K-virus. Attempts to produce a K-virus immune serum in rabbits, guinea pigs, monkeys, and hens have not been successful by preliminary methods so far tried. Repeated examinations with Machiavello and Giemsa stains have revealed no bodies suggesting infection with the psittacosis group of viruses. It is believed that the K-virus is possibly a new, hitherto undescribed, latent virus of mice. Efforts are continuing, however, to discover whether the K-virus is actually identical or related to any known pathogens. So far I have no evidence to prove or to disprove relationship to the Bittner milk agent. Experiments have been instituted in cooperation with Howard B. Andervont to determine whether the K-virus has the capacity to induce mammary tumors in susceptible mice.

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Histology and Histogenesis of *Drosophila* Tumors

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Numerous tumor-bearing stocks are known in *Drosophila*. These stocks have been used for studies of the influence of x-rays (*1*), nutrition (*2*), temperature (*3*), and mammalian sex hormones (*4*) on the penetrance of the genetic factors involved. There has been a strong tendency to homologize these tumors with the melanomas of vertebrates (*5–7*).

Although Russell (*8*) contends that it is impossible to say from what type of tissue the tumors arise, it has so far been generally accepted that Drosophila tumors consist of imaginal cells showing atypical growth.

In a study of the histogenesis of the tumors of the *tu(2)49k* stock, the present author has prepared sections of larvae at ages from 47 to 100 hr after hatching, with age differences of 5 hr or less. The tumors of this stock become visible macroscopically at around 96 hr age.

The main features of the histogenesis are as follows: (1) No evidence of mitotic or amitotic cell divisions has been found in the tumorous tissues. (2) The blood cells constitute the sole element engaged in tumor formation. (3) Melanization of the larger blood cells starts before 47 hr age. A single lot of larvae 34 hr old show faint signs of this anomaly. (4) The brownish tinge in the anomalous cells of young larvae becomes progressively darker with age, obscuring the presence of a nucleus at around 75 hr. By 90–92 hr the cells appear black. (5) At around 70 hr, some of the smaller blood cells assume a spindle shape, and some of them become melanized as well. These cells are free in the hemocele. (6) From 78 hr on, aggregates of spindle-shaped cells may be found in the hemocele and in the caudal parts of the "blood-forming organ."

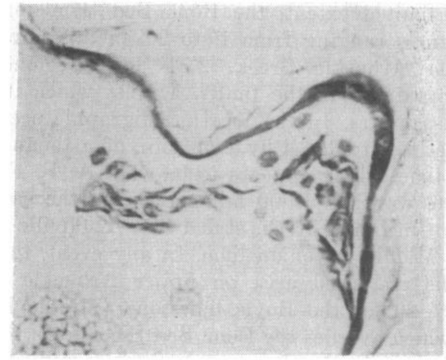

FIG. 1. Spindle-shaped, partly melanized blood cells, together with normal round ones, in the caudal hemocele of a 72-hr-old larva from *tu(2)49k* stock of *Drosophila melanogaster.*

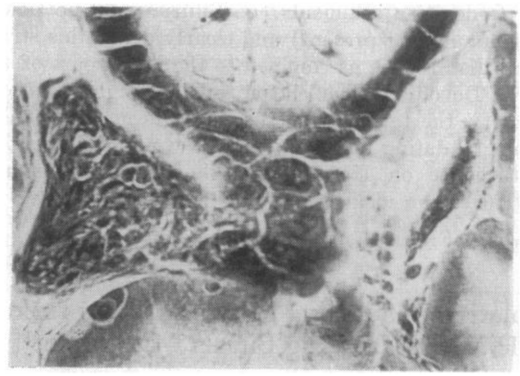

FIG. 2. Early tumor in the cardia region of a 92-hr-old larva from *tu(2)49k* stock. The tumor is not strongly melanized, and consists of spindle-shaped and round cells. Normal blood cells are seen around part of the tumor.

Fig. 1 shows free spindle-shaped blood cells in the caudal hemocele of a *tu(2)49k* larva, age 72 hr, together with normal round ones. Fig. 2 shows an early stage of tumor formation between the wall of the cardia and a gastric cecum, with an aggregate of partly melanized spindle-shaped cells surrounded by normal blood cells. This larva is 92 hr old.

After these results had been obtained in the study of *tu(2)49k* larvae, sections were prepared of larvae from five other tumor stocks. The ages of these larvae were not determined. The stocks used were *y 1(1)7, vg bw* mt^{A}, tu^{g}, *y* B^{263-43}, and *tu-36a*. The results of the examination of these sections may be summarized as follows: (1) All five stocks show melanized large blood cells. (2) Free spindle-shaped cells may be seen in the hemocele of larvae from tu^{g} and from *y* B^{263-43}. In the other three stocks, spindle-shaped elements are found only in the tumors themselves. (3) In tu^{g} stock the fat body seems to be attacked by the spindle-shaped cells at a comparatively early stage, and in *y* B^{263-43} there is some indication that early tumors are formed near the hind-gut. With the possible exception of tu^{g}, tumors free in the hemocele appear to be the most common type. (4) In no stock has there been found any indication of involvement of imaginal cells.

It will be seen from the above observations that, although the main principles of tumor formation appear to be common to all stocks, characteristic minor differences are still present between the several stocks. A number of problems present themselves in this connection, and further studies are in progress. A detailed report will be published elsewhere.

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A New Plant Growth Regulator— α-Cyano-β-(2,4-Dichlorophenyl) Acrylic Acid

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In the course of a search for novel plant growth regulators, a new chemical compound, α-cyano-β-(2,4-dichlorophenyl) acrylic acid (Ethyl-214) was synthesized and tested in greenhouse experiments on tomato and marigold plants. When applied at low concentrations, this compound produced the striking effects of inhibiting the growth of tomato and the flowering of marigold.

The discovery of the growth inhibitory action of maleic hydrazide (*1*) has drawn attention to the possibilities of plant growth control without visible injury. Preliminary studies indicate that the inhibitory effect of α-cyano-β-(2,4-dichlorophenyl) acrylic acid on tomato is similar to that of maleic hydrazide. Both materials inhibit the growth of tomato without apparent injury. However, tomato plants treated with α-cyano-β-(2,4-dichlorophenyl) acrylic acid show a decrease in apical dominance, permitting activation of the axillary buds, whereas response to maleic hydrazide is an over-all slowdown of growth. The application of α-cyano-β-(2,4-dichlorophenyl) acrylic acid to budding marigold plants caused a marked delay in flowering. However, maleic hydrazide was ineffective at comparative concentrations in delaying the flowering of marigold. Thus, it appears that the new compound has a mode of action different from that of maleic hydrazide, and a different range of selectivity as a plant growth regulator.

α-Cyano-β-(2,4-dichlorophenyl) acrylic acid was synthesized by the condensation of 2,4-dichlorobenzaldehyde with cyanoacetic acid. After recrystallization from benzene, it is obtained as white leaflets, melting at 197.5°–198.3° C. The diethanolamine salt is obtained in the form of white crystals, melting at 137.9°–138.9° C. Further details of the synthesis of α-cyano-β-(2,4-dichlorophenyl) acrylic acid and its derivatives will be published elsewhere.

Preliminary toxicological data[1] have been obtained, employing a small number of animals. The approximate lethal dose of α-cyano-β-(2,4-dichlorophenyl) acrylic acid for rats, when given by oral administration, lies between 50 and 250 mg/kg body weight, and that of its diethanolamine salt lies between 250 and 500 mg/kg. Both the free acid and the diethanolamine salt have been applied to the abraded skin of rabbits. In each instance the rabbit survived a 24-hr period of contact with 250 mg/kg of body weight.

Four tests were used to evaluate the effects of α-cyano-β-(2,4-dichlorophenyl) acrylic acid on tomato plants: seed germination, lanolin paste, single leaf dip, and total spray. No evidence of unusual growth response was noted in the seed germination or lanolin

[1] Toxicity tests were conducted by J. F. Treon, of the Kettering Laboratory, University of Cincinnati.

FIG. 1. Effect of α-cyano-β-(2,4-dichlorophenyl) acrylic acid, when applied to tomato plants at four different concentrations, 0.05, 0.1, 0.2, and 0.4% and control, 3 weeks following treatment.