labled 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 presemably 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 labled 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 labled. It therefore might be suggested that there is no apparent correlation between chromosomal protein synthesis or accumulation and chromosomal replication.

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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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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 indistinguishable, 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