

October 29, 1951

Dr. S. C. Rittenberg
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University of Southern California
Los Angeles 7, California

Dear Dr. Rittenberg:

When we met a year ago last summer, I promised to keep you informed of the development of our work on Salmonella. Mr. Zinder is now in the midst of writing his thesis and a paper on our work, so this time seems to be appropriate to discharge that promise.

In the first place, after we learned how to set it up, it became quite simple to obtain a wide variety of genetic exchanges in Salmonella typhimurium, and more recently to S. typhi. For example, we just received a verification from P.R. Edwards on the diagnosis of a typhi-typhimurium "hybrid" as being IX, XII; i —. But other characters are more readily studied: these included especially the nutritional mutants that we started with; also fermentative differences and "drug"-resistance markers.

The role of phage was perplexing for a long time. It appears now that certain phages, especially of a latent or lysogenic character, can evoke the formation of an active filtrable "particle" (FA) from typhimurium. A variety of other mildly deleterious conditions, e.g., small amounts of penicillin, can do likewise. FA behaves somewhat like the pneumococcus transforming agent: it can transfer individual properties of its donor to suitable recipient strains. FA is, however, not sensitive to DNase, and we have some evidence that it is a formed element, conceivably related to the so-called "L-forms". What is most remarkable, from a genetic standpoint, is that ordinarily, only one trait can be transferred at a time, so that we are dealing with a recombination only in a limited sense. This is in strong contrast to the E. coli system, in which there is strong evidence of linkage, and the associated transfer of several traits together is the rule. And, of course, the coli system is not mediated by a filtrable agent.

I am sure that you will recognize some aspects of our findings as familiar and reminiscent of your work with poona and cholera-suis. However, I believe we were fortunate in hitting on a more suitable system for developing the groundwork and establishing an experimental procedure that gives perfectly reliable and reproducible results.

Yours sincerely,

Joshua Lederberg