

3/30/49.

100 mosaics of H168 on lactose structural test on Lac EMB. If possible, one + and one - obtained from each. and tested on other sugars.

Almost all were Xyl - Mtl - and Gal = Lac. exceptions noted.

1-20. A ^{Lac} 20- } 2- unpaired = A
B 18+ 18+

#15A is Xyl +/- ; Mtl +/- . Streak out to purify.
is Mtl +/-

21-40. A 20- } 1 unpaired = A
B 19+ 19+

2A is Xyl +/- Mtl +/- ? Mtl +!

9A; 9B are Xyl + Mtl + (Conclation?)

41-50 A 14- } All X -
B 14+ } M -
A 3-
B 3+ 3+

61-80 A 16- } 4 unpaired.
B 20- 20-
16+ 16+

81-100 A 20- } All X -
B 20+ 20+ } 1A Mtl + Xyl - TS^R

Hold all indicated exceptions.

All above tested on TS, but all appeared resistant. (probably n.s. 4).

81-100 Retested on TS (on Ara EMB).

A. (lac-) 15R 5S
B 86, 89, 90, 92, 94 (lac+)
B: All ²⁰ showed an S reaction (Vic^A type)
84 and 85 appeared to be mixed. Streak these out.

[parentals in excess]

2
3
4
5
6
7
8
9
10
11

M168 Xyl selections.

5/2/49.

Mosaics picked from lac selection plates. Strained out on Xyl EMB. 100 streaked. Separable Xyl+/- in 27 tested first. 17 appeared pure- (replaid \bar{c} additional mosaics). 56 re-purified to separate a+ and -. 49 separated; 3 came pure+ (pair \bar{c} - corresponding to it). 6 still too crowded.

	Xyl- selection				Xyl+ selection			
	Xyl	lac	Gal	MH	X	L	S	MH
1	-	-	-	-	+	-	-	+
2	-	-	-	-	+	-	-	+
3	-	+	+	-	+	-	-	+
4	-	-	-	-	+	-	-	+
5	-	-	-	+	+	-	-	+
6	-	+	+	-	+	-	-	+
7	-	-	-	-	+	-	-	+
8	-	- (*)	- ✓	-	+	-	-	+
9	-	-	-	-	+	-	-	+
10	-	+	+	-	+	-	-	+
11	-	-	-	-	+	-	-	+
12	-	-	-	+	+	-	-	+
13	-	+	+	-	+	-	-	+
14	-	+	+	-	+	-	-	+
15	-	+	+	-	+	-	-	+
16	-	+	+	-	+	-	-	+
17	-	-	-	-	+	-	-	+
18	-	+	+	-	+	-	-	+
19	-	-	-	-	+	-	-	+
20	-	-	-	-	+	-	-	+
21	-	+	+	-	+	-	-	+
22	-	+	+	-	+	-	-	+
23	-	+	- ✓	-	+	-	-	+
24	-	+	+	-	+	-	-	+
25	-	+	+	-	+	-	-	+
26	-	+	+	-	+	-	-	+
27	-	+	+	-	+	-	-	+

lac: 12-15+.
almost all exceptional Xyl+ are lac+
Gal - lac almost completely linked
(2 c.o. / 54 tests)

tested on
our (take
from RMB Xyl);

33	56	88
38	59	89
39	62	92
48	64	96
53	66	
54	71	1-27
	80	p.502
	85	

	Xyl+				Xyl-			
	Xyl	Lac	Gal	MHC	Xyl	Lac	Gal	MHC
28	+	-	-	-	-	+	+	-
29	+	-	-	-	-	+	+	-
30	+	-	-	-	-	+	+	-
31	+	-	-	-	-	+	+	-
32	+	-	-	-	-	+	+	-
33	+	-	-	-	-	+	+	-
34	+	-	-	-	-	+	+	-
35	↓	-	-	-	↓	-	-	-
36	↓	-	-	-	↓	-	-	-
37	↓	-	-	-	↓	-	-	-
38	↓	-	-	-	↓	+	+	-
39	↓	-	-	-	↓	+	+	-
40	↓	-	-	-	↓	+	+	-
41	↓	-	-	-	↓	-	-	-
42	↓	-	-	-	↓	-	-	-
43	↓	-	-	-	↓	-	-	-
44	↓	-	-	-	↓	-	-	-
45	↓	-	-	-	↓	-	-	-
46	↓	-	-	-	↓	-	-	-
47	↓	-	-	-	↓	-	-	-
48	↓	-	-	-	↓	-	-	-
49	↓	-	-	-	↓	+	+	-
50	↓	-	-	-	↓	+	+	-
51	↓	-	-	-	↓	-	-	-
52	↓	-	-	-	↓	-	-	-
53	↓	-	-	-	↓	-	-	-
54	↓	-	-	-	↓	+	+	-
55	↓	-	-	-	↓	-	-	-

UOI

51

24	71
25	93
27	97
29	5 98
32	57 100
33	68 111
36	72 141
37	73 142
46	75 144
47	81 151
49	83 169
50	84 178
52	87

85-92

35

94

99

143

170

174

179

195

93-98

99

100

3

82

131

145

155

177

76

115

xyl+

xyl-

	xyl	lac	gal	MH		x	L	B	M
56	+	-	-	+		-	-	-	-
57							-	-	
58							+	+	
59							+	+	
60							+	+	
61							-	-	
62							-	-	
63							-	-	
64							+	+	
65							+	+	
66							+	+	
67							+	+	
68							+	+	
69							+	+	
70							+	+	
71							+	+	
72							-	-	
73							+	+	
74							+	+	
75							+	+	
76							+	+	
77							+	+	
78							+	+	
79							+	+	
80							+	+	
81							+	+	
82							+	+	
83							+	+	
84							+	+	
85	+	-	-	+		-	-	-	-
86	+	-	-	+		-	-	-	-
87	+	-	-	+		-	-	-	-
88	+	-	-	+		-	-	-	-
89	+	-	-	+		-	-	-	-
90	+	-	-	+		-	-	-	-
91	+	-	-	+		-	-	-	-
92	+	-	-	+		-	-	-	-
93	+	-	-	+		-	-	-	-
94							+	+	+
95							+	+	+
96							+	+	+
97							+	+	+
98							+	+	+
99	+	-	-	+		-	-	-	-
100	+	-	-	+		-	-	-	-

(...177)

4/5/49.

22, 23, 12, 5, 83 showed unusual combinations:

Retest:

#22: Lac#Gal- (Xyl#). Xyl#: 12 tested. 1 Lac-Gal-
 11 Lac#Gal#
 Xyl-: 24 tested 16 ##
 8 —

No reciprocals found. No other example of the unusual combination.

23: Lac# Gal- Xyl#: 9 tested 1 ##
 8 —
 Xyl-: 16 13 ##
 3 —

#5 12: Xyl-Mtl# Xyl- 1 Mtl#
 5 Mtl-
 Xyl# 6 Mtl#

#12 x5 Xyl-Mtl# Xyl # 10 Mtl# + 2 Mtl+ Xyl+
 Xyl- 4 Mtl- Sun: 6 Mtl-
 1 Mtl# 7 Mtl#
 2 mixed Mtl#,- : Mtl+ : Xyl+
 Mtl- : Xyl-

83 Xyl#Mtl-

No clear Xyl# could be found. Xyl- 20 Mtl-.

The streaked sectors from which these colonies were taken were reexamined to determine the prevalence of these unusual types, and the possible occurrence of the reciprocals.

- a. Reciprocals were not found at all.
- b. Recurrence of rare types was noted. (Total of 2/15 possibilities for Xyl-Mtl#).
 Therefore each mosaic colony does represent a limited sample. Size??

single

See page following 577

4/6/49.

58-161x W677 on EMS:

Lac, Xyl, M₁R, Mal.

Use .1 ml 4x mixture / plate

Lac B₁, use .05 ml or
dilution = .01 ml (D).

Cpunts:

Xyl EMS:

#	-
11	1
5	0
8	0
6	2
16	8
7	2
11	1
16	1
14	1
94	17

M₁R EMS:

#	-
0	54
3	27
2	17
0	14
1	18
—	—
6	130

Mal EMS

#	-
2	17
5	13
3	19
2	45
12	94

(sic)

Lac EMS

#	-
6	26
4	22
4	10
3	17
7	41
24	116

Kac EMS B₁

#	-
22	129
23	96
27	113
32	111
57	196
15	98
33	128
209	871

D:

9	26
21	41
12	31
10	27
16	21
68	146

Xyl " + " picked. * 9/23 were predominantly + in Xyl EMP.

	Xyl	MAL	Mal	Sac	Lac	
1	0	0	-	0	0	
2	+	+	-	-	-	
3	↓	0	+	+	+	
4		+	+	+	+	
5		+	+	+	+	
6		+	+	+	+	
7		+	+	+	+	
8		+	+	+	+	
9		+	+	+	+	
10		+	+	+	-	* ← + + - -
11		+	+	+	+	← + + - +
12		+	+	+	+	
13		+	+	+	+	
14		+	+	+	+	
15		+	+	+	+	
16		+	+	+	+	
17		+	↓	+	↓	
18		+	-	+	-	
19		+	+	+	+	
20		+	+	+	+	
21		+	+	+	+	
22		+	+	+	+	
23		+	+	+	↓	

* check as (-1)

Mal EMS

+ picked.

	Lac	Xyl	MH	Mal	Gal
1	+	-	-	+	-
2	-	-	-	+	-
3	+	+	+	+	+
4	-	-	-	+	-
5	-	-	-	+	-
6	-	-	-	+	-
7	-	+	+	+	-
8	-	+	-	+	-
9	-	+	-	+	-
10	-	-	-	+	-
11	-	-	-	+	-
12	-	-	-	+	-

MH EMS

+ picked.

1	-	+	+	-
2	-	+	+	-
3	-	+	+	+
4	-	+	+	+
5	-	-	+	-
6	+	+	+	-

Lac - from EMS

Lac - :

	Lac	Xyl	MH	Mal	Sac		Xyl	MH	Mal	Sac
1	-	-	-	-	-	24	-	-	-	-
2	-	-	-	-	-		-	-	-	-
3	-	-	-	-	-		-	-	-	-
4	-	-	-	-	-		-	-	-	-
5	-	-	-	-	-		-	-	-	-
6	-	+	+	-	-	26	-	-	-	-
7	-	+	-	-	-		-	-	-	-
8	-	+	-	-	-		-	-	-	-
9	-	-	-	-	-		-	-	-	-
10	-	-	-	-	-		-	-	-	-
11	-	-	-	-	-	32	-	-	-	-
12	-	-	-	-	-		-	-	-	-
13	-	-	-	-	-		-	-	-	-
14	-	-	-	-	-		-	-	-	-
15	-	+	+	+	+		-	-	-	-
16	-	-	-	-	-	36	-	-	-	-
17	-	-	-	-	-		-	-	-	-
18	-	-	-	-	-		-	-	-	-
19	-	-	-	-	-		-	-	-	-
20	-	+	+	+	+	40	-	-	-	-

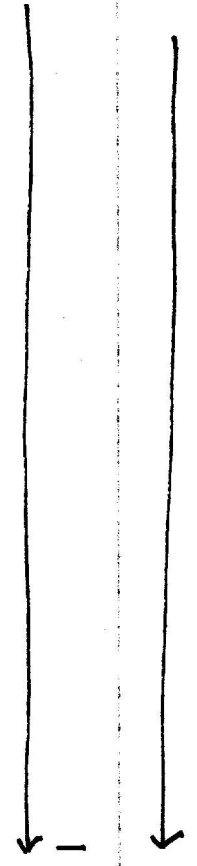
lec - Gal relationships.

Amarg	28 Lec +,	9 Gal + ;	21 Gal -					
Amarg	37 Lec -,	2 Gal +	35 Gal -					

Gal relationships.

	Lac B ₁ Verified lact.				26-50	Lac B ₁ Verified lact.			
	Gal	Mal	Xgl	MFL		Gal	Mal	Xgl	MFL
1	-	-	-	-		-	-	-	-
2	-	-	-	-		+	+	+	+
3	-	-	-	-		+	+	+	+
4	-	-	-	-		-	-	-	-
5	-	-	-	-		-	-	-	-
6	-	-	-	-		-	-	-	-
7	-	-	-	-		-	-	-	-
8	-	-	-	-		-	-	-	-
9	-	-	-	-		-	-	-	-
10	+	+	+	+		-	-	-	-
11	-	-	-	-		-	-	-	-
12	-	-	-	-		-	-	-	-
13	-	-	-	-		-	-	-	-
14	-	-	-	-		-	-	-	-
15	-	-	-	-		-	-	-	-
16	-	-	-	-		-	-	-	-
17	-	-	-	-		-	-	-	-
18	-	-	-	-		-	-	-	-
19	-	-	-	-		-	-	-	-
20	-	+	+	+		-	-	-	-
21	-	-	-	-		-	-	-	-
22	-	-	-	-		-	-	-	-
23	-	-	-	-		-	-	-	-
24	-	-	-	-		-	-	-	-
25	-	-	-	-		-	-	-	-

Checked



LaCB, Verif. Lac+

	Gal	Mal	Xyl	MFL	76-100	Gal	Mal	Xyl	MFL
51	-	-	-	-		# +	+	-	-
52	-	-	-	-		+	+	-	-
56	-	-	-	-			+	-	-
	-	-	-	-			-	-	-
	+	-	+	+			-	-	-
62	-	+	+	-			-	-	-
63	-	+	-	-			-	-	-
	-	-	-	-			+	-	-
	-	*	-	-			-	-	-
	-	-	-	-			-	-	-
72	-	-	-	-			-	-	-
72	-	-	-	-			+	-	-
73	+	-	+	+			+	-	-
74	+	-	-	-			-	-	-
75	-	-	-	-			-	-	-

Recheck

all app. Gal+
w/c. #97.
check again. ✓

Lac EMS B₁ Verif. Lact

126-150 all Lact

	Lac	Xyl	Mtl	Mal	Gal		Xyl	Mtl	Mal	Gal
101	+	-	-	-	+		-	-	-	-
2				-	+			-		
3				-	+			-		
4				+	+			-		
5				-	+			-		
6				-	+			-		
7				+	+			-		
8				-	+			+		
9					+			+		
10					+					
11					+					
12					+					
13					+					
14					+				+	
15					+				-	
16					-				-	
17					+				-	
18					+				-	
19					+				-	
20					+				-	
21					+				-	
22					+				-	
23					+				-	
24					+				-	
25					+				-	

Gal difficult to score.
probably interacting with B₁ -

Lac - from EKSB, Lac.

Lac verified

	Xyl	Mtl	Mal	Gal		Xyl	Mtl	Mal	Gal
1	-	-	-	-	21	-	-	-	+
2	-	-	↓	↓		-	↓	↓	-
3	-	-	↓	↓		-	↓	↓	↓
4	-	-	↓	↓		-	↓	↓	↓
5	-	-	↓	↓		-	↓	↓	↓
6	-	-	↓	↓	26	-	↓	↓	↓
7	-	-	↓	↓		-	↓	↓	↓
8	-	-	+	+		+	↓	↓	↓
9	-	-	+	+		-	↓	↓	↓
10	+	+	-	-		-	↓	+	↓
11	-	-	↓	↓	31	-	↓	-	↓
12	-	-	↓	↓		+	↓	↓	↓
13	-	-	↓	↓		-	↓	↓	↓
14	-	-	↓	↓		-	↓	↓	↓
15	-	-	↓	↓		-	↓	↓	↓
16	-	-	↓	↓	36	-	↓	↓	↓
17	-	-	↓	↓	37	-	↓	↓	↓
18	-	-	↓	↓		-	↓	↓	↓
19	-	-	↓	↓		-	↓	↓	↓
20	-	-	↓	↓		-	↓	↓	↓

+ ?

Summary.
58-161 x 10677

505x

Xyl+ EMS:		MH	Mal	Gal	Lac				
18		+	+	+	+				
1		+	-	-	-				
1		-	+	-	-				
MH+ EMS.			Mal	Gal	Lac	Xyl			
2			-	+	-	+			
1			+	+	-	+			
1			+	-	-	+			
1			-	-	+	+			
1			-	+	-	-			
Mal+	EMS]	MH	[Mal]	Gal	Lac	Xyl			
7		-	Mal	-	-	+			
1		+	Mal	-	-	+			
2		-	+	-	-	+			
1		+	+	+	+	+			
1		-	+	-	+	-			
5		+	+	+	+	+			
15		-	-	-	+	+			
3		-	+	-	+	+			
2		-	+	+	+	+			
2		+	+	+	+	+			
Lac-(EMS)									
37		-	-	-	-	+			
1		+	-	-	-	+			
1		-	-	-	-	+			
2		+	+	+	+	+			
Lac+(D.)									
		-	-	-	+	-			

Gal unresolvable & B, -

Yellow single cell isolates

<p>39</p>	<p>79</p> <p>80</p>	<p>159 het</p> <p>160 - (or het)</p> <p>161 het</p> <p>162 het</p>		<p>49</p>	<p>99</p> <p>100</p>	<p>199 - all minus</p> <p>200 het</p> <p>201 het</p> <p>202 het</p>			<p>⋮</p>
<p><i>Belgian's symb.</i></p>									
<p>streak out on EMS Xyl, Lac X-18, 19, 19.5, 20. X-24, 25, 26.</p>			<p>Both all are + and - on both media. No mosaic noted. X26 is pure Xyl - Lac - ^{det. pure H2} Others are mixture; no mosaic noted.</p>						
<p>2-159-60-61-62. -199-200-201-202</p>			<p>160 is stated to be ^{probably het?} pure - ? but contains a few Xyl+ papillae. 199 is <u>pure</u> Xyl - Lac - ; others are mixed.</p>						
<p>Grow out on EMS to verify mosaicism.</p>									

Disinfection of λ .

4/6/49.

Inactivate Y87 stable uv7" (for Cohen's mutability program).

Pick 100 cols. and test for λ^- :

Retest:

5, 6, 7, 15, 18, 19

20, 24, 28, 32, 34

45, 52, 55, 60

61, 78, 79, ~~80~~, 100

} and renumber 1-20.

A.

4/9: All but 4 were either sterile or λ^+ on retest from cell suspensions.

Retest 1-4: all 4 λ^+ , p20^R λ^R

B

4/8. Inactivate W588 10"-25" on EMB Lac.

20 colonies on 25" plate tested for sensitivity to p20.

All appeared more or less sensitive to p20. When tested on W518, 10 were λ^+ . This is not, therefore, a reliable criterion for λ^- .

Check other colonies directly on W518.

20" series: 37 tested none p20^S.

15" " 40 " " "

10" " 40 " " " (1 or 2 doubtful. Recheck: λ^+)

Apparent sensitivity may be partly an attenuation phenomenon.

4/8/49

1+2: Dilute 518 and 811 10^{-7} . Plate .1 ml \bar{c}/s .1 ml p20 stock.

Control \bar{s} p20.

titrate p20 stock on 518.

Plate p20 on W811

Add .5 ml $\lambda 10^9$ to .5 ml W518 10^{-7} . Hold 10 mins. Then plate .2 ml \bar{c} p20 to ascertain $\lambda+$.

	-P20	+P20	+ λ
W518: 10^{-9}	24	0	0.
W811: 10^{-8}	19	31	

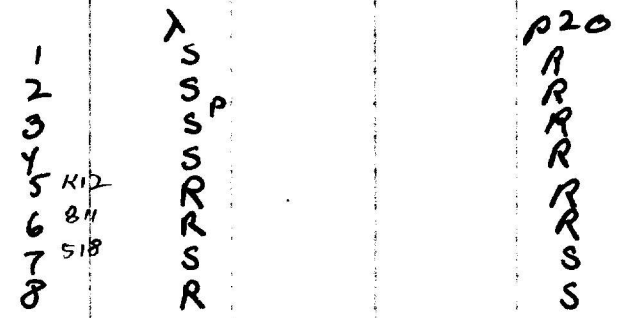
Titer p20: 10^{-7} : 253.
 Selection for P20: 10^{-1} \bar{c} W811: 173 plaques noted. Occur with a frequency ca. 10^{-6}

\therefore P20 can be used to select for $\lambda+$. But 10 mins. contact of 518 \bar{c} λ does not protect it.

Also, cross streak λ , p20 \bar{c} :

1-4 purified 518/20 isolates

- 5. K-12
- 6. W811
- 7. W518
- 8. B.



Note: B is resistant to P20. \bar{c} B/ types.

p20. 6 plaques picked from above plated \bar{c} W811: heavy plating from each, which therefore represent bonafide mutants (cf. p19).

Replate single plaques. 3x on W811; once on B. Grow out on B. Loopful from last plaque gave ca. same counts on W811, W518 + B. Essentially same plating efficiency is indicated.

p20L = p21.

4/9/49.

p21 = p20L described above as acting on $\lambda+$. [Not excluded that it may be a contaminant].

During titration of p20 on W518, a larger plaque with translucent halo was noted. This bred true when picked & plated.

Replate on W518; W811, to check identity and grow out on W518 p20 "r" buds true and is inactive on W811.

Material here for x (p20r x ~~W811~~ p21).

p20 tested \bar{c} B/ series.

B	S
B/1	S
B/1,5	S
B/2	S
B/3,4,7	S
B/6	R
B/89	S

Cross-reactions \bar{c} T6 noted.

T6 tested \bar{c} 518/20 4 tests all T6^R
W518 T6^S.

V₆^R is therefore related to resistance to p20, but not to λ .

	p19B	p21
B	S	S
B/1	S	S
B/1,5	S	S
B/2	S	S
B/3,4,7	S	S
B/6	S	R
B/19B	R	SP

\therefore p21 does not override genetic resistance

Lac = reversion.

514.

4/9/49.

96 papillae of H190 kept a week on EMS Lac tested as before.
None were Lac⁺. None contained Hgt⁺.

Run unsuccessful

4/12/49.

Test 811/x for maintenance of λ , after purification.

1. 811/r8 28 tests all $\lambda+$
2. 811/21 8 tests all $\lambda+$
3. 811/p9 24 tests all $\lambda+$
4. 811/T7 26 tests all $\lambda+$.

\therefore these phages do not displace λ .

[p14 should be tried as it appears to be lysogenic.]

4/11/49.

494-1 was Lac+ ... T₅^R // Lac- ... T₅^S $\widehat{+R}$
 -2 " " " " $\widehat{+R}$

-4 was indicated as pure S! (probably $\widehat{+S}$) but check.

On just checks of 3, 4, 9, 10 all R was indicated. Recheck.

N12: Sked out EMS colonies from 4, 5, 6, 7, 8, 12, 13 for further examination.

494:3	Lact: 10 ^R	Lac- 9S	1 ^R
494:8	Lact: 10 ^R	Lac- 10 ^S	$\widehat{+R}$
:9	Lact: 10 ^R	Lac- 10 ^S	$\widehat{+R}$
:10	Lact: 10 ^S	Lac- 4 ^R 6 ^S	$\widehat{+S}$!

Most are entirely segregated, e.g. Xyl brush tests:

4	abc - d ±
5	abcd -
6	abc -
7	abcd -
8	acd - b ±
12	abc -
13	abc - d +.

4d and 8b are only hopeful.

recheck these.

4d, 9, 8 recoverable, but throw out.

Partial analysis of 502 X.

89 in each group.

a)	Xgl-	Lac+	36	43%
		Gal+	35	42%
		Mtl+	2	2.5%
	Xgl+	Lac+	1	1
		Gal+	0	0
		Mtl-	1	1

Lac recombination is ca 40%.

possible intups.

Xgl
+

Gal

Lac

V₁

-

②

①

no c.o.

X-L-

%
40

①

X-L+

55

②

X+L-

3+

①.②

X+L+

<<1

Map Mal in Het + normal stocks

4/12/49

~~EMS Mal~~ Mal

-1 58-161 x W677
-2 W478 x W677.

A T(10) B T(B) C T(B.)

Pick colonies randomly to EMS Lac (E pyruv. supp.)
Recount from these plates to test segregation.

Summaries:

	Lact+	Lac-	Σ
① A	14	34	48
C	7	8	15
B	1	7	

→ also:

	Lact+	Lac-	Σ
	13	38	51
	7	7	14
	8	26	34
	<hr/>	<hr/>	<hr/>
	28	71	99

28% +

Plated on EMS Lac

15	11
12	15
10	14
8	10
17	20

② A	28	12	40
	29	10	39
	16	16	32
	31	19	50
	16	6	22
	30	31	61
	13	7	20
	33	20	53
	16	17	33
	27	10	37
	28	13	41

B 267 ✓ 161 428 62.4% +

B	69	40	109
	31	20	51
	37	21	58

137 81 218 62.8% +

C	46	67	113
	36	70	106

82 137 219 37.4% +

EMSB, plates badly faded, but pins presumed + and - to lac + Gal

EMB for correlation:

lac Gal :

1C:

30- 29- 1+

13+ 10- 3+

2C

19+ 13- 6+

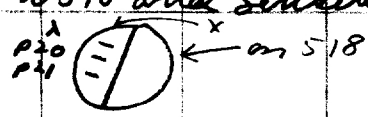
20- 20- 0+

Gal+ is simply infrequent and may not necessarily be linked directly to lac; maybe corresponding to Mal.

Mal difficult to score than mutual $\frac{E}{E} B, -$

4/12/49.

Test each of the following for λ on W518 and sensitivity to λ , p_{20} , p_{21}



1. 482-1 *canis* & grossly.
2. 451-1 " λ^R "
3. 451-6 " λ^R " ✓
4. 449-D1 " λ -prototroph"
5. W877 *canis* p14

1. ~~sensitive~~ sensitive to λ . Strongly lysogenic. ~~p20~~ p_{20}^s p_{21}^s
2. resistant to λ , p_{20}^s p_{21}^s not lysogenic Lact+
3. ? resistant to λ , p_{20}^s p_{21}^s not lysogenic. Lact+
resistance should be rechecked λ^R , λ^-
4. λ^s p_{20}^s p_{21}^s λ^- Confirmed as λ^- product of a cross.
5. λ^R p_{20}^s p_{21}^s (gross colony). Not tested for λ^+ as it *canis* p14.

Checks single colonies: 8 all λ^R p_{20}^s . Cf. 2 and 3, but here selected \bar{c} p14.

Check ~~451-1~~ 451-1 for avirulent agent resistant to λ .

Search for λ mutants

519a.

4/12/49.

1. Mix 451-6 as $\lambda^R \in$ W518 as λ^S . After 24h. co-growth in Y2, streak out to separate, + look for effect of λ -mutant possibly carried by 451-6. After first purification, test K12 / 21 isolates as T6 (20) and mix \in W518 (50) for transmission, test \rightarrow 20 lac- (W518 λ^-) recovered from mixed culture. Each one was λ^S . \therefore resistance is not transmitted extracellularly & is probably genetic. Keep 451-6 as W887

2. Displacement of λ : plate p14 \in K-12; W518. No lysis noted.
~~Tag: streak out ~~W518~~ K12~~ occasional pap. conc. noted. K12 did not show this.
Streak out p14 \in K-12. No evident reactions.

P21-Resistants. On the selection plate it was noticed that some of the colonies seemed to be somewhat weak fermenters. Some of these appeared to be T6^S. All K/21 noted were λ^+ . Crush of colony directly from picking needle may be a suitable method of testing λ on a large scale. Rescue λ^+ lac- from lytic margins, and test for resistance to λ , p21.

Tests on - from 43 ~~two~~ quadrants tested. As many - as could be conveniently picked for clarity, were pooled for each test to ensure a thorough sample. None were p21^R; 3 showed signs of a λ^S component.

Conclusion Resistance to p21 is not infective; only bacterial mutations were found; no λ mutants.

Filtrate p20s and p21.

4/13/49.

100 colonies of Y70 10" UV picked and deep tested for λ in W518.

1 apparent λ^- . Pick, streak out, and retest.

λ^+ λ^R p20^s [check on this].

	p20	λ
520-1	partial chaining	R
Y70	R R	R
W518	S	S
W811	R.	R

520-1 thus shows some deviation from Y70 from which it came.
(partial attenuation of λ ?)

4/21/49. 219 additional tested. All were λ^+ .

W-1: Gal- mutants
and λ disinfection attempts.

4/21/49.

20 plates W-1 on EM13 Gal for - mutants. Ca 300/plate = 6000.

4 Gal- mutants noted. Disregard slow. Purify and check for stability.

1
2
3
4

	W	Gal	Ara	Gal	Lac
1	494	+++	+++	-	-
2	495	+++	+++	-	-
3	496	+++	+++	-	-
4	497	+++	+++	-	-

stable!

1 papilla noted

A few doubtful lac papillae noted in (1) ✓ Lac+ found. Isolate W902. Gal+ Lac+

Disinfection: Test individual colonies by picking \bar{c} needle and keeping in a ribbon of W518.

24 tested from 7 and 20 see treatments.

2 uncertain λ - streak out on Mal EM13 to verify W-1 origin and recheck.

#1 Mal+, undoubtedly W518, pushed out by streak buds.

#2 Pure Mal-. On check was λ -. Recheck individual colonies for λ^s : All $\lambda^R \lambda^- p20^s$



A23: 420 tested from 7 second run. 22 possible λ - noted. Recover and recheck. Number 3-24

A24: 110 additional tests. 2 possible λ -. Streak out as 25-26.

4/24/49

R23: Test Isolates 3-24 and check responses.

	MalEMB scale for purity	/WS18	p20	λ	
3	[some Mal+]	Occ. λ plaq	S	R	
4	-	λ -	R	↓	
5	-	Occ. λ plaq	S		
6	-	λ -	S		
7	-	λ -	S		
8	-	λ -	S		
9	some Mal+	λ -	S		
10	-	λ -	S		
11	-	λ -	S		
12	-	λ +	S		
13	-	λ - diff	S		
14	-	λ -	S		
15	-	λ -	S		
16	-	λ -	S		
17	-	λ ±	R		
18	-	λ -	R		
19	-	λ -	R		
20	-	λ ±	R		
21	-	λ -	R S		
22	-	λ -	S		
23	-	λ -	S		
24	-	λ -	S		
W-1		λ +	R		R
WS18.		λ -	S		S

λ seems to have reappeared in some cultures.

Note #18, 19 which are p20^R λ -

25
26

R
S R
R

4/16. Returns:

	p ²⁰	λ	(λ)/518
W-518	S	S	-
W-898	S	R	-
W-899	R	R	-
W 900	S	R	-
W 901	S	R	-
-25	R	R	-
-26.	S	R	-

Cultures OK again

April 24, 1948.

P24. 4 individual colonies of W898 tested:

All are λ^R , $p20^S$. When cross-banded with W518, there is some mild apparent ^{discoloration} ~~lysis~~; no definite plaques or inhibition.

Keep and compare # 18, 19 as $\lambda - p20^R$;
22, 23 as $\lambda - p20^S$;

Recheck individual colonies from Mal EMB for λ . Do not check those already λ^+ . W518.

- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21

no lysis observed.

Note culture which was used as W518 4/25 is apparently unmutated as it tests $p20^R \lambda^R$ on suitably controlled plates. All expts. which this night effort have been attempted and present records are correct.

- # 2 telomers W898.
- 18 W900
- 19 W901
- 4 W899

c. Check out conjugation of W900 and W901, \pm W518 above, on Mal EMB to determine whether resistance to $p20$ is transmissible.