

LEDERBERG, ESTHER M., University of Wisconsin, Madison, Wis.--The inheritance of lysogenicity in interstrain crosses of Escherichia coli.--Of 50 diverse fertile strains, four proved to be sensitive to and lysogenized by the bacteriophage lambda carried by strain K-12. Crosses within these strains indicate an Lp locus determining lysogenicity and linked to Gal as in K-12. Each new strain lysogenized by lambda shows a more limited output of plaques when tested on K-12 than on the other sensitive indicators. Similarly, K-12 is more resistant than the other sensitives to free lambda originating from the other strains. By testing for sensitivity to both sources of lambda, and for lysogenicity on each indicator, four phenotypes are delineated: two lysogenic and two sensitive. These relationships are analogous to the host-induced modifications of lambda described by Bertani and Weigle (J. Bact. 65, 113). Whenever lysogenic x sensitive crosses involve K-12 as one parent, all four possible recombinant classes are found in the progeny, thus establishing a second locus, Mp, which modifies the expression of Lp. K-12 occurs as Mp^+Lp^+ (lysogenic) or Mp^+Lp^s (sensitive); the other four strains as Mp^sLp^+ (modified lysogenic) or Mp^sLp^s (modified sensitive). Linkage of Mp to the Lp-Gal loci was not demonstrated. Crosses reciprocal with respect to F (compatibility factor) differed in yield but not in the type of recombinants. The absence of sensitives from crosses of lysogenics segregating for Mp makes it likely that lambda prophage remains fixed to Lp, rather than Mp, in all lines.

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