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G35. Genetic Exchange in Salmonella, N. D. Zinder and J. Lederberg, Department of Genetics, University of Wisconsin, Madison, Wisconsin.

Salmonella typhimurium, when grown in the presence of weak phages, produces a filterable agent (FA) capable of transferring hereditary traits from one strain to another. Individual filtrates may transduce many different traits, but no more than one to a single bacterium. The activities of a filtrate parallel the characteristics of the donor cells. Nutritional, fermentative, drug-resistance and antigenic characters have been transduced. FA is resistant to such bacterial disinfectants as chloroform, toluene and alcohol, and to several enzymes including pancreatin, trypsin, ribonuclease and desoxyribonuclease. The size of the FA particle, as determined by filtration through gradocol membranes, is about 0.1 micron. Adsorption of FA is rapid and, among various serotypes tested, is correlated with the presence of somatic antigen XII. Some inter-type transfers have been observed. For example, the i flagellar antigen from S. typhimurium has been transduced to S. typhi to give a new serotype: IX, XII; i,--. Genetic transduction in Salmonella is compared and contrasted with "type transformation" in Hemophilus and the pneumococcus and with sexual recombination in Escherichia coli.

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