July 28, 1946. Status: sex in bacteria.

1. Occurrence of prototrophs
2. Not transformation via medium.
3. BM × PTR; BMR × PT. indications of linkage and haploid inheritance . .
4. Parity of $B^-$ in B⌀C × PT, B⌀C × TLB,
5. Parity of other recotypes compared to prototroph in some cases.
6. Linkage, clones, + selection as bases for variance.

There are slight indications of linkages which interfere with the random distribution of types:

$R_{T-1}$ to P or (T)

B to ⌀ or C

B to L.

Even a simple system will interfere with the occurrence of certain types drastically. More quant. data is needed + this depends on increasing rate considerably over spont. mutation rate so that single gene transfers can be studied effectively. Use, e.g. TLB, $R_1$ × B⌀C $R_2$.

Parity of $B^-$ compared to $B^+$ in $B\phi C \times TP$.

| $B^-$ | $B^+$ |
|---|---|
| $\phi^-$ | $\phi^+$ |
| $C^-$ | $C^+$ |
| $T^+$ | $T^-$ |
| $P^+$ | $P^-$ |

$B^+$ → $\phi^+ C^+ T^+ P^+$ ; $B^-$ → $\phi^- C^- T^- P^-$

$B^+$ linked with $\phi^+ C^+$ or ~~or B linked with~~ yet $B^- P$ obtained.

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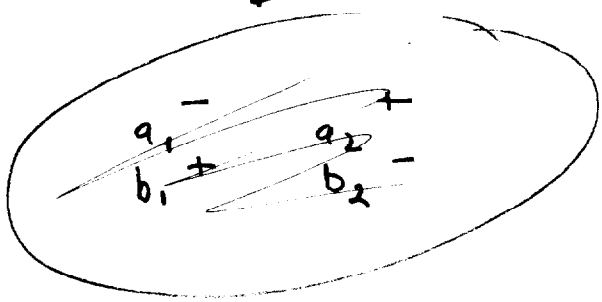
$B^- M^- R \rightarrow ++R$.

| $R_R$ | $R_S$ |
|---|---|
| $B^-$ ← | $B^+$ |
| $M^-$ ← | $M^+$ |
| $P^+$ | $P^-$ |
| $T^+$ | $T^-$ |

$R^+$ → $B^+ M^+ P^+ T^+$ ; — — — —

$R^+$ linked with $P^+$ or $T^+$




| | |
|---|---|
| $a_1^-$ | $a_1^+$ |
| $a_2^-$ | $a_2^+$ |
| $b_1^+$ | $b_1^-$ |
| $b_2^+$ | $b_2^-$ |

| | | |
|---|---|---|
| $a_1$ to $a_2$. | $< a_1^-$<br>$< a_1^- b_1^-$ | pr. ok. |
| $a_1$ to $b_1$ | $> a_1^-$<br>$< pr.$ | |
| $L^- \phi$<br>$L^- C$ | $> a_1^- b_2^-$<br>$< a_1^- b_1^-$ | |

L linked to B, $\phi$, or C.

$< LB, L\phi, LC.$

(BL key race)

($L^-$ linked to $B^+$) > ($B^+$ linked to $L^-$)

($B^-$ linked to $L^+$)

P - 5 recomb.

(R) linked with P or (T.)

B linked with ϕ or C

B linked to L ???

(BP) should be rare

$B^- \phi^+$ should be rare.

try Y40 (B14R) × TL.

→ × LB1

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For wild, require no linkages.

| | |
|---|---|
| 0 | 1 |
| B1 | 7 |
| T | 8 |
| L | 20 |
| B | 11 |
| ϕ | 4 |
| C | 5 |

| | |
|---|---|
| B1 | − |
| T | − |
| L | − |
| B | + |
| ϕ | + |
| C | + |

$B_1^+$

L

There will be a disproportionate excess of $\underline{\underline{x^-}}$ if $x^-$ is linked to any of the existing + alleles. If rates can be established >> sp or a non linked phage resistance established, the recombination frequencies of single genes can be studied. If $x^-$ is linked to $y^-$ there will be a deficiency of $x^-$ types. and of $x^- z^-$ recotypes.