

CONCLUSIONS.

1. Dogs injected with 5 c.c. of tuberculin or of the unconcentrated filtrate become sensitized to tuberculin, and an injection of tuberlin (1 drop in some cases) given the following day produces a drop in arterial pressure.
2. The depressor substance is not affected by heat up to and including 100° C. during a period of one hour.
3. If the tuberculin is kept at 105° C. for one hour the depressor may be lost or greatly diminished.
4. The results of the serum of tubercular calves injected into the sensitized dog seem to indicate that the method outlined in our previous paper can be used for the early diagnosis of tuberculosis.
5. This depressor substance seems to be different from the depressor substance of tuberculin in that the tuberculin depressor substance is much more stable; while the depressor substance of tubercular serum may be lost when the serum is kept in the ice box.
6. These experiments possibly give us a method for standardizing tuberculin by noting the minimal quantity which will cause a reaction in blood pressure.

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Immunity to the growth of cancer induced in rats by treatment with mouse tissue.¹By **ISAAC LEVIN.**

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The opinion prevails among investigators that resistance to growth of tumor can be induced only by treatment with tumor or normal tissue of the same animal species. In the course of a study on different phases of atreptic immunity, a series of experiments was undertaken with the aim in view to find the means whereby mouse tumor may be made to grow on a rat and *vice versa*. Ehrlich, in his so-called zig-zag transplantations, has shown that such a tumor of a mouse inoculated into a rat grows normally for eight or ten days and then ceases its growth and be-

¹This research is conducted at the expense of the George Crocker Special Research Fund.

comes absorbed. Our experiments consisted in the subcutaneous inoculation into a rat, of the normal skin and spleen tissue of a mouse followed in a few days by a subcutaneous inoculation of Ehrlich's sarcoma of a rat. The aim of this treatment was to accustom the tumor cells to mouse tissue, and then to see whether such a rat tumor, which may have obtained during its growth the food supplied by the inoculated normal mouse tissue, would not grow more readily when inoculated subsequently into a mouse. The results of this investigation were negative, but the extremely interesting fact was observed that a certain number of the rats treated with mouse tissue appeared immune against growth of the rat sarcoma. The following table will illustrate this phenomenon :

	Treated Animals.	Controls.
No. of rats inoculated with tumor.	40	40
No. of rats survived at the final examination.	27	40
No. of rats with tumors.	10	36
Per cent. of takes.	37 %	90 %

Similar positive results were obtained recently by C. Lewin, who succeeded in immunizing rats with mouse tumor and *vice versa*.

It would seem that this discovery of the possibility of immunizing an animal against growth of tumor by treatment with alien tissue not only adds a new fact to the study of artificial immunity, but is also of some theoretical interest. It would appear that Ehrlich's atreptic theory, with which he explains all the phases of tumor growth, while possibly of great importance in the explanation of certain facts, probably does not have a universal application. According to this theory the tumor of a rat grows within that animal because it finds there the necessary specialized food. On the other hand, organ cells of a mouse do not possess, nor do they require the specific food of the rat and this is the reason why a rat tumor fails to grow indefinitely in a mouse. When a rat is immunized against growth of rat tumor by previous treatment with mouse tissue, such a failure to grow cannot be ascribed to the lack of proper nourishment within the host, since the previously inoculated mouse cells could not assimilate such food. The explanation must rather be sought in some protective substances within the host created under the influence of the implanted mouse tissue.