which shows the greatest differences in specific zones, which can be interpreted as being due to the effect of the change of position of the $E_{1+2+9+12}$ arrangement in relation to the $E_{st}$ arrangement.

In total, 161 active loci were observed in Ral21 and 159 in H271. These numbers of puffs agree, in general, with those obtained by several authors studying different Drosophila species. Thus, Ashburner (1967, 1969) found 129 active loci in D. melanogaster; Berendes (1965) found 148 in D. hydei; Stocker and Kastritsis (1972), found in D. pseudoobscura, etc. The greatest differences are in the puffs that we have considered occasional, and the greatest resemblances in the puffs that define the characteristic pattern of each chromosome. In relation to the puffs of the second group, the greatest differences are in the J and O chromosomes.

References: Ashburner, M. 1967, Chromosoma 21:398-428; 1969, Chromosoma 27:47-63; Berendes, H.D. 1965, Chromosoma 17:35-77; Clever, U 1962, Chromosoma 13:385-436; Stocker, A.J. and C.D. Kastritsis 1972, Chromosoma 37:139-176.

Leber-Bussching,M. & R. Bijlsma. University of Groningen, The Netherlands. The effect of sodium octanoate on the adult mortality of Drosophila melanogaster.

Bijlsma (1978) studied the polymorphism at the G6pd and Pgd loci on food supplemented with sodium octanoate (the sodium salt of a small fatty acid with eight C-atoms). Sodium octanoate was expected to decrease the activity of these two pentose phosphate shunt enzymes because under these conditions less NADPH, which for the greater part is supplied by the pentose phosphate shunt, is thought to be needed for the synthesis of fatty acids. This was indeed observed during the larval stage. Adult flies, however, responded by increasing the activity of the pentose shunt enzymes. Furthermore 80-100% of the adults died within 5 days on food supplemented with 0.15% sodium octanoate. An explanation of this unexpected effect was hard to give and was ascribed to a secondary effect of sodium octanoate. Recently we performed some experiments on chemically defined food media. To overcome contamination with micro-organisms, which would probably alter the food composition, flies were reared under aseptic conditions. When these flies were tested on sodium octanoate supplemented food we obtained further information about the effect of sodium octanoate on adult survival.

Table 1. The mean cumulative mortality (%) of flies kept of food supplemented with 0.15% sodium octanoate.

| | 24 | 48 | 65 | 72 | 90 | 111 | 135 |
|---|---|---|---|---|---|---|---|
| "aseptic" flies | 0 | 2.0 | 2.0 | 2.8 | 3.2 | 3.3 | 3.5 |
| "non-aseptic" flies | 0 | 1.0 | 10.3 | 19.6 | 40.3 | 56.6 | 65.9 |

Table 2. Adult mortality (%) after 72 hours of exposure under different conditions.

| Condition | Mortality |
|---|---|
| A) Food: sterilized and 0.15% Na-octanoate added<br>Flies: "non-aseptic" | 79% |
| B) Food: sterilized and 0.15% Na-octanoate added<br>Flies: "aseptic" | 2% |
| C) Food: not sterilized and no Na-octanoate added<br>Flies: "non-aseptic" | 1% |
| D) Food: as in B, but incubated with "non-aseptic" flies for 1 day<br>Flies: "aseptic" | 91% |

For the experiments flies were reared under aseptic conditions according to the methods of Sang (1956) on medium C or reared under normal conditions on normal food according to Bijlsma (1978). The adult survival was tested by establishing a number of vials with 20 females (1-2 days old) each and the number of dead individuals in each vial was determined at successive time intervals. Food containing sodium octanoate was made by adding the appropriate amount (% weight by volume) to standard food.

The difference in survival on sodium octanoate supplemented food between flies reared "aseptically" and "non-aseptically" is shown in Table 1. "Non-aseptic" flies show the same result as found by Bijlsma (1978). After an incubation period of

approximately 2 days the first flies start to die and after 3-5 days 60-80% of the females have died. In contrast the "aseptic" flies show hardly any mortality during the same period. The fact that "aseptic" flies show no mortality indicates that the mortality is caused by an interaction between micro-organisms and the food. This is supported by the results of a second experiment of which the results are presented in Table 2. This table shows the mortality of flies after 72 hours of exposure to different conditions. Conditions A and B show the same result as presented in Table 1 and indicate that a high mortality on sodium octanoate is found when the flies are "non-aseptic". From a comparison between conditions A and C it is clear that sodium octanoate has to be present to induce a high mortality. The result of condition D shows that it is not the presence of the "non-aseptic" flies themselves that is responsible for the high mortality, but by something that is introduced into the vial by "non-aseptic" flies.

These results justify the conclusion that the presence of micro-organisms and sodium octanoate in the food creates a situation which is lethal for D. melanogaster adults. At the moment it is not clear what really causes the dying of flies. It may be that sodium octanoate is modified by a micro-organism to a toxic compound. Another possibility is that sodium octanoate enables a particular micro-organism to grow very rapidly and that or the micro-organism itself or one of its excrements is toxic to flies at a sufficiently high concentration.

References: Bijlsma, R. 1978, Genet.Res.Camb. 31:227-237; Sang, J.H. 1956, J.Exp. Biol. 33:45-71.

Lee, T.J. Chung-Ang University, Seoul, Korea. Systematic relationships among the species of Drosophilidae by the proteins electrophoretic analysis.

The difference patterns of aqueous soluble proteins and systematic relationships among the species of Drosophilidae in Korea were investigated by means of polyacrylamide gel disc-electrophoresis.

The number of protein bands appeared to be different in the 28 species, showing the difference patterns in mobility and density of staining of proteins.

Each species contained specific proteins. From 7 to 16 protein bands appeared in the 28 species, however most of the species had 10 bands.

In the intraspecies there were no different protein bands, and also the geographical difference of the protein patterns of the same species were not observed.

The average similarities among the species by the Whitney's formula in the result of the investigation as follows: in the case of the two subfamilies Steganinae and Drosophilinae in the family Drosophilidae appeared about 38%; in the case of the 5 genera Mycodrosophila, Liodrosophila, Scaptomyza, Lordiphosa, and Drosophila in the subfamily Drosophilinae appeared about 43%; in the case of the 5 subgenera Dichaetophora, Hirtodrosophila, Paradrosophila, Sophophora, and Drosophila in the genus Drosophila appeared about 46%; in the case of the interspecies in the subgenus Sophophora appeared about 69%; and the interspecies in the subgenus Drosophila appeared about 59%. However, the average similarities among the 4 species of quinaria species group of the subgenus Drosophila appeared about 72%.

This experiment means that the average similarities among species revealed high degree in accordance with the lower categories.

It is to be estimated that the study on the electrophoretic patterns of the whole proteins of the Drosophila species was valuable to determine the affinity among the species of subfamilies, genera, subgenera, and species groups as standard indices.

References: Throckmorton, L.H. 1962b, Univ.Texas Publ. 6205:415; Whitney, P.J., J.G. Vaughan & J.B. Mcale 1968, J.Exp.Botany 19:415-426.

Marengo, N.P. C.W. Post College of Long Island University, Greenvale, New York. Fibrillar disorganization in the "A" bands of "rotated" prepupal muscles of Drosophila melanogaster.

The mutation abdomen rotatum (ar) was discovered and named by Beliajeff (1931). The effect of this gene on development was described by the writer and Howland (1942). The ultrastructure of normal and "rotated" prepupal muscles was