Carcinosarcoma in the mouse / Wm. H. Woglom.

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CARCINOSARCOMA IN THE MOUSE

WM. H. WOGLOM, M.D.

(From Columbia University, George Crocker Special Research Fund, F. C. Wood, Director.)

Through the kindness of Dr. James G. Dwyer, our laboratory received last April a female Japanese waltzing mouse bearing two spontaneous tumors, one in the left axilla and one in the right groin, situations where mammary carcinoma is very likely to occur in the mouse (Fig. 1). Both tumors were extirpated and transplanted into three hundred and forty-eight white mice, in

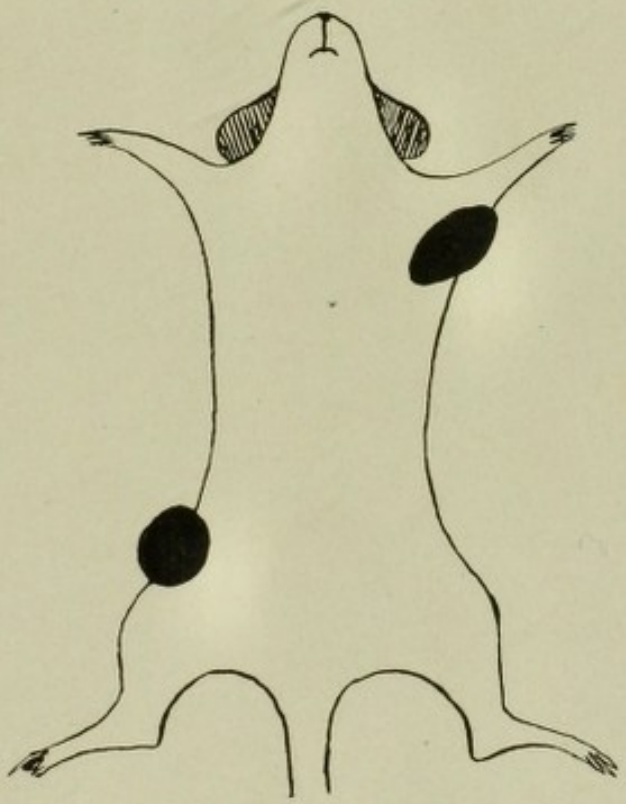

FIG. 1. Location and size of the two tumors in mouse 66/0. 6/7 natural size.

order to confirm the observation of Loeb and Tyzzer, that ordinary tame mice are naturally resistant to neoplasms of the Jap-

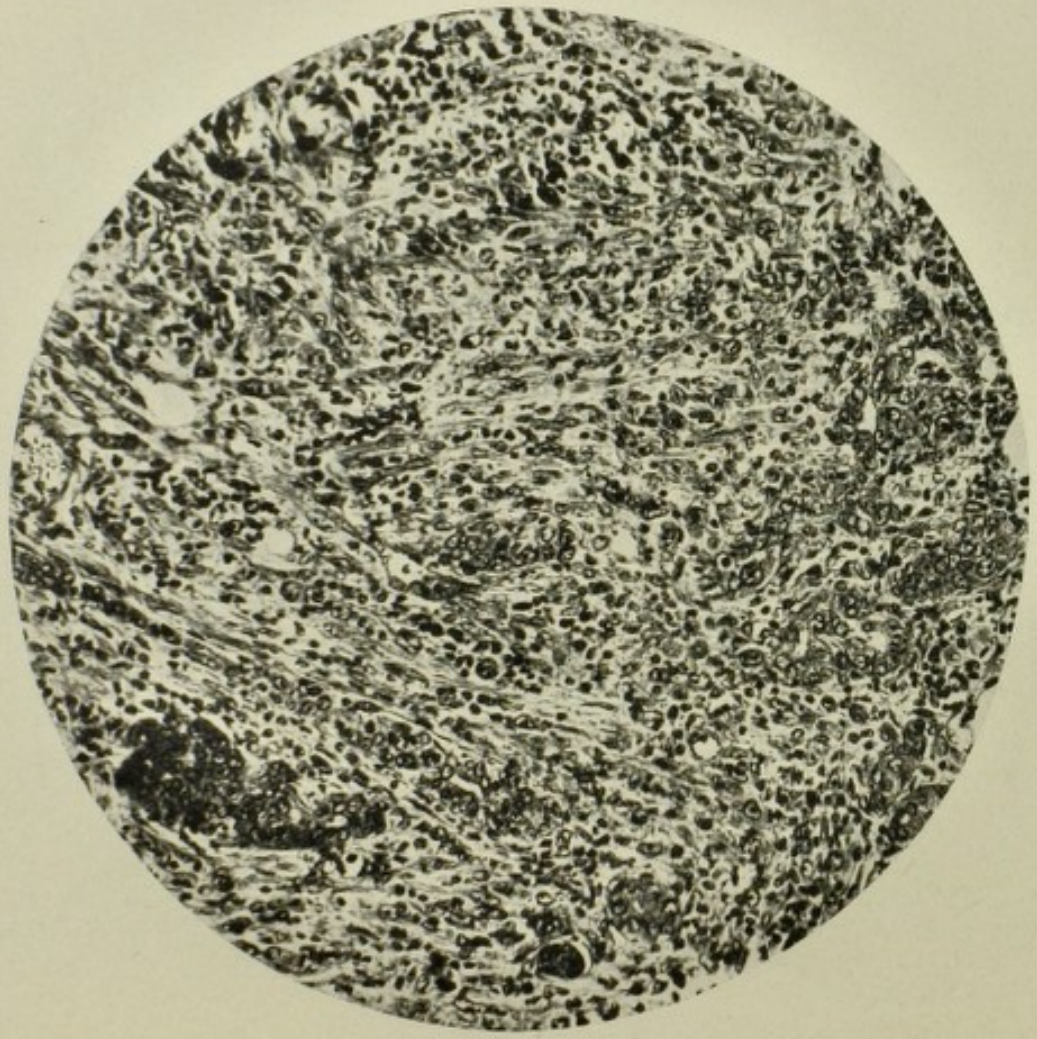

FIG. 2. Inguinal tumor. Carcinosarcoma. Hematoxylin and eosin. × 210.

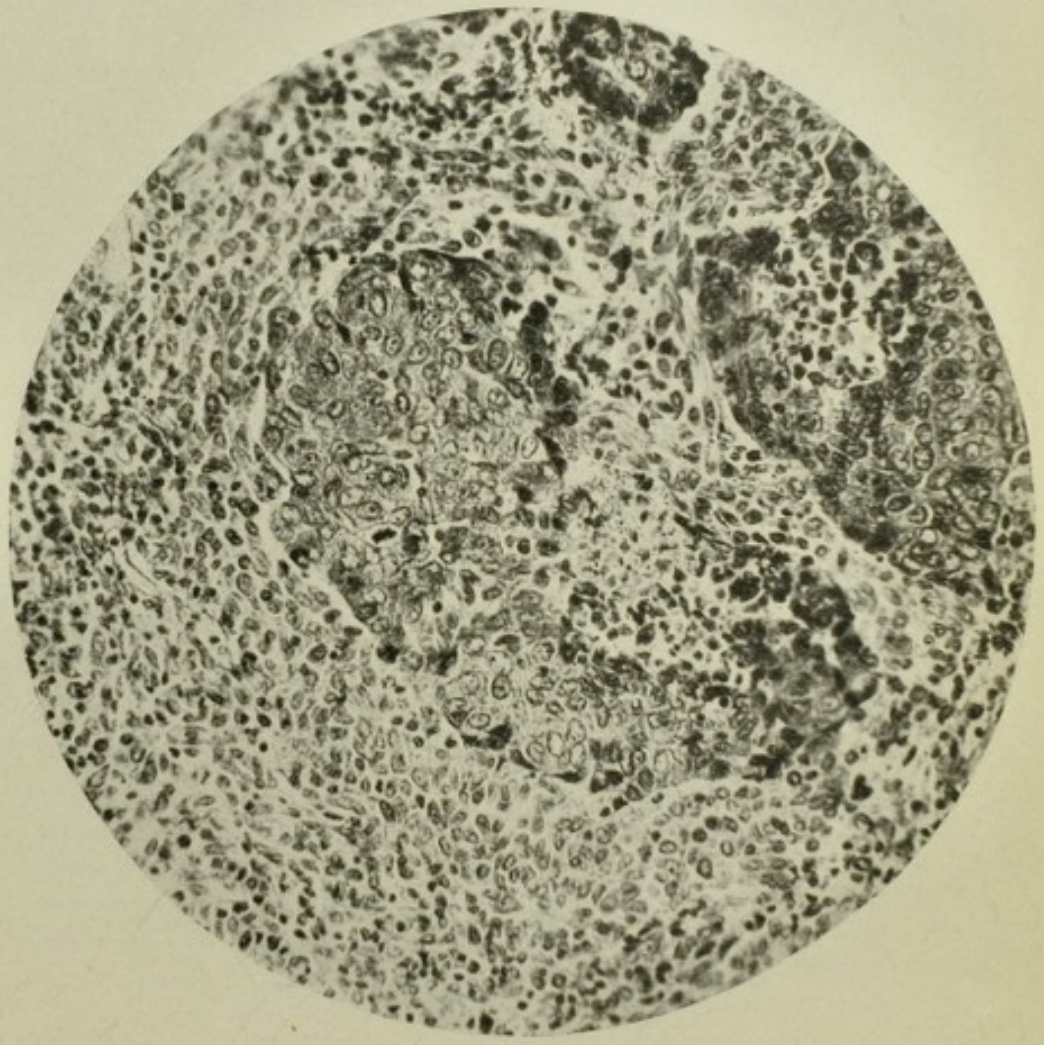

FIG. 3. Inguinal tumor. Carcinosarcoma. Hematoxylin and eosin. × 500.

anese waltzing mouse. Their findings were fully corroborated, since not one of all these animals developed a tumor. As the nature of the growths was not recognized at the time of operation, no attempt was made to procure Japanese waltzing mice for their propagation.

The tumor in the groin (Figs. 2 and 3) was found to be a

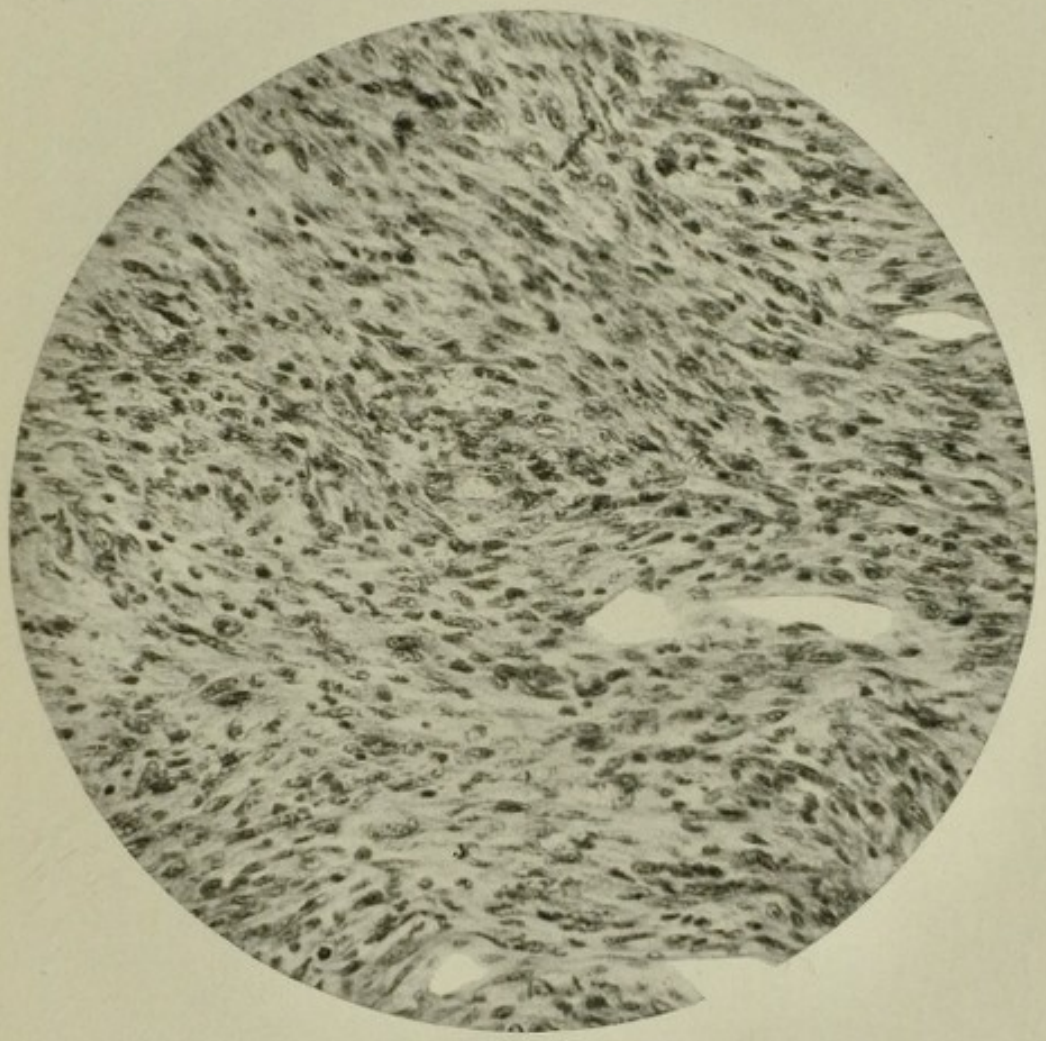

FIG. 4. Axillary tumor. Pure sarcoma. Hematoxylin and eosin. × 250.

carcinosarcoma, similar to those which have been already described by other investigators, while that in the axilla (Figs. 4 and 5) proved to be a pure sarcoma; still, its location in the mammary area and the fact that sarcoma of the mouse is relatively rare, while carcinoma is common, suggest that this tumor, like the former, was primarily a carcinoma. As a matter of fact, it did con-

tain considerable epithelium, though the presence of this tissue gave no clue to the original nature of the growth, since it was undoubtedly normal lactating mamma that had been invaded by the sarcoma (Figs. 6, 7, and 8).

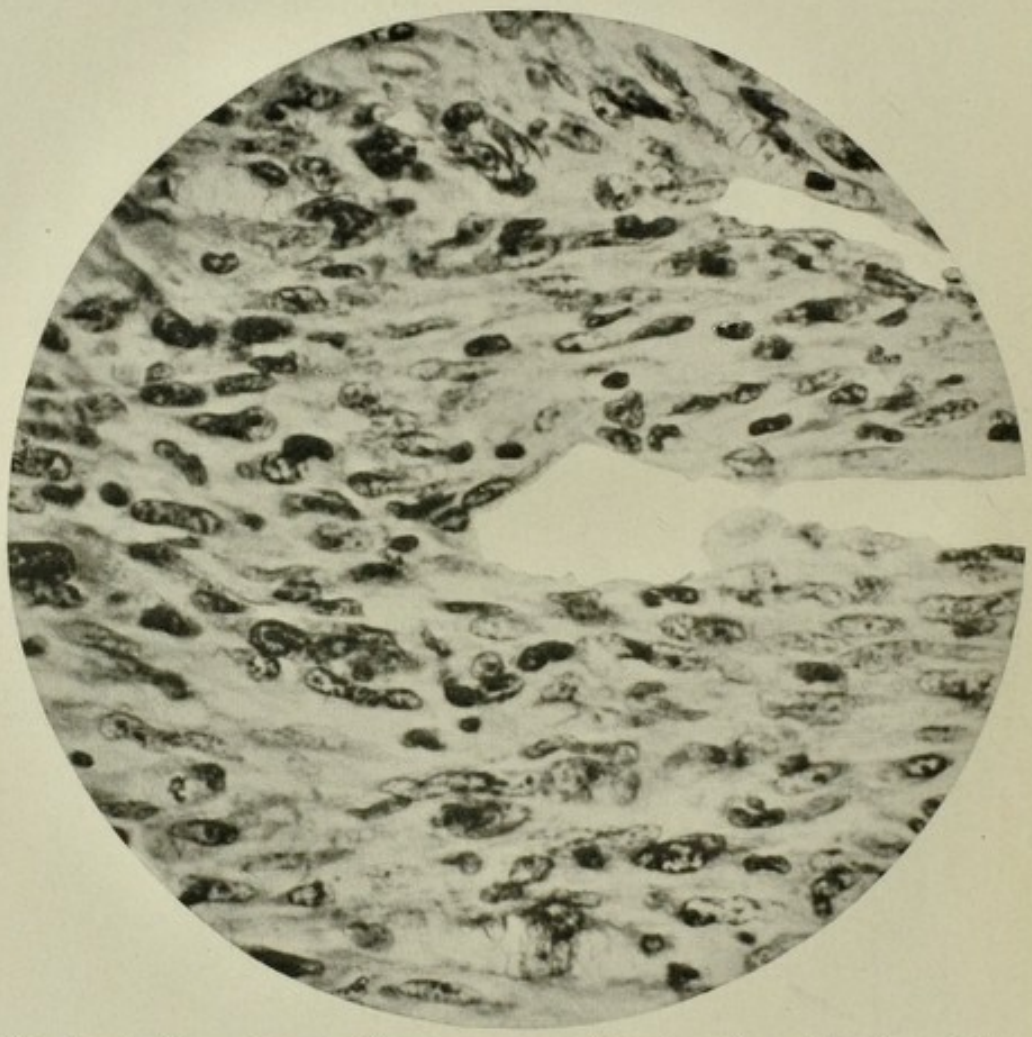

FIG. 5. Axillary tumor. Pure sarcoma. Hematoxylin and eosin. × 500.

In the case of the inguinal tumor, the newly developed sarcoma had not yet overgrown the carcinomatous constituent, while in the axillary growth it had succeeded in so doing. It is well known that, in transplantable carcinomata possessing the power to initiate sarcoma development in their stroma, the sarcomatous portion gradually gains the ascendancy over the carcinomatous, and there is no reason to suppose that this rule would not be valid in the case of spontaneous new growths.

Why the parenchyma of a few spontaneous and propagable carcinomata should be able to inaugurate sarcoma development in the connective tissue scaffolding, and in what manner it exerts this effect, are problems still unsolved. The power is ascribed by most investigators to the action of some stimulus, though what the nature of this may be even the boldest makes no attempt to define.

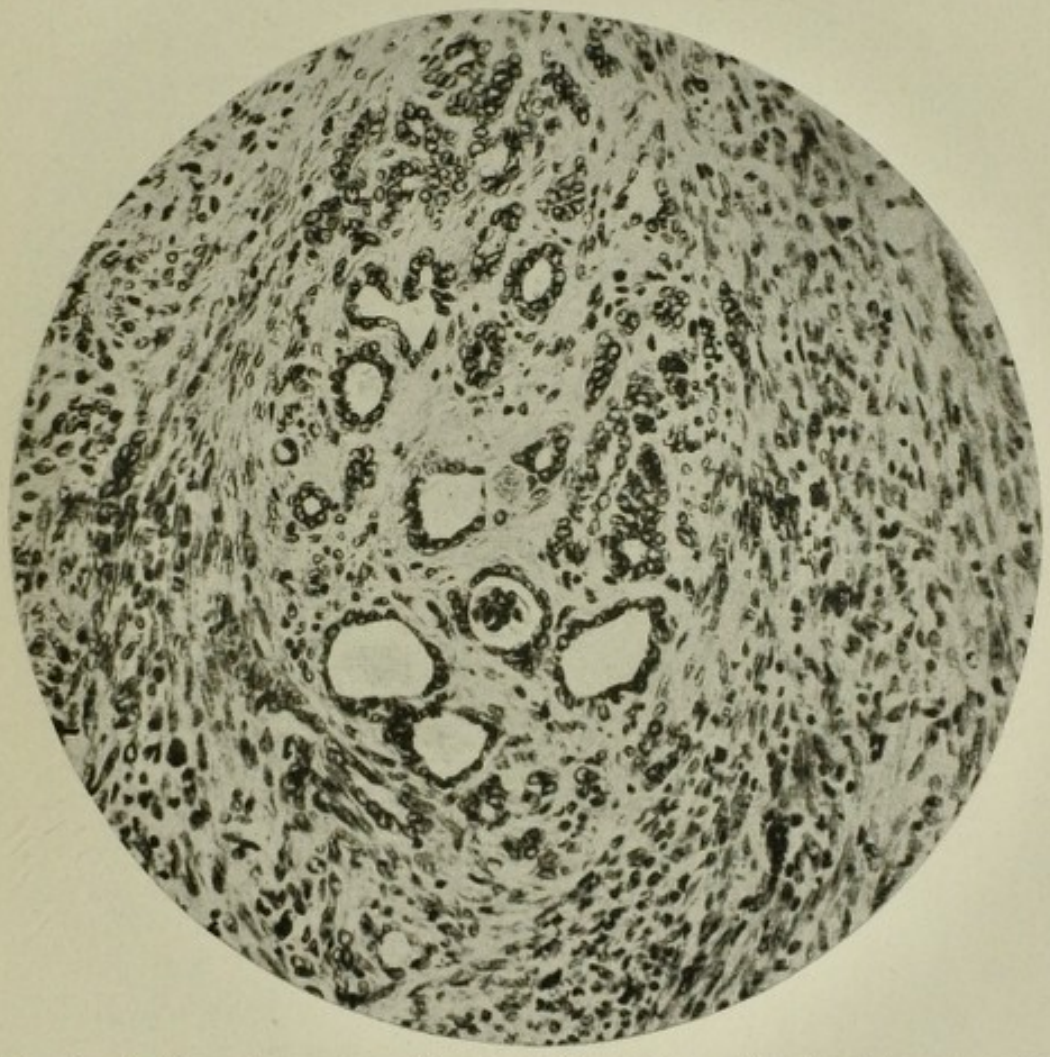

FIG. 6. Axillary tumor invading normal mamma. Hematoxylin and eosin. × 200.

The interest of the case now under discussion lies in the existence (or probable existence) of two carcinosarcomata in the same mouse. Ehrlich[1] has explained the onset of sarcomatous

[1] Ehrlich: *Ztschr. f. Krebsforsch.*, 1907, v, 64.

transformation in propagable carcinomata by assuming that the animal in which it takes place has some special predisposition toward connective tissue proliferation, as some human beings, for

FIG. 7. Axillary tumor invading normal mamma. Hematoxylin and eosin. × 500.

example, are apt to develop keloids at the site of a scar. To this hypothesis Russell[2] has objected that the Jensen mouse carcinoma, which has been propagated now for nearly fifteen years, has never yet given rise to sarcoma—has never yet, that is, happened to be inoculated into a "keloid" mouse, though a transplantable tumor able to cause this mutation will exert is effect in almost every animal, provided only that it be allowed to remain a sufficient length of time.

[2] Russell: *Jour. Path. and Bacteriol.*, 1910, xiv, 374.

If Russell's contention be correct, a mouse with sarcomatous transformation in two widely separated tumors is to be regarded, not as one in which the connective tissue is especially prone to undergo sarcomatous alteration, but as one whose mammary tissue, be it in one breast or another, possesses the power of in-

FIG. 8. Axillary tumor invading normal mamma. Hematoxylin and eosin. × 400. Note mitosis at *a*.

ducing sarcoma development, once it has taken on malignant growth.

The observation supports certain others regarding the individuality of the tissues of any given mouse, suggesting, as it does, that although carcinomata of different mice vary among themselves, those of the same mouse may have characteristics identical, or nearly so.