

al and th (decreases the number of arisal filaments and the number of claws on the prothoracic legs) and "leg" mutations d and fj (decreases the number of tarsal segments on the prothoracic legs) at 16°C and 29°C in *D. melanogaster*, we found the appearance of essential signs of non-homoeotic mutations on the corresponding homoeotic structures (Kaurov et al. 1976, 1978). In addition, in double mutants pb ss^a we observed a special manifestation of mutation ss^a on homoeotic structures, caused by the action of mutation pb (Kaurov et al. 1977). Similar effects were also observed by other authors (Brown 1940, Ouwenell 1970, Lewis 1963, Stepshin and Ginter 1972).

On the basis of the data obtained I suggest defining the notion "field gene activity" as a totality of cells of definite determination, specific for manifestation of activity of a given gene, to which a definite phenotype of definitive structures corresponds. The consequences include application for definition of gene activities, morphogenetic relationship of normal and homoeotic structures and gene activity after the appearance of cells of definite determination, independently of its origin in ontogenesis and localization.

References: Brown, W. 1940, *Genetics* 25:143-149; Kaurov, B.A., V.I. Ivanov and V.A. Mglinetz 1976, *Genetics* (Russ.) 12:75-81; _____, _____ and _____ 1977, *Genetics* (Russ.) 41:1-20; _____, _____ and _____ 1978, *Genetics* (Russ.) 13:76-84; Lewis, E. 1963, *Amer. Zoologist* 3:33-56; Ouwenell, W. 1970, *Genetica* 41:1-20; _____ 1970, *Wilh. Roux's Archiv* 166:76-88; Rokizky, P.F. 1929, *Zh. exp. Biol.* (Russ.) 5:182-214; Stepshin, V.P. and E.K. Ginter 1972, *Genetics* (Russ.) 8:67-74.

Kaurov, B.A. Institute of Medical Genetics, AMS USSR, Moscow, USSR. Mutation aristapedia causes the transformation of distal segments of antennae to five-segmented tarsi in *D. melanogaster*.

Despite the fact that homoeotic mutation causing the transformation of distal segments of antennae to the distal structures of mesothoracic legs has been discovered by Balkaschina in 1928 in *D. melanogaster*, there was no information concerning the number of tarsal segments in the homoeotic tarsus up to now. This number is considered to

be equal to four and to correspond to Ta2-Ta4 of the tarsus, which are homologous to AIY-AY of the antenna; Tal of the tarsus is homologous to AIII of the antenna (Postlethwait and Schneiderman 1971). So, the appearance of leg bristles on AIII and four tarsal joints on the homoeotic tarsus will indicate the presence of Tal on it.

Studying the different alleles of the aristapedia locus (ssak, ssax and ss^a40a) in *D. melanogaster* at 16, 25 and 28°C, we observed the appearance of four tarsal joints on homoeotic tarsi in the mutants ss^a40a at 16°C and between Tal and Ta2 (Kaurov and Ivanov 1977). The tarsal joints in the mutants ss^a at this locus have been observed by other authors (Mglinetz 1974). In addition, we observed leg bristles on AIII. The mean number of these bristles varied depending on the temperature (16, 25 or 28°C) and the genotype (ssak, ssax or ss^a40a) from 1.5±0.1 to 7.4±0.4. It can be noted that leg bristles on AIII in different mutants ss^a reacted to the change in temperature, as well as the bristles reacted to Ta2-Ta5 of homoeotic tarsus. At 16°C the number of leg bristles on AIII in the mutants ssak and ssax was increased, while in the mutants ss^a40a it was decreased in comparison with 28°C.

So, the data obtained show that the homoeotic mutation aristapedia causes the transformation of AIII-AY of the antenna to Tal-Ta5 of the tarsus, i.e., the formation of five-segmented homoeotic tarsi.

References: Balkaschina, E.I. 1928, *Zh. exp. Biol.* (Russ.) 4:93-106; Kaurov, B.A. and V.I. Ivanov 1977, *Genetics* (Russ.) 13:70-75; Mglinetz, V.A. 1974, *Genetics* (Russ.) 10:91-97; Postlethwait, J.H. and H.A. Schneiderman 1971, *Develop. Biol.* 25:606-640.

Kidwell, M.G. Brown University, Providence, Rhode Island. The use of pupation height as a method for distinguishing between the sibling species *D. melanogaster* and *D. simulans*.

Although males of the sibling species *D. melanogaster* and *D. simulans* may be readily distinguished by examination of their external genitalia, separation of females is difficult on the basis of morphological differences. We have found that pupation height in shell vial cultures provides a quick and reliable means of

preliminary separation for females of the two species without time-consuming microscopic examination of male progeny.