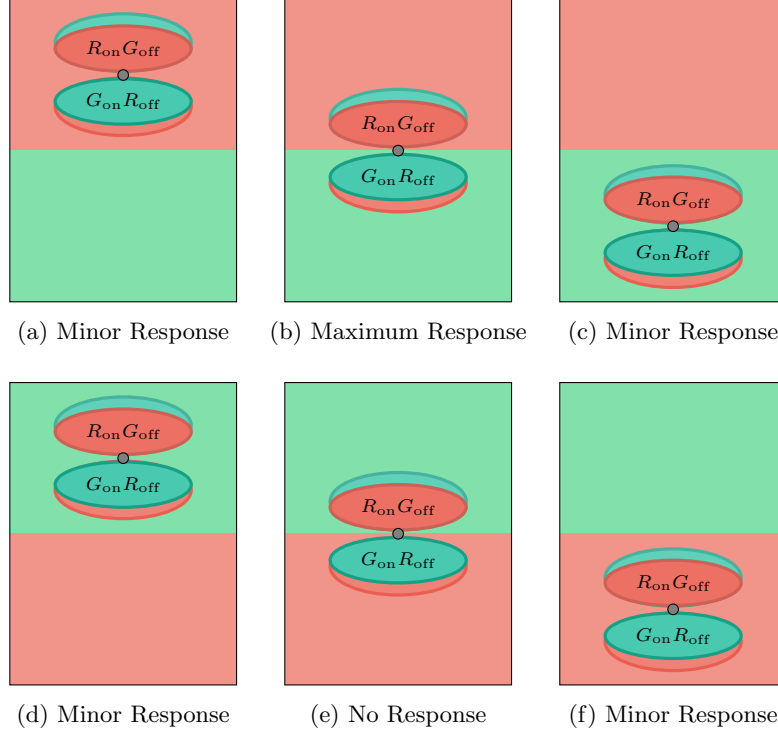


Figure 4: A double-opponent cell selective to horizontally oriented borders with red above and green below; only responsive to that particular stimulus. In Figure (b), the neuron is presented with its ideal stimulus: its R_{on} and G_{on} receptive fields are fully activated while its R_{off} and G_{off} receptive fields are completely unactivated. Figure (e) presents the neuron with the exact opposite stimulus, neither its R_{on} nor G_{on} receptive fields are activate at all, and both its R_{off} and G_{off} receptive fields are fully activated, ensuring no response possible from the cell. While its R_{on} receptive field might be strongly stimulated in (a) and (f), it's R_{off} receptive field cancels it out. Similarly, in (c) and (d) its G_{on} receptive field is stimulated but cancelled out by activity in its G_{off} receptive field.

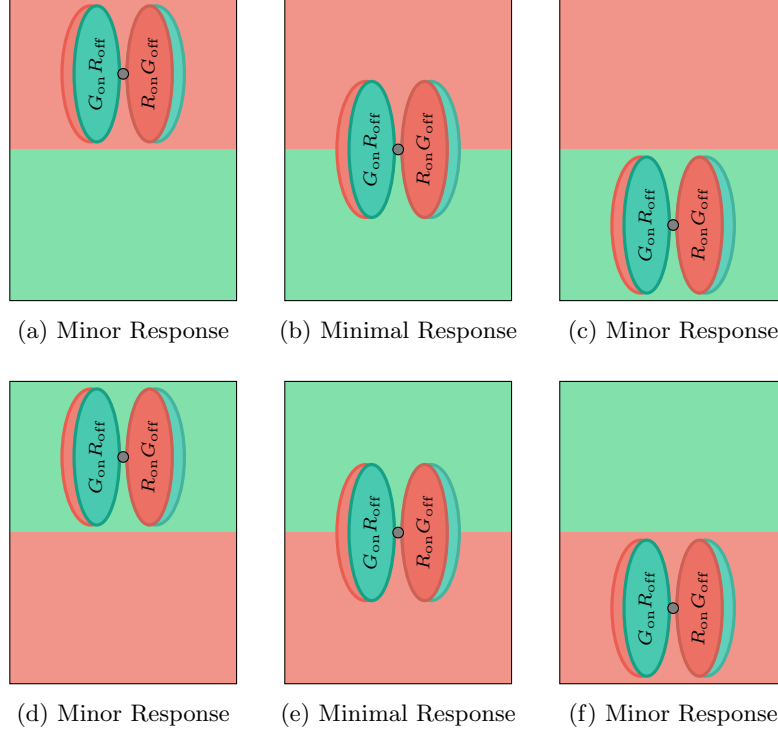


Figure 5: A double-opponent cell selective to vertically oriented borders with red to the right and green on the left; completely unresponsive to a horizontal border. While its R_{on} receptive field might be strongly stimulated in (a) and (f), its R_{off} receptive field cancels it out. Similarly, in (c) and (d) its G_{on} receptive field is stimulated but cancelled out by activity in its G_{off} receptive field. In (b) and (e) both of its R_{on} and G_{on} receptive fields are moderately activated, but again, cancelled out by activation in its R_{off} and G_{off} receptive fields, respectively.