2/20/49.

Plate K-12 and W435 heavily together on EMB + NSA, to look for clear plaques of λ'.

All-defined mottling but no clear plaques seen in 8 plates.

2/21. 445g. Clear plaque. Streak out on W435 and on K-12, also seeing a turbid plaque and λ 450c'.

	W435	K12
1. Cl. pl.	+	-
2. Turb pl	+	-
3. λ	+	-

"Clear plaque" was probably purely ~~phage~~-free phage particle-initiated. Free λ gives essentially the same picture. Lysogenicity in this system is not evoked as readily as in Bruner's.

However on 2d day, lytic zone was clear, not hazy, and individual (resistant?) colonies were noted. Pick to NSB + 518 to grow out the phage, and streak out the "resistants".

Purify 8 cultures and test for sensitivity. All but #5 are λ- and λ^r as determined with W435 and free λ. #5 is λ^s

Keep as ~~W8-~~ W- for #1 (Lac-) and ~~W8-~~ W- for #6 (Lac+, never

3/5/49.

EMB Lac
EMB —
EMS Lac
EMS —
T(0)
YZ broth
Penassay
NSA

Steaks out single plaques from λ' on W518. 4 tested
a). All gave clear plaques on W518
b) All gave no plaques on W811 (518 λ+)
c) When streaked out alone, all were ϕ ridden, with a few resistant colonies.

3/5. Test c) resistants for lysogenicity on W518 16 test

		W518	Aut
A	1	−	−
	2	+++	+++
	3	+	+
	4	−	−
B	1	++	−
	2	−	−
	3	++	−
	4	++	+?
C	1	++	++
	2	−	− ±?
	3	−	−
	4	++	++
D	1	−	−
	2	−	−
	3	−	−
	4	+++	+++

Possible exceptions to "no lysogenicity in λ'". Should be rechecked.

Plaques of λ' are certainly clearer, and may bespeak a less frequent development of lysogenicity.

Check on B1 and B3:

B1 λ, rather small, clear plaques.

B3: larger plaques, some filled heavily or with granular overgrowth.

Keep B1 as W-855

2/20/49.

1. W-126 x W705
2. " x W706
3. " x W707.

Lactose heterozygote "Het"

2/20/49.

A } ~~W770 x W477~~ Lac⁻ W769 x W478 (Lac⁺) (BM).

B } ~~W770 x W477~~

C. ~~W770 x W478~~ W769 x W477 (TB, Lac, -). No Yield.

~~W769 x W478.~~

C

A+B } 100 tested on Lac EMB for Lac V. 2 Lac V, H177-178

Purify on Lac EMS.

56 add'l tested: No Lac V. 1?

February 20, 1949.

W126 x

1. W 769
2. 771 2+ Not Lac v
3. 772
4. 778 4+. 3++ 1 Lac v (H 179)
5. ~~777~~
6. 782 ca. 5% + 2+ Not Lac v
7. W770 x W677 (770 v : ca 10% revertants.

49 tested. No Lac v

Stocks for Lac reversion in heterozygotes

Febr. 28, 1949

A W478 x W660 on Xyl EMS.

B. x 677

P23. Yields very few 1+ col. from B. Not Xyl v
10 from B. 1++ 9 mucoid. Recisolate

3/1. Repeat W478 x W660. on EMS Lac + Xyl.

a) Picked + dest 16 Xyl+ for Xyl v. 6 likely heterozygotes. (1-6).
Retest on Xyl EMS and Lac EMB.

	Xyl EMB	Lac EMB	Xyl EMS.
1	v	−	
2	+, − v?	+, −	H189
3	v	−	
4	v	v	
5	+, −	v	
6	++	−	

#1 #3 6 are suitable for reversion studies of Lac.

B) 3/3. 6 added'l tested on Xyl EMB Mucoid +/−; 6 Xyl v.
48 " " " Lac ". 8 likely Lac v

	vm Lac EMB	
1	+, −	= X 11
2	−, +	X 12 } do not keep.
3	−, +	X 13 }
4	−, +	X 14
5	−	X 15 Keep. H190
6	−, +	X 16

Recorded as Gal v.
Later tests show Gal+!

3/6/49.

W478 x W660 (Lac, Xyl, Mal, Ar, Mtl).

Remember in X and L series.

X 1–6. An Xyl EMS.

H-189 1. Growth ok; numerous – eswellas + colonies. Picks +'s to Lac EMS, Xyl EMS' Xyl EMS.

2. No isolated colonies. Heavy growth in streak. 1 or 2 "papillae" in streak. Picks to EMS.

3. Good growth. 1 poorly isolated Xyl+ S.O.

4. Lilac 1 Lac v+ Xyl v−

5. Freq. + cols; – background

6. do.

H189 is Xyl v (except #4 of 6 isolates). ε – predom.

Do. H190 (except #2 of 4 isolates).

455L series. test on other sugars. (Mal, Arab, Xyl, Mtl).

	Lac	Mal	Arab	Xyl	Mtl	
1	v	–	++	–	–	
2	++	–	++	–	–	
3	v ✓	++	++	v+ *	+	? shows patterning
4	v ✓	++	v? s	+ –	+	
5	v	–	+	v	v+	
6	v *	–	+ s	v * – +	v –	* many p
7	v *	–	v? +	v	v	
8	v ✓	–	++	–	–	

Arab can scarcely be scored. Note correlation of Mtl with Mal.

~~Segregation of H180-181.~~ New heterozygotes

2/22/49.

W588 × W769. ~~Hoyaich~~ 5 tested. 2 were Lac V!

~~H~~ H180-181.

2/25 Repeat W588 × W769 [should be het. for Lac^{769}, V, ^{IP}, IV, Aeg., TLB,.

3/1 100 tested. (4/plate 25 plates: 19 plates had 1; 3 had 2; 13 had no Lac V. 18 altogether).

Many of these appear to be "bullseye" colonies

See 464 for segr. of W180 + 181.

→ 18 retested from Lac EMS. 2+ colonies from each.

All but #13 are clearly Lac V. Preserved ☐ on Lac EMS Save momentarily.

At 48 hours:

1 Mostly sectorial; 1 bullseye (change of type? Streak out!)
2 Empty Sectorial; 1 ~~bullseye~~ annular. [both yield both]
3 Annular
4 " (almost pinpoint)
5 Sectorial; — pseudom.
6 ~~Sectorial~~, almost all bullseye (Annular)
7 Sectorial
8 " and bullseye nearly equalcros.
9 Sect. + pseud
10 Sectorial
11 Annular (large); occ. sectorial
12 Sectorial
— ++
14 Sectorial, very complex
15 Sectorial, some very simple
16 Sectorial
17 Sectorial, — pseudom
18 Sectorial

2/22/49.

Pick growth in center of plaques of λ (450c') on W435 and streak out on EMB Lac.

A23. Mostly + colonies (recession of W435 previously noted). Test for lysogenic on W435 and auto. (16 colonies; 2 from one plaque)

		Lac	λ/435	auto.
A	1	—	—	—
	2	+	—	—
	3	+	— ±	— ±
	4	—	++	—
B	1	+	—	—
	2	—	—	—
	3	+	+	—
	4	+	—	—
C	1	+	++	—
	2	+	++	—
	3	+	—	—
	4	+, —	++	—
D	1	+	++	—
	2	+	++	—
	3	+	++	—
	4	+	++	—

As 16 trials, 9 lysogenic cultures isolated from plaques of λ/W435 Maintain A4 to test for persistence of λ.

News phages for 2 study

2/22/49.

Broz. NSA ē W518 and 1 ml sewage filtrate, devery streaks out unfiltered lysate on W518.

A23 Pick plaques to water. 1-7 large 8-28 small and very small. ~~Pick to~~ Streak these on W518 and on Y10 / EH13. to find any φ ē diffuntial activity

Pick plaques of #2, 7, 8 13 and 20 to Penassay and add droplet of W518.

P213.

	W518	Y10
	~~++ M~~	
1	~~++ M,S~~	++ M,>
largest 2	++ M	++ M
3	++ M	±± M,S
4	++ M	++ M
5	++ ML	++ M
6	+ ML	+ M
7	++ ML	++ M
8	+ MS	+ S
9		
10		
11		
12		
13	+ M	± S
14	+ M	+ S
15	+ M	+ S
16	+ M	+ S
17	+ M	± S
18	+ M	+ S
19	++ M	+ S
20	+ M	± S
21	+ M	± S
22	+ M,S	++ S
23	± M	—
24	+ M	± S
25	+ M	S
26	+ M	++ S
27	+ M	S
28	± M	± M

maybe a difference.

Dif.

3/1/49. Cross test 12 and 120

φ	518/12	120
2	R	S
7	R	S
8	S?	R
13	S?	R
20	S?	R

Make 518/20 /2.

λ - specific phages. 458a

2/20/49.

A). Lysates of 458-2, 7, 8, 13 + 20. Last three were completely clear overnight; 2 + 7 were fully grown + had to be sedimented before filtration. Steile filter (sintered glass).

B) Picks & plaques each from 13 and 20 to Y10 and W518.

		Y10	518		Y10	518
13	1	28 M	8 M	20		
	2	11 M	23 M			
	3	20 M	16 M			
	4	0	0			
	5					
	6					
	7					
	8					

same plaque size but smaller on Y10. No absolute difference

4/5/49. Test strains against 458-2 and 458-20.

	2	20
"518/2/20"	S	R
"518/20/2"	R	R
518	S	S
16/1,5	S±	R
Y10	S	S±

20 resembles Bordet small in pattern.

518/20/2 is suitable for selection of additional ϕ. Plate with Bo-picture change. 5 plaques resemble strain 518 ϕ11

Check new phages

3/5/49.

From Hershey.

	B/1,5	W811	W518
T16	++++	++++	+++
Bordet large	± —	—	—
" small	—	++++	+++
ϕ10-174	—	—	—
C36	++++	++++	+++
~~Luria's (S13)~~		++++	++++

Hershey sent 3/2/49.

Sp10 (not on B/6 or B/1) acc. Hershey. (same host range as T1)

Sp11 Not related to T. N. G. or I (acts on H, not B).

Sp12 all coli.

~~etc~~ (= C36)

These phages evidently do not differentiate between λ- and Bordet large and ϕ 10-174 may be related to T1 and T5.

Bordet small does not attack B/1,5 although it is active on K/1,5.

Mold for lysogenicity tests.

1. Plaques very hazy, clear, regular centers; opaque margins
2. moderate plaques, "Resistants: a few papillae in background Some lact!
4. moderate-large; sharp borders. " a single pop. " ".
3. v. large plaques, spreading lysis?
5. large and small plaques. Restricts. small + large both → large

Streak out 518/— above for lysogenicity tests.

C36: no resistants! Test 2 cols./water suspension. Streak on

Lysogenicity tests on new phages. 458d

March 7, 1949.

Test newly received and isolated phages for the induction of lysog in W518, by simple streaks over sensitive smear.

	/c36.	5 tests	None lytic
	/T16	5 tests	None lytic
/Sp17	~~/Sp17~~	3 tests	None lytic
	/Sp14	5 tests	Each lytic: lysogenicity? or carryover.

Streak out bacteria of /Sp14 and retest lysogenicity. 458d1 and d2
Lysogenicity confirmed. Sp14 is, then, ~~Sp~~ lambda -2.

	Sp 15	4 tests	all λ -
	Sp 14	1 test	λ -
	518/13	No stable resistants	
	518/18	6 colonies streaked out and isolates tested on W518: None lytic	

Test Hershey's Phages: [illegible]

2/24/49.

	1 HP21	2 HP13	3 HP15	4 HP18	5 HP20	6 HP22	7 HP23	8) Sp 1	
SW36	L ++	++ S	++ ML	++ M	– hazy? small	M ++	S ++	–	bandage
Y10	–	–	–	–	–	–	–	a few hazy plaques.	
W518	–	–	papillae! –	–	–	–	–	a " **	
SY20	–	–	–	–	–	–	–	+ *	
SY21	+	+	+	+	+	+	? +	?	hard to th
SY23	–	–	–	–	–	–	–	–	
SY61	–	–	–	–	–	–	–	–	Lac+!
SY83 very large plaques here!	very large ++	++	++	++	hazy ++ capture	++	sm. pl. ++	–	

* Many confluent lysis with a few clear plaques. (Reduced lysogeni

** Several large plaques with hazy borders, and medium small sharp bo
Y10 is similar, only scaled down.

SY23 all – maybe doubled as it was spread very thin.

The most distinctive phages here seem to be #5 (probably inducing lysogenicity), #1, very large plaques, and #7, very small plaques.
Also Sp-1 which acts on K-12. clear plaques should be picked to pu

λ and T1-T7.

2/28/49.

Plate W518 and T1-T7 on Lac EMB.

T1. Ca 10^2 plaques, noted, probably of λ, as W518 is V_1^R
T5 Ca 40 " " " ".
∴ lysates of K12 contain λ as well as specific phage.

T2h. Confluent lysis and ca 300. resistant colonies. Some are smaller + smooth, others larger + rough.

T3. 6 very large plaques (ca 1 cm.) and 10^2 λ.

T4. Complete lysis ca 100 resistants, a few mucoid. Very small co

T6 Ca 400 "

T7 ca 500 ". Many nibbled or suicidal.

W435/T1. ca 100 resistants
T5. " ca 10-15% mucoid.

518: 458-2 Nearly confluent lysis. ca 10^3 resistants (large plaques).
458-20. Complete. Most of 10^{2-3} survivors very rough.

Heat sensitivity of bacteriod λ.

2/28/99.

A. Titrate out unheated W811 on EMB and C WS18.

B. Heat aliquot at 56° 1 hour and titrate for bacteria + λ.
Bacteria sterile. (No colonies at 10^{-1} ml).
No plaques seen at 10^{-3}

ca 100 colonies. Only 7 plaques (1 confluent group included).
The plates used were very wet + plaques may have smeared.

Segregation of H180-181 (W588 × W769)

March 1, 1949.

H181. 4/ Lac$^{\underline{v}}$ streaked out. Lac− is very predominant

H180 12 Lac$^{\underline{v}}$ so. − pred. also, not so markedly.

Test for V_1^R = .

Test 9 or 10 cols. from each of 10 mosaics.

	Lac−V_1^S	Lac+V_1^R	Lac−V_1^R	Lac+V_1^S
1	8	2	0	
2	2	7	1	
3	5	5	0	
4	5	4	1	
5	7	3	0	
6	4	5	1	
7	7	3	0	
8	5	3	1	
9	5	4	1	
10	4	1	5	
	52	37	10	0

The proportion of Lac+ is probably exaggerated due to bias in attempt to sample this fraction. It is clear that the −R crosso is more frequent than the +S, although it is difficult to say how representative a sample this is. Certainly, the crosso are not randomly distributed. (4^0; 5^1; 1^5)!

T1 - T7 lysogenicity.

March 2, 1949

Picks colonies streaked out from WY35/— or W518/— and test for lysogenicity on Y70., and control alone on EMB.

WY35/T1. A, B. 43 tested. None lysogenic.

W518/T2. A, B 43 tested " ".

W518/T4. 20 tested. Most did not grow on control plates!
#20 showed ca 40 plaques on Y70; 2 colonies. Pick these colonies and recheck: not lysogenic

1458-2. 10 tested No lys. only 2 grew on control.

1458-20 7 tested No lys. 3 grew.

1T7. 6 tested No lys. 4 grew

W588/6. 54 tested. all grew No lys. 1 doubtful (#54; retest not lysog

435/5. 55 " " No lys.

Attempts to remove λ by ultra-violet

3/3/49.

29 W811 picked from UV irradiation ~~on~~ EMB plate. Tested on W. for λ. all +.

12 addnl. All λ+

3/2/49. 60 tested. All λ+

101 tested λ+.

3/5/49. Test 100 each of u-v treated W826 and W828, from face plates in a mutation run.

828, #6 ~~maybe λ—~~, 94,
826, #13, 16, 27, ~~59~~, 64,

6/200 = ~~3%~~ 3.5%

Reisolate and recheck.

I did not grow in 826 series. Check others by using as basis for W811 streak.

These cultures are not susceptible to W811 λ. Reisolate this lysogenicity — lost in course ??

March 6, 1949.

20 plates x 400 cols = 8,000 each. W826 and W828 4 UV/sec.
Lac EMB.

(See 466 for λ tests)

1–6	W826	→ W847–852
7–8	W828	W853–854.

W847 is hexose –, very like W768

~~W848~~ 852 is very slow, not – on lactose.

Zelle's single cell isolates

March 5, 1949.
Slants, Lac- segregants.

	Lac EMB	Xyl EMB	T5
47	—	++	S
48	—	++	S
99	—	++	S
100	—	++	S
101	—	++	S
102	—	++	S

A51 +, −, ± ++ (some −?) A51 seems to be pure Xyl+ but Lac ± !

on Lac EMB, A51 gave + : − ca 2-3:1. I more acc colon
Streak this out on EMS, EMB Lac and EMB Xyl.

A51, A53, A77, A78, A219-222 are all Xyl++, Lac+ and − or ±.
Are these from H-72 ??

H72, from slant is Lac ± Xyl +. ∴ these isolates are from a different lutinous zygote sent Zelle in error. (Air Mail L
Rechecks from older Lac EMS plates.

3 plates marked H72 were found in refrigerator
"A" is verified as H72 (Xyl ± Lac ±)
B did not grow out
C is like slant. (probably H62)

Absorption of λ.

5/7/49.

Heat broth cultures of W518 W811 (→ K.) and λ 1:5 at 56°, 90m

A. Titrate λ at 10^{-2}. ($\frac{1}{11} \times \frac{1}{10}$).
B. Test W518K and W811 for sterility
C. Test W811K for free λ (multiply by 5 to compare with A.)
D. Test heated λ for inactivation

E. Add .1ml λ to 1ml W518K. ~~At 10 mins., dilute to 10ml and~~
At 16 mins., assay .1 ml on W518. Do in triplicate.

F do. using W811K.

3/8. A. 114, 112, 119

B. Both sterile (.1ml.) ✓ at 48h.

C 34 / 41 plaques! Some λ survives with this W811 and can be cleared!

D. No plaques at 10^{-1}, 10^{-2}

E Numerous plaques. 81, 126, 144, 152. m̄ = 126

F. Numerous plaques. 146, 127, 159, 158 m̄ = 147

No evidence of absorption.

Note that some plaques are mottled, with clearer patch

Repeat C+D.

C. 26 plaques. (i.e. ca 300 λ/ml ~~stock~~ survive heating of U

D. No plaques.

λ in heated W811

3/9/49.

Sediment suspension of heated W811 used in W470 to locate λ as free or in cells.

Cells	25
Supernatant	11.

Reversible absorption is indicated, even from heat killed cells!

Segregation of H-72

3/10/49

1. Test with 8 and some H72' for T5, T1 same.

	Lac	T1	T5	V_1^c	V_1	(V_{1c}^R reaction)
W478	+	P	S^P	R	S	
1	−	P	S^P	R	S	
2	−	R	R	—	R	
3	−	R^P	P	R	S	
4	−	R	P	R	S	
5	+	R	R	—	R	
6	+	R	R	−	R	

The coupling is probably Lac− V_1^R ; Lac+ V_1^R , so that X had occurred prior to the establishment of the heterozygote.

Reduction segregation of H168 (4176) 472

3/10/49.

		Lac	Mtl
165	1	V	V+
166	2	V	V+
167	3	V	—
H168	4	V	V−
169	5	+	—
170	6	V	V+
171	7	V+	—
172	8	V+	V−

→ Choice for crossover studies.

Pick four Lac- and 4 Lac+ ~~and~~ from H168 and test nutrition and φ.

	Lac	T1	T5	V_1	V_{1c}	Nutr.	Xyl	Mtl	Sal	
1	−	P	S	S	R	TB,	−	−	S	
2	−	R	R	R	−	B_1	−	−	S	
3	−	P	S	S	R	B_1	−	−	S	
4	−	R	R	R	−	TLB_1	−	−	S	Parental!
5	+	P	S	S	R	TB,	−	−	+	
6	+	P	S	S	R	+	−	−	+	(test for Het
7	+	P	S	S	R	TB_1	−	−	+	
8	+	P	S	S	R	TB_1	−	−	+	
W677	−	R	R	R	S	TLB_1	−	−	S	
W478	+	P	S	S	R	BM	+	+	+	

seems to be predominantly B_1− L+ M+ V_1^S Lac−. Bacterial sample to be Lac+.

Parental configurations were T−L−B_1−M+V_1^R Lac− ....

"Lysogenicity" of Sp 14.

3/11/49.

See 4584.

When the cultures of 518/14 were first grossly tested for lysogenicity they lysed W518. However, when streaked out, no lysis ensued from single colonies thus purified.

Repeat isolations of 518/14 and 811/14.

A from lysed area.
B from "halos"

			λ	Acetol.
811 ~~518~~.	A. Gross streak		+	−
	Single colonies.	1	+	+
		2	+(3 plaques)	−
		3	−	−
		4	−	−
	B.	1	−	−
		2	−	−
		3	−	−
		4	±	±
518.	A Gross		+	+ −
		1	−	−
		2	−	−
		3	−	−
		4	−	−
	B	1	−	−
		2	−	−
		3	+++	−
		4	−	−

Picks 518B3 and rechecks for lysogenicity. When streaked out as 518, a considerable content of W was indicated. Test single colonies and gross streaks.

3/13/49

Some of the 12 single colonies tested showed lysis, but gross streak lysed W518.

Restreak and test on W518. Also, inoculate broth & gross streak assay now + after growth for λ_2.

Test 3 single colonies and W518 as ✓ for sensitivity to 7p14.

Redetermine lysogenicity.:

1, 2 + 3 were not lysogenic on W518; 7p14 control lysed.

When tested for sensitivity to 7p14, there was no lysis or plaque formation, but the area spread showed the same increased opacity as seen in the margins of halos from 7p14 plaques.

Initial. At a 10^{-6} dilution: 127 bacterial colonies 23 plaques.

∴ probably each bacterium does not carry the phage.

At 10^{-2} dilution there was confluent lysis of the background and granular overgrowth

At 10^{-4} there were about 10^3 confounded plaques

Final: supernatant inadvertently discarded. Plate scrt washed bacteria.

λ_2 can grow on W811, but many of the bacteria are readily disinfected. Test a series of sci from the 10^6 dilution plate for λ^+ and λ^s. Also maintain #1 above for further study as W874

3/25/49

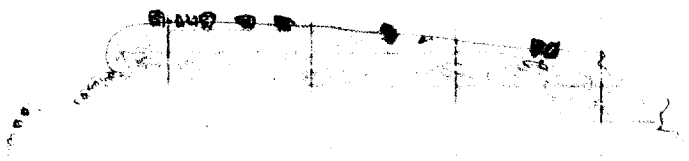
Test 70 s.c. from 473 a plating on W518 for λ_L.
None were lytic. 20 tested were resistant to λ_2.

This fluid gross streak showed λ, but not as markedly as the previous.

Restreak the streaks $\bar{c}$ and $\bar{3}$ W518 made layers.

Plating of culture from 473a. gave ca 300-500 bacteria; just 1 plaque. This does not correspond to any growths.

Note 473(2) which had an appreciable amount of λ showed a light bulgeyed growth with heavy outgrowths. The bulgeyed is probably responsible for only opacity & not different area for λ.



Type ∞ A: opaque outgrowths; B: more manola and bulgey

Some B did not grow, or grew sparsely showing some regns of autolysis. Amount of λ from A streaks was variable, and much less in proportion to the bacterial growth than from B.
Pick 1 single colony from a sparse B brush, and that grew somewhat more densely, and streak out for purity + λ.
473(4). Heavy streak. Normal. Streak for ...

3/17/49 ff.

473(5). None of 10 single colonies is λ+. Brush is more active than ever. Turning lac+ on continued selection. ~~Test brush + single cols~~ Hold for outcome of B2:

clone B, 1 is λ−; 2 is λ+. Brush + streak.

8 single colonies from B2 were not lysogenic. ~~Str~~ Brush w

3/18. Streak out bacteria from brush of B2 (473(6)).
Brush heavily λ+. No single colonies were.
Pick brush (1) and 8 single colonies (2-9). Test these for λ. Also (10) mix 8 colony suspensions and streak out for λ. 1 only lysogenic.

Compare cells from this brush for sensitivity to vaccinia C $\bar{C}$ W5/8, its parent.

↳ Take to slant as W877.

Segregation of H168

3/13/49.

Inoculate from EMS streak to two tubes Penassay. Aerate overnight (5 humidifier; volume ca halved!)

Dilute 10^{-8} and spread on EMB media:

A		Lac	Lac	Mtl	Mtl	Gal	Gal	Xyl	Xyl
	Σ	528	365	651		510		651	
	+	500	341	644		486	too crowded to count well.	1	
	−	26	18	647		24		647	
	V	2	6	3		0 ?		3	
Rel %		4.9	4.9	0.5		4.7		0.5	

B.								
	Σ	204	229	201	163		236	187
	+	~~200~~ 199	225	201	1		0	0
	−	4	3	0	161		230	186
	V	1	1	0	1		1	1
Rel %		2.0	1.3	0	0.6	~~0~~		

ca 200 all −

By error all Gal was lt
Xyl was B

Ca half the plates from B have cont ε a mycoides type.
Pick rare type to all sugars.

A. Lac −
~~B~~. Gal −
B { A. Xyl + 1st 1
{ B Mtl + 2nd 1

Segregation of H168. 474a

3/15/49.

A. Lac−: 33 picked.
All are Gals. 32 are Xyl− Mtl−
1 Xyl+ Mtl+

B. 1. Xyl+: Lac− Mtl+ Gals
2. Mtl+: Xyl+ Lac− Gals
54 Gals: All Lac− All but 1 Xyl−Mtl−
1 Xyl+ Mtl+.

∴ Xyl, Mtl are ~~empirically~~ linked (3 ++ # segregants; all others −− ##)
Gal, Lac ~~fairly~~ very closely linked. (87 −− segregants; all others ++

The Xyl Mtl + segregants are crossovers.

This segregation may not be entirely valid because of the very high population density which was reached.

Test some Lac− from A for V_1^R.

4 Mtl+ Xyl+ Lac− Gals from above: all R.
of the − − − −; 19 were V_1^S 6 were V_1^R. From parent background at lytic bunch. all V_1^S judged to be V_{1c}^R
Additional Lac− tested: − probably nucleoside

Corol. Lac+ can be taken to be exclusively (or nearly so)

Gal+
Xyl−
Mtl−

that is, the dominant type.

Lac− is usually Gal− and v.v., but may be either Xyl Mtl+ or − is often V_1^R.

3/17/49.

W847 x W769 on Lac EMS.

40 Lac+ prototrophs streaked on Lac EMS.

None Lac-. Later 847 retested: mostly Lac+!

3/20: W842 x W859. on Mtl EMS.

40 Mtl+ tested: all ++.
48 additional "

Note! In this cross, Mtl+ appears to exceed Mtl- by at least 10:1.
(on EMS Lac; no B_1)