

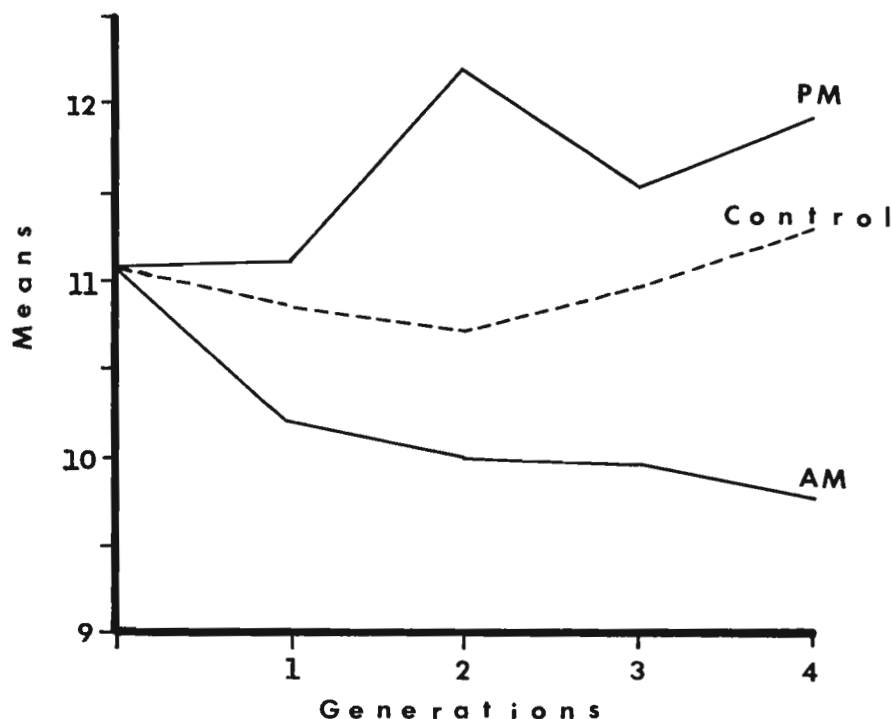
Grant, B.S. and W.L. Harrison. College of William and Mary, Williamsburg, Virginia. Selection on the eclosion rhythm of *D. melanogaster*.

In preliminary directional selection experiments performed as the first phase of a disruptive selection program, we have confirmed the results of Pittendrigh (P.N.A.S. 58: 1762) demonstrating that the eclosion profile of *Drosophila* can be altered via selective breeding.

Our base population was derived from a four-way gene pool cross of the inbred lines Swedish-B, Oregon-R, Samarkand and Canton-S. Within the first generation, small but distinct differences between the eclosion profiles were obvious for the populations selected for early morning and late afternoon emergence from the puparium. The mean eclosion times of the selected lines continued to diverge from each other and the control (unselected) population without overlap (see figure). The response to selection, thus far, has been asymmetric. Both

selected populations continued to peak at "dawn" (12:12 LD cycle) but the "PM" population showed an additional peak at "dusk" which appeared to increase each generation with the concomitant diminution of the morning peak. The "AM" population profile appeared quite similar to the unimodal control except for an exaggerated increase in the peak of emergence at "dawn."

Over four generations of selection, the average realized heritabilities for AM and PM are 0.24 and 0.10 respectively. These estimates are somewhat atypical. Since the data are cyclical, the extremes in eclosion time, either very early (just after midnight) or very late (just before midnight) would differ greatly in score on a linear time-of-day scale of one through 24 hours; however, in terms of a diurnal



rhythm of eclosion, rather than simply developmental rate, such individuals differ only slightly. In order to avoid the ambiguities of possible overlapping of daily distributions, the tails of the distributions were truncated arbitrarily for a four hour block of time between the two hours immediately preceding and succeeding midnight. Actually, because so very few flies emerge during this interval, the effect of truncation on mean estimates is negligible. (Supported by NSF-GU-3111-M.)

Miller, D.D. University of Nebraska, Lincoln, Nebraska. Evidence of "eastern" *D. athabasca* XL inversion associations in the XL patterns of other *D. affinis* subgroup species.

As reported by Miller and Voelker (1969), the salivary gland chromosome patterns of the long arm of the X of "western" and "eastern" *D. athabasca* appear to be differentiated by a minimum of five inversions: MI, MII, MVI, MVII, and MVIII. Recently XL patterns have been studied in five related species: *D. af-*

*finis*, *algonquin*, *azteca*, *narragansett*, and *tolteca*. Although it is not yet possible to interpret the XL sequences of these other species in terms of all the material of the *athabasca* XL strand, one can nevertheless recognize some pattern associations attributable to certain of the inversions (MI, MVII, and MVIII) distinguishing the sequences of "eastern" *athabasca* from numerical Sequence I of "western" *athabasca*. These are either actual stretches of pattern like those of "eastern" *athabasca* inversion break point regions or, at least, cases involving discontinuities coinciding with the "eastern" *athabasca* inversion break points and