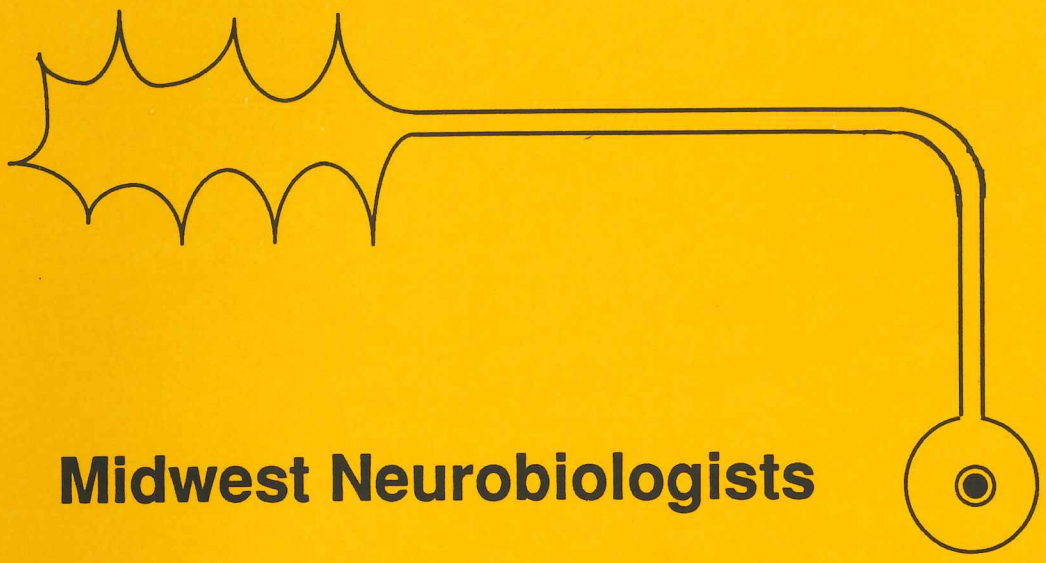

Midwest Neurobiologists

Fifteenth Annual Meeting

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University of Missouri-Columbia
Memorial Union
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A-7

ENGEL, JEFF E. and CHUN-FANG WU, Physiological response of mechanosensilla in "bang sensitive" *Drosophila* mutants. Department of Biology, University of Iowa, Iowa City, Iowa, 52242

In the fruit fly, *Drosophila melanogaster*, several mutations are known that produce the phenotype of "bang sensitivity", in which the animal is paralyzed by mechanical shock. So far there has been little insight into the physiological effects of these mutations or the basis of the bang-sensitive phenotype.

We recorded responses of sensory neurons of thoracic macrochaetes as the bristles were deflected. In three of these mutants, *bang sensitive*, *banged senseless*, and *easily shocked*, the maximum frequency of action potentials is lower than in wild-type flies. In addition, *bang sensitive* bristles are resistant to fatigue, compared with wild-type.

The lower action potential frequency in these three mutants may point to a common deficit, perhaps not limited to the sensory neurons, that could be related to the cause of bang sensitivity.

A-8

STARK, WILLIAM; BROWN, GARY; HOMBS, DARREN; CHRISTIANSON, J. SCOTT and WHITE, RICHARD*, Freeze fracture analysis of carotenoid replacement in *Drosophila* visual receptors
Division of Biological Sciences, University of Missouri, Columbia, MO, 65211; *Department of Biology, University of Massachusetts, Boston, MA, 02125

Carotenoid replacement therapy effects a recovery of visual pigment, size of the photoreceptive organelle (rhabdomere) and immunocytochemically labeled opsin (Sapp et al. *Exp Eye Res.* **53** 71-79, 1991 likely via activation of transcription at the level of the opsin promoter (Stark et al. *Invest. Ophthal. Vis. Sci. ARVO-abstract* **33** 1992). Here we report that the P-face particles increase in rhabdomeric microvilli in the first few days of replacement. Our vistas demonstrate a continuity of the microvilli with the adjacent retinula cell plasmalemma and that this plasmalemma reflects the P-face particle density. Autophagic coated pits, the initial step in membrane turnover, are visualized at the bases of microvilli and from the plasmalemma. Our fracture planes were fortunate to show multivesicular bodies and Golgi apparatus, other organelles involved in membrane turnover and renewal. In general, we note a richness in cytoplasmic organelles in replacement above the deprived level consistent with synchronizing a massive new biosynthesis of the photoreceptors' predominant protein, opsin.