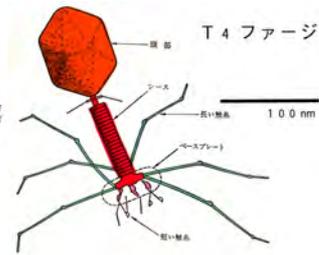


T4ファージの形成過程

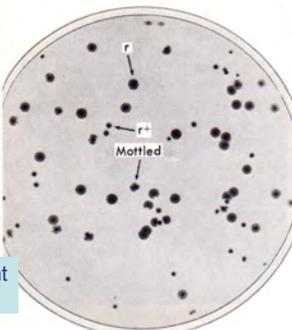


T2 phage

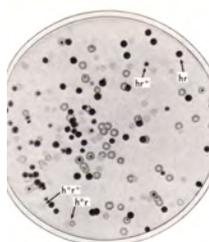
原因は分からないが、プラークの形をかえる変異を得ることが容易にできた

T2 r : rapid-lysis mutant
T2 r⁺:wild-type

11. Photograph of phage T2 plaques on a lawn of *E. coli* bacteria

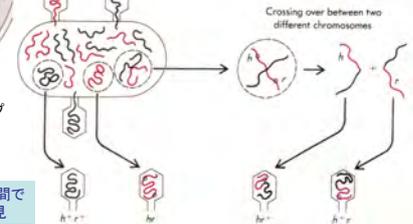


T2 mutant phage



13. Phage recombination in cells infected with two different strains of phage T2

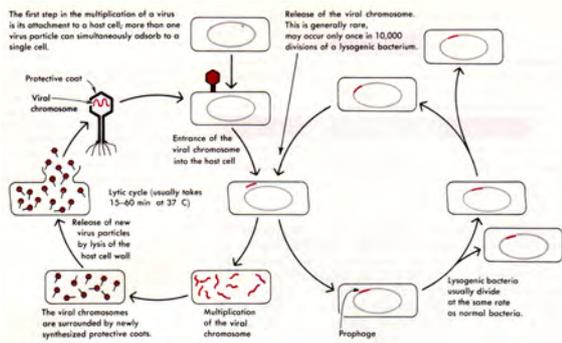
T2h:野生型T2が吸着できない大腸菌B/2に感染できる変異株
T2 r : rapid-lysis 変異株



大腸菌B株とB/2株の混合菌でプラークを作らせることで、h⁺r⁺、hr、h⁺r⁺を区別

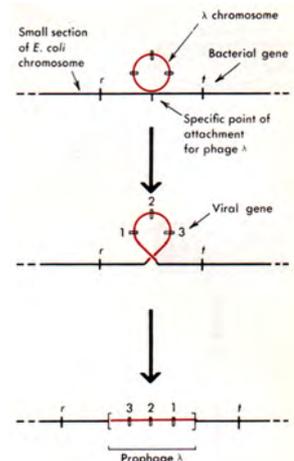
1945年: 変異株ファージ間での遺伝的組み換えの発見

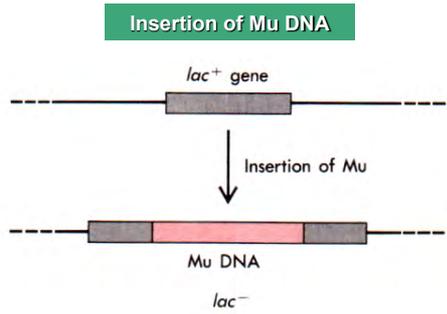
29. The life cycle of a lysogenic bacterial virus



溶原化ファージ⇌λファージ⇌プロファージ

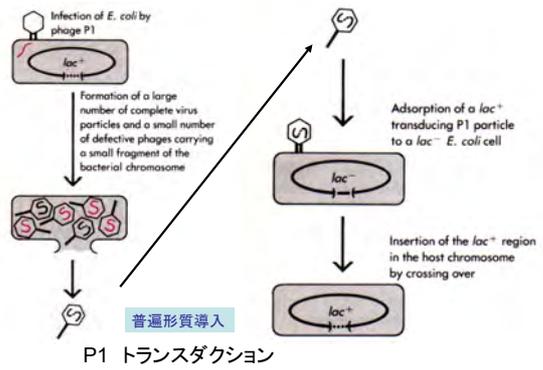
30. Insertion of the chromosome of phage λ into *E. coli* chromosome



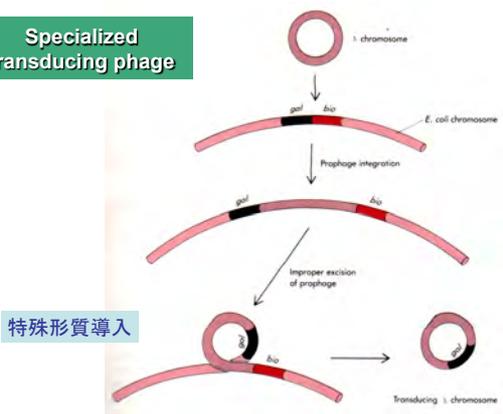


Muはλファージと異なり、挿入が起こる場所はランダムである

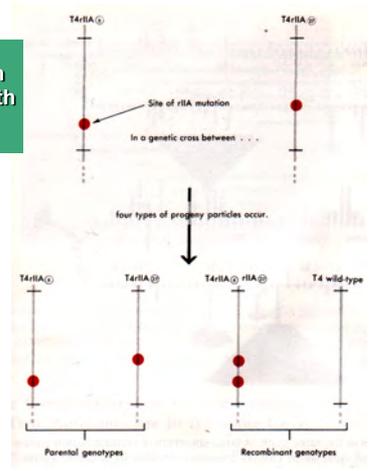
Transduction, the passive transfer of genetic material from one bacterium to another by means of carrier phage particles



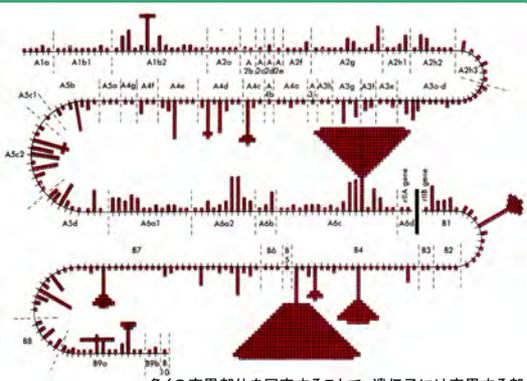
Specialized transducing phage



The demonstration of crossing over with in the gene

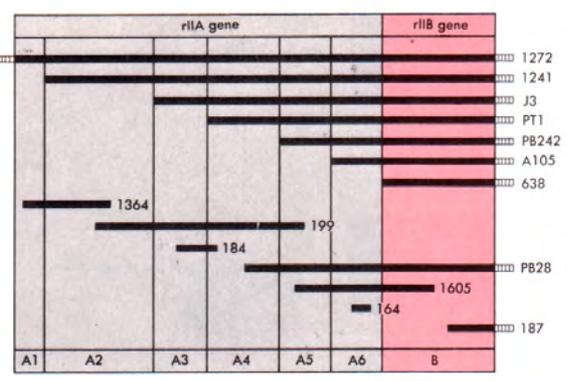


The genetic map of the rIIA and rIIB genes of phage T4



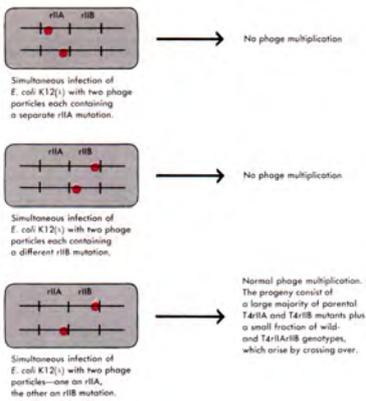
S. Benzer, PNAS, (1961) 多くの変異部位を同定することで、遺伝子には変異する部位がたくさんありそれが線状に配列していることが分かった。

Deletion mutations with in the rII region of T4



The *rII* region consists of two distinct genes that can complement each other during simultaneous infection

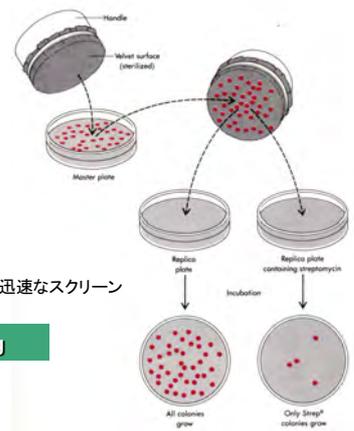
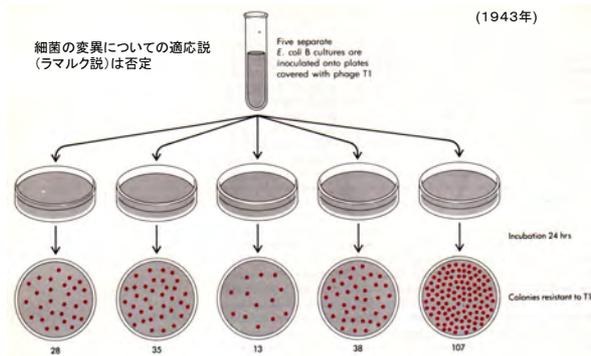
相補性検定
シストランス検定
シストロン



The Genetic Systems Provided by *E. coli*

Molecular Biology of the Gene

1. Fluctuation analysis of bacterial resistance to phage



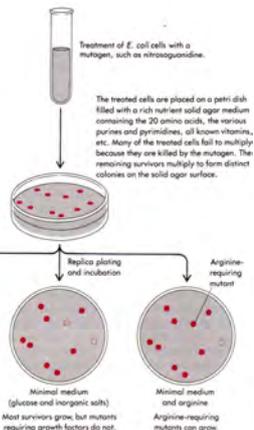
2. Replica plating

3. Isolation of mutant *E. coli* cells with a specific growth factor requirement

必須代謝物合成能に影響を与える変異体の分離

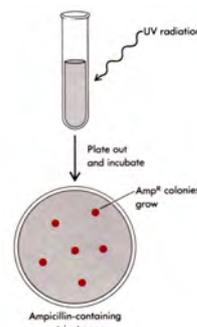
栄養要求株 (auxotroph)
原栄養株 (prototroph)

(1944年)



4. Enriching mutants I

direct selection



counterselection

