



Figure 5

1 column

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Figure S1. Cartoon model of changes in firing rate distributions during saccade preparation. Each firing rate distribution depicted corresponds to the hypothetical probability distribution of firing rates for a given neuron and stimulus. The distributions depicted, which cannot be directly visualized from the data are instead estimates based on the measured means and FFs, with the assumption of a Poisson distribution. A, The baseline firing rate distribution has a comparatively wide spread, reflected in its higher FF. B, Distributions during the presaccadic period move to separate means depending on saccade direction but become narrower, and thus have lower FFs, for all directions. C, At the time of cue onset, firing rates may be within any of the three presaccadic distributions due to advance planning or directed spatial attention (see Discussion). On those trials with the correct plan, firing rates are already in the correct presaccadic distribution and reaction times tend to be short (green). For trials with either of the incorrect plans, firing rates are in either of the other two presaccadic distributions (summed and divided by two) and RTs tend to be longer (red). “Optimal” firing rates are shown as dotted lines corresponding to the presaccadic mean firing rate appropriate for a given condition (note alignment with distribution means in B). Short RT distributions in each case have smaller standard deviations ( $\sigma$ ) than long RT distributions while the differences between the means ( $\mu$ ) of the short and long RT distributions in this model correspond qualitatively to our observed results (Figure 4A).