

Bacterial Transduction

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Introduction - Transfer of fragments of DNA from one bacterial cell to another by bacterial viruses (bacteriophages) is called transduction. Transduction is of two types

- (1) Generalized (2) Specialized.

Generalized transduction - Phage mediated transduction of a small segment from any region of the bacterial chromosome is called generalized genetic transduction. In 1952 Zinder and Lederberg discovered that bacteriophage particles could transfer bacterial genes from one ~~generalized~~ bacterium to another. Earlier Lederberg and Tatum (1946) had performed the now classical cross of two auxotrophic mutants of *E. coli* (conjugation)

Zinder and Lederberg initially began their experiments with the objective of discovering whether the *E. coli* type of genetic exchange also existed in *Salmonella typhi murium*. Various strains of ~~auxotrophic~~ auxotrophs were crossed on an amino acid free minimal medium in an attempt to find new prototrophic combinations.

The LA22 strain was unable to synthesize the amino acids phenylalanine and tryptophan (Phe⁻ Trp⁻ strain) but could synthesize methionine and histidine. The LA2 strain was unable to synthesize methionine and histidine (Met⁻ His⁻ strain) but could synthesize phenylalanine and tryptophan. Crossing of LA22 and LA2 strains resulted in a wild-type prototroph which