

Halfer, C., M. Piccinelli and T. L. Torri.  
University of Milan, Italy. Melanotic  
formations and their development in the  
stock Freckled of *Drosophila melanogaster*.

Some histological researches have been  
carried out on the new tumorous stock  
Freckled (Frd, 102, 2nd chromosome) of  
*Drosophila melanogaster*, characterized by  
peculiar formations.

Two different tumoral manifesta-  
tions have been found in this stock, each with its own mechanism of formation: i) an early  
tumoral manifestation (larval stage with a low and rather inconstant incidence (up to 16.0%),  
involving the haemolymph cells, and there, similar to the usual tumoral stocks); ii) a late  
manifestation typical of Freckled, with 100.0% penetrance, characterized by melanotic masses  
all over the whole body (fig. 1), present only in the pupal stage and in the adult, which  
involved single fat and pericardial cells.

The action of Freckled depends on temperature (25°) and on certain unidentified  
substances in living yeast and leads to the synthesis of polyindole in the fat cells  
(R. Nicolaus, personal communication).

In the fat cells melanization starts about 30 hours from the onset of pupation; at  
the beginning it is confined to the area of cell nucleus, later spreads to the cytoplasm  
reaching its height between 93 and 120 hours. Melanization appears first in the thorax,  
then in the head and in the abdomen.

The pericardial cells undergo also melanization (Fig. 2), especially in the old flies,  
but do not seem to produce melanin themselves, but to absorb melanotic products from the  
fat cells through a process of phagocytosis (Bairati Jr., personal communication).

The Freckled phenomenon resembles that described by Jones and Lewis (Biol. Bull.,  
112:220, 1957) as red cells (r c, 26.0<sup>+</sup>, 2nd chromosome).



Fig. 1: Frd : pupa, sagittal section.  
Unstained (x 28)

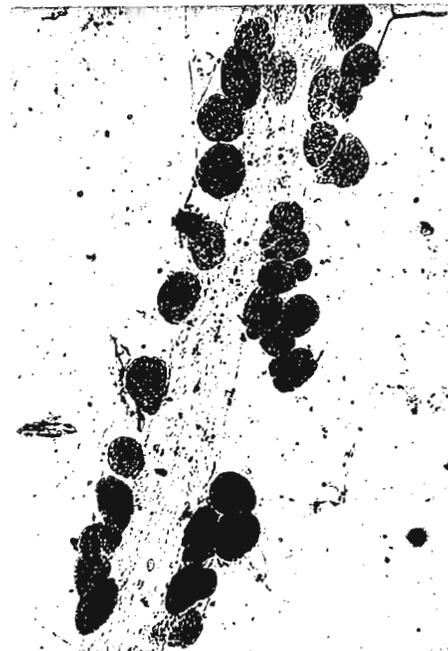


Fig. 2: Frd : pericardial cells of  
adult fly. Unstained (x 80)