Segregation of Various Resistance

Prepare minicola P21. Plate P22 — also surface.

 Avoid fetal contamination to avoid contamination; also on 15 directly.

<table>
<thead>
<tr>
<th>T1</th>
<th>T3</th>
<th>T5</th>
<th>T7</th>
<th>Lack A - H -</th>
<th>x T1B, Lack -</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>R</td>
<td>R</td>
<td>S</td>
<td>T1, T3, T5</td>
<td>T7</td>
</tr>
<tr>
<td>R</td>
<td>R</td>
<td>R</td>
<td>S</td>
<td>R S S S S</td>
<td>2</td>
</tr>
<tr>
<td>R</td>
<td>R</td>
<td>R</td>
<td>S</td>
<td>R S R S S</td>
<td>4</td>
</tr>
<tr>
<td>R</td>
<td>R</td>
<td>R</td>
<td>S</td>
<td>S R R S S</td>
<td>3</td>
</tr>
</tbody>
</table>

A1 and B1 are confirmed should be:

\[ S \quad S \quad S \quad S \quad - \]
\[ R \quad R \quad R \quad S \quad - \]
\[ R \quad R \quad R \quad R \quad + \]
\[ R \quad R \quad R \quad S \quad - \]
\[ R \quad R \quad S \quad S \quad - \]

and there is only one possible discrepancy! A5.

otherwise: 10A/14.

\[ R \quad R \quad S \quad - \]
\[ R \quad R \quad S \quad - \]
\[ S \quad S \quad S \quad - \]
\[ ? \quad A \quad ? \quad S \quad - \]
\[ S \quad S \quad S \quad - \]
From same plate as 357:

<table>
<thead>
<tr>
<th>T1</th>
<th>T3</th>
<th>T5</th>
<th>T7</th>
<th>Lac</th>
<th>T1</th>
<th>T3</th>
<th>T5</th>
<th>T7</th>
<th>Lac</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>R</td>
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X

<table>
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<th>S</th>
<th>S</th>
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<th>S</th>
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<tbody>
<tr>
<td>R</td>
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</tr>
<tr>
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<td>R</td>
<td></td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>S</td>
</tr>
</tbody>
</table>

| R? | R  | R  | R  |      | R  | R  | R  | R  |

22R | 40. all $T_1^R$ use $T_3^R T_5^R$

$T_1^R$ line $= T_1^R$ line + $T_3^R$ line $= T_3^R$ line +

21 11 18 0
strains used to purify:

Y63  YS3/Muc  from A.
Y64  YS3/1  from A.
Y66  Y10/1/7M  from C.
Y67  Y53/1  from E
Y68  Y53/7  from E

After Y-platings, restagin 12/10.

<table>
<thead>
<tr>
<th></th>
<th>Ti</th>
<th>T3</th>
<th>T5</th>
<th>T7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y63</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>S</td>
</tr>
<tr>
<td>Y58</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Y59</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>S</td>
</tr>
<tr>
<td>Y61</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>S</td>
</tr>
<tr>
<td>Y62</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>

Prepares plates for:

58-161/3
58-161/7

also # T4, T6 R. probably contaminant.
\[ B = \frac{5D}{212} \]

and better information.
Shown cultures, washed, mixed, and plated into various media.

<table>
<thead>
<tr>
<th>Turbidity</th>
<th>Medium</th>
<th>Compts. Mean m.d.</th>
<th>Excess</th>
<th>R</th>
<th>pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>±</td>
<td>0</td>
<td>217</td>
<td>193</td>
<td>212</td>
<td>± 34</td>
</tr>
<tr>
<td>±</td>
<td>0</td>
<td>179</td>
<td>234</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>++</td>
<td>B</td>
<td>760</td>
<td>548</td>
<td>2.58</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>B</td>
<td>100</td>
<td>50?</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>±</td>
<td>L</td>
<td>421</td>
<td>389</td>
<td>177</td>
<td>0.85</td>
</tr>
<tr>
<td>±</td>
<td>T</td>
<td>304</td>
<td>350</td>
<td>148</td>
<td>0.65</td>
</tr>
<tr>
<td>++</td>
<td>N.</td>
<td>0§§§</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Does not seem to be so limited that growth should be inhibited!!

Repeat in added peptone.

| + | B, B | 764. | 0. |
|   | T, M | 0    | -  |
|   | M, B | 0    | -  |
| ++ | B, T | 0    | -  |
| + | N, M | 0    | -  |
|   | M, T | 0    | -  |
|   | B    | 0    | -  |
|   | T    | 0    | -  |
Recursion controls

\[ Y_{53} \ni: T_{1}, 0 \quad 0 \quad ++ \\
L_{1}, 12 \quad 2 \quad + \\
\]

\[ Y_{40} \quad M \quad 0 \quad ++ \\
L_{2}, 0 \quad + \\
\]

Conclusions:

Plate count determinations may be in error due to variable increase in cell density. B seems to be a limiting factor in synaptosomes. (Try it in a B⁺ x b B⁺.)

B: independent, or linked to: B⁺; M⁺

B: linked to M.

L: independent?

T: independent or linked to L.

\[ \cdots \text{B⁻ should be linked to L} \]

and in this case, one may find that the B⁻ aspected.

\[ \text{B⁻ compared to B⁺.} \]

Similarly to B₁⁻.
5/20 B-

Exp. 10.

\[
\begin{align*}
5:15:10 & \\
\chi^2 = \frac{25}{10} + \frac{25}{10} & = 5 \\
\rho = .025 & \quad \text{Need more data!}
\end{align*}
\]
Tech clones on $\alpha$, $\beta$, $\beta'$, $T_l$ medium appropriately +
segregate together various single mutants for lys + fun. tests.

<table>
<thead>
<tr>
<th>46/48 $B$, -</th>
<th>$T^{R Lac}$ - $T^{R Lac}$ - $T^{s Lac}$ - $T^{s Lac}$ -</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>21 30 $L$, -</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3/20 $L$, - $B$, -</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4/78 $L$, $Z^2$ $T$, -</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
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</tr>
</tbody>
</table>

*Prototrophs: See 357.

Prototrophs:

Ser 1:

<table>
<thead>
<tr>
<th>4</th>
<th>4</th>
<th>6</th>
<th>0</th>
</tr>
</thead>
</table>

Ser 2:

<table>
<thead>
<tr>
<th>205</th>
<th>15</th>
<th>0</th>
</tr>
</thead>
</table>

Summary:

<table>
<thead>
<tr>
<th>51</th>
<th>23</th>
<th>11</th>
<th>4</th>
</tr>
</thead>
</table>

10, - mega
deficient in $T_i$ (rec + class [parent type])

Cf. 357:

<table>
<thead>
<tr>
<th>28</th>
<th>21</th>
<th>28</th>
<th>0</th>
</tr>
</thead>
</table>

Cf. 357:

<table>
<thead>
<tr>
<th>70</th>
<th>44</th>
<th>31</th>
<th>4</th>
</tr>
</thead>
</table>

Cf. 357:

<table>
<thead>
<tr>
<th>55</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
</table>
Lugac monilum P.Y.

Plate Y55 (lactose - from Y53+Y46) into lactose - minimal.

10" colonies too high
Graduate 58-161 92.4. 20000 brood No V3. Quad 10000

20-20000 colonies examined.
No typical gel-colonies. Several sectorial colonies + some jelly
mucoid gel - were seen.

Student A Lactose

No mutants.

1 mucoid form.
Y53 x Y54. grow separately. Pick prototipes.

1. fermentus.
2-16 vari. fermentus.

quit to Tuffino.
November 24, 1946.

(Mayouth) feel photographs.

38 $T_1$, $\text{Lac}^-$
16 $T_1$, $\text{Lac}^+$

$\text{No}(T_1$, $\text{Lac}^+$
$\{T_1$, $\text{Lac}^+$.
26 NOV 1946

a) Synthesis medium preparation (TB, BM):

much more turbid; no prototrophs. See. on surface. ca. 10^8...

b) YB. 10^-7 on surface. ammonia in dup.,

suggests YB better than synth. However, must be repeated.
11/24/46.

440 x 453 plate 3 growth in / 12.5

Dilute H2O, test on $B_1^+, B_1^-$. 

33/39 = $B_1^-$

$6/39$ = $B_1^+ = 15\%$

Test $B_1^-$ for l-ac, $T_1$.

12/3/46: Tests:

<table>
<thead>
<tr>
<th>$T_1^A$</th>
<th>$T_1^B$</th>
<th>$T_1^C$</th>
<th>lact</th>
<th>$T_1^D$</th>
<th>lact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>-</td>
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<tr>
<td>4</td>
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<tr>
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<td>8</td>
<td>8</td>
<td>0</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>
26 Nov. 1946

a) BT

\[
\begin{align*}
\text{BT} & : 0.0 \quad 0 \quad 10^2 \quad \text{turbid} \\
\text{BL} & : B \quad 0 \quad \#0 \\
\text{TL} & : T \quad 0 \quad 10 \quad ? \\
\end{align*}
\]

\[
\begin{align*}
\text{BTTL} \times \text{TL} & : 0 \quad 0 \\
\text{BTTL} \times \text{BT} & : 0 \quad 10^2 \quad \text{turbid} \\
\end{align*}
\]

Plague was probably a transuranic-fبيب-

b) BTB

\[
\begin{align*}
\text{BT} & : 0.0 \quad B \quad ? \quad \text{turbid} \\
\text{BL} & : B \quad 0 \quad 0 \\
\text{TL} & : T \quad 0 \quad 10 \quad ? \\
\end{align*}
\]

\[
\begin{align*}
\text{BTTL} \times \text{TL} & : 0 \\
\text{BTTL} \times \text{BT} & : 0 \quad 10^2 \quad ? \\
\end{align*}
\]

Plague was probably a transuranic-fبيب-
December 4, 1946.

YS3 x Y0 in YB. (5 growth) Plate in various test. Compare c

\[ N A \frac{?}{N B} \left( 0. \left( 10^2 \right) \right) \text{ yea } y_0. \]

dn grown in that suit's hand.

YB:

- B
- B
- B
- B
- T
- T

\( \text{most} \text{ sterile do not resemble E. coli.} \)

 beaten's blood serum controls.

\[ \begin{array}{c}
\text{BM} \\
\text{LM} \\
\text{TM} \\
\end{array} \]

\[ \text{Ti}^{+} + \text{TL} \]

\[ \text{BM} \left( \text{Ti}^{+} + \text{TL} \right) \]

\[ \text{BM} \left( \text{Ti}^{+} + \text{TL} \right) \]

B cells to types which are \( B_1 + M^+ \), i.e. emergence resistant and study puzzle.
December 5, 1946.

10^{-3}/10^{3} = 10^{-6}

PB. a) Plate V40, V53 mB, plate. Select colonies and plate into monkey kidney tissue culture in BMTL. Any colonies appearing may be either BM or the complementing recombinant. Test for bearing only T should be tested thoroughly. 

P5. 

\[ \frac{B_{1}}{B_{2}}, B_{2}^{+} \text{ T}^{-}, T^{+} \]

complementary type is B - T and may have any + B - T configuration, particularly + T.

b). Assuming that M is relatively far from L or T, so that (as Y-stand) 2 double exchanges can be expected to occur in this region; plate out for exchange-exchange (e.g. L - M - L or L - M - T [B, B, L; B, T]) and examine for heterogeneity in L or T (particularly the former).

PB: L: same as above + x. hybrid below (37)
A. BB x TL.
B. BB x TL
C. BB x TL

A solution of the problem:

Ref: 12/19/16.

No colonies.

(cause?)

Detailed analysis:

No colonies.
December 9, 1946.

Y40xy53: into BB, L (A) and BB, T (B)

4 q. like 375
12/14/46.

Y40x453. into BTL.

ca. 10 colonies. Latter inhibited by eubiotic growth.

Cultures ca. 8 hours.

( too old???)
December 9, 1946.

Y53 × 58-6315. (Biotin - "ß-alamine?" + cystine, i. e.)

Some very high frequency \((5 \times 10^3 / 10^3)\) of prototrophs; ca. same number of colonies on a ß-alamine plate. To Earl

Feed prototrophs on Ti.w reacted plates. Earl - found \(\Phi\) - ... + virus indicating usability of \(\Phi\). Cyst. ¥.
Y43 x Y53

T- + L-

10/5 - 10/46.

Plate m T, L resp. with clo.

Und more data

5/20.

T1 Rlac- T1 Rlac+ T3 lac- T3 lac+

3 0 1 1

2 2

L:


1 2

(11)

4/96.

T-

9/46

(25)


4/46.

T1 Rlac-

T1 Rlac-

T- all att.

5 2 1 1

T-

T- T1 Rlac-

d T- T3 lac+

3/30.

Both T1 Rlac- 2 0

36y.

5/56.

n. f. (2) ½

½

5/18.

T1 Rlac+ (2)

CA 10% L - OK.

CA 10% T - OK.
10 December 1946.

8 Dec. plate colonies of (453 x 440) from E. agae, into BTLM agar.

Yellow plates have 1-300 colonies, e. many non-pigmenting; otherwise.

12/10/46. Pick colonies 1) to BTLM; 15TM small tubes 10 tubes x 8 plates.

b) to BTLM large tubes (for detection plates)

Tests: (only BTLM + BTM- so far recorded).

<table>
<thead>
<tr>
<th>Plate no.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

BTM- cases:
- 378-1
  - 2
  - 3
- 4, 5
- 6, 7.

b) Pick colonies to E4/6 culture (1 plate): 15+ (8), 4- (9)
December 13, 1946. Nota following as usual.

A. 1. 753 x 740. (Shown)

B. 2. 764 x 58-161

C. 3. 765 x 58-161. (7101/7 x 58-161).

D. 47.

E. 5. 767 x 740

F. 8. 753 x 58-161 x 768.

G. 9. 767 x 768.

most moms to large

A: Yield rather low! B: too turbid. C: OK but less than

B: also too heavy. V: low yield.

C: (O: none B: ca 20 E very wide zone of stimulation)

D. 0 when x: x: monoflora.

E. ca 10^2-10^3 colonies. Not very much like coli, but x: x: on EM13 Bac

F. 0.
December 16, 1946.

12/16. Use Bt/BMTL plates of Exp. 378. Pick colonies from petri dish to EMB lact plates to eliminate lact- which from 378 are probably Bt-.

Study sub-lact- colonies on EMB lact to obtain pure cultures (avoid putrefaction of hypothalamus). Tent. on:

A. 1/15 +

B. non-vec

C. 8/8 -

D. 1/1 -

E. 17/17 -

F. 8/8 -

G. + +

H. 4/16 -

J. 1/1 -

K. 4/6 -

L. -

M. 1/5 -

378-8

378-9.

380.
January 5, 1947

1 ml. bacterial broths cultures w/ YB agar
+++ = unif. turbidity.

Logarithm

1:10^3 A B C D
1:10^2
1:10^1

Crystal violet: 1:10^3 → 20. 20. ca 10^3 cols.

Logaritmic is N.I. under these conditions
Survival & crystal violet is OK in range 10^-2 to 10^-3.
This should be extended. Observed cultures?
January 9, 1947.

Graduate in flask, vaporized tropic. Do 1 Y-9.1 ml. Also plate on EMB. 0.01 ml initial dilution.

0  S / 100 s. ps.  
15 sec  +++
30  +++
60  ca. x 10^3 10^5  5  3?
120  ca. x 10^3 10^5  4  4
300  0?/5 10^3  6

P10: Dilute 120 sec. 1:10^7 on EMB plates + spread.

P14: Pick colonies which seem to be non-papillate. Sample is not clean-cut because plates are crowded and entire population could not be screened. Estimate ca. 5-10 x 10^6 tentative to flush EMB for further test.

Pick 6 colonies to Y-9 plants which seem to be non-papillate. 1 is merid.