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In 1968 a high frequency of abnormal abdomen (aa) was observed among *D. melanogaster* inhabiting wineries of Crimea and Transcaucasus. 263 aberrant males detected in the fall of 1968 among wild males in the winery Magarach (Crimea, near Nikita Botanical Gardens) were crossed individually with "y w f" or "y f" attached-X females. 88 of these males manifested the

character abnormal abdomen (aa), 175 other phenotypical abnormalities. The 88 aa males proved to be bearers of 76 hereditary abnormalities of the abdominal tergites. In the progeny of 13 aa wild males the character did not appear in two subsequent generations. One male out of 75 was heterozygous for two mutations - one sex linked and one autosomal dominant with low penetrance in homozygotes. Out of 76 aa mutations, 4 proved to be sex linked, 72 autosomal (5 recessive and 67 dominant). Out of 67 dominant mutations 17 revealed a 100% penetrance in heterozygotes as well as in homozygotes. 35 mutations were characterised by low penetrance in heterozygotes but the penetrance being high in homozygotes. 12 mutations manifested low penetrance in homozygotes as well as in heterozygotes. In the progeny of three males bearing a dominant aa character with low penetrance in heterozygotes no homozygous flies were observed. In the progeny of 175 males bearing other phenotypical abnormalities the aa flies were found in 37 lines or in 21.1 percent. The genetical analysis showed that out of 37 aa mutations 8 mutations proved to be recessive, 17 dominant with 100% of penetrance in homozygotes and 12 with low penetrance in heterozygotes as well as in homozygotes. The mode of inheritance of aa is strikingly similar to the inheritance of wing venation abnormalities widespread in *D. melanogaster* populations in past years.

Berg, R.L. Institute of Cytology and Genetics, Novosibirsk-90, U.S.S.R. A sudden and synchronous increase in the frequency of "abnormal abdomen" (aa) in geographically isolated populations of *D. melanogaster*.

The study of the phenotypical polymorphism in geographically isolated populations of *D. melanogaster* carried out by me since 1937 revealed a relatively low frequency of the abdominal segmentation abnormalities designated as abnormal abdomen (aa). It was rare till 1968 when a sudden and simultaneous increase in its concentration occurred (Table 1). In 1967 its fre-

quency was not higher than in previous years and no drift was observed. In 1968 the populations of Magarach (Crimea), of Dilizhan and Erivan (Armenia) were studied. The concentrations of aa among males were 2.3, 1.08, 2.9 per cent respectively. 222 aa males were collected and the inheritance of the character was investigated. In 1969 the concentration reached 11.0, 12.2, 13.5 per cent respectively. In the same year the population of Frunze (Kirghizia) contained 7.9 percent of aa males. A hypothesis of the global increase of the aa concentration was put forward and the increase of aa in the other populations predicted. In 1970 three Uman populations as well as two other Ukraine populations - Cherkassy and Zolotonosha - were studied. The character aa was met with 21.4, 18.5 and 17.3 per cent of males in Uman populations and 12.2 and 13.2 per cent in Cherkassy and Zolotonosha. The frequency of aa in females was much higher - 43.9, 42.4, 60.6 in Uman, 40.4 and 37.8 per cent in Cherkassy and Zolotonosha, respectively. The Frunze population contained in 1970 14.5 per cent of aa males and 52.2 per cent of aa females. In 1971 the three Uman populations and that of Frunze were investigated again. The concentration of aa males in Uman decreased significantly (Table 1). In Frunze a significant decrease was observed among females. Six other populations were investigated during 1971 - three Transcaucasian (Dilizhan, Erivan, Burakhan), the population of Magarach, of Baku (Azerbaijan) and of Vladivostok (Far East). A slight increase was observed in Erivan, all other indices being constant. All "new" populations revealed a high frequency of aa comparable to that observed in populations previously studied. The concentration of aa was lower in Vladivostok - the single population investigated not by myself but by Dr. J.N. Ivanov who used however the same method of registration of aa as I did. The parallel with the sickle cell anemia in man seems clear. The simultaneous increase in geographically isolated populations in frequencies of a gene complex causing harmful developmental abnormalities and at the same time securing resistance is supposedly dependent on some pandemic fly disease acting as a powerful positive selective factor.