Barigozzi, C., M. Fraccaro (1), C. Halfer, and L. Tiepolo (1), Institute of Genetics, University of Milan, Italy. DNA-replication of eu - and heterochromatin translocatoon of D. melanogaster.

In previous investigations the late replication of heterochromatin, in respect to euchromatin, had been observed in the normal chromosome set. The present note refers to the results obtained labelling with tritiated thymidine embryonic cultured cells of stocks, where translocations between Y-chromosome and euchromatin are cytologically detectable.

The following stocks have been utilized:

i) sterilizer: the centric part forms a ring and the acentric one is translocated to the X chromosome heterochromatic portion;

ii) T(Y:2)B/b: the centric part is translocated to the right arm of the second chromosome, the acentric to the heterochromatin of the centric region of the same second chromosome;

iii) T(Y:3)P80: the centric part is translocated to the distal portion of the right arm of the third chromosome, while the acentric portion is translocated to the right arm of the third chromosome.

The observations have been made on cells, cultured according to Horikawa and Fox (1964) technique. Tritiated thymidine was added to 16 hours old cultures, and treatment lasted for 4 hours. Autoradiographies were taken according to the usual technique. The results show that in sterilizer the centric ring shaped portion of the Y replicates synchronously with the centromeric heterochromatic portions, while the acentric one (translocated on the X chromosome) becomes so precocious as to replicate as early as euchromatin; in T(Y:2) all heterochromatic components (translocated or not) replicate simultaneously; in the T(Y:3) the acentric Y chromosome portion is the last replicating, while the centric one replicates earlier, although later than euchromatin.

The interpretation of these data is that the replication time is strongly controlled by the location taken by heterochromatin, so that the law of earlier replication of euchromatin versus heterochromatin holds only in the normal set. Thus, the replication time of different sections of the chromosome complement is the result of a position effect.

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References: Horikawa, M. and Fox, A.S., 1964 - Culture of embryonic cells of Drosophila melanogaster in vitro. Science, 145:1437-1439.

Dolfini, S. Institute of Genetics, University of Milan, Italy. Some comparative data on embryonic cells of D. melanogaster cultured in vitro.

In order to obtain long-term cultures of Drosophila melanogaster cells in vitro, different synthetic media have been tested for their ability to support growth of embryonic cells. The following media were used:

i) H-5(Horikawa and Fox, 1964)

ii) Kuroda's medium(Kuroda, 1966)

iii) Schneider's Drosophila medium(revised)(Schneider, 1964)

all supplemented with 10% new born calf serum.

Tissue fragments adhering to a coverslip have been kept in culture for several weeks; the conditions of the cultures have been estimated by direct daily observation and by analysis of stained coverslips. The results, so far incomplete, show that a better growth occurs in H-5 than in the other media.

In fact, in H-5 the cells have been maintained for 25 days in healthy conditions; fibroblast-like cells appeared after 4 days. Tetraploid metaphases and binucleated cells were also observed.

In Kuroda's medium on the contrary, the cells were maintained for 18 days, but in visible suffering conditions; the spindle-shaped cells were rare. In Schneider's medium cells survive only for a few days.

References: Horikawa, M., and Fox, A.S., 1964, Science 145:1437. Kuroda, Y., 1966, Annual Report, National Institute of Genetics, Japan, 17:37. Schneider, I., 1964, J. Exp. Zool. 156:91.