have not been able to detect any change of behaviour in the sarcoma cells when they meet the fibroblasts. Both advancing outgrowths of cells continue moving after they have met, and become superimposed. We conclude that contact inhibition must be very slight or absent between these sarcoma cells and normal fibroblasts.

It would obviously be premature to assert that all malignant cells are characterized by reduction or absence of contact inhibition. A very large range of sarcomata and carcinomata, as well as of benign tumours and normal tissues, needs to be tested. Nevertheless, the hypothesis seems to be sufficiently plausible, in relating the invasiveness of malignant cells to a property of normal cells, to be perhaps worth following up by those who have access to a large range of tumours.

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[1] Abercrombie, M., and Heaysman, J. E. M., *Exp. Cell. Res.*, **5**, 111 (1953); **6**, 293 (1954).
[2] Carrel, A., and Ebeling, A. H., *J. Exp. Med.*, **48**, 105 (1928).
[3] Fischer, A., "Gewebezüchtung" (Müller and Steinicke, München, 1930).
[4] Earle, W. R., *Arch. exp. Zellforsch.*, **20**, 140 (1937).

Intracellular Distribution of Histamine

Although histamine is widely distributed in the tissues, very little has been reported on its intracellular distribution. Recently, Copenhaver *et al.*[1] and Hagen[2], studying the histamine content of different cell fractions of dog liver, verified that the major amount of this substance was present in the mitochondrial fraction.

However, dog liver is exceptionally rich in mast cells[3], and the contamination of the mitochondrial fraction with mast cell granules during the differential centrifugation must be considered in the interpretation of these papers. We report here experiments performed in order to observe the distribution of mast cell granules in the different fractions of dog liver homogenate.

Samples of dog liver were obtained under pentobarbital anæsthesia and fractionated in 0·25 *M* sucrose as described by Schneider[4]. The nuclear, mitochondrial and microsome plus supernatant fractions were studied. Smears were made from these three fractions, fixed in 1 per cent lead sub-acetate in 50 per cent alcohol, stained with acidified Ehrlich's thionin and observed by normal and phase-contrast microscopy. Microscopic observation showed that the mitochondrial fraction was highly contaminated with mast cell granules which appeared as very small round metachromatic particles.

Many recent observations support the striking positive correlation between mast cell content of a tissue and its concentration of histamine[5]. Furthermore, the alterations of mast cells in conditions in which liberation of histamine occurs, both *in vivo* and *in vitro*[6], suggest that tissue histamine is present mainly in mast cells. By differential centrifugation of rat subcutaneous tissue a relatively pure fraction of mast cell granules could be obtained, and it was verified that the major amount of histamine was present in these granules, from which it could be released by heating in an acid medium or by the action of compound 48/80, a very potent histamine releaser. It is therefore probable that the higher histamine concentration of the mitochondrial fraction of dog liver might be due, at least in part, to its contamination with mast cell granules. A reconsideration of this problem seems to be necessary.

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[1] Copenhaver, J. H., Nagler, M. E., and Goth, A., *J. Pharm. Exp. Therapy*, **109**, 401 (1953).
[2] Hagen, P., *Brit. J. Pharmacol. Chemotherapy*, **9**, 100 (1954).
[3] Michels, N. A., in Downey, H., "Handbook of Hematology", **1** (Paul Hoeber, Inc., New York, 1938).
[4] Schneider, W. C., in "Manometric Techniques and Tissue Metabolism" (Burgess Publishing Co., 1951).
[5] Riley, J. F., and West, G. B., *J. Physiol.*, **120**, 528 (1953). Riley, J. F., *Science*, **118**, 332 (1953).
[6] Wilander, O., *Skand. Arch. Physiol.*, **81**, Supp. xv (1939). Jaques, L. S., and Waters, E. T., *J. Physiol.*, **99**, 454 (1941). Mota, I., thesis, University of São Paulo (1953). Riley, J. F., *J. Path. Bact.*, **65**, 471 (1953). Mota, I., Beraldo, W. T., and Junqueira, L. C. U., *Proc. Soc. Exp. Biol. Med.*, **83**, 455 (1953). Benditt, E. P., Bader, S., Arase, M., Corley, C., and Lam, K. B., *Fed. Proc.*, **13**, 422 (1954).

Destruction of Tumour Cells by Rift Valley Fever Virus

In the course of work on the effects of infection with several viruses upon different kinds of tissue cells from several animal species *in vitro*, it was found unexpectedly that Rift Valley fever virus has a marked destructive action upon rat sarcoma cells grown in tissue culture. A number of papers have appeared on the effects of infection with viruses upon various tumours in several animal species[1]. A destructive effect of the viruses of eastern equine encephalomyelitis and poliomyelitis on the tumour cells grown in tissue culture has been demonstrated by Bang and Gey[2] and by Scherer, Syverton and Gey[3] respectively; but no report of an effect of infection with Rift Valley fever virus upon tumour cells either *in vivo* or *in vitro* came to our attention. It is felt, therefore, that the results so far obtained by us are sufficiently interesting to merit publication at this stage.

Rhodamine *B* rat sarcoma[4] and fructose mouse sarcoma[5] were used for tissue culture experiments. The roller tube technique was used and the cover-slip technique in Porter flasks was employed for staining cells grown in tissue culture. Suitable pieces of tumour tissues were grown directly on the glass wall of the roller tube without clot or upon the cover-slip in a Porter flask with or without plasma clot. Nutrient medium (1·0 ml. per tube) consisted of 45 per cent Hanks's solution, 45 per cent horse serum (or human ascitic fluid) and 10 per cent swine (or chick) embryo extract (1 : 1 in Hanks's solution). 100 μgm. of