Ranganath, H.A. and N.B. Krishnamurthy.
University of Mysore, Manasagangothri, India. Chromosomal morphism in D. nasuta Lamb. I. Altitudinal variability.

Cryptomorphism is one of the genetic mechanisms evolved by many species of Drosophila to meet the adaptive needs in a dynamic environment. The high order of structural variability in the natural populations of D. nasuta has been recorded by Nirmala and Krishnamurthy (1972). The present report deals with the adaptive polymorphism of D. nasuta at different altitudes of Biligirirangana Hills and Sampaje Ghats (Mysore, India). Table 1 illustrates the trends in the response of chromosomal variability to different elevations.

The observations point to certain conclusions. The data evinces the genetic plasticity of the genotype of D. nasuta to the variation in the altitudes. The incidence of heterokaryotypes ascends with the increasing altitude; the mean number of heterozygous inversions per third chromosome and also per larva is more at higher elevations; particularly the frequency of the overlapping inversions H+K increases at higher altitudes; irrespective of the altitude the fact that the heterokaryotypes are always more than 50% demonstrates the prevalence of

Table 1. Trends in the altitudinal variability of the chromosomal structure of D. nasuta in Biligirirangana Hills and Sampaje Ghats.

	Altitude of Mts.	Total larvae scored	Heterokaryotypes (%)	Heterozygous H+K inversion (%)	Mean values of inversions: Chromosome II	Chromosome III	Larva
Biligiriran-gana Hills	820	106	64.2	16.0	0.25	1.16	1.41
	1040	138	81.9	24.6	0.29	1.68	1.97
	1300	95	94.8	42.1	0.28	2.07	2.35
Sampaje Ghats	500	68	67.6	8.8	0.24	1.36	1.50
	800	65	81.5	21.5	0.24	2.12	2.36
	1100	89	87.3	32.5	0.42	2.12	2.54

heteroselection at all altitudes.

Thus, the existence of these altitudinal variabilities in the chromosomal morphism represents an expression of the flexible nature of the polymorphism present in D. nasuta.

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Reference: Nirmala, S.S. and N.B. Krishnamurthy 1972, DIS 49:72.

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are different for blind mutant and wild-type. Or perhaps there are differences in synaptic transmission resulting from transmitter differences rather than structural differences. It is also possible that synapses other than receptor to monopolar neuron synapses, some of which may involve the centrifugal fibers described by Trujillo-Cenóz (1965) and Boschek (1971) may be altered in blind mutants. Further work may establish morphological differences between the synapses of wild-type and the nonphototactic mutants.

References: Boschek, C.B. 1971, Z. Zellforsch. 111:369-409; Hodgets, R.B. and R.J. Konopka 1973, J. Insect Physiol. 19:1211-1220; Hotta, Y. and S. Benzer 1969, Nature 222: 354-356; Konopka, R.J. 1972, Nature 239:281-282; Pak, W.L., J. Grossfield and N.V. White 1969, Nature 222:351-354; Trujillo-Cenóz, O. 1965, J. Ultrastructure Res. 13:1-33.

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