

medium is covered with a solution of yeast autolysate, the fecundity of the flies is improved. In heterozygous females, the rate of egg chamber production appears to be increased by this addition of yeast autolysate, as is shown in table 1. The mean rate becomes 2.25 ± 0.05 and the difference between normal and autolysate fed females ($+ 0.30 \pm 0.06$) is highly significant.

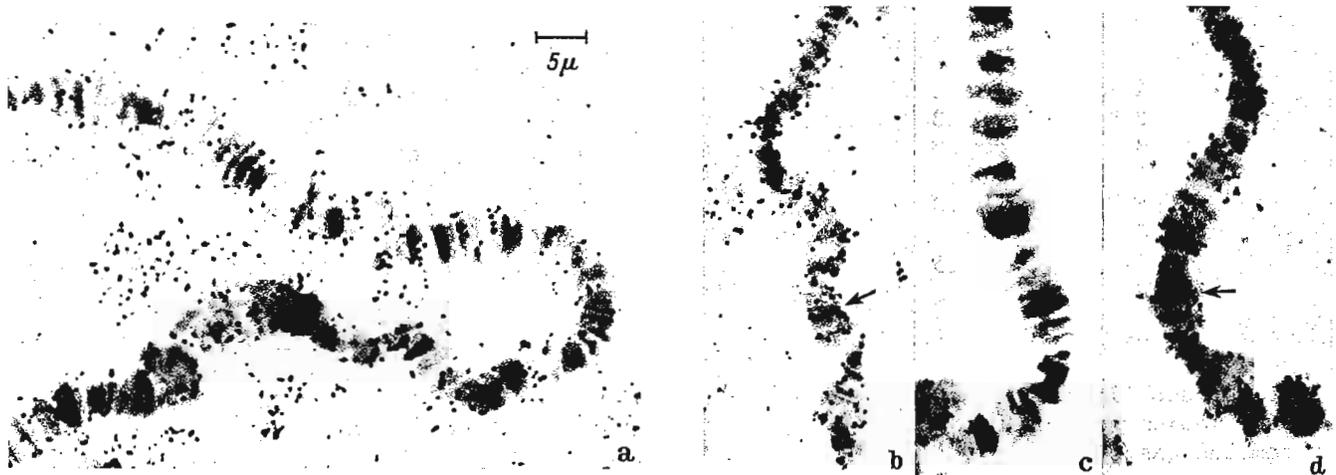
Conclusion: If only the functional overioles are considered, the rate of egg chamber production is fairly constant for all strains of *Drosophila*. But accurate measurements of this character demonstrates some variation, either below or above the normal rate. These variations could be an interesting test character in nutritional studies.

References: (1) David, J. 1959. Bull. Biol. Fr. Belg. 93:472-505; (2) David, J. 1961. Bull. Biol. Fr. Belg. 95:521-535; (3) King, R. C. 1964. Symp. Roy. Entom. Soc. London, 2:13-25; (4) David, J. 1966. J. Ins. Physiol. (in press).

Berendes, H. D. Max Planck Institut für Biologie, Tübingen, Germany. Amino acid incorporation into giant chromosomes of *D. hydei*.

Staining salivary gland chromosomes with Fast green at pH 2.14 revealed that normally occurring puffs as well as those produced by a temperature shock contain a high amount of proteins which are absent in the non-puffed condition of these

regions. Various tritiated amino acids were injected into larvae to trace their incorporation into the chromosomes and the possible relation of protein synthesis to the origin of puffs. The following experiments were performed: $1 \mu\text{l}$ of tryptophan H^3 (Spec. act. 3.02 C/mM) was injected into 140 hour old larvae. The larvae were kept at 25°C for 10, 30, 60 minutes or 5 hours and then transferred to 35°C to induce temperature specific puffs. After the temperature treatment of 15 minutes the salivary glands were dissected, autoradiographs prepared and the number of grains occurring over the induced puffs was compared with that over a neighboring non-puffed part of the chromosome. No preferential labeling of the induced puffs was ever observed. In many cells the number of grains over the puffed region was even lower than over the neighboring part of the chromosome. In many cases, however, certain unpuffed bands showed a reproducible preferential labeling (see arrow in b and d). Naturally occurring puffs were studied similarly. Larvae of 145 hours old were injected with the



- part of chromosome 4 labeled with tryptophan H^3 after 5 hours of incubation. The puffs showed no preferential uptake of the amino acid.
- histidine label over a part of chromosome 5 in a proximal cell of the salivary gland after 15 minutes of incubation.
- the same part of chromosome 5 in a distal cell of the same gland as in b.
- the same part of chromosome 5 as shown in b in a distal cell of the salivary gland after 5 hours of incubation.

labeled amino acid and the salivary glands were dissected after 8 or 12 hours of incubation. None of the puffs specific for puparium formation which arise during the period of incubation showed a preferential uptake of the labeled amino acid (see a). Similar results were obtained with proline, histidine, leucine and arginine. On account of these data it is clear that the regional increase in protein content during puffing is not caused by a synthesis in the puff itself, but is presumably due to an accumulation of pre-existent proteins from someplace in the cell. It is also conceivable that these proteins cannot be synthesized in the cell during the 15 minute temperature treatment since they appear as soon as swelling of the regions occurs. It might be suggested that the puff protein has a uniform composition in all puffs and has some bearing on the structural constitution of the puff and/or is involved in transport of the RNA produced.

A comparison of glands dissected from larvae 15 minutes after injection of either tryptophan or histidine with those dissected 5 hours after injection showed that in the first series of glands the cytoplasm and the chromosomes of the proximal cells was far stronger labeled than in the distal cells (see b and c). After an incubation period of 5 hours the difference in labeling intensity between the two types of cell was less obvious (see d). In most cells a positive correlation between the labeling density of the cytoplasm and of the chromosomes was observed. Furthermore, the possibility of a correlation between chromosomal protein synthesis and replication was studied. Larvae of 136 hours showed amino acid labeling in 100% of the salivary gland nuclei after 5 hours of incubation. After the same period of incubation with thymidine H^3 only 37 - 46% of the nuclei of similar glands were labeled. It therefore might be suggested that there is no apparent correlation between chromosomal protein synthesis or accumulation and chromosomal replication.

Duffy, John P. and John Stiles Jr.* St. John's University, Jamaica, New York. Esterase 6^S isozyme in alaful-1 and gluful-1 mutants of *D. melanogaster*.

Starch gel electrophoresis (per method of Beckman and Johnson 1964, Wright 1963) was performed on 3rd instar larval homogenates of alaful-1 and gluful-1 along with the 3rd larval homogenates of either Est 6^S or Est 6^F, in order to compare the esterase

isozymes present in these amino acid mutants. It was found that the esterase of the alaful-1 and gluful-1 mutants electrophoretically migrated to the same positions as the Est 6^S mutants. Using 3rd instar larval homogenates of the Est 6^I mutant (*D. simulans*) (Wright and Mac Intyre 1963), we compared the esterases of alaful-1 and gluful-1 with Est 6^I in the same manner as before. We found Est 6^I esterase migrated further than that of gluful-1 and alaful-1 but less than the esterase of Est 6^F. Thus, the alaful-1 and gluful-1 mutants appear to possess the Est 6^S isozyme rather than the Est 6^F or Est 6^I isozyme.

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Rezzonico Raimondi, G. and A. Gottardi. University of Milan, Italy. Growth behavior of embryonic cells of *Drosophila melanogaster* cultured in vitro.

The behavior of embryonic cells of *Drosophila* in vitro has been analyzed during 8-day experiments, comparing the growth curves of three different wild stocks. The three stocks (Aspra, Varese and S. Maria) can be considered genetically diversified, although phenotypically indis-

tinguishable, as a consequence of their distant geographical origin and the strict inbreeding to which they have been submitted for several years.

The technique used for growing the cells obtained from dechorionated eggs is that by