

June 6, 1949.

A. W478 x W677 m Lac, Mal EMS.

B. W45 x W677 m 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.

Alac	Lac	Mal	Xyl	MFL	bal	
1	-,+ ✓	-	✓	-	✓	} v? Check from EMS.
2	(-,+)	-and+	-,+ ✓	-,+	-,+	
3	✓✓	-	-	-	-,+	
4	✓✓	(-,+)	✓✓	✓✓	✓✓	
5	✓✓	-	-	✓✓	✓	
6	++	-	-	-	++	
7	++	+	+	++ ✓	++	
8	✓+,-	-	✓✓	- ✓	++	
9	✓✓	-	✓✓	✓✓	✓✓ = H211	
10	++	++	++	++ ✓	++	
11	++	-	++	- ✓	- ✓	
12	✓	-	✓	✓✓	✓✓ = H212	

#5 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 Mal+ component in #4.

←
↑

June 9, 1949.

Second batch pulled from A. 100 tests (Lac).

6 possibilities tested. # 13-18.

	Lac	MHL	Xyl	Mal	Gal	
1	13	✓	✓	✓	-	✓
2	14	✓	+	+	+	✓
3	15	✓	✓	✓	-	✓
4	16	✓	✗	✓	-	✓
5	17	✓	+	✓	-	✓
6	18	✓	+	+,- v?	+(-)	✓
7	19	✓	v+	+	-	v-

second batch (200) from Mal EMS: Ca 1/2 measured and are Mal-

8 possible Mal_v, "v" colonies picked for test. 1, 2 looked definitely variegated, 3-8 only somewhat irregular.Only #1 is Mal_v. W^H 213.

June 7, 1949.

- (B) W45 x W677 on Lac EMS. No. 4. No yield, even \bar{c} brot + thiamin
- (A) W478 x W677 on Xyl EMS. (unlabeled) ✓ high yield 125-140+
- (C) W478 x W595 on Lac EMS, Xyl EMS. ✓ v. poor yield diff. to score
- (D) W~~478~~ 677 x W826 on Mal EMS. unl. ✓ high yield 133-131+

A. Xylose. 80 tests.

Miscord-'s: HHT / 111

72 tests. 2 possible Xyl v.

#1 Xyl v Lac v
 #2 Xyl star Lac - not Lac v

C. Xylose 40 tests
 Lac 7 "

Mostly -'s. 1? No v.
 No v.

D. Maltose 100 tests

2 unlikely Lac v. Not v /

6/12/49

A Xyl. 100 adml. tests.
 3 possible Xyl^v.

	Xyl	Gal	Mal	M+L	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.

W478 x W945

6/9/49

	lac	Mal	Gal	Xyl	MFL	Ara	
1.	V	-	-	-	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 striking variation on four sugars. The Gal factor here resembles that of W583. #3 might also be useful as a Gal - heterozygote.

Segregation of W209, ~~210~~
 reversal of Hcl

6/9/49

	Lac	Xyl Xyl	MFL	Ara	Lac	Xyl	MFL	Ara
Lac selection.	+	-	-	+	-	-	-	-
	+	-	-	+	-	-	-	+
	+	-	-	+	-	-	-	+
	+	-	-	+	-	-	-	+
	+	-	-	+	-	-	-	+
	+	-	-	+	-	-	-	-
	+	-	-	+	-	-	-	-
	+	-	-	+	-	-	-	-
MFL Selection	-	+	+	-	-	-	-	-
	-	+	+	+	+	-	-	+
	-	+	+	-	+	-	-	+
	-	+	+	-	-	-	-	+
	-	+	+	-	-	-	-	+
	-	+	+	-	-	-	-	+
	-	+	+	-	+	-	-	+
Ara select.	+	-	-	+	-	-	-	-
	-	-	-	+	-	-	-	-
	+	-	-	+	-	-	-	-
	-	-	-	+	-	-	-	-
	+	-	-	+	-	+	+	-
	+	-	-	+	-	-	-	-
	+	-	-	+	-	-	-	-
Xyl sel.	-	+	+	-	+	-	-	+
	+	+	-	+	-	-	-	+
	-	+	+	-	+	-	-	+
	-	+	+	-	+	-	-	+

Mg on recombination

534

6/14/49

58-161 x 410 ca 8x from 42. Mix 1ml \bar{c}

A 1ml H₂O

Colonies:
13, 12, 6, 2

8 = \bar{c} .

B 1ml M/1 MgSO₄

3, 4, 7, 0

3.5 = \bar{c} .

Incubate 2:30 PM - 10:20 PM.
mT(B.)

Dilute 1:10 and plate 1ml

MgSO₄ alone did not augment recombination.

Gal, Mal recessions
of H209-210

555

6/11/49.

Pick single colonies from EMS lac to EMBlac, EMS ^{Mal} ~~lac~~ ± EMS gal for recessions study.

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

210 is Gal-Mal- " " " " "

Hold on EMS for recessions.

A few papillae which appeared were not recessions, nor lac_v! [H210 presumed ↓ 3/21/50].

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

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

6/20 B. Gal+. Two papillae isolated. Not yet purified but predominantly lac_v, almost pure Gal+ & no signs of Gal segregation.

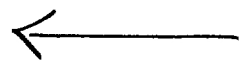
6/21. 8 s.c.i. from Gal EMS. All preponderantly lac_v. No Gal- or mottled Gal_v seen. Some colonies mottled on Gal EMS, like Mal above. Retains the most suspicious for Gal- component. None of 24 colonies tested yielded a Gal-. ∴ Gal also hemizygous.

conclusion: Mal and Gal both hemizygous.

BS, B7 reverted for T, L. test on

	BM	B, M	BB,	BB, M
S, { 7	++	++	-	++

both are only M-costs as demonstrable.



6/11/49.

	lac ^u	streaked			lac ⁻ and +	selections.				
+select.	lac#	MTL MTL	Gal	Xyl		-select. lac	MTL MTL	Gal	Xyl	
A H211	+ + + + + +	-	+	-		-	-	-	-	
		↓	↓	↓		↓	↓	↓	↓	
B H212	+ + + + + + + +	-	+	-	Nutr + + T +	-	-	-	-	Nutr MTL MTL 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 reversion noted. B1, B5 appear to have
 reverted on T, L. Replate and check mutations

6/14/49.

	Lac	MH	Xyl	↔	lac	MH	Xyl	
(B) H211 lac sel.	+	-	-		-	+	+	20 pairs
	+	-	-		-	+	+	1 pair
					-	-	-	3 unpaired.
(C) Xyl sel.	-	+	+		-	-	+	17 pairs
	● -	+	+		+	-	-	6 pairs
					-	-	-	9 unpaired
					+	+	-	1 "
					+	+	-	3 "

Xyl + relatively scarce!

Note scarcity of Xyl + Lac +.

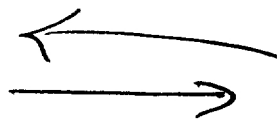
	lac	MH	Xyl	lac	MH	Xyl	
(D1) 212	+	-	-	-	+	-	# 344 is Lac ⁺
lac	+	+	-	-	+	-	Also?
21	+	+	+	-	+	-	1, 2, 4, 6 16?
2	+	+	+	-	+	+	Do not include ←
1	+	+	+	-	+	+	
6	+	+	+	-	+	+	
5	+	+	+	-	+	+	
1	+	+	+	-	+	+	
?				-	-	-	1 unpaired
				-	-	-	5 "
(D2)				-	+	+	# 7 lac ⁺
				-	+	+	# 24 - Lac ⁺

See next page.

See next page.

Each of these cultures was lac⁻ on retest. Pick, as possible
single lac⁺ and check on MH, Xyl. #1-9 were
lac⁺ MH⁻ Xyl⁻. #2? ~~lac⁻ MH⁻ Xyl⁻~~ ✓: Xyl⁻ lac⁺
#10? lac⁺ MH⁺ Xyl⁺

Restreak these.



H212

Lac xyl.	Lac			MHE			Xyl.			Lac			MHE			Xyl.		
	A	B																
D2. 1	+	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-
2	+	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-
3	+	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-
4	+	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-
5	+	0	-	-	0	-	+	-	-	+	+	0	-	-	0	-	-	0
6	+	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-
7	V	-	-	V	+	-	+	-	-	+	+	-	-	-	-	-	-	+
8	+	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-
9	+	0	-	-	0	-	+	-	-	+	+	-	-	-	-	-	-	+
10	+	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	-	+	+	+	+	+
2	V	-	+	+	V	+	+	-	-	-	+	-	-	+	+	+	+	+
3	+	-	+	-	V	+	+	-	-	-	+	-	-	+	+	+	+	+
4	V	-	+	-	V	+	+	-	-	+	V	-	+	+	+	+	+	+
5	+	-	+	-	V	+	+	-	-	+	+	0	-	+	+	+	+	+
6	V	-	+	-	V	+	+	-	-	+	+	-	-	+	+	+	+	+
7	+	-	+	-	V	+	+	-	-	+	+	-	-	+	+	+	+	+
8	+	-	+	-	V	+	+	-	-	+	+	-	-	+	+	+	+	+
9	+	-	+	-	V	+	+	-	-	+	+	-	-	+	+	+	+	+
10	+	-	+	-	V	+	+	-	-	+	+	-	-	+	+	+	+	+

Summary above is -

Check on "+" of:
 1, 2, 3, 4, 6, 16, 24, 34, 38 of D1 and 7 of D2.
 #1-10 556DV

← #10 is pure lac+ Xyl+. Nutritionally
 Prototrophic, but Malt+, therefore a contaminant.
 Also resembles Proteus, but not a spreader
 T1, T6, T7 - resistant

6/11/49.

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

Test for ~~some~~ hemizygosity of Lac. Use single cols. from
Mal EMS to Lac EMS; Mal EMB No lact found.

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

Test all 3 ^{pairs} for nutrition.

1+	(T)+	1-	M(T)
2+	TLB ₁	2-	M(T)
3+	TLB ₁	3-	M.

3- x 3+ would be suitable for crossing!

Note that (B)M⁻ is Mal⁺
TLB₁⁻ 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 B3	TLB ₁	Mal ⁻ Mtl ⁺ Xyl ⁺	557 B6
6	B3	TLB ₁	Mal ⁻ Mtl ⁺ Xyl ⁺	557 B3
	19A	B3	++	
	22A	F3	++	

213AAA. Xyl selection.

23 pairs +++ / ---

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-

6/14/49.

+,- isol. from single mosaic colonies.

A. Maltose selection

① 34 paired selections were Mal+ Xyl+ Mtl+ // - - -
 + 19 Unpaired +++ 1 + 0 / 1
 --- 2 + 2 / 4
 53

	Mal	Mtl	Xyl	Mal	Mtl	Xyl
# 3	+	+	+	-	+	+
7	+	+	+	-	+	-
40	+	+	+	-	+	+
20	+	-	-	-	-	-

② #19	-	+	+	-	-	-
22	-	+	+	-	-	-
6	+	+	+	-	+	-
13	+	+	+	-	+	+

} To be checked!
 ✓ Scored properly +
 - Must have been picked
 as + m Mal. (from Mtl??)

53 parental pairs
 6 + 2? had one recombinant.

Total crossing over, $\frac{8}{2 \times 61 + 5} = \frac{8}{107} = 7\%$

Mannitol selection.

AA.

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



6/13/49.

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

Almost pure Lac+. Ca 2% - 61+ : 2- . ~~Mal+~~
 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.

~~558~~
559
(558)

6/14/49.

H138 is Lac₁/Lac₂ Mal⁻ spant. heterozygote. Is it
Mal⁻/Mal⁻ ?

Struck onificid Lac⁺ on Mal EMS. Pick papillae after 3-4 days.

8 "papillae" tested. None were Mal⁺ at all. Abandon this trial
no Lac⁺

6/19/49.

Repeat on (Lac⁺) Mal.

6/15/49.

Cross 557-B+ x 557-3- on Mal + lacEMB.

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

Different colony isolates of
H215 are inconsistent

Spontaneous Lac⁻
Mal hemizygosity

6/15/49.

W45 x W677 }
 W67 x W677 } Lac EMS.

W45 gave almost no yield: 1 + colony / 15 plates
 W67 gave numerous Lac+, ca 2+ / 5000 Lac-
 Pick all +'s and check for heterozygosity.

W67.	A. ✓	<u>lac⁻</u>	<u>MH⁺</u>	<u>Xyl⁺</u>	<u>Gal⁺</u>	Mal- / Mal-	H214	See infra.	
	B.	<u>lac⁻</u>	<u>Xyl⁺</u>	<u>MH⁺</u>	<u>Gal⁺</u>	Mal ⁺	H215	Now Xyl-?	
W45	C.	Not lact.						= mixture!	or Xyl+! Mal+

H214 streaked on ~~Mal~~ (Mal⁺). 7 (or) 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⁺ is
 modifier nothing. No -
 segregants isolated

6/17/49.

Cross W1014 x W588 on E14S, Lac, Mal for persistence of Mal^v in heterozygotes.

9 Lac+ / 408 Lac -
31 ^{Mal} Lac+ / 191 ^{Mal} Lac -

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

These ratios maintained on reincubation!

29 ~~lac~~ 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 cols. picked OK
9, 10 mass pick.

	Lac	Mal
1	v	+
2	v	+
3	v	-
4	v	+, - ^{v?}
5	v	-
6	v	+
7	v	+
8	v	-
9	+, -	-
10	+, -	+, -

Reisolate from Lac EMS.

Det. colonies rather small.

6/18/49.

MARZ. sent "H168": 5a1, 5a2, 5a3, "Series 8":

Also "8" - 215, 216, 217.

1. 5a1, "8" both show no Xyl+ component when streaked out from slant.

Lac_v isolated from each of these 4 isolates. Recheck from lac EMS for Xyl, MH, Lac_v components!

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

}	Lac _v	MH _v	Xyl-	!!!
	<hr/> <hr/>			

28: 215, 216 both lact, - 217 lact

prototrophic.
 on lac EMS.

Lac_v isolated from 215, 216 prototrophs
 217 is pure lact, reverts fairly readily to prototrophy

216 is scarcely
 readily to prototrophy

6/19/49.

1.	W1014-1	x	W1015-1	Mal \times	F2	
2.	" - 2	x	" - 2	"		
3.	W478	x	566-B4	lac \times	F2	97 Lac+ : 3- : 102 Mal+ : 11-
4.	W1014-1	x	566-B4	Mal-(Mal-)	x	F2, Note reversal of linkage relationship 566-B4!

1, 2 gave very low yields! - colonies scold like + or uscutaris.

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 \times and Mal \times (200 total)
2 likely heterozygotes on lac ~~and Mal~~ None on Mal.

1	lac \times	Mal+	✓
2	lac \times	Mal+	✓

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

v. uifer.

6/20/49.

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

	1	2	3	4	
Gal	+	+	+	+	(fades)
Glu	-	-	-	-	
Tre	-	-	-	-	
Mannose	-	-	-	-	
MH	-	-	-	-	
sorbitol	-	-	-	-	
Mal	-	-	-	-	
Lac	-	-	-	-	
W	1016	1017	W1018	1019	

of 545

6/21/49.

Brush lac, MALV on Xyl EMB, lac EMS to find possible illustrations of losses of XylV.

A.	All XylV.	#14 mostly Xyl-	Reisolate from lac EMS.	40
(B)	"	#7 " "	" " " "	12
(E)		16 tests. all Xyl+.		16
		#9 Xyl- but no growth on EMS. ∴ a signant.		
		streak out on lac EMB		
(C)		v12. #3.	24 tests.	24
(D)		v12. #26.	40 tests	40

Restreaks E9, C3 and D26 on lac EMB.

C, D pure lact+

E pure+, - NoV.

(F) ca. 60 tests 1/2 Xyl- were pure lact 60

(X) } 80 tests No Xyl- 80

(Y) }
 ∑ 272

In 272 tests of lacV, no Xyl- (i.e. Xyl+ losses) were found.

6/29/49.

1. Y10 x W1014
2. W588 x W1014
3. W1015 x W1014
4. W1015 x 58-161
5. W1015 x W478
6. W478 x W677 (for Xyl⁺Lac⁻).

V. good yield.
No yield!
Good "

4. 50 Lac ⁺ tests:	No Lac ⁺	237 Lac ⁺ : 2 Lac ⁻
5. " "	"	1408 Lac ⁺ : 13 Lac ⁻
1. 100 Mal ⁺ tests	"	[Mostly Mal ⁺ as expected].
100 Lac ⁺ tests.	"	547 Lac ⁺ : 143 Lac ⁻ as expected.

1014 = BM Lac Mal

1015 = TLB, ~~TLB~~ Lac

6-23-49

H213		Mal (3 plates)							
	+	-	✓						
A	42	397	38	(2 plates partially smeared)					
B	65	394	24						
H215		Mal (4 plates)		Lar (6 plates)		Nyl (2 plates)			
	+	-	✓	+	-	+	-	✓	
C	ca 460	0	0	0	1112	174	0	ca 320	0
D	ca 640	0	0	0	290	131	0	ca 300	0
E	0	ca 480	0	0	435	196	0	ca 240	0
G	ca 430	0	0	0	719	122	0	ca 480	0

3 lac plates
no good

1 lac plate
no good

Mal. Segregation of H215

568

6-23-49

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 Thal_v, Lac_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 brushed on EMS Lac.

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

Streakout en masse from -1.

Mal EMB Many +, - colonies. Some + colonies had a variegated
 appearance but not distinctly Lac_v. Look for Mal/Xyl crossovers.

59 Mal+ tested were Xyl-

42 Mal- tested. 41 Xyl+ 1 Xyl-? ^{TLB} Restreaks as 568-2. Probably W677!

Mal EMS. 100+ tested for Mal_v. None Mal_v. 7 Mal-.

Maybe mixture of Mal+ Xyl- and Mal- Xyl+.

6/23/49ff

Inoculate W811 on EMBlac 10secs. Pick 200 colonies and brush against W578 to test for λ +

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

all but #2 are λ - . This may be mixed. Check remaining 4 for λ^S : (using W811)

These 4 cultures are resistant to W811.

Ditto \approx 487.

\approx 300 tests on W578

Lytic tests very sharp.

1 λ - found in

281 tests.

= 570-6

Also λ - sensitive.

= W1025

Test for induced lysogenicity.

7/3/49 Do. W112

142 tests.
38

180 "

7/8/49

79

259

2 might be mixed.

All λ +

7/15/49 Do. 470

200 tests.

2 λ - found.

W1026-27

both λ - λ^R

6/29/49.

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

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

1. ~~lac⁺~~ lac⁻ (periclinal)
Substantially Xyl- Mal-. Occasional + colonies ^{+ purified} picked
to determine whether parental.

3 Xyl+ were Mal+ Lac- Gal+ Mtl+ , probably parental.
4 Mal+.

7/8/49. 35 plates ca 30/ = 1000

7/9 2 Lac+ and 1 mucoid Lac+ prototrophs. } 4 Lac⁻
35 plates } # 471:2-5
1 Lac+.

1. lac⁻ Mal- Xyl- ~~Mal-~~

5	lac ⁻	Mal+
3	lac ⁻	Mal-
4	lac ⁻	Mal-
2	lac ⁻	Mal-

Xyl+	Mtl+] (B.u.g.) completely invariable 1/23/50
Mtl-	Xyl-	
Mtl ⁻	Xyl ⁻	
Mtl-	Xyl-	

3-5 are predominantly Mal-. A few Mal+ colonies were seen, but
were undoubtedly parental or other prototroph contamination.

2-5 are homogeneously as above., as tested by comparing
p.c.i with entire original.

Modified linkage ratio test.

6/29/49.

A.	W1022	x 58-161	}	lac, Mal, Gal
B	W677	x 58-161		
				± B ₁

A + C rather badly contaminated in 2 runs. Parents should be rechecked, but this is likely due to medium or thiamin.

But on uncontaminated plates, A shows recessive + B shows ca 10%. A also almost pure lact

Counts:

A).	Lac EMS:		+	-		Mal	+	-	Gal	+	-	
			3	0		19	1	(Scoring?)	38	I	sect.	
			4	0		27	2					
			36	0		10	0					
			6	0		29	0					
			43	1		16	1	12				
			37	2		67	3					
			26	1								
			49	1		139	7	146.				
			204	5	209	95.2%						
			97.6%									
B)			34	36		5	32					
			29	39		9	66					
			23	35		15	73					
			33	53		6	82					
			24	34								
			28	27								
			39	73								
			203	297	500	35	315	350				
			40.6%			10%						

scoring difficult but ca 30% +.

Test all exceptions of A on various media.

	Mal	Lac	TI	MH	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 MH data should be recorded from the Mal+Lac+ population.

Test Lac+ on Xyl EMB, TI / EMS Lac

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

Indications of Mal \div 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 lacv.
 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 on lac EMS, and EMS 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.

lacv Mal+
 lacv Mal+
 lacv Mal-
 lacv Mal-
 " "
 " "

Retest lac+ prototrophs from 4, 5, 6 to find any duplex types.

8 from #4 are Mal+ } all lacv
 8 ca. " #5, 6 " Mal- }

7/1/49.

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

P1

W478.

Chloromycetin/oul	1mg	100r	10r	1r	+++	
^{A2} _{P4}	-	-	-	-	-	
Aureomycin	1mg	100r	10r	1r	+++	
_{P4}	-	-	-	-	-	
Bacitracin	-	100u	10u	1u	+++	streak out as Amp ^r
_{P4}	-	-	-	-	+++	04. (control)
P4 _{P4}	-	+++	+++	+++	+++	
	-	+++	+++	+++	+++	

W112

Vitro albidin	1mg	500r	100r
	7 sat.	sat'd. or	
	-	-	-
	-	-	-

2,5, amnisicilis etc.	-	sat'd.	-
	-	-	-

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

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

Bacitracin and the acidines are bactericidal at these conc.

Test +++ cultures for presence of λ .

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