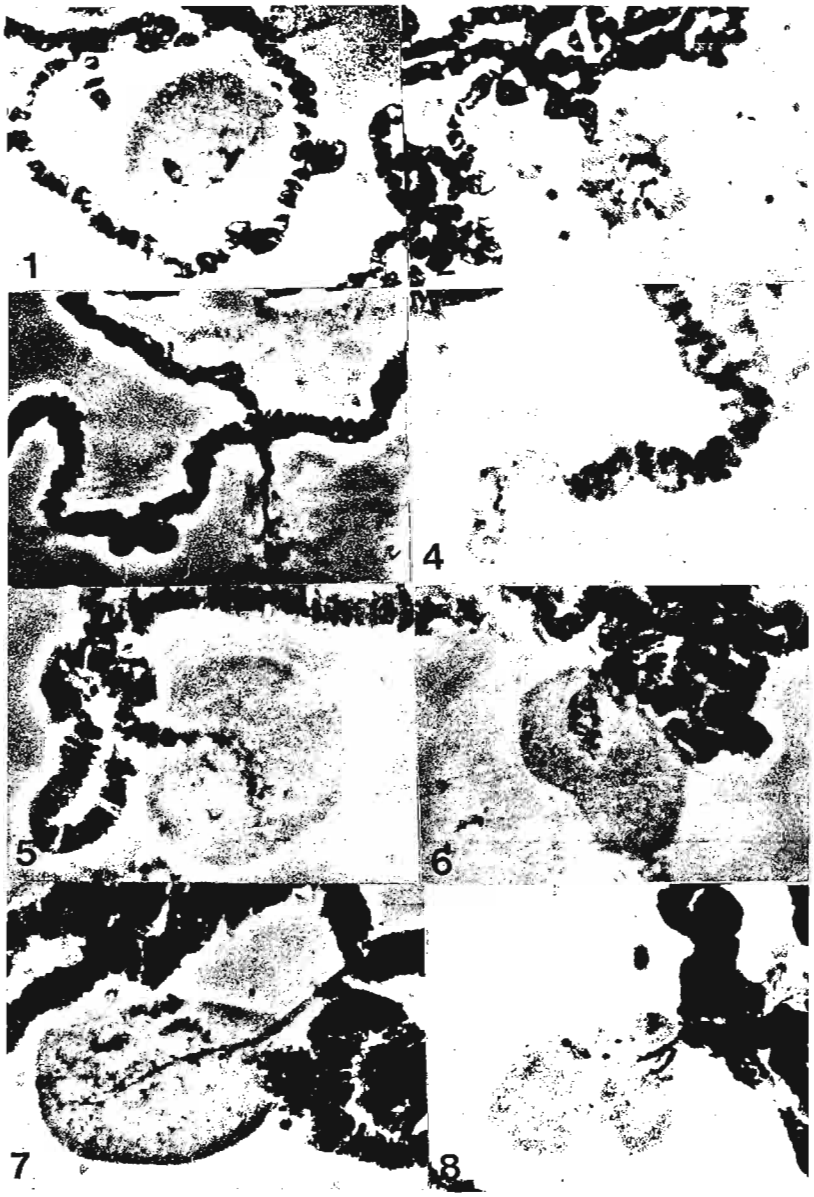

FIGURES. Photomicrographs showing the NCTs in different species of Drosophila. NCTs appear as: (1) puffs; (2) chromosome ends as a puffy structure with Type 1 NCT; (3) one chromosomal band is continuous as NCT; (4) chromosome ends as a puff in which NCT is present as a doublet; (5) NCT differentiated as bands and interbands; (6) NCT as a small puff; (7 & 8) NCT appears to originate from one band of the chromosome.

Fig. 1 = D.nasuta; 2 = D.melanica; 3 = D.virilis; 4 = D.melanogaster; 5 = D.pseudoobscura; 6 = D.ananassae; 7 = D.hydei; and 8 = D.simulans.

In general it appears from our data that (1) in all species of Drosophila studied (altogether 14 species) 4 main NCT types are found as reported earlier (Ghosh & Mukherjee 1982); (2) the structural organization of both chromosomes and NCT are similar as revealed by the presence of bands, interbands and puffs in both chromosomes and nucleolus.

Reference: Ghosh, M. & A.S. Mukherjee 1982, Cell and Chromosome Res. 5(1):7-22.

Ghosh, M. and A.S.Mukherjee. University of Calcutta, India. Evolutionarily related species and their NCT structures.

Nucleolus of eukaryotes is now well known as a distinct body which is either round or oval in shape. There are some reports (Rodman 1969; Lettré et al. 1968) that the nucleolar chromatin thread or NCT (DNA) remains embedded within the nucleolar mass. A species specific nucleolar chromatin structure in polytene nuclei of Drosophila has also been reported by Barr and Plaut (1966a,b). Rodman (1969) reported variable conformations of nucleolar chromatin (DNA) present in Drosophila melanogaster. Earlier we have reported that there are 4 major types of nucleolar chromatin threads (NCTs) in the nucleolus of Drosophila hydei (Ghosh & Mukherjee 1982a,b). In the present investigation we have examined the NCT in 14 species of Drosophila viz., D.melanogaster, D.simulans, D.willistoni, D.insularis, D.melanica. D.miranda, D.pseudoobscura, D.persimilis, D.virilis, D.nasuta, D.malerkotliana, D.bipectinata, D.ananassae and D.hydei to find out the evolutionary relationship in the NCT structure, if any.

Analysis of the data reveals that (1) the 4 major types of NCTs are present in all the species studied, (2) the NCTs of slaivary gland nuclei are not species specific, (3) the frequencies of different NCTs in the closely related species are more or less equal and,

(4) the differences in frequency of NCT types is observed between distantly related species (Figs. 1-3).

References: Barr, H.J. & W.Plaut 1966a, J.Cell Biol. 31:10A; Barr, H.J. & W.Plaut 1966b, J.Cell Biol. 31: 17-22; Ghosh, M. & A.S.Mukherjee 1982a, DIS 58:66-67; Ghosh, M. & A.S.Mukherjee 1982b, Cell and Chromosome Res. 5(1):7-22; Lettré, R., N.Paweletz, S.Ghosh & W.Siebs 1968, Mater.Med.Nordmark 20(11):30-38; Rodman, T.C. 1969, J.Cell Biol. 42:575-582.

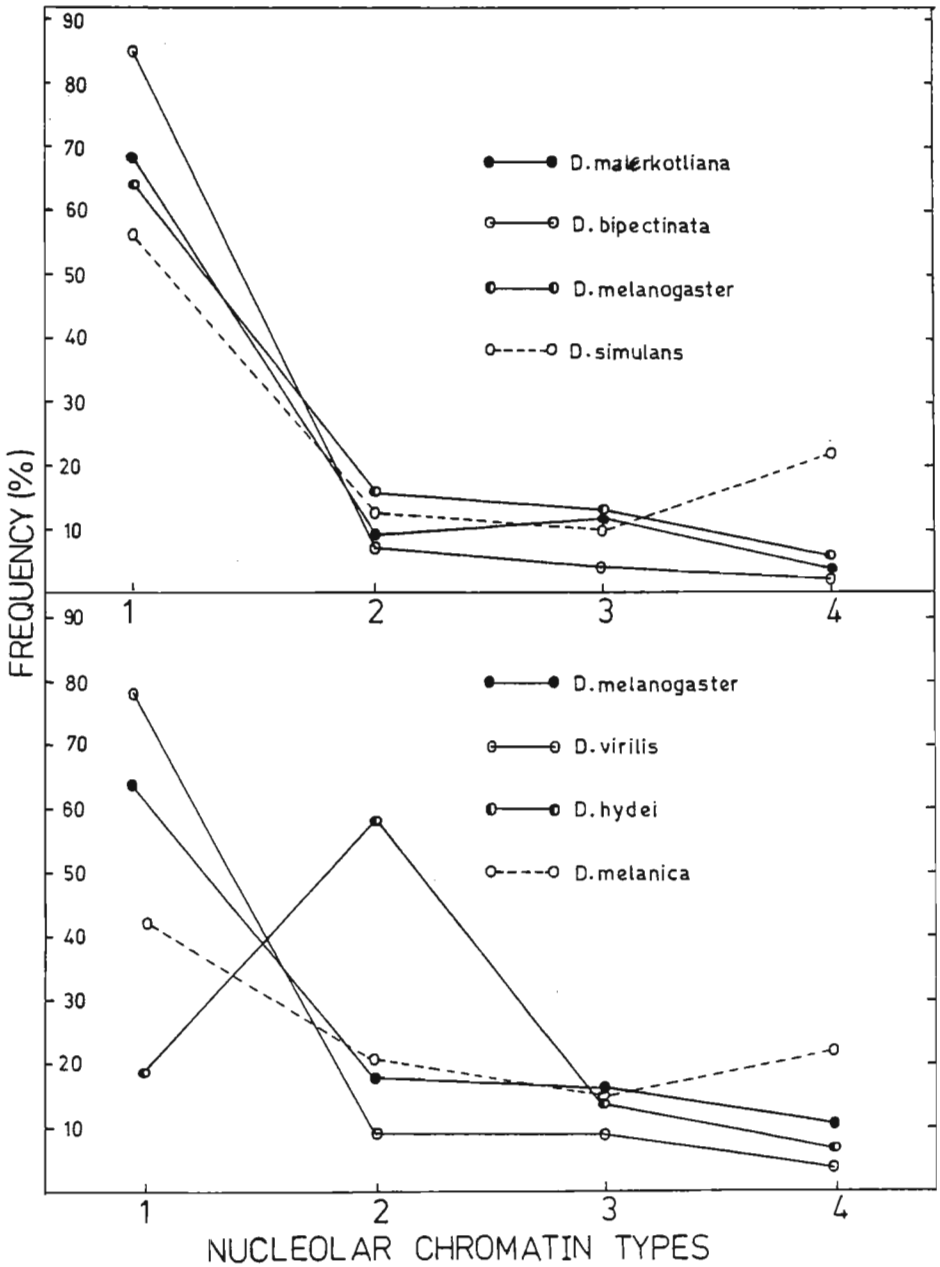

Figure 1. Comparative frequencies of different NCT types in closely and distantly related species of Drosophila.

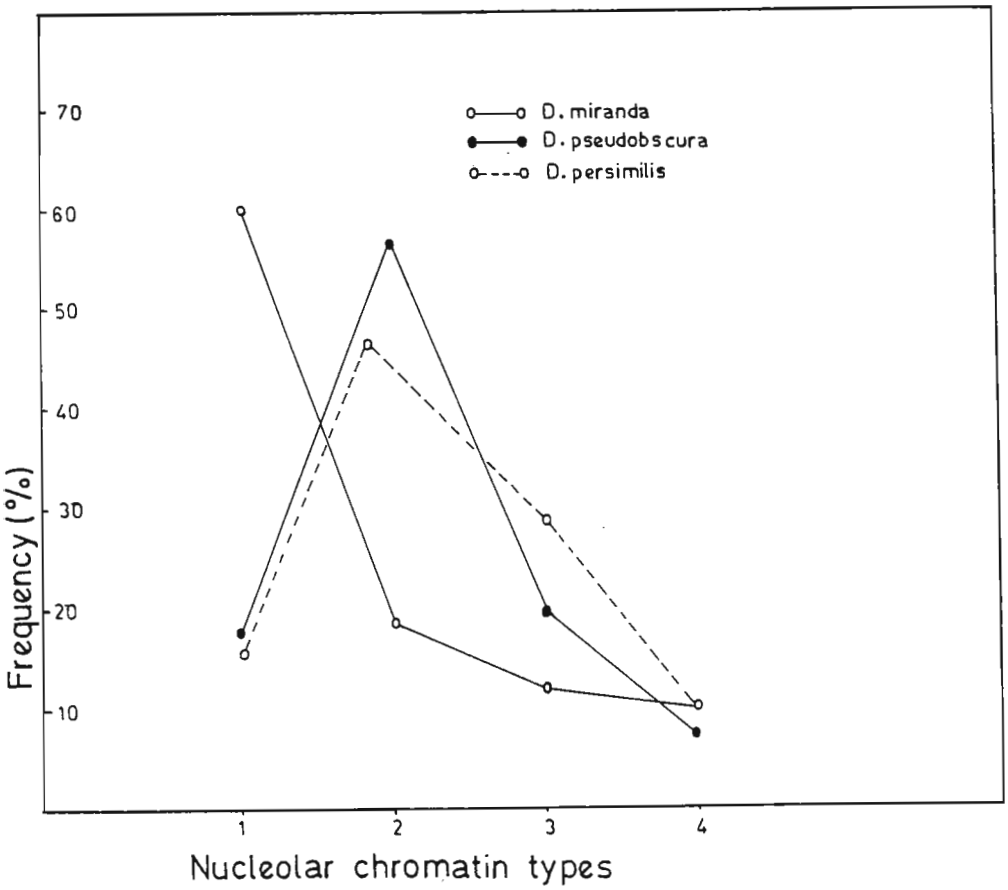

Fig. 2. Frequencies of different NCT types in three species of closely related species of Drosophila.

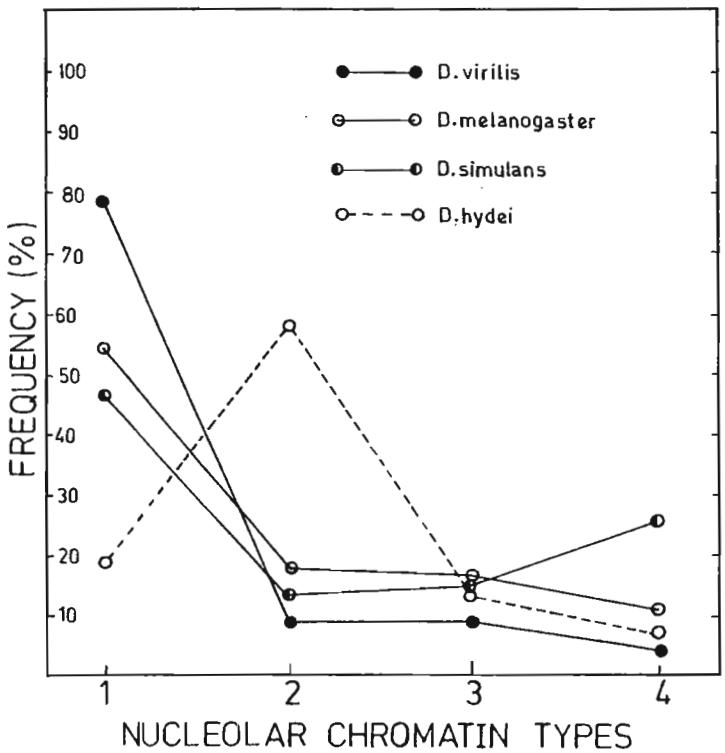

Fig. 3. Frequencies of different types of NCT in different distant related species of Drosophila.