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Mechanosensing in the *Drosophila* Nervous System

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Abstract

Neurons allocated to sense organs respond rapidly to mechanical signals dictating behavioral responses at the organism level. The receptors that transduce these signals, and underlie these senses, are mechanically gated channels. Research on mechanosensation over the past decade, employing in many cases *Drosophila* as a model, has focused in typifying these receptors and in exploring the different ways, depending on context, in which these mechanosensors are modulated. In this review, we discuss first what we have learned from *Drosophila* on these mechanisms and we describe the different mechanosensory organs present in the *Drosophila* larvae and adult. Secondly, we focus on the progress obtained by studying the fly on the characterization of the mechanosensory crosstalk underlying complex behaviors like motor coordination. Finally, turning to a cellular level, we summarize what is known on the mechanical properties and sensing capabilities of neural cells and how they may affect neural physiology and pathology.