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VISUAL INTERNEURONS IN *DROSOPHILA*

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Drosophila/Vision/Descending pathways/Electrophysiology.

In flies the fused pair of cervical connectives mediates the signal traffic between the brain (processing sensory information). and the thoracic compound ganglion (motor coordination of flight & walk).

Extracellular records show a spontaneous impulse activity, which specifically changes under visual stimulation. When periodic striped patterns move in front of the compound eyes from front to back of the fly, the spike rate doubles until the movement stops. Reverse movement has no effect. Monocular stimuli elicit similar but smaller responses.

Rotatory stimuli on both eyes are equivalent to front-to-back stimuli on one eye. The response is largest for horizontal and absent for vertical movement. With varying ω speed of pattern movement the response increases up to $\omega = 400^\circ / \text{sec}$ ($\omega/\lambda=9\text{Hz}$).

It seems that these fibres are involved in the landing response rather than in visual course control. Measuring the landing response in stationary flight under identical stimulation favors the presumed correlation.

In larger flies (*Musca*, *Calliphora*) almost identical results are found in the extracellular records and behavior. Fibres here are large enough to be amenable to intracellular recording and identification by dye injection. At the moment these studies are under way.