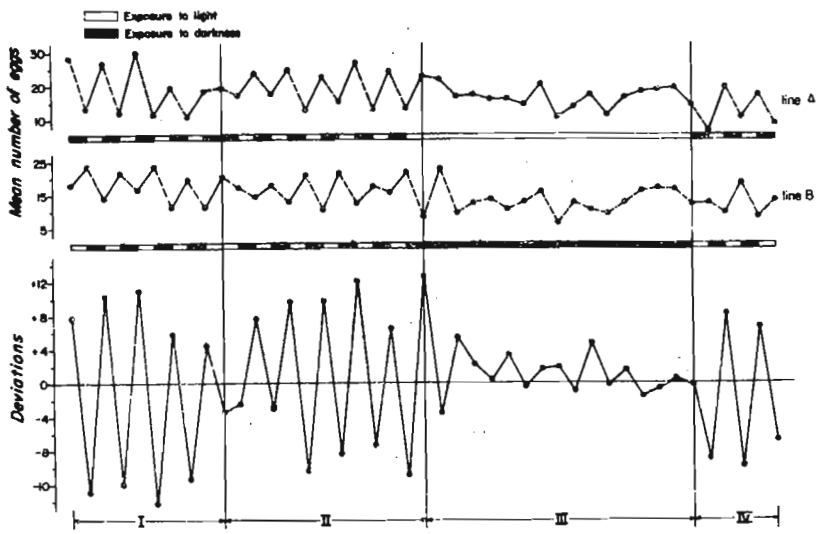
Kambysellis, M.P.* and M.R. Wheeler. University of Texas, Austin, Texas.
Light-dependence of oviposition in D. virilis.

In studies of oviposition in D. virilis we observed a striking difference between the number of eggs laid during the day and night time. Thirty females, ten days old, were placed individually in Plastainer bottles (Richardson, R.R. DIS 42, 1967) together with two males per bottle and allowed to lay eggs for a period of 12 hours. The illumination was controlled as follows:

I. Fifteen of the flies (Line A) maintained in 12 hrs darkness (12D) followed by 12 hrs of light (12L), while the other fifteen (Line B) were exposed to reverse illumination, 12L:12D. II. After ten sets of observations the conditions in both lines were reversed. III. After ten more observations, Line A was placed in continuous light and Line B in continuous darkness for 8 days. IV. Finally, Line A was placed in 12D:12L and Line B in 12L:12D.



The results summarized in Figure 1 show that at each observation in the sets I, II and IV, the mean number of eggs laid during the illuminated periods was significantly larger than those of the dark periods. No significant difference was found during continuous darkness or light (set III).

The deviations between the mean number of eggs for Line A and Line B for each set of observations illustrate more clearly the significance of illumination on the oviposition. Since the light conditions for each line were consistently the mirror image of each other, assuming that the alternation of light-darkness environment of the flies is the only or the primary stimulus for the periodicity, then we should expect the deviations in sets I, II and IV would take successive positive and negative values, the magnitude of which will indicate the significance of the difference between the means. In set III, the deviations should be equal to zero, if alternations of illumination is the only causal factor. Positive or negative values would be observed if a free running rhythm exists in light or dark environment. The lower part of Figure 1 shows that in sets I, II and IV, each positive value of the deviation is followed by a negative one, indicating that increased egg productivity in one of the lines is accompanied by a decrease in egg productivity for the other line.

In set III, the deviations fluctuate near zero, with a slight preference toward positive values. This indicates that an increase or decrease in egg productivity in Line A is accompanied by a parallel increase or decrease in Line B. A free running rhythm cannot be detected if the flies are considered as a group, although several individuals showed a clear persistence of the rhythm in total darkness.

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Genetic viability in D. melanogaster.

In the summer 1971, flies were collected from north of Tehran and lethal effects of the population were compared with a cage population. The Cy/Pm;D/Sb method was used for the detection of lethals, and in the F_3 four kinds of phenotype (Cy Sb, Cy, Sb, +) with the ratios of 4, 2, 2, 1 respectively, were observed (Tsuno,