In a number of cases, they appear to be budding from a local electron-dense region of the nucleoplasm (Fig. 2). No particles were observed in nuclei from the muscles of either the normal heterozygotes (ar/+) or the +/+ Oregon "R" wild type.

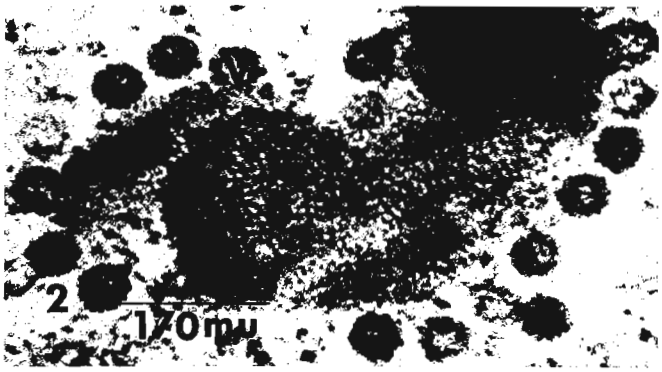


FIG. 2. Section through nucleus showing particles (V) which appear to be budding from a faintly crystalline nucleoplasmic condensation. X145,000.

DISCUSSION: The classification and significance of the observed particles is at present not known. Since abdomen rotatum as originally described by Beliajeff (1931) was a mutant of chromosome IV it might be speculated that the presence of a virus may relate to the carrying of information from the mutant DNA of chromosome IV to the larval muscles. These muscles bring about through exaggerated contraction both the puparial abnormalities described and the rotation of imaginal abdomen which is characteristic of the adult phenotypic expression of this gene.

If these particles are carriers of the ar codon, their isolation from genetically "rotated" individuals might provide a means of experimental transformation of normal larvae capable of metamorphosis into abnormal prepupae, pupae and "rotated" adults.

SUMMARY: Nuclei of muscle fibers of genetically "rotated" (ar/ar) prepupae of D. melanogaster examined by electron microscopy were found to contain virus-like particles not previously described. These particles were not observed in identical preparations of Oregon "R" prepupae and normal heterozygotes of the ar/ci$^{D}$ stock.

References: Beliajeff, N.K. 1931 Erbliche Asymmetrie bei Drosophilia. Ein neues Gen im IV chromosom von D. melanogaster. Biol. Zbl. 51:701-709; Marengo, N.P., and R.B. Howland. 1942 The effect of the gene abdomen rotatum on the development of D. melanogaster. Genetics 27:604-611; Robertson, C.W. 1936 The metamorphosis of D. melanogaster, including an accurately timed account of the principal morphological changes. J. Morph. 59:351-359.

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Doane, W.W. Yale University, New Haven, Connecticut. Isoamylases in Drosophila hydei: a system for the analysis of gene-specific puffing activity.

α-Amylase activity in the larval gut of D. hydei is essentially restricted to a small region at the anterior end of the posterior midgut. The region is characterized by large secretory cells with polytene chromosomes and, unlike the situation in D. melanogaster, polyteny here is of a magnitude readily open to cytological investigation of gene-specific puffing activities. As a secretory protein whose activity may be manipulated by dietary starch, amylase is an ideal subject for such a study (Doane, W.W., 1969, pp. 73-108 in "RNA in Development" E.W. Hanly, ed., Univ. of Utah Press).

A single structural gene for Amylase (Amy) is located on chromosome 5 in hydei, between cn and vg. Making use of the latter markers and two electrophoretic Amy variants, a screening program was set up to select for potential X-ray induced deficiencies of the Amy locus, and so position the locus on the cytological map of the chromosome (Doane, W.W., 1971, Isoz. Bull. 4:46-48). Of the strains selected, one is particularly useful: it contains a fifth chromosome with an inversion near the center. The inverted section is apparently accompanied by deficiencies of the Amy and vg loci, perhaps at opposite ends. Tentative location of the break points are: proximally, in 107A before the doublet, and, distally, in 109C, between bands 7 and 8 (according to the map of H. Berendes, 1963, Chromosoma 14: 195). The inversion has been examined in polytene chromosomes from salivary glands and midguts (anterior and posterior regions) taken from larvae reared on starch- and/or sugar-yeast diets with promising results. (Supported by grant NSF GB 8607.)