

This conclusion is strengthened by experiments showing that tannin adsorbed on red blood cells mediates agglutination, promotes phagocytosis, and prepares the cells for lysis by complement,⁷ and that it combines with, and detoxifies, toxins adsorbed on collodion particles.

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Studies on Mouse Leukemia. IV. Specificity of Susceptibility to Different Lines of Inoculated Leukemia.*

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Susceptibility and resistance to a particular line of inoculable mouse leukemia may, for present purposes, be defined in terms of the presence or absence of conditions necessary for the survival of the active agent. A group of 11 such lines of agent, each of which originated in a different case of spontaneous lymphatic leukemia in a highly inbred strain of mice designated as C58, found the necessary conditions for survival in mice of the same strain.¹ Although different lines of agent can grow in the same pure bred strain of mice, these different lines do not all have the same requirements for survival, as has been shown by hybridization experiments.² The present report gives direct evidence of the specificity of requirements of different lines of agent, without the use of hybridization, by means of a new line that originated from a spontaneous case in another highly inbred strain of mice.

The new line of agent is designated line L. The spontaneous case that gave rise to this line was a mouse in strain 89; the line is carried in mice of this same strain. During the course of 13 trans-

⁷ Reiner, L., and Fischer, O., *Z. f. Immunitätsf.*, 1929, **61**, 317; Reiner, L., and Kopp, H., *Ibid.*, 1929, **61**, 397; Freund, J., *PROC. SOC. EXP. BIOL. AND MED.*, 1922, **26**, 876; Neufeld, F., and Etinger-Tulezyska, R., *Zentralbl. f. Bakt.*, 1929, **114**, 252.

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¹ Richter and MacDowell, *J. Exp. Med.*, 1930, **51**, 659.

² MacDowell and Richter, *J. Cancer Res.*, 1930, **14**, 434.

fers 75 mice of this strain have been inoculated. Of these all but 4 (94.6%) have died with unmistakable lesions of leukemia, mostly between the 15th and 25th days after inoculation. The agent of line L has been inoculated into 64 mice of strain Storrs-Little with completely negative results and into 82 mice of strain C58, of which all but one were negative.

The active agent of line I originated in a spontaneous case in strain C58 in April, 1929. It has now reached its 116th transfer. Barring experiments designed to study the nature of the agent, 859 mice of this strain have been so inoculated; all have proved susceptible with the exception of a single mouse whose identity is questionable. A total of 225 mice of strain Storrs-Little have been inoculated with the agent of line I with no positive case. But a large proportion of the mice from strain 89 inoculated with agent of line I die with the lesions characteristic of line I (94 positive, 48 negative). The proportion of susceptible mice in this total has no significance since different matings within the strain give different proportions of susceptible animals. Only the study of individual families gives significance to the ratios obtained. This indicates that in spite of many generations of inbreeding by brother to sister matings, which usually renders a strain uniform genetically, strain 89 is at present not genetically homogeneous in regard to the susceptibility to line I, although to line L it is probably uniform.

To summarize, all families of strain 89 are susceptible to line L; some of them give numerous individuals susceptible to line I, others give few such individuals, while strain C58, on the other hand, is susceptible to line I and virtually negative to line L. The same animal may provide resistance, as well as different types of susceptibility.

It is not correct, therefore, to regard "susceptibility to inoculated leukemia" as a state dependent on any single set of conditions. The number of different sets of conditions that produce susceptibility depends on the number of lines of agent that may be found with differing requirements. Susceptibility can be defined only with reference to a particular line of agent.