

LEDERBERG, JOSHUA and BRUCE STOCKER, University of Wisconsin, Madison, Wis., and Lister Institute, London, Eng.--"Phenotypic" transductions of motility in Salmonella.
--The formation of genetically stable transformed clones by transduction of genetic fragments from one Salmonella strain to another has been well established for a wide range of markers, including motility. The possibility of scoring the motility of single cells has allowed the detection of a mode of transduction involving a determinant which is not regularly heritable. Motile cells were individually isolated within three hours of mixing a nonmotile strain with competent phage. Only five percent of the motile initials gave stably motile subclones, usually in mixture with co-segregant parental nonmotile cells. The remainder formed predominantly nonmotile clones containing no more than, at most, 100 motile individuals. The latter, when reisolated usually transmitted motility to only one daughter at each successive fission as if they carried a non-replicating determinant of motility. The exact nature of these determinants is debatable: they might be erstwhile genes that had been damaged or misplaced, or they might be persistent gene products or both. The nonrandom partition of motile progeny in subclones from early cell lineages suggests two levels of determination, either in organization or kind of motility-conferring "particles". The emergence of a motile phenotype and its transmission to a single chain of descent occurs spontaneously in a few cells of certain strains.

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