

Responses of looming-sensitive neurons in the lobula complex of the mantis brain

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The praying mantis shows defensive reactions in response to looming stimuli. It is possible that the looming-sensitive neuron, like the lobula giant movement detector (LGMD) in the locust, plays a role in triggering the defensive reaction. Although it has been reported that there is a looming-sensitive neuron that descends the nerve cord from the brain in the mantis, no studies have ever tried to identify a looming-sensitive neuron that is a homologue of the LGMD in the lobula complex of the mantis brain.

Responses to visual stimuli of lobula complex neurons were recorded intracellularly in the mantis *Tenodera aridifolia*. Some of the recorded neurons showed their largest responses to looming stimuli that simulated a black circle approaching towards the mantis. The neurons showed a transient excitatory response to a gradually darkening or receding circle. The neurons showed sustained excitation to the linearly expanding circle, but the spike frequency decreased rapidly.