Lakhotia, S.C. and A.S. Mukherjee.
University of Calcutta, India. Activation of a specific puff by benzamide in D. melanogaster.

Effect on the salivary glands of D. melanogaster of in vitro incubation in Benzamide (BM) has been studied. From each mature late third instar larva one of the paired salivary glands was incubated in control ringer (i.e., without BM) while the contralateral gland was incubated in BM-ringer (1.3mg. BM/ml. ringer; pH - 6.7) for 10 minutes and then transferred to control ringer or BM-ringer respectively, both containing H^3-uridine (100 uCi/ml.) and incubated for another 10 minutes after which they were fixed, squashed and autoradiographed with Kodak AR 10 stripping film. It has been observed that in comparison with the control gland the chromosomal RNA synthesis in BM-incubated gland is drastically reduced while the nucleolar RNA is not much affected. RNA synthesis in all but one puff (93D on 3R) is in majority of nuclei completely inhibited in the BM-treated gland. The puff at 93D on the contrary is very highly activated after BM treatment. This puff is either completely absent or very slightly active in the control gland, but in the BM-treated gland this puff is 5-6 times more activated than the control (fig. 1). This specific stimulation of the activity of a single puff under conditions which in general inhibit all chromosomal RNA synthesis is very interesting. All the treatments employed so far to induce puffing in Dipteran salivary glands have resulted in stimulation of a number of puffs. Benzamide has been shown to be an inhibitor of chromosomal RNA synthesis in preference to nucleolar RNA (Jacob, et al., 1964). In view of the fact that in the present study also nucleolar RNA is much less affected while the puff at 93D is super-activated, it is tempting to speculate whether this particular puff at 93D has some functional relation with the nucleolus. Further studies are in progress.

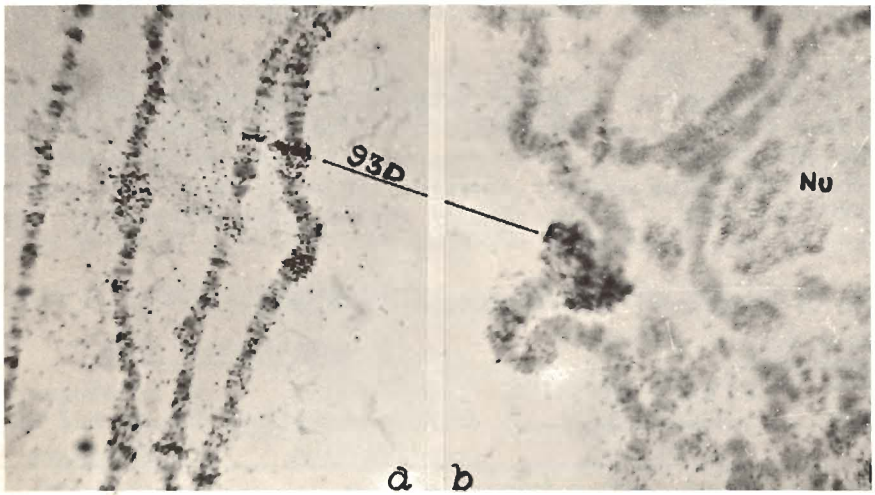

Fig. 1. H^3-uridine labelling in (a) CONTROL gland and (b) in BM-treated gland from the same larva. Note the labelling on the puff at 93D. In (b) Nu indicates the nucleolus.

Reference: Jacob, J., Birnsteil, M.L. and Sirlin, J.L., 1964, "Nucleic acids - structure, biosynthesis and function", Proc. Symp., Hyderabad (India) pp. 197-209.