

# On your mark, get set: Brainstem circuitry underlying saccadic initiation 1

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**Abstract:** Saccades are rapid eye movements that are used to move the visual axis toward targets of interest in the visual field. The time to initiate a saccade is dependent upon many factors. Here we review some of the recent advances in our understanding of these processes in primates. Neurons in the superior colliculus and brainstem reticular formation are organised into a network to control saccades. Some neurons are active during visual fixation, while others are active during the preparation and execution of saccades. Several factors can influence the excitability levels of these neurons prior to the appearance of a new saccadic target. These pre-target changes in excitability are correlated to subsequent changes in behavioural performance. Our results show how neuronal signals in the superior colliculus and brainstem reticular formation can be shaped by contextual factors and demonstrate how situational experience can expedite motor behaviour via the advanced preparation of motor programs. Munoz et al.

**Key words:** superior colliculus, reticular formation, eye movement, saccade, motor preparation, motor control.