Matthews, D.L. and C.P. Wright. Western Carolina University, Cullowhee, North Carolina. Development of Gluful-4, 1(1)EN5, a lethal mutant of D. melanogaster.

Gluful-4, 1(1)EN5, is a sex-linked lethal mutant of Drosophila melanogaster which was X-ray induced by Novitski (1963). Death in this mutant usually occurs in the larval stage. The objective of this study was to determine general developmental characteristics of the life history of this lethal mutant. As a control, y, w, spl, sn larvae, which came from the stock in which Novitski (1963) induced the lethal mutant, were used.

To observe development of control larvae, sixty 48-hour larvae were placed in food containers at 25°C and observed until puparium formation. The control larvae exhibited normal development. All 60 control larvae underwent puparium formation at 110 ± 17 hours after oviposition. To observe development of 1(1)EN5 larvae, 130 48-hour larvae were placed in food containers and observed until death. The results of these observations are summarized in Table 1.

Table 1. Subsequent development of 130 1(1)EN5 larvae separated from non-lethal sibs and placed in food containers 48 hours after oviposition.

Age in hours after oviposition	Total live larvae	Total dead larvae	Total puparia formed
48	130	0	0
72	78	52	0
96	28	102	0
120	9	121	0
144	5	125	0
168	5	125	0
192	5	125	0
216	5	125	0
240	2	126	2
264	1	126	3
288	1	126	3
312	1	126	3
336	0	126	4

It is evident that most 1(1)EN5 individuals died before the stage of puparium formation. About 3% of the 1(1)EN5 larvae did undergo puparium formation. The rare instances of puparium formation in 1(1)EN5 larvae occurred much later than puparium formation in control larvae. Whereas control larvae formed puparia at about 110 hours after oviposition, the lethals formed puparia from 240 to 336 hours after oviposition. After puparium formation no further development was evident in the 1(1)EN5 individuals. All apparently died within 5 days after puparium formation.

Reference: Novitski, E. 1963, List of biochemical mutants DIS 37:51-53.

This work was supported by a grant from the North Carolina Academy of Science.

Mather, W.B. and P. Thongmeearkom. University of Queensland, Brisbane, Australia. The nasuta complex in Taiwan.

In August 1971, one hundred and thirty one isolines were established from Taiwan. In 128 of these the males had a white face. These are designated as belonging to Taxon A. In 1 line the males had white orbits. This is designated as belonging to Taxon B. The remaining 2 lines had males without white on the face. These are designated as belonging to Taxon C.

In Taxon A three simple heterozygous inversions were detected. Of these E and L had previously been detected at Cebu (Mather & Thongmeearkom 1972) but the third designated B' is new (figure). The Taiwan population appears to be far less variable than the Cebu population. In the Taiwan population a total of 7 inversions were recorded and 37/131 flies were free of heterozygous inversions. Of the three inversions recorded E and B' occur in high frequency and L in low frequency (table).

The one line of Taxon B had inversion C, already detected at Cebu, in heterozygous condition.

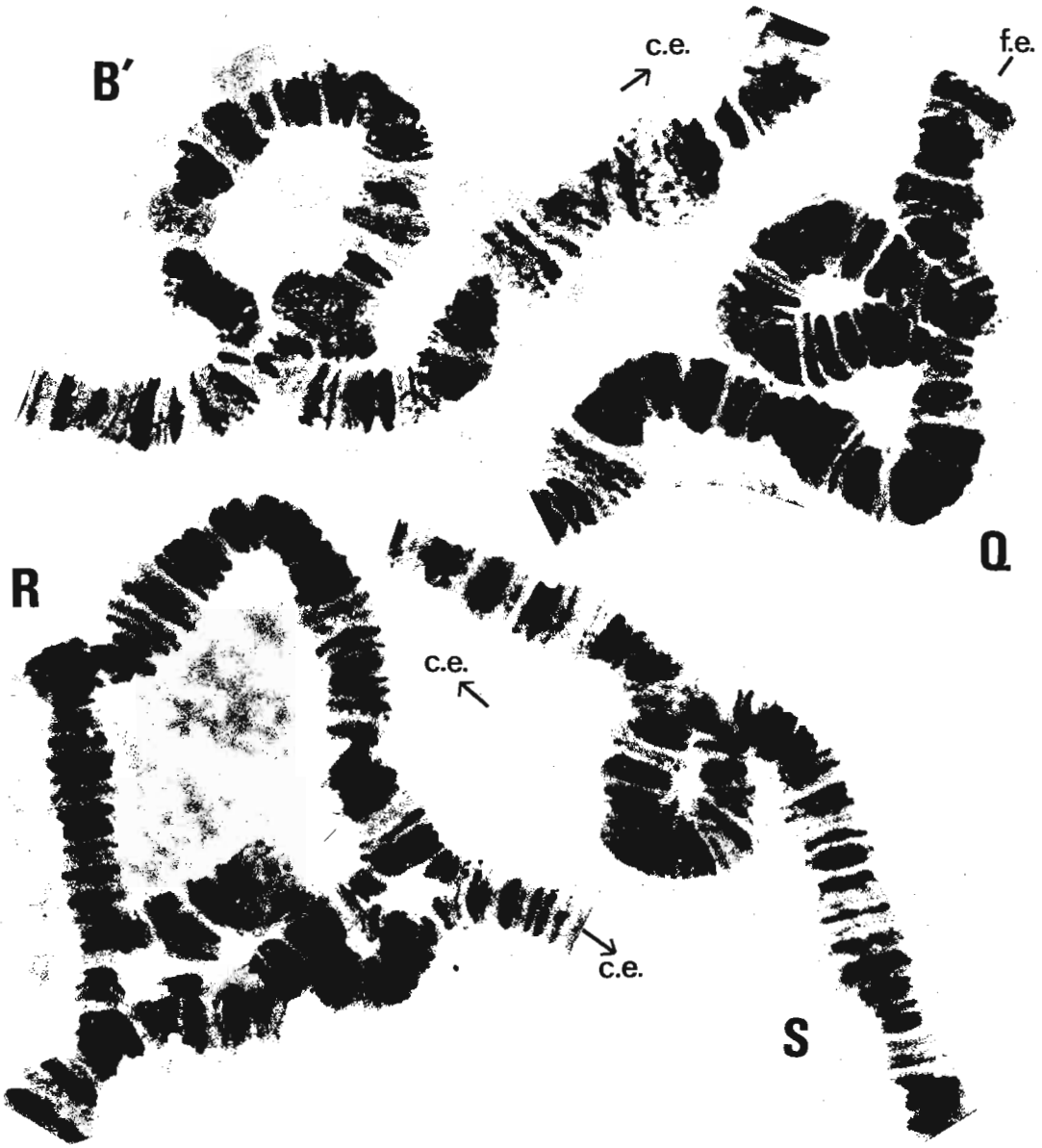

Figure. Inversions. c.e., centromere end; f.e., free end. Arrows point toward centromere ends.

Inversion	Type	Position	Heterozygosity Frequency %
E	Sim	II LC	39.1
B'	Sim	III P	47.7
L	Sim	III P	1.6

Sim=simple, C=Central, P=proximal to centromere

One line of Taxon C had three new inversions A, R and S and the other the Q inversion (figure).

The hybridisation relationships between the Cebu flies and the Taiwan taxons, which will throw light on their taxonomic status will be reported on in a later communication.

References: Mather, W.B. and P. Thongmeearkom 1972, Inversion polymorphism in D. sulfurigaster albostrigata, DIS 48:40.

(The material was collected and maintained and the larvae reared for dissection by W.B.M. The chromosomes were prepared, analysed and photographed by P.T.)