

October 31, 1952

Dear Dr. Rountree:

Thank you for your letter of September 2. I will try to answer the questions you raised concerning the ms. on lysogenicity [which is to appear in the January 1953 issue of GENETICS].

Your first point had to do with the transfer of prophage to a "sensitive" cell. Let us consider the segregation from heterozygous diploid cells. (ms. p. 9 and table 3). If a separate nuclear factor is involved, as you suggest, and if the diploid parent cells are infected with mature or potentially mature phage, then the Lp^S (Gal-) segregants should be uniformly infected with a ~~lethal~~ virus lethal for that genotype, and should not be recovered. A certain fraction would become lysogenic again. In fact, viable Gal- Lp^S are recovered without difficulty, and very few Gal- are Lp^+ are lysogenic. We conclude, therefore, that "potentially mature phage" is not transmitted to these segregants. We argue further that either 1) the prophage is not transmitted to these segregants at all, i.e. that it is chromosome-bound, or 2) that prophage, as it exists in Lp^+ is unable to propagate in Lp^- , i.e. that it is distinct from the lambda of the lytic cycle (not necessarily genetically; perhaps developmentally). In either case, there is evidence for prophage as distinct from mature, albeit intracellular phage. This weak conclusion is stated on p. 17, and I do not think we are in disagreement at all.

To come to your second question, experiments with lambda are complicated by reversible adsorption. As far as our studies go, however, they point to immune-1 (Lp_1^R) as capable of adsorbing lambda, while immune-2 (Lp_2^R) is not. The possibility that Lp^R may represent some sort of bound lambda was stated on p. 19-- it is still open. More recently, we have found that Lp_1^R can, very rarely, be made lysogenic. The behavior of closely linked markers suggests that this occurs when there is a transduction of the Lp_1^+ locus (together with Gal_4^+), so that the situation is very complicated. Recently, this transduction of Gal_4^+ has been found to take place, in a way comparable to the transduction of a variety of traits in Salmonella. But Gal_4 ~~is~~ (perhaps also Lp) is the only locus for which this experiment works in E. coli. All of this seems again to point to a very intimate relationship of lambda with the bacterial chromosome.

Yours sincerely,

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