

Conjugation

I. Bacterial Genetics

Lederberg and Tatum

What was known, what they thought, what it was

Donor (male), recipient (female), pilus, transconjugate

II. Mechanism of Plasmid transfer

Conjugative vs Mobilizable

Tra genes

Dtr (DNA transfer & replication)

Mpf (Mating-pair formation)

oriT vs oriV, relaxase, primase, peelaway single strand transferred, replication

Regulation of transfer, FinP (antisense RNA to traJ), FinO stabilizes FinP

Mobilizable plasmids have mob genes which are tra-"like" hitch-hikers

III. Chromosomal Transfer (Bacterial Sex)

Insertion elements

Formation of Recombinant chromosomes

Interspecies mating and barriers to overcome between species

F vs F' vs Hfr

IV. Experiments using conjugation

Testing for conjugational recombination in an Hfr strain

Donated material must have selectable marker

Recipient material should have selectable marker

Filters, growth phases, selection, controls

Gene mapping using conjugation

Gradient of transfer

Time of entry

Complementation using F's

V. Other mechanisms of plasmid transfer

Chemical

Electroporation

VI. Other systems

Gram positive bacteria

Pheromones