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MORSE, M. L. (Introduced by M. R. Irwin.), University of Wisconsin, Madison, Wis.--Transduction of certain loci in Escherichia coli K-12.--Lysogenicity for the phage lambda is determined by a nuclear gene closely linked to a cluster of loci affecting galactose fermentation (Lederberg and Lederberg, Genetics 38, 51). A small fraction of the cells in galactose-negative cultures can be transformed to fermenters by lambda lysates from positive, or from non-homologous negative, cells. The interactions between cells and lysates are concordant with allelism tests by crossing. With excess assay cells the number of transformations is proportional to the amount of lysate added, with an efficiency of about one transduction per million plaque forming particles. Most transformed clones are unstable for galactose fermentation and continue to segregate galactose negative cells after many single colony isolations. When Gal_1^- cells are transformed with wild type lysates the negative segregants from the "heterozygous" positives are Gal_1^-. When Gal_1^- cells are transformed with a lysate of Gal_2^- cells, the negative segregants are usually Gal_1^-, occasionally Gal_2^-, and rarely $Gal_1^-Gal_2^-$. Similar results have been observed with various combinations of Gal_1, Gal_2, and Gal_4. Exceptional lysates transduce with an efficiency greater than 10^{-1}. These lysates are capable of (1) transforming a large fraction of a cell population, (2) transducing Gal^- as well as Gal^+ alleles, and (3) showing that adsorption of lambda to a cell is necessary, but not sufficient for transformation. The phage here, as in Salmonella (Zinder and Lederberg, J. Bact. 64, 679), acts as a passive vector of genetic material. Other loci tested, not linked to Gal, are not transduced by lambda.

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