June 6, 1949.

A. W478 × W677 on Lac, Mal EMS.

B. W45 × W677 on Lac EMS. 15 plates. No yield.

(A'). Test for Lac and Mal v.

180 Lac+ tested for Lac v. 16 possible Lac v.

120 Mal+ tested for Mal v. No likely Lac v.

	Lac	Mal	Xyl	Mtl	Gal	
A Lac 1	−, + ✓	−	− ✓	−	✓	} v? Check from EMS.
2	−, +	− and +	−, + ✓	−, +	−, +	
3	V ✓	−	−	−	−, +	
← ✓ 4	V ✓	−, (+)	V ✓	V ✓	V ✓	
5	V ✓	−	−	V	V	
6	++	−	−	−	++	
7	++	+	+	++ ✓	++	
8	✓ +, −	−	V ✓	− ✓	++	
9	V ✓	−	V ✓	V ✓	V ✓	= H211
10	++	++	++	++ ✓	++	
11	++	−	++	− ✓	− ✓	
12	V	−	V	V ✓	V ✓	= H212

#S 1, 2, 3, 4, 5, 8, 9, 12 (8 in all) are likely heterozygotes. All are Mal−. Some may be suitable for further outcrossing. = (9, 12)

Check as Mal+ component in #4.

June 9, 1949.

Second batch picked from A. 100 tests (Lac).
6 possibilities tested. #13-18.

		Lac	Mtl	Xyl	Mal	Gal
1	13	V	V	V	—	V
2	14	V	+	+	+	V
3	15	V	V	V	—	V
4	16	V	V	V	—	V
5	17	V	+	V	—	V
6	18.	V	+	+,- v?	+(-)	V
7	19.	V	V+	+	—	V-

Second batch (200) from MalEMS: Ca'h missed and are Mal+
8 possible Mal v, "v" colonies picked for retest. 1, 2 looked definitely variegated, 3-8 only somewhat irregular.

Only #1 is Mal v. W 2 13.

June 7, 1949.

(B) W45 × W677 on Lac EMS. No. Y. No yield, even c̄ biotin + thiamin

(A) W478 × W677 on Xyl EMS. (unlabelled) ✓ high yield 125-/40+

(C). W478 × W595 on Lac EMS, Xyl EMS. v. poor yield diff. to score

(D). W ~~[illegible]~~ 677 × W826 on Mal EMS. unl. ✓ high yield 133-/31+

A. Xylose. 80 tests. Misscored-'s : ~~HH~~ /// 72 tests. 2 possible Xyl v. #1 Xyl v Lac v
#2 Xyl slow Lac - not Lac v

C. Xylose 40 tests Mostly -'s. 1 ? No v.
Lac 7 " No v.

D. Maltose 100 tests. 2 unlikely Lac v. Not v /

6/12/49

A Xyl. 100 addnl. tests.
3 possible Xyl v.

	Xyl	Gal	Mal	Mtl	Ara	Lac
1 ~~Xyl~~	v	v	—	v	+ ?	v
2	+, slow	v	+	+	+	v
3	v	v	—	v	v ?	v

#2 is apparently Xyl + but it has a mottled appearance which may be related to Gal v.

5393 tests of heterozygosity

W478 x W945

6/9/49

	Lac	Mal	Gal	Xyl	Mtl	Ara	
1.	V	—	—	—	——	V	
2.	V +faded	—	—	+	V++	V=	
3.	V ok	—	—	V	V	V	= H210
4.	V faded+	—	—	V	—	V	
5.	V+	—	+ pure?	+	V	V+	
6.	faded V?	—	—	V	V	+	
7.	V+	—	+	+	V	V+	
8.	V-	—	+	V	V	V-	= H209

For general segregation studies, #8 is apparently best suited, as it shows stubborn variegation on four sugars. The Gal factor here resembles that of W583. #3 might also be useful as a Gal - heterozygote.

Segregation of W209, ~~Reversion of Hel~~

6/9/49

	Lac	Xyl	Mtl	Ara	Lac	Xyl	Mtl	Ara
Lac selections.	+	−	−	+	−	−	−	−
	+	−	−	+	−	−	−	+
	+	−	−	+	−	−	−	+
	+	−	−	+	−	−	−	−
	+	−	−	+	−	−	−	+
	+	−	−	+	−	−	−	−
	+	−	−	+	−	−	−	−
	+	−	−	+	−	−	−	−
Mtl Selections	−	+	+	−	−	−	−	−
	−	−	+	+	−	−	−	+
	−	+	+	−	+	−	−	+
	−	+	+	−	−	−	−	−
	−	+	+	−	−	−	−	+
	−	+	+	−	−	−	−	+
	+	−	+	−	+	−	−	+
Ara select.	+	−	−	+	−	−	−	−
	−	−	−	+	−	−	−	−
	−	−	−	+	−	−	−	−
	+	−	−	+	−	−	−	−
	−	−	−	+	−	+	+	−
	+	−	−	+	−	−	−	−
	+	−	−	+	−	−	−	−
	+	−	−	+	−	−	−	−
Xyl sel.	−	+	+	−	+	−	−	+
	+	+	−	+	−	−	−	−
	−	+	+	−	+	−	−	+
	−	+	+	−	+	−	−	+

Mg on recombination

6/14/49

58-161 x Y10 ca 8x from Y2. Mix 1 ml c

Colonies:

A	1 ml H_2O	13, 12, 6, 2	8 = av.
B	1 ml M/1 $MgSO_4$	3, 4, 7, 0	3.5 = av.

Incubate 2:30 PM — 10:20 PM. Dilute 1:10 and plate .1 ml on T(B,)

$MgSO_4$ alone did not augment recombination.

Gal, Mal reversions of H209-210

6/11/49.

Pick single colonies from EMSLac to EMBLac, EMS Mal ± EMS Gal for reversion study.

209 is Gal+Mal- Each of 4 isolates gave ca 95%+ Lac v.

210 is Gal-Mal- " " " " " ".

Hold on EMS for reversions.

A few papillae which appeared were not reversions, nor Lac v! [H210 presumed + 3/21/50].

6/17 ff. Mal+ and Gal+ isolated respectively.

A. Single Mal+ purified on Mal EMS. Each of 6 s.c.i. tested on EMB Mal, EMB Lac: Each of 6 isolates is Lac v. Mal+ Many colonies on Mal EMB, however, show extreme mottling as if segregating at least for a modifier of Mal (2n vs. n ??) No Mal- colonies seen, but this might be due to close linkage of Mal+ to lethal. Retests on 6 suspicious colonies: all Mal++ pure, Gal-

B. Gal+. Two papillae isolated. Not yet purified

6/20 but predominantly Lac v, almost pure Gal+ ± no signs of Gal segregation.

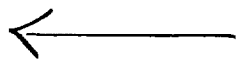
6/21. 8 s.c.i. from Gal EMS. All preponderantly Lac v. No Gal- or marked Gal v seen. Some colonies mottled on Gal EMB, like Mal above. Restreak the most suspicious for a Gal- component. None of 24 colonies tested yielded a Gal-. ∴ Gal also hemizyg

Conclusion: Mal and Gal both hemizygous.

B5, B7 reverted for T, L. test on

	BM	B, M	BB,	BB, M
5, 7	++	++	–	++

Both are only M-astases demonstrable.



6/11/49.

Lac v streaked Lac- and + selections.

	+select. Lac#	Mtl ~~Xyl~~	Gal	Xyl		-select. Lac	Mtl ~~Xyl~~	Gal	Xyl	
A H211	+	—	+	—		—	—	—	—	
	+	↓	↓	↓		—	↓	↓	↓	
	+					—				
	+					—				
	+					—				
	+					—				
	+					—				
	+					—				
	+				Nutr					Nutr
B H212	+	—	+	—	+	—	—	—	—	MTL
	+	↓	↓	↓	+	—	—	↓	↓	MTL
	+				T	—	—			MTL
	+				+	—	—			TL*
	+					—	+		+	MTL
	+					—	—			(T) +
	+					—	+			MTL
	+					—	—			TL

* 556 B4. = T-L-Lac-Mal-Gal-Xyl-. Het? No! W1022

6/12/49 ff. Attempt Reversion of B5, 7, 8. Add several drops from ++ medium to each. -T and -L tubes all grew after 48h. -M tubes remained clear. Transfer from B5T, B7T, B1T.

6/21/49. No M reversions noted. B1, B5 appear to have reverted on T, L. Reisolate and check mutation

H 211 - 212 segregations

556A.

6/14/49.

	Lac	Mtl	Xyl	↔	Lac	Mtl	Xyl	
(B) H211 Lac sel.	+	−	−		−	−	−	20 pairs
	+	−	−		−	+	+	1 pair
					−	−	−	3 unpaired.
(C) Xyl sel.	−	+	+		−	−	−	17 pairs
	−	+	+		+	−	−	6 pairs
	Xyl + relatively scarce!				−	−	−	9 unpaired
					−	+	−	1 "
					+	−	−	3 "

Note scarcity of Xyl+ Lac+.

(D1) 212 Lac	21	+	−	−	−	−	−	# 34+ is Lac v
	2	+	−	−	−	+	−	Also? 1, 2, 4, 6 16?
	1	+	+	−	−	−	−	Do not include ←
?	6	+	+	+	−	−	−	
	5	+	−	−	−	+	+	
	1	+	+	+	−	+	+	
(D2)		+	+	+	−	−	−	1 unpaired, 5 "
		+	+	+	−	+	+	# 7 Lac v, # 24- Lac v

See next page.

See next page.

Each of these cultures was Lac v on retest. Pick, as possible, single Lac+ and check on Mtl, Xyl. #1–9 were

Lac+ Mtl− Xyl−. #2 ? ~~Lac v Mtl v Xyl v~~ vv: Xyl− Lac+

#10 ? Lac+ Mtl+ Xyl+

Restreak these.

H212

	Lac		Mtl		Xyl		Lac	Mtl	Xyl	Lac	Mtl	Xyl
Lac sel.	A	B										
D2. 1	+	−	−	−#	−	−	+ −	− −	+ −	+ −	− −	− −
2	+	−	−	−	−	−	+ −	− −	− −	+ −	− −	− −
3	+	−	−	−	−	−	0 −	0 −	0 −	+ −	− −	− −
4	+	−	−	−	−	−	+ −	− −	− −	+ −v	− −	− −
5	+	0	−	⊖	−	0	+ −	− −	− −	+ 0	− 0	− 0
6	+	−	−	−	−	−	+ −	− +	− −	+ −	− −	− −v
7	v	−	v	+v	v	+v	0 −	0 −	0 −	+ −	− +	− +v
8	+	−	−	−	−	−	+ −	− −	− −	+ −	− +	− +
9	+	0	−	0	−	0	+ −	− +	− +	+ −	− −	− −
10	+	0	−	0	−	0	+ −	− −	− −	+ 0	− 0	− 0

+−−//−−−	17 pro.	14	+−− Unpaired: 5 4
+−−//−++	4 pro.	5	−−− 2 0
+−−//−+−	1 pr.	2	

The Lac+ Xyl+ exception (#7) is obviously V.
Discount Lac+ Xyl+ exceptions.

1	v	−	+	+	v	+	+	−	−	−	−	−	+	⊖	−	0	−	0
2	v		±		v		+	−	−	−	−	−	+	−	−	+	−	+
3	+	−	+	−	−	−	+	−	−	−	−	−	+	−	−	+	−	+
4	v	−	+	−	v	−	+	−	−	+	−	+	v	−	+	−	+	−
6	+	−	−	−	−	−	+	−	−	+	−	+	+	⊖	−	0	−	0
6	v	−	+	−	v	−	+v?	−	+	−	+	−	+	−	−	−	−	−
7	+	−	−	+	−	+	+	−	−	−	−	−	+	−	−	−	−	−
8	+	−	−	−	−	−	+	−	−	−	−	−	+	−	−	−	−	−
9	+	−	−	+	−	−	+	−	−	−	−	−	+	−	−	−	−	−
10	+	−	−	−	−	−	+	−	−	−	−	−	+	−	−	+	−	−
													+	−				

	Lac	Mtl		Xyl	
+	−	−	−	−	−
+	0	−		−	
+	−	−	−	−	−
v	−	+	−	+v	−
+	−	−	−	−	−
+	0	−		−	
+	−	−	−	−	−
+	−	+	−	v	−
+	−	−	−	−	−
+	−	−	−	−	−

Summary above is —

Check on "+" of:
1, 2, 3, 4, 6, 16, 24, 34, 38 of D1 and T of D2.
#1-10 556 D2

#10 is pure Lac+ Xyl+. Nutritional Prototrophic, but Mal+, therefore a contam.
Odor resembles Proteus, but not a spreader
T1, T6, T7 – resistant

E
212
Xyl selection

Lac		Mtl		Xyl		Lac		Mtl		Xyl		Lac		Mtl		Xyl	
−	−	+	−	+	−	−	−	+	−	+	−	−	−	+	−	+	−
−	−	+	−	+	−	o	−	o	−	o	−	−	+	+	−	+	−
−	−	+	−	+	−	−	−	+	−	+	−	o	+	o	−	o	−
−	+	+	−	+	−	−	−	+	−	+	−	−	−	+	−	+	−
−	−	+	−	+	−	−	−	+	−	+	−	−	−	+	−	+	−
−	−	+	−	+	−	o	−	o	−	o	−	−	−	+	−	+	−
−	+	+	−	+	−	o	−	o	−	o	−	−	−	+	−	+	−
−	−	+	−	+	−	−	−	+	−	+	−	−	+	+	−	+	−
−	−	+	−	+	−	o	+	o	−	o	−	o	+	o	−	o	−
o	−	o	−	o	−	−	−	+	−	+	−	−	−	+	−	+	−
												−	+	+	−	+	−
												−	−	+	−	+	−
												−	+	+	−	+	−
												−	+	+	−	+	−
												−	−	+	−	+	−
												−	−	+	−	+	−
												−	−	+	−	+	−
												−	−	+	−	+	−
												o	−	o	−	o	−

X+M+L− //−−− 25 pro.

X+M+L− //−−+ 7 pro.

−−− 5 ind.

~~−−+~~

−−+ 3 ind.

No M/X c.o. No Xyl+ Lac+.

Among Xyl−, 28 L− : 10 L+.

Xyl+ all L−

H213 analysis

6/11/79.

Streaks of single Mal v colonies show:
Lac−, Gal−, Xyl v, Mtl v, Ara+.

Test for ~~zone~~ hemizygosity of Lac. Four single cols. from Mal EMS to Lac EMS; Mal EMB ~~0~~ No Lac+ found.

3 Mal selections. Mal+ were Xyl+ Mtl+ ; Mal− were Xyl− Mtl−

Test all 3 pairs for mutations.

1+	(T)+	1−	M (T)
2+	TLB,	2−	M (T)
3+	TLB,	3−	M.

3− x 3+ would be suitable for crossing !

Note that (B)M− is Mal+
TLB,− is Mal+

Test

1	557a:	B3		TL	Mal− Mtl+ Xyl+	557 B3
2	(1)	B7		++	Mal− Mtl+ Xyl−	
3		B40		TL	Mal− Mtl+ Xyl+	557 B40
4		A20		M	Mal+ Mtl− Xyl−	557 A20
5	(2)	6B	✓	TLB,	Mal− Mtl+ Xyl+	557 B6
6		13 B	✓	TLB,	Mal− Mtl+ Xyl+	557 B13
		19A		~~BMM~~	++	
		22A		~~TLB,~~	++	

213AAA. Xyl selections.

23pairs +++ / ---

All Xyl+ were Mtl+;

Xyl	Mal	Mtl	Xyl	Mal	Mtl	
+	−	+	−	−	+	2
+	+	+	−	−	+	1
+	−	+	−	−	−	8

Nutritional tests.

(A1) 1+ TL 2+ TL
1- M(T) 2- M−

Segregations from H213

6/14/49.

+, - isol. from single crossed colonies.

A. Maltose selections

(1). 34 paired selections were Mal+ Xyl+ Mtl+ /// - - -

+ 19 Unpaired +++ 1 + 0 / 1

53 --- 2 + 2 / 4

	Mal	Mtl	Xyl	Mal	Mtl	Xyl	
#3	+	+	+	—	+	+	
7	+	+	+	—	+	—	
40	+	+	+	—	+	+	
20	+	—	—	—	—	—	
(2) #19	—	+	+	—	—	—	} To be checked! ✓ Sound probably +
22	—	+	+	—	—	—	
6	+	+	+	—	+	—	
13	+	+	+	—	+	+	- Must have been picked as + on Mal. (from Mtl??)

53 parental pairs

6 + 2? had one recombinant.

Total crossing over, $< \frac{8}{2 \times 61 + 5} = \frac{8}{107} = 8\%$

Mannitol selections.

AA.

	Mtl	Mal	Xyl	Mtl	Mal	Xyl
3 pairs:	+	+	+	—	—	—
2 "	+	—	+	—	—	—
1 unpaired	+	+	+			
1 "	+	—	+			

←

Test H212 segregant for Het. 558

6/13/49.

556 B4 x 58-161 on Lac, Mal EMS.

Almost pure Lac+. Cal 2% − 61+ : 2− .

Mal 40+ : 6−

100 Lac+ prototrophs tested. None were Lac v

35 Mal+ None Mal v

556-B4 does not carry "Het"

Reversions of H138.

~~5[illegible]~~
559
(558)

6/14/49.

H138 is Lac_1/Lac_2 Mtl v Mal- spont. heterozygote. Is it Mal-/Mal- ?

Streak verified Lac v on Mal EMS. Pick papillae after 3-4 days.

8 "papillae" tested. None were Mal+ at all. Abandon this trial
nor Lac v

6/19/49. Repeat on T(m) Mal.

6/15/49.

Cross 557-3+ x 557-3- on Mal & lac EMS.

No yield! 1 Lac+ colony in 25 plates Not v

Different colony isolates of
H215 are inconsistent

Spontaneous Lac v
Mal hemizygosity

561

6/15/49.

W45 × W677 } Lac EMS.
W67 × W677 }

W45 gave almost no yield: 1 + colony / 15 plates
W67 gave numerous Lac+, ca 2+/>600(?) Lac−

Pick all +'s and check for heterozygosity.

W67.	A ✓	Lac v¼ Mtl v Xyl v Gal v Mal− / Mal−	H214	See infra.
	B.	Lac v Xyl v Mtl v Gal v Mal v	H215 = mixture!	Now Xyl− ? or Xyl+ ! Mal+
W45	C.	Not Lac+.		

H214 streaked on ~~Mal (T Xm)~~. T(m) Mal gave numerous papillae. Pick as H214M+ for hemizygosity test.

6/20. 1-4:

	Mal	Lac
1a	+	✓
b	+	✓
2a	+	✓
b	+	✓
3a	+	✓
b	+	✓
4a		
b		

apparent Mal v is modifier mottling. No − segregants isolated

W1014 x W588 562

6/17/49.

Cross W1014 x W588 on EMS, Lac, Mal for percentage of Mal v in heterozygotes.

9 Lac+ / 408 Lac −
31 Mal Lac+ / 191 Mal −

Mal− Mal+
DM Lac− x TLB, Lac+
Should give excess Lac+!!
Note deviation!! Should also be Het.

These ratios maintained on reincubation!

29 Lac tests. No Lac v
48 Mal " " Mal v

After 24 h. reincubation, additional +'s picked:

Mal.	4	No v.
Lac	18	10 likely heterozygotes

Check for other factors
#1-8 Lac v colls. picked OK
9, 10 mass pick.

	Lac	Mal	
1	v	+	Reisolate from Lac EMS.
2	v	+	
3	v	−	
4	v	+,− v?	
5	v	−	
6	v	+	
7	v	+	
8	v	−	
9	+,−	−	
10	+,−	+,−	Ind. colonies rather small.

Reisolate H168 from Jelle transfers. 583

6/18/49.

MRZ. sent "H168": 5a1, 5a2, 5a3, "Swis 8":
Also "8 - 215, 216, 217.

1. 5a1, "8" both show no Xyl+ component when streaked out from plant.
Lac v reisolated from each of these 4 isolates. Recheck from Lac EMS for Xyl, Mtl, Lac v components!

#3 = 5a1
#6 = 5a2
#9 = 5a3
#13 = "8"

} Lac v Mtl v Xyl− !!!

28: 215, 216 both Lac+, — 217 Lac+ 216 is scarcely prototrophic. Lac v isolated from 215, 216 prototrophs on Lac EMS. 217 is pure Lac+, reverts fairly readily to prototrophy

6/19/49.

1. W1014-1 x W1015-1 Mal v F2
2. " -2 x " -2 "
3. W478 x 566-B4 Lac v F2 97 Lac+ : 3- ; 102 M+ : 11-
~~4. W1014-1 x 566-B4 BM-(Mal-) x TLB,~~ Note reversal of linkage relationships c̄ 566-B4!

1, 2 gave very low yields! - colonies scoured like + or uncertain.

1. Mal: 10 tests all Mal-.
   Lac 10 " " Lac- ! (of course! both parents Lac

2. Mal 8 tests 6 Mal- 2 Mal+
   Lac 18 " all -

(3) 100 tests each for Lac v and Mal v (200 total)
2 likely heterozygotes on Lac ~~[illegible]~~ None on Mal.

1 Lac v Mal+ ✓
2 Lac v Mal+ ✓

Note. These heterozygotes Mal+. This cross also gaves Mal+ prototrophs in excess!

v. infra.

6/20/49.

Papillae from W108 in Gal EMB picked and purified. Four isolates tested (may be same):

	1	2	3	4	
Gal	+	+	+	+	(fades)
Glu	—	—	—	—	
Tre	—	—	—	—	
Mannose	—	—	—	—	
Mtl	—	—	—	—	
Sorbitol	—	—	—	—	
Mal	—	—	—	—	
Lac	—	—	—	—	
W	1016	1017	W1018	1019	

4/546

Loss of Xyl+ from H212.

6/21/49.

Brush Lac, MAL v on Xyl EMB, Lac EMS to find possible illustrations of losses of Xyl v.

A.	All Xyl v. #14 mostly Xyl-. Reisolate from Lac EMS.		40
(B)	" #7 " " " " " "		12
(E).	16 tests. all Xyl+. #9 Xyl- but no growth on EMS. ∴ a segregant streaked out on Lac EMB		16
(C)	V12. #3.	24 tests.	24
(D)	V12. #26.	40 tests	40

Restreak E9, C3 and D26 on Lac EMB.

C, D pure Lac+

E pure +, − No v.

(F).	ca. 60 tests	1/~~La~~ Xyl− was pure Lac+	60
(X) } (Y) }	80 tests	No Xyl−	80
		Σ	272

∴ 272 tests of Lac v, no Xyl− (i.e. Xyl+ losses) were found.

Crosses (fertility tests)

6/21/49.

1. Yr0 × W1014 — V. good yield.
2. W588 × W1014 — No yield!
3. W1015 × W1014 — Good "
4. W1015 × 58-161 — "
5. W1015 × WY78
6. WY78 × W677 (for Xyl ± Lac −).

H. 50 Lac ± tests: No Lac ± — 237 Lac+ : 2 Lac−
5. " " — 1408 Lac+ : 13 Lac−
[illegible]. 100 Mal ± tests " [Mostly Mal+ as expected].
100 Lac ± tests. " 547 Lac+ : 143 Lac− as expected.

1014 = BM Lac Mal 1015 = TLB, [redacted] Lac

6-23-49

H213	Mal (3 plates)					
	+	−	V			
A	42	397	38	(2 plates partially smeared)		
B	65	394	24			

H215	Mal (4 plates)			Lac (6 plates)			Xyl (2 plates)		
	+	−	V	+	−	V	+	−	V	
C	cā 460	0	0	0	1112	174	0	cā 320	0	
D	cā 640	0	0	0	290	131	0	cā 300	0	3 lac plates no good
E	0 (C)	cā 480	0	0	435	196	0	cā 240	0	
G	cā 430	0	0	0	719	122	0	cā 480	0	1 lac plate no good

Mal Segregation of H215

568

6-23-48

H215 was a Lac+ prototroph from W67 x W677 on Lac EMS. This prototroph was streaked out initially on EMS Lac, and on other EMB sugars, where it was scored as Mal$\underline{v}$, Lac$\underline{v}$ etc. The EMS plate & the initial streaking was preserved as 568-1.

16 single colonies from 568-1 picked and streaked on EMB Lac, EMB Mal and punched on EMS Lac.

	Lac	Mal
1	v	−
2	v	+
3	v	+
4	v	+
5	v	−
6	v	+
7	v	−
8	v	−
9	v	+, − v?
10	−	+
11	v	+
12	v	+ (−)
13	v	+
14	v	−
15	v	+
16	v	+, v?
17	v	−
18	v	−
19	v	+
20	v	+

Streaked out en masse from −1.

Mal EMB Many +, − colonies. Some + colonies had a variegated appearance but not distinctly Lac$\underline{v}$. Looks for Mal / Xyl crossovers.

59 Mal+ tested were Xyl−

42 Mal− tested. 41 Xyl+ 1 Xyl−? → TLB1 − Restreak as 568-2. Probably W677!

Mal EMS. 100+ tested for Mal$\underline{v}$. None Mal$\underline{v}$. 7 Mal−.

May be mixture of Mal+ Xyl− and Mal− Xyl+.

W112 + W811 λ-disruptions.

6/23/49ff.

Irradiate W811 on EMB lac 10 secs. Rub 200 colonies and brush against W578 to test for λ+.

Due to high incubator temperature, readings sometimes indistinct. 5 isolates selected are possibly λ−. Streak out on lac EMB

All but #2 are λ−. This may be mixed.
Check remaining 4 for λ⁵: (using W811)

These 4 cultures are resistant to W811.

Ditto ≡ Y87. ca 300 tests on W578
Lytic tests very sharp. 1 λ− found in 281 tests.

=570-6 Also λ-sensitive. = W1025

Test for induced lysogenicity.

7/3ff/49 Do. W112 142 tests.
38
"
180

7/8/49 79 2 might be mixed.
259 All λ+

7/15/49. Do. Y70 200 tests. 2 λ− found. W1026-27
both λ− λᴿ

6/29/49.

20 plates, heavily seeded, EMS Lac.
no +.

7/3/49. 30 plates. ca 50/ = 1500. 1 Lac+ prototroph. #1

1. [redacted] Lac v (periclinal)
Substantially Xyl- Mal-. Occasional + colonies + purified pulsed to determine whether parentals.
3 Xyl+ were Mal+ Lac- Gal+ Mtl+, probably parental.
4 Mal+.

7/8/49. 35 plates ca 30/ = 1000
2 Lac+ and 1 mucoid Lac+ prototrophs.
7/9 35 plates 1 Lac+.
} 4 Lac v
#571: 2-5

1. Lac v ⊙ Mal- Xyl- [redacted]

2	Lac v ⊙	Mal+	Xyl+ Mtl+	(Bu.)
3	Lac v ●	Mal-	Mtl- Xyl-	Completely
4	Lac v ⊗	Mal-	Mtl v Xyl v	inviable 1/23/50
5	Lac v ⊙	Mal-	Mtl- Xyl-	

3-5 are predominantly Mal-. A few Mal+ colonies were seen, but were undoubtedly parental or other prototroph contamination.
2-5 are homogenously as above., as tested by comparing s.c.i with entire original.

Modified linkage-ratio test. 572

6/29/49.

A.	W1022 556 B_4	x 58-161	}	Lac, Mal, Gal EMS ± B_1
B	W677	x 58-161	}	

A + B rather badly contaminated in 2 runs. Parents should be repurified, but this is likely due to medium or training.

But on uncontaminated plates, A shows excess Mal+ B shows ca 10%. Also almost pure Lac+

Counts:

A). Lac EMS:

+	− III	Mal +	− II	Gal +	−
3	0	19	1	(scoring??)	
4	0	27	2		
36	0	10	0		
6	0	29	0	38	I 1 sect.
43	1	16	1		
37	2	67	3		
26	1				
49	1	139	7 / 146.		
204	5 / 209	95.2%			
97.6%					

B)

34	36	5	32	scoring different but ca 30% +.
29	39	9	66	
23	35	15	135	
33	53	6	82	
24	34			
26	27			
39	73			
203	297 / 500	35	315 / 350	
40.6%		10%		

Test all exceptions of A on various media.

		Mal	Lac	T1	MR	Xyl	Gal
Mal-	1	−	+	S	−		+
	2	−	+	S	+	+	+
	3	−	+	S	+	+	+
	4	−	+	S	−	−	+
	5	−	+	S	+	−	+
	6	−	+	S	−	−	+
	7	−	+	S	+	+	+
	8	−	+	S	−	−	+
Lac-	1	+	−	S	+	−	+
	2	−	−	S	−	−	−
	3	+	−	S	+	+(−)	+
	4	+	−	R	+	+(−)	+
	5	+	−	S	+	+	+

Note: Mal exceptions are not related to Lac exceptions. Mal-Xyl linkage still firm. V_1 and MR data should be recorded from the Mal+Lac+ populations.

Test Lac+ on Xyl EMB, T1 / EMS Lac

40 tested. #14, 18, 30 are Xyl−
other 37 Xyl+.

Indications of Mal ÷ Xyl linkage.
#33 is a mixture of V_1^R, V_1^S (on Lac EMS).
All others are V_1^S.

Note uniformity of characters from 58-161!

7/1/49.

Lac EMS. Counted 110+ : 36− Test + for lac V.
200 tests. 10 kept for recheck.

In previous work, single V colonies were usually taken to isolate a diploid strain. Now, the broad streak was used to determine whether any diploids are duplex with respect to Mal or to Gal. Streaked out on Lac EMS, and EMB Lac, Gal, Mal

	Lac	Gal	Mal
1	+,−	++	−, +
2	++,−	++	++
3	V	++	++
4	V	++ −	++, −
5	V?	++	+, −
6	V	++	+, −
7	V	++	=, (+)
8	V?	++,−	=, (+)
9	++	++	++ (−)
10	++	++	−

} not V

Mostly Lac − prototrophs.

Lac V Mal+
Lac V Mal+
Lac V Mal−
Lac V Mal−
" "
" "

Retest lac+ prototrophs from 4, 5, 6 to find any duplex types.
8 from #4 are Mal+
8 ea. " #5, 6 " Mal− } all Lac V

7/1/49.

a. Determine sensitivity ranges by inoculating one drop into 10 ml Prunassay + indicated material.

P1

W478.	Chloromycetin/ml	1 mg	100 r	10 r	1 r	
	A2	—	—	—	—	+++
	P4	—	—	—	~~+++~~	
	Aureomycin	1 mg	100 r	10 r	1 r	
		—	—	—	—	+++
	P4	—	—	—	+++	streak out as Amy^R
	Bacitracin		100 u	10 u	1 u	0 u. (control)
	~~P4~~		÷	+++	+++	+++
	P4		—	+++	+++	+++
			—			
W112	Nitroakridin	1 mg	500 r	100 r		
		7 sat.	sat'd.	ox		
		—	—	—		
		—	—	—		
				—		
	2,5, aminonitroak.		sat'd.			
		—	—	—		
		—	—	—		
				—		

P2 Streak out all tubes at lowest inhibitor concentration to find a possible λ-. Bactericidal - or + ↑

Aureomycin and Chloromycetin are bacteriostatic at 1 r/ml or below

Bacitracin and the acridines are bactericidal at these conc.

Test +++ cultures (isolates) for presence of λ.

Beach, chloromycetin and aureomycin survivors (not resistant) all λ +