

MILK AND SERUM of LACTATING MOTHERS

Virus Used - Lansing Virus - Pool IV of 8-16-49
 Two 2cc frozen amps. - centrifuged
 because of slight flocc. ppt. Original
 virus is 1:10

Mixtures - Virus 1:10 and 1:50 (in saline) distributed
 into 2cc amounts in indicated tubes.
 0.2cc of undiluted serum or milk then
 added and shaken. Left at room
 temp. for 1 hour when inoculation
 begun - lasted 1 1/2 hrs.

Mice - Maxfield 18-20 Gm. females
 8 mice per dilution

<u>Code</u>	<u>SPECIMEN</u>	<u>1:20</u>	<u>1:100</u>	<u>1:1000</u>	<u>1:10,000</u>
A	SERUM	0/8	3 ⁷ /8	—	—
B	MILK	2/8	0/8	—	—
C	SERUM	2 ⁷ /8	0/8	—	—
D	MILK	1/8	2 ⁷ /8	—	—
E	SERUM	2/8	1/8	—	—
F	MILK	1/8	0/7	—	—
G	SERUM	6/8	0/8	—	—
H	MILK	0/8	0/8	—	—
I	SERUM	1 ⁷ /8	0/8	—	—
J	MILK	0/7	1 ⁷ /8	—	—
K	SALINE CONTROL	—	8/8	6/8	3/8

DEC 21 1949

SPEC.

VIRUS

No

1

2

3

4

5

6

7

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11

12

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30

31

32

33

34

35

MORTALITY

LD50

A

0/8

37/8

2/8

0/8

B



DEC 21 1949

MORTALITY LB 50

VIRUS No 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 28 29 30 31 32 33 34 35

SPEC

C

SERUM

2/8

0/8

1/8

2/8

D

PPD

TY
PHSD
D

D

MILK

D

D

[illegible]

DEC 21 1949

SPEC.

G

SERUM

VIRUS No

1 2 3 4 5 6 7 8
VPPD
P D

1/20

1/100

1/20

1/100

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 28 29 30 31 32 33 34 35

MORTALITY

LD50

6/8

0/8

0/8

0/8

10 day
3 day

10 day
2 day

10 day
2 day

10 day
2 day

10 day
2 day

H

MILK

DEC 21 1949

SPEC.

VIRUS

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1

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DEC 21 1949

SPEC.

VIRUS NO

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	28	29	30	31	32	33	34	35
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MORTALITY

LD 50

[illegible]
$$\frac{8}{8}$$

$$\frac{8}{3}$$

VIRUS CONTROL

STANDARD B & P "NOTEAR"

DEC 23 1949

TEST FOR LANSING ANTIBODIES IN MILK AND SERUM OF LACTATING MOTHERS

VIRUS USED - Lansing virus - Pool IV of 8-16-49
One three cc frozen ampule. - centrifuged
because of slight flocc. ppt. Original virus
is 1:10

MIXTURES - Virus 1:10 and 1:50 (in saline) distributed
in 0.2 cc amounts in indicated tubes.
0.2 cc of undiluted serum or milk then added
and shaken. Left at room temp. for 1 hour
and then placed in ice bath for inoculation.
Inoculation lasted 1 hour.

MICE - Masfield 18-20 gram females
8 mice per dilution

<u>CODE</u>	<u>SPECIMEN</u>	<u>1:20</u>	<u>1:100</u>	<u>1:1000</u>	<u>1:10000</u>	
L		SERUM	1/8	1 [?] /8	—	—
M		MILK	1/8	0/8	—	—
N		SERUM	2 [?] /6	0/8	—	—
O		MILK	1 [?] /8	3 [?] /8	—	—
P		SERUM	1/8	1 [?] /8	—	—
Q		MILK	2/8	0/8	—	—
R		SERUM	2 [?] /8	2/8	—	—
S		MILK	7/8	4/8	—	—
T		SERUM	1/8	0/8	—	—
U		MILK	2 [?] /8	0/8	—	—
V	VIRUS CONTROL		—	8/8	6/8	4/8

DEC 23 1949

MORTALITY L.D.50

SPEC. VIRUS No. 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 28 29 30 31 32 33 34 35

PPPPD

 $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{0}{8}$

L

SERUM

M

MILK

DEC 23 1949

SPEC. VIRUS No 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 28 29 30 31 32 33 34 35 MORTALITY LD50

2 1/6

N

SERUM

0/8

1 1/8

O

MILK

1 3/8

STANDARD B & P "NOIBAR"

DEC 23 1949

MORTALITY LD50

SPEC. VIRUS No. 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 28 29 30 31 32 33 34 35

1/8

P

1/20

SERUM

D

12/8

1/100

P D

MISSING

2/8

Q

1/20

MILK

0/8

1/100

[illegible]

DEC 23 1949

MORTALITY LD₅₀

31 32 33 34 35

28 29 30 31 32 33 34 35

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

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 28 29 30 31 32 33 34 35

8/8

6/8

3/8

SPEC

VIRUS NO

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1/100

1/100

1/1000

V

VIRUS CONTROL

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

STANDARD B & P "NOTEPAR"

JAN 3-1950

TEST FOR LANSING ANTIBODIES IN MILK AND SERUM OF LACTATING MOTHERS

VIRUS USED

- Lansing Pool IV of 8-16-49
one 2cc and one 3cc frozen ampule - thawed and
centrifuged because of slight flocc. ppt. Original virus 1:10

MIXTURES

- Virus 1:10 and 1:50 (in saline) distributed in 0.2cc
amounts in indicated tubes.
0.2 cc of undiluted serum or milk then added
and shaken. Left at room temperature for 1 hour
and then placed in ice bath for inoculation.
Inoculation lasted 1 hour

MICE

- 18-20 gram Maffield female albino
8 mice per dilution

CODE	SPECIMEN	1:20	1:100	1:1000	1:10000
A	SERUM	3/8	1/8	-	-
B	MILK	3/8	0/8	-	-
C	SERUM	3/8	2/8	-	-
D	MILK	8/8	7/8	-	-
E	SERUM	1/8	0/8	-	-
F	MILK	6/8	4/8	-	-
G	SERUM	3/7	1/8	-	-
H	MILK	8/8	7/8	-	-
I	SERUM	2/7	0/8	-	-
J	MILK	5/8	4/8	-	-
K	SERUM	1/8	1/8	-	-
L	MILK	5/8	4/8	-	-
M	VIRUS CONTROL	— 8/8	8/8	7/8	3/8

JAN 3 1950

SPECIMEN	VIRUS	No	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	28	29	30	31	32	33	34	35	MORTALITY	LD50			
A [REDACTED] SERUM	1:20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3/8			
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B [REDACTED] MILK	1:100	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/8			
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JAN 3 1950

MORTALITY LD50

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

3/8

2/8

8/8

7/8

C

SERUM

D

MILK

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WPP D

WPP D

WPP D

WPP D

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WPP D

WPP D

WPP D

WPP D

WPP D

WPP D

WPP D

WPP D

JAN 3 1950

MORTALITY LD 50

SPECIMEN VIRUS NO

E

SERUM

 $\frac{1}{8}$ $\frac{0}{8}$ $\frac{6}{8}$ $\frac{4}{8}$

P D

E

P PP D
EE PP D
EE PP DP PP D
EE PP D
EE PP D

P PP D

P PP D

P D

P PP D

P PP D

P PP D

P PP D

F

MILK

JAN 3 1950

MORTALITY LD50

SPECIMEN VIRUS No 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 28 29 30 31 32 33 34 35

G

SERUM

3/7

1/8

8/8

7/8

H

MILK

1:20
1:100

1:100

STANDARD B & P "NOTAR"

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 28 29 30 31 32 33 34 35

1 D

ppD

1:20

I

[REDACTED]

SERVA

1:100

0/8

? (NSD)

P D

P P P D

1:20

P D

J

[REDACTED]

MILK

ppD

ppD

ppppppD

1:100

P D

4/8

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

MORTALITY

LD 50

1/8

1/8

5/8

4/8

K

1:20

SERUM

L

1:20

MILK

JAN 3 1950

MORTALITY	LD50
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
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86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

[illegible]~~2/2~~

1:20

ppD

2 PD

ppD

$$M^2$$

1:100

DE D

PPD

EECS

www.D

$\frac{P}{F}$
 $\frac{D}{F}$

 $\frac{1}{2}$
$$M_3$$

1:000

9

pppp

2. P

2	1	1
1	1	1

2	1
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~~3/8~~
$$M_4$$

01/11

pp D

$\frac{P}{P}$

3	1	1
2	1	1
1	1	1

2.1

JAN-26-1950

TEST FOR LANSING ANTIBODIES IN MILK AND SERUM OF LACTATING MOTHERS

VIRUS USED - Lansing virus - Pool IV of 8-16-49
Two 3cc frozen ampules. - Thawed and centrifuged
because of slight flocc. ppt. - Original virus is 1:10

MIXTURES - Virus 1:10 and 1:50 (in saline) distributed in 0.2cc
amounts in indicated tubes. 0.2cc of
undiluted serum or milk then added and shaken.
Left at room temperature for 1 hour and then
placed in ice bath for inoculation.
Inoculation lasted 1½ hours.

MICE - 18-20 gram weanling female albino
8 mice per dilution.

CODE	SPECIMEN	1:20	1:100	1:1000	1:10000
A	SERUM	0/8	0/8	-	-
B	MILK	6/8	5/8	-	-
C	SERUM	0/8	0/8	-	-
D	MILK	3/8	1/8	-	-
E	SERUM	0/8	0/8	-	-
F	MILK	4/8	13/8	-	-
G	SERUM	0/8	0/8	-	-
H	MILK	6/8	1/8	-	-
I	SERUM	3/8	0/8	-	-
J	MILK	5/8	2/8	-	-
K	SERUM	1/8	0/8	-	-
L	MILK	7/8	4/8	-	-
M	SERUM	2/8	0/8	-	-
N	MILK	4/8	4/8	-	-
O	VIRUS CONTROL	7/8	8/8	7/8	3/8

JAN 26 1950
MORTALITY LD50

MORTALITY LD50

 $\frac{8}{10}$ $\frac{8}{10}$ $\frac{3}{8}$

8/1

[illegible]

SERUM

101 DAYS
AFTER
DELIVERY

A hand-drawn diagram of a semi-elliptical arch. The arch is drawn with a thick black line on a grid background. It consists of a rectangular base with a semi-elliptical top. The arch is centered horizontally and its height is approximately half the width of the base.

8716

120

1.00

120

15/100

pp d

D	
P	

२७

PD

JAN 26 1950

MORTALITY

LD50

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

F

1:20

SERUM

0/8

340 DAYS
AFTER
DELIVERY

1:100

0/8

F

1:20

MILK

4/8

JAN 26 1950

MORTALITY L D 50

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

G

SERUM

117 DAYS AFTER DELIVERY

H

PLK

0/8

0/8

6/8

8/1

PPD

uns D

P D

PPD

ED

? P uns D

1:20

1:100

1:20

1:100

JAN 26 1950

MORTALITY L D50

SPECIMEN VIRUS No 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 28 29 30 31 32 33 34 35

I

SERUM

77 DAYS
AFTER
DELIVERY

J

MILK

3/8

0/8

5/8

2/8

JAN 20 1950

MORTALITY L.D50

SPECIMEN VIRUS No 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 28 29 30 31 32 33 34 35

K

1:20

SERUM

1/8

281 DAYS
AFTER
DELIVERY

1:100

0/8

L

1:20

MILK

8/1

8/4

1:100

P PP

JAN 26 1950

MORTALITY L D 50

SPECIMEN VIRUS No 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 28 29 30 31 32 33 34 35

M

SERUM

1:20

PPPPD

PD

2/8

55 DAYS
AFTER
DELIVERY

1:100

0/8

N

MILK

1:20

PPPD

PPPPD

PPPPD

4/8

1:100

PPPPD

PD

PPPPD

PPPPD

4/8

JAN-27-1950

TEST FOR LANSING ANTIBODIES IN MILK AND SERUM OF LACTATING MOTHERS

VIRUS USED - Lansing virus - Pool IV of 8-16-49
Two 3 cc ampules used

Mixtures as in preceding tests.

MICE - 18-20 gram mayfield female albinos
8 mice per dilution

Inoculation lasted $1\frac{1}{2}$ hours.

CODE	SPECIMEN	1:20	1:100	1:1000	1:10000
A	SERUM	5/8	3/8	-	-
B	MILK	7/8	8/8	-	-
C	SERUM	1/8	1/8	-	-
D	MILK	7/8	0/8	-	-
E	SERUM	5/8	1/8	-	-
F	MILK	8/8	6/8	-	-
G	SERUM	2/8	1/8	-	-
H	MILK	4/7	0/8	-	-
I	SERUM	4/8	2/8	-	-
J	MILK	4/8	2/8	-	-
K	SERUM	1/8	0/8	-	-
L	MILK	2/8	2/8	-	-
M	SERUM	2/8	1/8	-	-
N	MILK	8/8	6/8	-	-
O	VIRUS CONTROL	—	8/8	6/8	3/8

[illegible]

SERUM

87 DAYS
AFTER
DELIVERY

4713

$$5/8$$

3/8

$$\frac{8}{7}L$$

8/8

JAN 27 1950

MORTALITY LD50

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

C

1:20

SERUM

1/8

108 Days
AFTER
DELIVERY

1:100

PD

1/8

D

1:20

MILK

7/8

D3 SMEAR SHOWED NO BACT. IN BRAIN. BAP-O

CNS D

CNS D

P D

P P P P P P P P P P

0/8

1:100

STANDARD B&P "NOISEAR"

JAN 27 1950

MORTALITY L D 50

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

F

SERUM

5/8

P P P P D

P P D
P P P P D

P P D

112 DAYS
AFTER
DELIVERY

1/8

F

MILK

8/8

P P P P D
P P P P DD
W P P P D

P P D

D
P P D
P P D

W P D

P P P P D

P P D

6/8

JAN 27 1950

MORTALITY LD50

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

G

SERUM

2/8

190 DAYS
AFTER
DELIVERY

1/8

H

MILK

4/7

8/0

STANDARD B&P "NOTEPAR"

JAN 27 1950

MORTALITY LD50

VIRUS No 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 28 29 30 31 32 33 34 35

SPECIMEN

I

1:20

PD

4/8

SERUM

40 DAYS
AFTER
DELIVERY

1:100

2/8

J

MILK

1:20

4/8

1:100

2/8

JAN 27 1950

MORTALITY

LO 50

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 28 29 30 31 32 33 34 35

SPECIMEN

K

[REDACTED]

SERUM

192 DAYS
AFTER
DELIVERY

L

[REDACTED]

MILK

1/8

0/8

2/8

8/8

Smear showed no bacteria
PP D
PP D
CNS ?

BAP-000

PP D

P D

JAN 27 1950

MORTALITY LD50

VIRUS No 1 2 3 4 5 6 7 8 1-20 1:100 1:20 1:100 1:20 1:100

SPECIMEN

M

SERUM

51 DAYS
AFTER
DELIVERY

N

SERUM

2/8

1/8

8/8

6/8

1 2 3 4 5 6 7 8 1-20 1:100 1:20 1:100 1:20 1:100

SPECIMEN

M

SERUM

51 DAYS
AFTER
DELIVERY

N

SERUM

2/8

1/8

8/8

6/8

JAN 27 1960

LD50

MORTALITY

35

34

33

32

31

30

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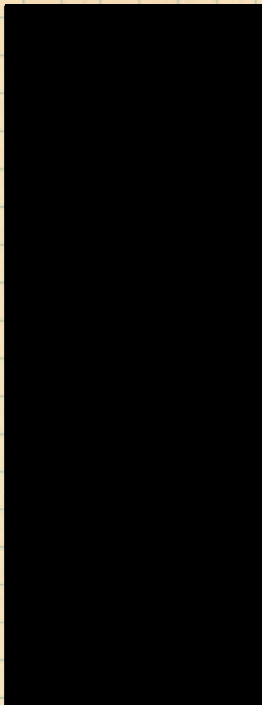
270

271

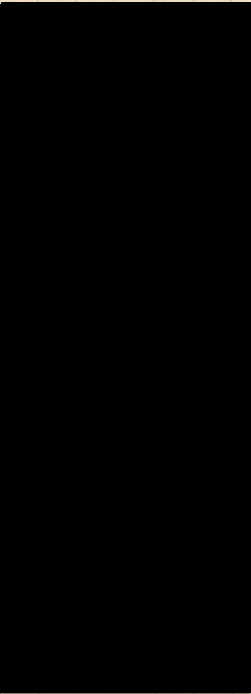
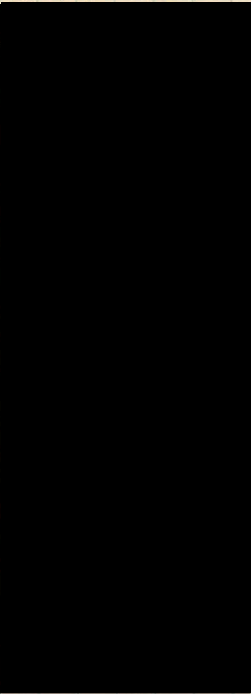
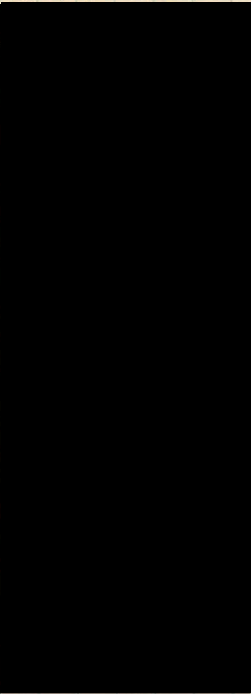
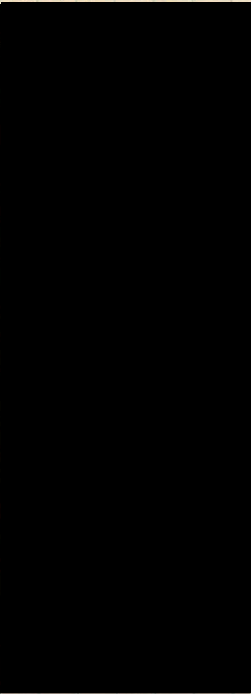
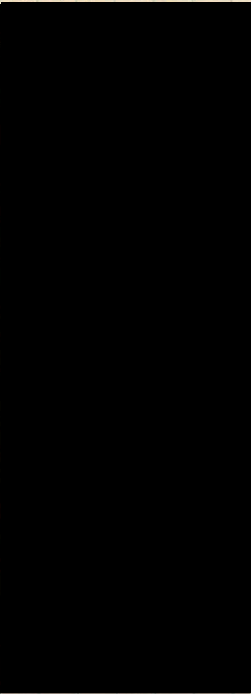
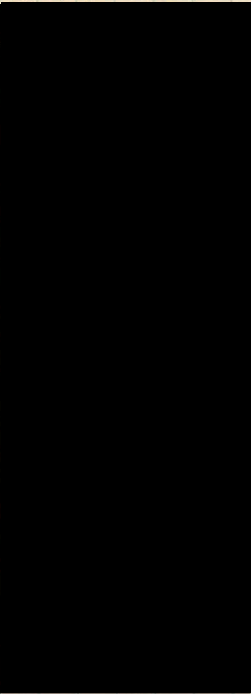
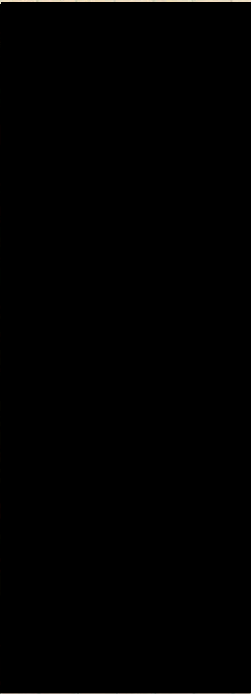
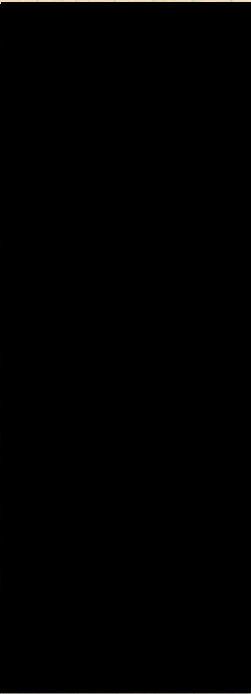
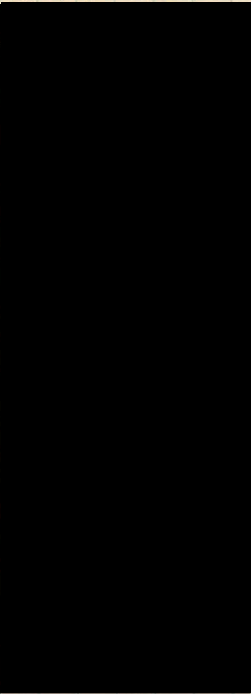
272

HUMAN MILK OF 5/22
SPECIMENS FROM CHRIST HOSP.
PRIVATE PATIENTS OF DR. S. GARNER

5-25-50

<u>NAME</u>	<u># OF COLONIES ON BAP</u>	<u>COMMENT</u>
	300	Large, gray, rough, hemolytic + small dark colonies - no hem.
	300	Staph albus - no hem
	500	Staph albus
	200	Large, gray, round - no hem.
	75	Large, gray, round - no hem
	300	Staph albus
	TMC	Small gray round + large gray round
	TMC	(Same as Fryd)
	50	3 large, gray, rough hemolytic colonies; remainder small, white, round colonies - raised center + no hem.

MAY 25 1950

SPEC.	FINAL VIRUS DILUTION			
	$\frac{1}{20}$	10^{-2}	10^{-3}	10^{-4}
A. HUMAN MILK POOL "A" *	2/8	2/8	—	—
B. MILK POOL (HUMAN) HEATED 100°C	8/8	8/8	—	—
C. HUMAN MILK POOL CENT. MIDDLE LAYER	2/8	0/8	—	—
D. *  O SERUM	8/8	8/8	—	—
E.  + SERUM	7/8	3/8	—	—
F.  O SERUM	8/8	8/8	—	—
G.  O SERUM	8/8	8/8	—	—
H.  + SERUM	2/6	0/6	—	—
I.  + SERUM	8/8	4/8	—	—
J.  + SERUM	0/8	1/8	—	—
K.  + SERUM	0/7	0/7	—	—
L.  O SERUM	8/8	8/8	—	—
M. CONTROL	—	8/8	6/8	1/8

* This human milk pool is made up of 4 milks obtained 2 days after delivery (Bouma, Perkins, Evigan, Luker) and one (1) taken 3 days after delivery (Jackson).

** The names from D to L are Private patients of Dr. S. Harple who delivered children at Christ Hospital between 5/16/50 + 5/19/50. All were held 5/22/50.

Private patients

Effect of Centrifuging Human Milk Pool "A"

at 2,000 rpm. for 20 min. on Horizontal.

4 cc in small tube (10 cm. long. - 2 mm. int. diam.) yielded fatty cake (deep yellow) @ 4 mm. - @ 4 to 5% of total - at the top. The middle layer looked gray and watery. There was a grayish, gelatinous sediment occupying the bottom 8 mm. of the tube. Microscopic examination both [redacted] + [redacted] stained revealed that while a few formed cells were present, the bulk of the material consisted of refractile corpuscles varying from 1 to 20 or more μ in size - some round, oval or irregular. These did not stain with [redacted] but appeared refractile in field. Middle "watery" portion used in test.

Effect of 100°C for 30 min.

Sealed ampoule submerged in boiling water at 100°C. No coagulation or other gross change in appearance at end of 30 min.

MAY 25 1950

Mortality

VIRUS NO 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 28 29 30 31 32 33 34 35

A

HUMAN MILK POOL
+
LANSING

PPP PPPD

PPD

PPPD

10-2

B

HUMAN MILK POOL
100°C X 30 MIN
+
LANSING

PPD

PPD

PPD

PPD

MAY 25 1950

SPECIMEN

VIRUS NO

MORTALITY

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 28 29 30 31 32 33 34 35

C

HUMAN MILK POOL
2000 RPM X 20 MIN
(SKIM)

LANSING

10⁻²

D

NOVAKOR
SERUM
+
LANSING

10⁻²

10⁻²

—

PEE D

? PPD

PEE PPD

PPD

PPD

PPD

PPD

? PPD

? PPD

? PPD

? PPD

? PPD

? PPD

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MAY 25 1950

MORTALITY

VIRUS NO 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 28 29 30 31 32 33 34 35

SPECIMEN

F

SERUM
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LANSING

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F

SERUM
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LANSING

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MAY 25 1950

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

MORTALITY

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— E PP PP D

PP D

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MAY 25 1950

MORTALITY

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

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SERUM
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SPECIMEN	VIRUS NO.																	MORTALITY																	
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10-2-1
21 day

$$\frac{8}{8}$$
$$\frac{2}{2}$$
[illegible]

MAY 25 1950

MORTALITY LD50
10^{-3.0}
21 day

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

M

CONTROL

SALINE
+
LANSING

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10⁻⁴

PP D

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Lansing Virus vs. HUMAN MILK

MAY 31 1950

MILKS USED - 1. HUMAN MILK POOL - A.M. - 5/29/50 - C.G.H.
2. HUMAN MILKS - 9 SPECIMENS - FROM PRIVATE PATIENTS OF DR. GARBER AT CHRIST HOSPITAL.

VIRUS - LANSING POOL IV of 8-16-49

MICE - 18-20 GRAM MAXFIELD ALBINO (FEMALE).

LANSING 10 ⁻²	FINAL MILK DILUTION		
	1/8	1/32	1/128
A. HUMAN MILK POOL - C.G.H. - A.M. 5/29/50	2/7	6/8	7/7

MILK		FINAL VIRUS DILUTION	10 ⁻²	10 ⁻³	10 ⁻⁴
B. HUMAN MILK POOL - C.G.H. - A.M. 5/29/50		Contam	—	—	—
C.	0	7/8	7/8	—	—
D.	0	8/8	8/8	—	—
E.	0	8/8	8/8	—	—
F.	0	8/8	7/8	—	—
G.	+	2/8	0/8	—	—
H.	+	5/8	3/8	—	—
I.	+	4/8	1/8	—	—
J.	+	2/8	0/8	—	—
K.	0	7/8	7/8	—	—
L. VIRUS CONTROL	—	—	8/8	7/8	6/8

● ★

A

ANSWER
10-2

CGD

	dd	DD
-	dd	DD
-	dd	DD
-	cd	DD

$$\frac{8}{9}$$
~~22~~

MAY 31 1950

SPECIMEN

D

MILK
+
LANSING

MORTALITY

VIRUS NO 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 28 29 30 31 32 33 34 35

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E

MILK
+
LANSING

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MORTALITY

SPECIMEN	VIRUS NO.
67	891011
68	12131415161718192021
69	2223242526272829303132333435

$$+ 271w$$

LAINSLING

10-2

A handwritten capital letter 'K' on a grid background. The letter is formed by three strokes: a vertical line down, a diagonal line from the top-left to the middle of the vertical line, and another diagonal line from the top-right to the same middle point.

Y716

ANSWER

10-2

LD50

MORTALITY

LD50

[illegible]

JUN 29 1950

MORTALITY

VIRUS NO 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 28 29 30 31 32 33 34 35

SPECIMEN

[REDACTED]

MILK
OF 6/29

+

LANSING

30 days
postpartum

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For virus control see test on Cows Milk of 6/29/50

Pool V of 6/6/50

1/20 - 8/8
10⁻² - 8/8
10⁻³ - 7/8
10⁻⁴ - 3/7

Mechanism of Antipoliomyelitic Effect of "late" Human Milk.

- Questions - 1) Is in vitro incubation necessary to demonstrate the effect?
- 2) If so, what is the influence of time and temperature?
- 3) What is the effect of inoculating the virus on one side and the milk on the other side of the brain - and at different intervals?

Milk - Human Pool "B" [redacted]
obtained from mothers 170, 172 + 340 days after delivery.

Virus - Lansing Pool V of 6/6/50 - 2 ampoules - centrifuged
Culture of centrif-virus on BAP - 1 small white colony

Procedure: First *chill milk and virus 1:10 and 1:50 in ice water.

Mix 1) 1cc of milk + 1cc of virus 1:10 } In ice water
2) 1 " " " + 1cc " " 1:50 }

Immediately after mixture remove enough from each tube to inoculate 8 mice - series "A"

Divide remainder in 2 parts + incubate
11:25 - a) at room temperature (25-26°C)
b) at 37°C in water bath

At the end of 30 minutes, inoculate series "B" from (a) and series "C" from (b)

At the end of 60 min., inoculate series "D" from (a) and series "E" from (b).

Mix - 0.5cc saline + 0.5cc virus 1:10 } in ice water
0.5cc " + " " 1:50 }

Inoculate series F immediately, and divide remainder into 2 parts - incubate one at room and one at 37°C.

At the end of 60 min. inoculate series 11:35 with room temp. material and series H with 37°C material.

Keep a 0.5cc of virus 1:10, virus 1:50, + 1cc undiluted milk for series I and J. (over)

First inoculate 0.015cc of indicated dilutions of virus in right side of brain of mice in series I + J.

Immediately thereafter inject 0.015cc of undiluted milk in other side of brain in mice of series I.

60 minutes later repeat same procedure in mice of series "J."

Mechanism Exp't

<u>Code</u>	<u>Description</u>	<u>Final dilution of virus in mixture</u>	
		<u>1:20</u>	<u>1:100</u>
A	Milk + virus - no incubation	6/8	1/8
B	" + " - 30 min. - room (28°)	4/8	1/8
C	" + " - 30 " - 37°C	4/8	0/7
D	" + " - 60 " - room	3/7	2/7
E	" + " - 60 " - 37°C	2/8	0/8
F	Saline + " - no incubation	8/8	8/8
G	" + " - 60 min - room	8/8	8/8
H	" + " - 60 min - 37°	8/8	8/8
I *	0.015cc virus on right 0.015cc milk " left - immediately	8/8	7/8
J.	0.015cc virus on right 0.015cc milk on left - 1 hr. later	8/8	8/8
K.	0.015cc virus on right 0.015cc saline on left - 1 hr. later	7/8	8/8

In series I - The 0.015cc of milk was injected @ 10 min after the virus 1:50, and immediately after virus 1:10

Otherwise the whole test was carried out according to plan.

JUL 1 1950

MORTALITY

A

HUMAN MILK
POOL B
+
LANSING

SPECIMEN	VIRUS NO	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	28	29	30	31	32	33	34	35
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NO INCUBATION

10-2

B

HUMAN MILK
POOL B
+
LANSING

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INCUBATED
30 MIN AT 20°C
(ROOM TEMP.)

10-2

JUL 1 1950

MORTALITY

SPECIMEN VIRUS No 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 28 29 30 31 32 33 34 35

C

HUMAN MILK
POOL B
+
LANSING

INCUBATED
30 MIN AT 37°C

1/20

WED

P PPD

4/8

?? - CR CR CR CR D

0/7

(D)

PPD

1/20

PPR D

3/7

D

HUMAN MILK
POOL B
+
LANSING

INCUBATED
60 MIN AT 26°C
(Room Temp)

PPD

? Y D

2/7

JUL 1 1950

MORTALITY

VIRUS	No	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	28	29	30	31	32	33	34	35
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HUMAN MILK
POOL B
+
LANSING

INCUBATED
60 MIN AT 37°C

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SALINE
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LANSING

NO INCUBATION

CONTROL

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PPD

JUL 1 1950

MORTALITY

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VIRUS NO

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6250

MORTALITY

2829	30	31	32	33	34	35
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22	23	24	25	26	27
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17 18 19 20 21

1 12 13 14 15 16

678910

10	1	2	3	4
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MEIN	VIRUS
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595

015cc Virus

60 min interval

0.15 cc SALINE

Control

JUL 28 1950

Jul 28 1959

[illegible]

* Musang - evidently thrane out when boxes were cleaned, could not have gotten out of the box otherwise.

SUMMARY OF TEST OF 9/28/50

TEST FOR PRESENCE OF LANSING AND Y-SK PROTECTIVE
SUBSTANCE IN HUMAN MILK.

DONOR	VIRUS	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS						LD ₅₀	NI
		1.3	1.6	2.0	3.0	4.0	5.0		
	LANSING		4/8	2/8	0/8			1.7	200
	Y-SK	5/8		1/7	0/8			1.5	200
	LANSING		0/8	1/8	0/8			1.4	400+
	Y-SK	5/8		2/8	0/8			1.6	160
CONTROL	LANSING			8/8	8/8	4/8		10 ^{-4.0}	
	Y-SK			10/10	8/10	4/10	2/10	10 ^{-3.8}	

TEST FOR LANSING AND Y-SK ANTIBODIES IN

SEP 28 1950

MILK OF LACTATING MOTHERS.

PURPOSE:

To determine if human milk which neutralizes Lansing virus will also neutralize the related Y-SK virus. Both of these milks have ^{shown} activity against Lansing virus.

VIRUS USED:

Lansing Virus - Pool IV of 6/6/50. One 2 ml frozen ampule - centrifuged 2000 rpm for minutes because of flocculent ppt. 10% in saline.
Y-SK Virus - Pool from 7/18/50. Blend 10 ml. 10% in saline. Centrifuged 10 minutes at 2000 rpm to remove heavy ppt.

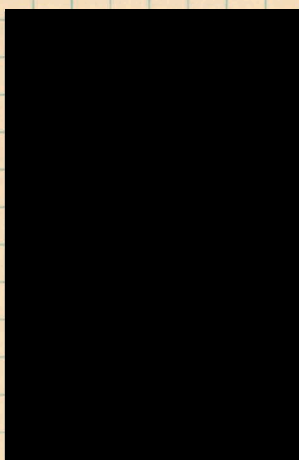
MIXTURES:-

Lansing Virus - 1:20, 1:50 and 1:500 (in saline) distributed in 0.2 ml amounts in indicated tubes. 0.2 ml of undiluted, unheated milk then added to each dilution of virus and mixed.
Y-SK Virus - 1:10, 1:50, 1:500 (in saline) distributed in 0.2 ml amounts in indicated tubes. 0.2 ml of undiluted, unheated milk then added to each virus dilution and mixed.
Both groups left at room temperature for 1 hour when inoculation began. Lasted one hour, five minutes.

CODE

SPECIMEN

A



B

C

D

E

CONTROL, SALINE
+ LANSING

F

CONTROL SALINE
+ Y-SK

LANSING				Y-SK			
1:40	10 ⁻²	10 ⁻³	10 ⁻⁴	1:20	10 ⁻²	10 ⁻³	10 ⁻⁴ 10 ⁻⁵
4/8	2/8	0/8		5/8	1/7	0/8	
4/8	1/8	0/8		5/8	2/8	0/8	
8/8	8/8	4/8		10/10	8/10	4/10	2/10

MICE:

4x field 18-20 gram albino g. & mice per dilution + 4 control Y-SK controls in which 10 mice per dilution was used.

[illegible]

SPECIMEN
(CONTINUED)

B
[REDACTED]
MILK
+
Y-SK

VIRUS NO.

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 28 29 30 31 32 33 34 35

MORTALITY

1 2 3 4 5 6 7 8

1/7

10⁻²

2E 7E

10⁻³

0/8

C

1/40

0/8

APPD

10⁻²

1/8

LANSING

SPECIMEN
(CONTINUED)

VIRUS NO.

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 28 29 30 31 32 33 34 35

1 2 3 4 5 6 7 8

0/8

MILK
+
LANSING

D

MILK
+
Y-SK

5/8

1/20

2/8

1/20

0/8

1/20

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 28 29 30 31 32 33 34 35

1 2 3 4 5 6 7 8

0/8

MILK
+
LANSING

D

MILK
+
Y-SK

5/8

1/20

2/8

1/20

0/8

1/20

SEP 27 1950

TEST FOR CONTAMINATION IN HUMAN MILK

PROCEDURE: 0.1 ml. UNDILUTED HUMAN MILK INOCULATED ON BAP.

5 MICE INOCULATED INTRACEREBRALLY $\pm$ 0.03 ml OF 1:2 DILUTION OF EACH SAMPLE OF MILK

MICE: MAXFIELD ALBINO (σ AND ϕ ADULT @ 20G.)

SPECIMEN	BAP	MICE				
		1	2	3	4	5
9/5/50	Grey, spreading, lumpy foul smelling, hemolytic colonies. Gram -	CNS	CNS	-	-	-
9/6/50	"	CNS	CNS	-	-	-
9/7/50	"	CNS	0	-	-	-
9/9/50	"	CNS	CNS	-	-	-
9/11/50	"	CNS	-	-	-	-

Because BAP showed heavy growth of what appeared to be an enteric organism and because several mice showed evidence of CNS involvement due to the bacteria, the samples of milk were heated at 60°C for 30 minutes in sealed ampules (1 ml amounts) to destroy the organisms. The following experiment was carried out using this "treated" milk.

SUMMARY OF TEST OF 9/29/50
 TEST FOR LANSING PROTECTIVE SUBSTANCE IN HEATED CGH
 HUMAN MILK POOLS - USED FOR FEEDING CYNOMOLGI.

SPECIMEN	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS				LD ₅₀
	1.6	2.0	3.0	4.0	
MILK POOL USED 9/5/50	4/8	3/8	1/8	—	1.8
MILK POOL USED 9/6/50 6/20/50 A.M.	1/8	2/8	0/8	—	1.3
MILK POOL USED 9/7/50	2/8	2/8	0/8	—	1.5
MILK POOL USED 9/9/50	5/8	2/8	0/8	—	1.7
MILK POOL USED 9/11/50	6/8	2/8	0/8	—	1.8
CONTROLS	—	8/8	8/8	1/8	3.6

TEST FOR LANSING ANTIBODIES IN HEATED CGH

SEP 29 1950

HUMAN MILK POOLS - LARGE POOLS USED FOR FEEDING
CYNOMOLGUS MONKEYS.

PURPOSE:

To determine if this milk which was fed to monkeys and which failed to protect them vs. oral administration of Y-SK virus contains "antibodies" vs. Lansing virus.

VIRUS USED:

Lansing Virus - Pool V of 6/6/50 (10% in PSS) in 2ml ampules. Distributed in 0.2 ml amounts in indicated tubes, dilutions 1:20, 1:50, 1:500. 0.2 ml of undiluted heated milk (60°C for 1/2 hour) added, shaken. Incubated at room temperature for 1 hour, when inoculation began. Lanted one hour.

MICE:

Matfield 18-20 gram ♀ 8 mice per dilution

NOTE: Milk was heated to destroy bacteria which were present in large numbers.

CODE	SPECIMEN	1:40	10 ⁻²	10 ⁻³	10 ⁻⁴
A	CGH HUMAN MILK POOL USED 9/5/50	4/8	3/8	1/8	
B	CGH HUMAN MILK POOL USED 9/6/50	1/8	2/8	0/8	
C	CGH HUMAN MILK POOL USED 9/7/50	2/8	2/8	0/8	
D	CGH HUMAN MILK POOL USED 9/9/50	5/8	2/8	0/8	
E	CGH HUMAN MILK POOL USED 9/11/50	6/8	2/8	0/8	
F	CONTROL, SALINE + LANSING		8/8	8/8	1/8

SPECIMEN

VIRUS NO

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 28 29 30 31 32 33 34 35

MORTALITY

A

CGH HUMAN MILK POOL
USED 9/15/50
(HEATED)

+
LANSING

4/8

3/8

1/8

1/8

B

CGH HUMAN MILK POOL
USED 9/16/50
(HEATED)

+
LANSING

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35 MORTALITY

(CONTINUED)

B

CGH
HUMAN
MILK POOL
USED 9/6/50
(HEATED)
+
LANSING

10⁻²

2/8

10⁻³

0/8

C

CGH HUMAN
MILK POOL
USED 9/7/50
(HEATED)
+
LANSING

10⁻⁴

2/8

10⁻²

2/8

SEP 29 1950

MORTALITY

VIRUS NO 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 28 29 30 31 32 33 34 35

SPECIMEN
(CONTINUED)

CGH HUMAN MILK POOL
USED 9/15/50
(HEATED)
LANSING

D

CGH HUMAN MILK POOL
USED 9/9/50
(HEATED)
+
LANSING

-2
10

-3
10

0/8

5/8

2/8

0/8

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35 MORTALITY

F

CGH
HUMAN

MILK POOL
USED 9/11/50
(HEATED)

+

LANSING

1/40

6/8

2/8

0/8

8/8

1/40

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F

CONTROL

SALINE

+

LANSING

1/40

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SPECIMEN
(CONTINUED)

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SUMMARY OF TEST OF 10/3/50

TEST FOR LANSING PROTECTIVE ANTIBODIES IN CCM
MILK POOLS HEATED AT 60°C FOR 30 MINUTES

SPECIMEN	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS				LD ₅₀
	1.6	2.0	3.0	4.0	
Pool of 5/31/50 A.M.	5/8	4/8	2/8	—	1.9
Pool of 6/1/50 A.M.	3/8	2/8	1/7	—	1.6
Pool of 6/5/50 A.M.	1/8	3/8	0/8	—	1.9
Pool of 6/8/50 P.M.	3/8	0/7	2/8	—	1.6
Pool of 6/12/50 P.M.	3/8	2/8	0/8	—	1.6
Pool of 6/16/50 P.M.	2/8	6/8	0/8	—	1.8
CONTROLS	—	8/8	5/8	3/8	3.5

TEST FOR LANSING PROTECTIVE SUBSTANCE IN
AUTOCLAVED COMMERCIAL COW'S MILK - USED FOR
FEEDING CYNOMOLGI.

SPECIMEN	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS				LD ₅₀
	1.6	2.0	3.0	4.0	
AUTOCLAVED COMMERCIAL COW MILK - 9/5/50	8/8	7/8	8/8	—	3.4
AUTOCLAVED COMMERCIAL COW MILK - 9/6/50	8/8	7/8	7/8	—	3.4
AUTOCLAVED COMMERCIAL COW MILK - 9/8/50	6/7	7/8	6/8	—	3.2
AUTOCLAVED COMMERCIAL COW MILK - 9/10/50	7/8	6/8	6/7	—	3.2
CONTROLS		8/8	5/8	3/8	3.5

TEST FOR LANSING ANTIBODIES IN CGH HUMAN

MILK POOLS

OCT 3 1950

PURPOSE:

To determine if large pools of early human milk contain the neutralizing factor for Lansing virus

VIRUS:

Lansing Virus: Pool V of 6/6/50, 10% in saline. Two 2 ml frozen ampules. Centrifuged 2000 RPM for ten minutes to remove flocculent ppt.

MIXTURES:

Lansing virus in dilutions 1:20, 1:50 and 1:500 (in saline) distributed in 0.2 ml amounts in indicated tubes. 0.2 ml of undiluted heated CGH milk pool (heated 60°C for 1/2 hour) added and shaken. Incubated at room temperature for one hour when inoculation began. Lasted 50 minutes.

MICE:

Maxfield 18-20 gram ♀. 8 mice per dilution.

<u>CODE</u>	<u>SPECIMEN</u>	<u>1:40</u>	<u>10⁻²</u>	<u>10⁻³</u>	<u>10⁻⁴</u>
A	CGH HUMAN MILK POOL OF 5/31/50 A.M.	5/8	4/8	2/8	
B	POOL CGH HUMAN MILK POOL OF 6/1/50 A.M.	3/8	2/8	1/7	
C	CGH HUMAN MILK POOL OF 6/5/50 A.M.	1/8	3/8	0/8	
D	CGH HUMAN MILK POOL OF 6/8/50 AM	3/8	0/7	2/8	
E	CGH HUMAN MILK POOL OF 6/12/50 PM	3/8	2/8	0/8	
F	CGH HUMAN MILK POOL OF 6/16/50 P.M.	2/8	6/8	0/8	
G	CONTROL, LANSING + SALINE		8/8	5/8	3/8

SPECIMEN	VIRUS NO.
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A

CGH HUMAN
MILK POOL
5/31/50 AM
(HEATED)
+
KANSING

 $\frac{8}{5}$

VIRUS No.		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	28	29	30	31	32	33	34	35
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CELESTIAL
MILK POOL
6/1/50 AM
(HEATED)
+
LANSING

Q 3.3.3.3

$$\frac{8}{3}$$

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SPECIMEN	VIRUS	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	28	29	30	31	32	33	34	35	MORTALITY	
B (CONTINUED) CGH HUMAN MILK POOL 6/1/50 AM (HEATED) + LANISING	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2/8
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SPECIMEN
(CONTINUED)

VIRUS

MORTALITY

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 28 29 30 31 32 33 34 35

CGH HUMAN

MILK POOL

6/5/50 AM
(HEATED)+
LANSING

D

CGH HUMAN

MILK POOL

6/8/50 AM

(HEATED)

+

LANSING

10

D

10

0/8

3/8

6/0

2/8

DATE/TIME

3/23/34

30 31 32 33 34 35

28 29 30 31 32 33 34 35

25 26 27 28 29 30 31 32 33 34 35

18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

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12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

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E

CG-HUMAN
MILK POOL
6/12/50 PM
(HEATED)

+
LAUSING

3/8

2/8

0/8

2/8

E

CG-HUMAN
MILK POOL
6/16/50 PM
(HEATED)

+
LAUSING

OCT 3 1950

SPECIMEN
(CONTINUED)

F

CGH HUMAN
MILK POOL
OF 6/16/50 PM
(HEATED)
+

LANSING

MORTALITY

VIROS NO 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 28 29 30 31 32 33 34 35

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CONTROL

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MORTALITY

35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

SPECIMEN VIRUS NO

G

CONTROL
SALINE
+
LANSING

10⁻⁴

wppd

wppd

3/8

1

LANSING NEUTRALIZATION - EARLY HUMAN MILKS & SERA

MAR 16 1951

PURPOSE - To determine presence of Lansing neutralizing substance in human milks & sera.

VIRUS - Lansing pool VI of 2/5/51 1090 in sal.

MILKS & SERA - Specimens as described below. (2-6 days after delivery)

METHODS - Virus dilutions $1/20$ & $1/100$ added to appropriate tubes & equal amounts of milks & sera added making final virus dilutions against each specimen tested of $1/40$ & $1/200$. Final virus concentration in controls of $1/200$, 10^{-3} , 10^{-4} .

Mixtures incubated for 1 hr at room temp. & tubes placed in ice bath for inoculation.

MICE - 18-20 gram maffield albinos (female).

CODE	NAME	SPECIMEN	FINAL		VIRUS DILUTION	
			$1/40$	$1/200$	10^{-3}	10^{-4}
A		MILK (3 days)	6/8	0/8	—	—
B		SERUM	3/7	1/8	—	—
C		MILK (3 days)	5/8	1/8	—	—
D		SERUM	4/8	3/8	—	—
E		MILK (2 days)	2/8	3/8	—	—
F		SERUM	5/8	1/8	—	—
G		MILK (3 days)	5/8	1/8	—	—
H		SERUM	7/8	1/8	—	—
I		MILK (4 days)	5/8	4/8	—	—
J		SERUM	1/8	1/8	—	—
K		MILK (6 days)	8/8	8/8	—	—
L		SERUM	5/8	6/8	—	—
M		MILK (3 days)	6/8	0/8	—	—
N		SERUM	6/8	1/8	—	—
O		MILK (5 days)	8/8	5/8	—	—
P		SERUM	6/8	3/8	—	—
Q	VIRUS CONTROL		—	8/8	6/8	6/8

MAR 16 1951

MORTALITY

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 28 29 30 31 32 33 34 35

SPECIMEN

A

MILK
(3 days)
+
LANSING

10^{-1.8}
N.I.
250

6/8

D
-E D
-P

PD

PPD
WD

1/40

0/8

1/200

10^{-1.6}
N.I.
400

3/7

10

PPD
PPD

B

SERUM
+
LANSING

D

1/40

1/8

1/200

SPECIMEN

VIAL NO.	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	28	29	30	31	32	33	34	35
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Specimen

VIAJ NO

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MORTALITY

MILK
(3 days)
+
LANSING

SERUM
(3 days)
+
LANSING

10^{-1.8} N_{II} 250

$$\frac{8}{5}$$

$\begin{matrix} D & p & p & p & D \\ & p & p & p & \\ & & p & p & \\ & & & p & \\ & & & & D \end{matrix}$

ERC

$$\frac{8}{11}$$
 $\frac{1}{2}$

10^{-1.8} N.I. 250

4/8

100%

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ep

i pp pp

D

 $\frac{8}{5}$ $\frac{1}{2}00$

MAR 16 1951

SPECIMEN

Scrub

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	28	29	30	31	32	33	34	35
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MORTALITY



(2 day)

LAN SING

 $\frac{1}{40}$

1/20

 $\frac{1}{2}$ $\frac{1}{2}$

A hand-drawn diagram on a grid background. It consists of a vertical line segment on the left and a horizontal line segment extending to the right from the bottom of the vertical segment. There is a small vertical tick mark on the horizontal segment, about one-third of the way from the left.

SERUM

(2 days)

C2K gmsissw

$$10^{-1.5} \cdot 2^{1.5} = 0.5$$

10-1.8
N₂
250

$$\frac{8}{2}$$

A hand-drawn diagram of a cell on lined paper. The cell is represented by a large, irregular outline. Inside the cell, there is a smaller, roughly circular nucleus at the top, containing a darker, more textured area. Below the nucleus, there is a large, clear, oval-shaped vacuole. The entire drawing is done in black ink.

A hand-drawn diagram of a cell. It features a large, irregular outer boundary representing the cell membrane. Inside, there is a smaller, more rounded structure representing the nucleus, which contains a small, dense, circular nucleolus. The drawing is done in red ink on a light blue grid background.

STANDARD B & P "NOTER"

STANDARD B & P "NOTER"

MAR 16 1951

MAR 16 1951

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 28 29 30 31

SLIPWING

(5)

SLIPWING
(3 days)
+
LANSING

1/40

PPPPPP

D

PPPP

1/40

5/8

8.1-10
N.I.
N.I.
250

1/40

PPPPPP

D

PPPP

1/40

8/1

6.1-10
N.I.
N.I.
250

1/40

PPPPPP

D

PPPP

1/40

8/1

6.1-10
N.I.
N.I.
250

1/40

PPPPPP

D

PPPP

1/40

8/1

PPPP

D

PPPP

1/40

8/1

6.1-10
N.I.
N.I.
250

MAR 16 1951

MORTALITY

SPECIMEN VIRUS No 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 28 29 30 31 32 33 34 35

I

WICH
(4 days)
+
LAUSING

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5/8

4/8

1/8

1/8

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10-0
N.I.

1/40

1/40

SERUM
(4 days)
+
LAUSING

1/200

P D

P D

P D

P D

P D

P D

W D

P D

P P D

1/40

1/40

1/40

1/200

MAR 16 1951

SPECIMEN

M

[REDACTED]

(3 days)

LANSING

VIEW NO

1/40

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MORTALITY

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10-118
N.T.
1150
250

6/8

9/8

1/200

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N

[REDACTED]

(3 days)

LANSING

1/40

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10-119
N.T.
" 200

6/8

1/8

1/200

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35 - - - - -

MAR 16 1951

MORALITY

WIND NO 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 28 29 30 31 32 33 34 35

SPECIMEN

O

[REDACTED]

(5 days)

LANSING

1/40

PPD

PD

1/200

PD

P

[REDACTED]

(5 days)

LANSING

1/40

PPD

1/200

PD

10-2.4
N.I.
" 63

10-2.0
N.I.
" 160

9/8

7/8

6/8

3/8

MAR 16 1951

Spice / mēn

with

No

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 28 29 30 31 32 33 34 35

MORTALITY

LD50

 $\frac{1}{20}$

Virus

CONTROL

SALINÉ

ANSING

10-3

A red ink scribble on graph paper, consisting of a horizontal line with a loop above it and a tail extending to the right.

29

10-412

$$\begin{array}{c} \Delta \\ \text{pp} \\ \text{pp} \end{array}$$

FD

$$D \frac{D}{3/4}$$

2

△

△

LANSING NEUTRALIZATION - 2 EARLY + 6 LATE HUMAN MILKS + SERA

MAR 19 1951

PURPOSE - To determine presence of Lansing neutralizing substance in human milks + sera.

VIRUS - Lansing pool VI of 2/5/51 - 1090 in ml.

MILKS + SERA - Specimens as described below

METHODS - Virus dilution $1/20 + 1/100$ added to appropriate tubes & equal amounts of milks + sera added making final virus dilution against each specimen tested of $1/40 + 1/200$. Final virus concentration in controls of $1/200, 10^{-3}, 10^{-4}$.

Mix tube incubated for 1 hr. at room temp. & tube placed in ice bath for inoculation.

MICE - 18-20 gram maxfield albino (female).

CODE	NAME	SPECIMEN	FINAL VIRUS DILUTION			
			$1/40$	$1/200$	10^{-3}	10^{-4}
A		MILK (5 days)	8/8	8/8	—	—
B		SERUM	4/8	3/8	—	—
C		MILK (3 days)	3/8	0/8	—	—
D		SERUM	4/8	1/8	—	—
E		MILK (214 days)	8/8	5/8	—	—
F		SERUM	2/8	0/8	—	—
G		MILK (177 days)	7/8	2/8	—	—
H		SERUM	1/8	1/8	—	—
I		MILK (50 days)	8/8	8/8	—	—
J		SERUM	8/8	8/8	—	—
K		MILK (77 days)	8/8	7/8	—	—
L		SERUM	2/8	0/8	—	—
M		MILK (138 days)	8/8	6/8	—	—
N		SERUM	4/8	4/8	—	—
O		MILK (150 days)	8/8	6/8	—	—
P		SERUM	8/8	3/8	—	—
Q		VIRUS CONTROL	—	8/8	7/8	8/8

MAR 19 1951

MORTALITY

323334B

2728293031

222324252627

1718192021

1314151617

87675674

32345678

12345678

1/40

10-2-6

N.I.

8/8

8/8

10-1-8

N.I.

4/8

3/8

A

(5 drops)
+

LANCING

B

SERUM
(5 drops)
+

LANCING

SPECIMEN

5.1-01
T.M.

$$\frac{8}{3}$$

Q
C
.
.

rr D

 $\frac{1}{2}$

Milk
(3 drops)
+

LANSING

 $\frac{8}{9}$ $\frac{1}{2}$

10-1.7
2.5.2.

$$\frac{8}{4}$$
 $\frac{1}{4}$

56100m
(3 days) +

ANSWER

8/1

 $\frac{1}{2}$

MAR 19 1951

Mortality

35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Specimen

K

(77 days)
+
LANSING

1/40

8/8

10-2-6

N.P.

"

1 - P P D

2 - P P D

3 - P P D

4 - P P D

5 - P P D

6 - P P D

7 - P P D

8 - P P D

1/200

8/8

1 - P P D

2 - P P D

3 - P P D

4 - P P D

5 - P P D

6 - P P D

7 - P P D

8 - P P D

1/40

8/8

10-1-4

N.P.

"

(77 days)
+

LANSING

1/10

8/8

STANDARD

STANDARD B & P "NOTAR"

MAR 19 1951

Speimen

Vindu þjó

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	28	29	30	31	32	33	34	35
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MORTALITY

 $\frac{1}{4}$

(138 days) + LANSING

10 2.5 2.5 11

$$\frac{8}{8}$$

د. محمد صالح

PPPD
- - PPPD

 $\frac{1}{2}$

1/2

138 dpm
 (138 dpm)
 +
 125 dpm

10-1-9 N.I.N.

 $\frac{4}{8}$ $\frac{1}{2}$

MAR 19 1951

SPECIMEN	VIRUS NO	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	28	29	30	31	32	33	34	35	MORTALITY
O [REDACTED] (150 days) + LANISING	1	-	-	-	1/2 P	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8/8
	2	-	-	-	-	P	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10-2.5 10 N.I.
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P [REDACTED] (150 days) + LANISING	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4/8
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P [REDACTED] (150 days) + LANISING	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8/8
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10-2.2
N.I.
"

8/8

LANSING NEUTRALIZATION & LATE HUMAN MILKS & SERA

MAR 20 1951

PURPOSE - To determine Presence of Lansing neutralizing substance in human milks & sera.

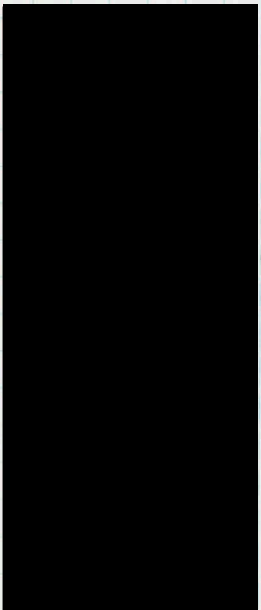
VIRUS - Lansing Pool VII of 2/5/51 - 1090 - Sal.

MILKS & SERA - Specimens as described below. (35-330 days after delivery)

METHODS - Virus dilutions $1/20 + 1/100$ added to appropriate tubes + equal amounts of milks & sera added making final virus dilution against each specimen tested of $1/40 + 1/200$. Final virus concentrations in controls of $1/200$, 10^{-3} , 10^{-4} .

Mixtures incubated for 1 hr. at room temp & tubes placed in bath for incubation.

MICE - 18-20 gram Maxfield albino (female).

CODE	NAME	SPECIMEN	FINAL VIRUS DILUTION			
			$1/40$	$1/200$	10^{-3}	10^{-4}
A		MILK (89 days)	7/8	5/8	—	—
B		SERUM	5/8	1/8	—	—
C		MILK (97 days)	3/8	1/8	—	—
D		SERUM	4/8	0/8	—	—
E		MILK (35 days)	6/8	1/8	—	—
F		SERUM	2/8	1/8	—	—
G		MILK (149 days)	2/8	1/8	—	—
H		SERUM	3/7	3/6	—	—
I		MILK (93 days)	8/8	7/8	—	—
J		SERUM	8/8	8/8	—	—
K		MILK (330 days)	4/8	6/8	—	—
L		SERUM	7/8	2/7	—	—
M		MILK (196 days)	3/7	1/8	—	—
N		SERUM	5/8	0/8	—	—
O		MILK (90 days)	8/8	7/8	—	—
P		SERUM	1/8	0/8	—	—
Q		VIRUS CONTROL	—	7/8	7/8	5/8

STANDARD B & P "NOTES"

STANDARD B & P "NOTES"

MAR 20 1951

MORTALITY

WILDS NO 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 28 29 30 31 32 33 34 35

SPECIMEN

A

[REDACTED]

MILK
(89 days)

+

LANSING

10^{-2.3}
N.I.B.
4

7/8

4/7

10^{-1.8}
N.I.B.
4

5/8

1/8

1/40

1/200

1/40

1/200

B

[REDACTED]

SERUM
(89 days)

+

LANSING

PPD

7 EE PP D
(EN) W P D

PPD

PD

HAD

EE D

WPPD

PPD

PPD

D

MAR 20 1951

SPECIMEN

VIRUS

NO

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

28

29

30

31

32

33

34

35

MORTALITY

C

WICK
(97 days)

+

LANSING

D

SKUM
(97 days)

+

LANSING

10-1.5
N.I.
"

3/8

1/8

10-1.6

4/8

0/8

MAR 20 1951

SPECIMEN

VIRUS No

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 28 29 30 31 32 33 34 35

MORTALITY

F

1/40

(35 days)

+

LANSING

1 - P
2 - P P P D
3 - P P P D
4 -
5 -
6 -
7 -
8 -
9 -P P P P P D
P P P D

P E E E D

P P P P D

1/200

1/8

F

1/40

(35 days)

+

LANSING

D

D

2/8

1/200

1/8

P E

D

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

H H

10-1.9

N.I.
H10-1.4
N.I.
H

SPECIMEN VIRUS NO

	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	28	29	30	31	32	33	34	35
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MORTALITY

10 4.1 4.1 4.1

 $\frac{2}{8}$

10-1.7

Repeat

$$\frac{9}{3}$$

۷

 $\frac{1}{4}$

Milk
(149 days)

+

ANSWER

ppg

 $\frac{1}{2}$

030

 $\frac{5}{4}$

SEKUN
(149 day)

+

ANSWER

۹۹۱۰

 $\frac{1}{2} \times 100$

Thyroid

SD

3D

MAR 20 1951

SPECIMEN

I

VIRUS

1/40

(93 days)

+

LANSING

No 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 28 29 30 31 32 33 34 35

MORTALITY

10-2.6

8/8

7/8

10-2.6

8/8

8/8

-E/D

-E/D

-E/D

-E/D

-E/D

-E/D

-E/D

-E/D

-E/D

-E/D

MAR 20 1951

SPÉCIMÉN

Virus No

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	28	29	30	31	32	33	34	35
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MORTALITY



MILK
(196 day)

+

LANSING

 $\frac{1}{4}$

④

$\frac{P}{E} = \frac{D}{E}$

$24 \frac{p}{24} D$

$$\frac{1}{3}$$

10 -1.6

 $\frac{1}{2}$

8
1

5 ERM
(196 days)

+

LAWJING

 $\frac{1}{4}$

PPD - P D

DD

		Ty Ty	Ty Ty	Ty Ty
r r	D			
-	-	P P	D	D

$$\frac{8}{5}$$

10-1.7

 $\frac{1}{2}$

8/0

MORTALITY

VIRUS No 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 28 29 30 31 32 33 34 35

SPECIMEN

O

WATER
(90 days)

+

LANISING

9/8

10-2.6

7/8

2 4 6 D PPP
P EE D
P EE D

PP PP
EE

D

10-1.3

P

SERUM
(90 days)

+

LANISING

1/8

PEE PR D

0/8

0.4

MAR 20 1951

SPECIMEN

VIRUS NO

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 28 29 30 31 32 33 34 35

MORTALITY

Q

10-4.0

VIRUS

CONTROL

10-4

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 28 29 30 31 32 33 34 35

7/8

SALINE
+

LANSING

10-3

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 28 29 30 31 32 33 34 35

7/8

10-4

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 28 29 30 31 32 33 34 35

5/8

LANSING NEUTRALIZATION LATE
HUMAN MILKS + SERA

MAR 21 1951

PURPOSE - to determine presence of Lansing neutralizing substance in human milks + sera.

VIRUS - Lansing pool VI of 2/5/51 - 1090 - real.

MILKS + SERA - 5 specimens as described below.

METHODS - Virus dilution $1/20$ + $1/100$ added to appropriate tubes + equal amount of milks + sera added making final virus dilution against each specimen tested of $1/40$ + $1/200$. Final virus concentration in control of $1/200$, 10^{-3} , 10^{-4} .

Mix tubes incubated for 1 hr. at room temp. + tubes placed in ice bath for inoculation.

MICE - 18-20 gram Mayfield albinos (female).

CODE	NAME	SPECIMEN	FINAL VIRUS DILUTION			
			$1/40$	$1/200$	10^{-3}	10^{-4}
A		MILK (77 days)	5/8	3/6	—	—
B		SERUM (77 days)	2/8	0/8	—	—
C		MILK (137 days)	8/8	6/8	—	—
D		SERUM	1/8	1/8	—	—
E		MILK (93 days)	6/8	6/8	—	—
F		SERUM	0/8	0/4	—	—
G		MILK (84 days)	6/8	5/8	—	—
H		SERUM	1/8	2/8	—	—
I		MILK (356 days)	2/8	0/8	—	—
J		SERUM	1/8	0/8	—	—
K		MILK (138 days)	8/8	8/8	—	—
L		SERUM	1/8	0/8	—	—
M		MILK (73 days)	6/8	4/6	—	—
N		SERUM	2/7	1/7	—	—
O		VIRUS CONTROL	—	8/8	8/8	4/8

MAR 21 1951

SPECIMEN

VIRUS NO

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 28 29 30 31 32 33 34 35

MORTALITY

A

[REDACTED]
(77 days)

+

LANSING

1/40

WPPD

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SPECIMEN	VIDEOS	NO.
1	2	3
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3	4	5
4	5	6
5	6	7
6	7	8
7	8	9
8	9	10
9	10	11
10	11	12
11	12	13
12	13	14
13	14	15
14	15	16
15	16	17
16	17	18
17	18	19
18	19	20
19	20	21
20	21	22
21	22	23
22	23	24
23	24	25
24	25	26
25	26	27
26	27	28
27	28	29
28	29	30
29	30	31
30	31	32
31	32	33
32	33	34
33	34	35

MORTALITY

1. 2. 5. 10^{-2.5}

$$\frac{8}{8}$$

6/8

-1.3
10 N.I.
"

2

 $\frac{1}{18}$

MILK
(187 days)

+

ANSWER

WATER
(187 days)

+

ANSING

MAR 21 1954

SPECIMEN

[illegible]

MORTALITY

1/40

MILK (93 days)

+

Laying

$$10^{-2.4} \text{ J.T.} = 11$$
$$\frac{6}{8}$$

EWE D

80

 $\frac{1}{200}$

D
=

D 4

$$\frac{8}{9}$$

Dep D

 $\frac{1}{40}$

VERON
(93 damp)

+

Laundry

$$10^{-1.2} \approx 0.063$$
$$\frac{1}{2}$$

10

2

6 - } MISSING 3/23/51 (no hole in tarp)
7 -
8 -

STANDARD B & P "NOTEPAR"

STANDARD B & P

SPECIMEN	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	28	29	30	31	32	33	34	35
G	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	28	29	30	31	32	33	34	35
1/40	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	28	29	30	31	32	33	34	35
MILK (84 days)	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	28	29	30	31	32	33	34	35
+	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	28	29	30	31	32	33	34	35
LANCING	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	28	29	30	31	32	33	34	35
H	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	28	29	30	31	32	33	34	35
SERUM (84 days)	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	28	29	30	31	32	33	34	35
+	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	28	29	30	31	32	33	34	35
LANCING	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	28	29	30	31	32	33	34	35

MAR 21 1951

MORTALITY

10^{-2.3}
N.I.P.
"

6/8

5/8

8/11

8/2

10^{-1.4}
N.I.P.
"

STANDARD B & P

STANDARD B & P

MAR 21 1951

MORTALITY

VIRUS NO 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 28 29 30 31 32 33 34 35

SPECIMEN

10^{-1.4}

2/8

0/8

1/8

0/8

10^{-1.3}
2^{1.5}
"

PPPRPPPPPPPPPPPP

D

P

1/40

1/200

1/40

1/200

I

LANCING
(356 days)

+

LANCING

J

SERUM
(356 days)

+

LANCING

MAR 21 1951

10-2.6
N.I.
"

10-1.3
N.I.
"

MORTALITY

SPECIMEN VIRUS NO 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 28 29 30 31 32 33 34 35

K

MILK
(188 days)

+

LANSING

1/40

1 -D
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2/8

1/200

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2/8

1/40

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1/8

SERUM
(188 days)

+

LANSING

1/200

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0/8

MAR 21 1951

SPECIMEN VIRUS No 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 28 29 30 31 32 33 34 35

MORTALITY

M

[REDACTED]
MILK
(73 days)

+

LANCING

1/40

1/200

N

[REDACTED]
SERUM
(73 days)

+

LANCING

10⁻³

10^{-1.9}
N.I.P.
11

6/8

1/6

10^{-1.5}
N.I.P.
11

2/7

1/7

MAR 21 1951

SPECIMEN VIRUS NO. 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 28 29 30 31 32 33 34 35
MORTALITY 60%
-4.0
10

8/8

8/8

4/8

VIRUS

CONTROL

SALINE
+
LANSING

100

10⁻³

10⁻⁴

PPD

PPD

WPPPD

100

EE D

100

100

100

100

100

100

100

100

100

LANSING NEUTRALIZATION WITH EARLY AND LATE HUMAN MILKS AND SERA

PURPOSE:

To determine the presence of Lansing neutralizing substances in human milks and sera. These milks and sera in previous test had doubtful results.

VIRUS:

Lansing virus: Pool VI of 2/5/51. 10% suspension in saline. Centrifuged 10 minutes at 2000 rpm to remove flocculant ppt.

PROCEDURE:

0.2 ml of undiluted milk or serum was added to 0.2 ml of each of the following dilutions of Lansing virus in saline: 1:20, 1:100, 1:500; giving final dilutions of virus of 1:40, 1:200, 10⁻³. Virus controls consisted of 1:200, 10⁻³, 10⁻⁴ dilutions made in saline. The mixtures were shaken and inoculated at room temperature for 1 hour.

MICE:

Maxfield albino 18-20 gram 8 per dilution:

CODE	SPECIMEN	1:40	1:200	10 ⁻³	10 ⁻⁴
A	MILK	8/8	7/8	4/8	—
B	SERUM	7/8	2/8	1/8	—
C	MILK	8/8	8/8	5/8	—
D	MILK	8/8	7/8	5/8	—
E	MILK	8/8	8/8	7/8	—
F	SERUM	8/8	8/8	7/8	—
G	MILK	8/8	8/8	8/8	—
H	MILK	8/8	8/8	2/7	—
I	MILK	7/8	7/8	1/8	—
J	SERUM	8/8	4/8	4/8	—
K	CONTROL	—	7/7	7/7	4/8

MAY 11 1951

SPECIMEN

VIRUS NO.

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 28 29 30 31 32 33 34 35

MORTALITY

LD50

A

[Redacted]

MILK

(6 days after delivery)

+

LANSG

1:200

1 - D
2 - PP
3 - PP
4 - PP
5 - PP
6 - PP
7 - PP
8 - PP

1:40

1 - D
2 - PP
3 - PP
4 - PP
5 - PP
6 - PP
7 - PP
8 - PP

8/8

10^{-2.9}
N.I.

4

13

7/8

4/8

D

[Redacted]

SEKUM

+

LANSG

1:40

1 - PP
2 - PP
3 - PP
4 - PP
5 - PP
6 - PP
7 - PP
8 - PP

1:40

1 - D
2 - PP
3 - PP
4 - PP
5 - PP
6 - PP
7 - PP
8 - PP

7/8

10^{-2.1}
N.I.

80

SPECIMEN VIRUS NO. 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 28 29 30 31 32 33 34 35 MORTALITY LD50

B (CONT.)

F200

SERUM

+

LANSING

10-3

C

1:40

MILK

(3 days after delivery)

+

LANSING

1:200

2/8

1/8

8/8

8/8

10-3/2
N.B.
1
6

MAY 11 1951

MORTALITY

VIROS NO. 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 28 29 30 31 32 33 34 35

SPECIMEN

(CONT.)

MILK

(3 days after delivery)

+

LANSING

D

MILK

(5 days after delivery)

+

LANSING

5/8

8/8

7/8

5/8

10 -3.1
P.T.
" 8

10-3

1:40

1:20

10-3

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WPP
EE
EE

[illegible]

SPECIMEN VIRUNA 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 28 29 30 31 32 33 34 35

MORTALITY

LD50

F

1:200

SERUM

+

LANISING

D

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

8/8

7/8

8/8

8/8

G

1:200

MICK

(77 days after delivery)

+

LANISING

1:200

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

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1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

8/8

10-2.5
N.T.
11
3

SPECIMEN	VIRUS NO.	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	28	29	30	31	32	33	34	35	MORTALITY	LD50
G (CONT.) [REDACTED] MILK (19 days after delivery) + LANSING	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8/8	10-2-18	
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H [REDACTED] MILK (138 days after delivery)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8/8		
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[REDACTED] LANSING	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4/8		
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MAY 11 1954

[illegible]

MAY 11 1951

SPECIMEN	VIRUS NO	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	28	29	30	31	32	33	34	35	MORTALITY	LD ₅₀
K (CONT.) CONTROL	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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SALINE +	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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4/8

P D P P

LANSING NEUTRALIZATION WITH LATE HUMAN MILKS AND SERA

PURPOSE:

To determine the presence of Lansing neutralizing substances in late human milks and sera. These milks and sera had doubtful results in previous tests.

VIRUS:

Lansing virus: Pool VI of 2/5/51. 10% suspension in saline. Centrifuged 10 minutes at 2000 rpm to remove flocculant ppt.

PROCEDURE:

0.2 ml of undiluted milk or serum was added to 0.2 ml of each of the following dilutions of Lansing virus in saline: 1:20, 1:100, 1:500, giving final dilutions of virus of 1:40, 1:200, 10^{-3} . Virus controls consisted of 1:200, 10^{-3} , 10^{-4} dilutions made in saline. The mixtures were shaken and incubated at room temperature for 1 hour.

MICE:

18-20 gram Swiss mice. 8 per dilution.

CODE	SPECIMEN	1:40	1:200	10^{-3}	10^{-4}
A	[REDACTED] K	8/8	6/8	3/6	—
B	[REDACTED] LK	8/8	8/8	8/8	—
C	[REDACTED] ROM	8/8	8/8	8/8	—
D	[REDACTED] ILK	8/8	8/8	8/8	—
E	[REDACTED] ILK	8/8	8/8	7/8	—
F	[REDACTED] ILK	7/7	6/8	3/8	—
G	[REDACTED] MILK	8/8	6/8	1/8	—
H	[REDACTED] MILK	7/8	6/7	1/8	—
I	[REDACTED] MILK	8/8	6/8	3/8	—
J	CONTROL	—	7/8	7/8	5/8

MAY 14 1951

SPECIMEN

VIRUS NO.

MORTALITY

LD50

A

MILK

(89 days after delivery)

+

LANSING

LD50

-2.8

10

N.T.

N.T.

16

8/8

6/8

3/6

8/8

-3.5

10

N.T.

N.T.

13

B

+

LANSING

(93 days after delivery)

VIRUS NO.

MORTALITY

LD50

1

2

3

4

5

6

7

8

SWISS

1:40

1:200

1:40

1:200

1:40

1:200

1:40

1:200

1:40

1:200

1:40

1:200

1:40

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SPECIMEN VIRUS NO. 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 28 29 30 31 32 33 34 35 MORTALITY 2 D51

B (cont.)

[Redacted]

MILK

(18 days after delivery)

SWISS

+

LANSING

10¹³

SWISS

C

SERUM

+

LANSING

1:200

SWISS

8/8

8/8

8/8

8/8

10^{13.5} N.I.I. " 3

STANDARD B & P "NOT"

STANDARD B & P "NOT"

MAY 14 1951

MORTALITY 4050

VIRUS NO. 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 28 29 30 31 32 33 34 35

SPECIMEN

(cont.)

SERUM

+

LANGING

D

MILK

(330 days after delivery)

+

LANGING

10⁻³

SWISS

1:40

SWISS

1:200

SWISS

10⁻³

SWISS

1:40

SWISS

1:200

SWISS

10⁻³

SWISS

1:40

SWISS

1:200

SWISS

10⁻³

SWISS

1:40

SWISS

1:200

SWISS

10⁻³

SWISS

1:40

SWISS

1:200

SWISS

10⁻³

SWISS

1:40

SWISS

1:200

SWISS

10⁻³

SWISS

1:40

SWISS

1:200

SWISS

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[illegible]

MAY 14 1951

SPECIMEN MORTALITY LD50

URUSNO. 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 28 29 30 31 32 33 34 35

F

1:200

MILK

(187 days after delivery)

+

LANSING

10⁻³

SWISS

G

1:40

MILK

(91 days after delivery)

+

LANSING

1:200

SWISS

6/8

3/8

8/8

6/8

-2.6
10 N.D.
25

LD50

MORTALITY

VIRUS NO. 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 28 29 30 31 32 33 34 35

SPECIMEN

Grants

10-3

MILK

(7 days after delivery)

+

LANSING

SWISS

H

1:40

MILK

(14 days after delivery)

SWISS

+

1:200

LANSING

SWISS

10-3

SWISS

1/8

7/8

6/7

1/8

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N.I.

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MAY 14 1951

LD50
10^{-2.7}
N.D.
" 20

MORTALITY

8/8

6/8

3/8

7/8

10^{-4.0}

SPECIMEN VIRUS NO. 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 28 29 30 31 32 33 34 35

I

MILK

(98 days after delivery)

+

LAUSING

J

CONTROL

SALINE

LAUSING

1:40

1:200

SWISS

1:200

SWISS

10³

SWISS

1:200

SWISS

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SPECIMEN VIRUS NO. 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 28 29 30 31 32 33 34 35 MORTALITY LD50

J (CONT.)

CONTROL

SALINE

+

LANGING

7/8

3/8

D

10⁻³

SWISS

10⁻⁴

SWISS

TEST FOR PRESENCE OF LANSING NEUTRALIZING ANTIBODIES IN TWO DIFFERENT SAMPLES OF LATE MILK FROM THE SAME MOTHER.

PURPOSE:

Previous tests have shown that 149 days after delivery the milk of this woman neutralized Lansing virus. However, when the milk was retested at 204 and 223 days after delivery, it was found to be completely devoid of substances which were present in the earlier milk ~~sampled~~. These milks are therefore being tested to determine if the Lansing neutralizing substance remains after the other substances have disappeared from the milk.

VIRUS:

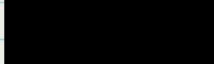
Lansing virus. Pool VI of 2/5/51. 10% mouse brain suspension in saline. Centrifuged at 2000 rpm for 10 minutes to remove flocculent ppt.

Procedure:

0.2 ml of undiluted milk was added to tubes containing 0.2 ml of 1:20, 1:100 and 1:500 dilutions of Lansing virus. Final concentration of virus = 1:40, $10^{-2.3}$, 10^{-3} . Controls in saline were $10^{-2.3}$, 10^{-3} , 10^{-4} dilution of Lansing. Incubation at room temperature for one hour.

MICE:

18-20 gram Maxfield albino ♀

CODE	SPECIMEN	1:40	1:200	10^{-3}	10^{-4}
A	 MILK	5/8	0/7	0/7	—
B	 MILK	7/8	1/8	0/7	—
C	CONTROL	—	8/8	7/7	3/7

SPECIMEN	VIRUS NO.	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	28	29	30	31	32	33	34	35	MORTALITY	LD50
A		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ^{-1.7}		
		2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ^{-1.7}		
		3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ^{-1.7}			
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		MILK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ^{-1.7}		
	OF 4/26/51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ^{-1.7}			
	(204 days after delivery)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ^{-1.7}			
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	LANSING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ^{-1.7}			
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		3	-	-	-	-	-																															

[illegible]

JUN 6 1951

MORTALITY 6.050

VIRUS NO. 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 28 29 30 31 32 33 34 35

SPECIMEN (CONT.)

CONTROL

SALINE +

LANSING

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SUMMARY OF TEST OF OCTOBER 10, 1951

TEST FOR NEUTRALIZING SUBSTANCES AGAINST LANSING VIRUS IN SKIM, CREAM AND WHOLE MILK - BOSTON LATE MILK - 7/24/50

SPECIMEN	FRACTION	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS				LOG OF LD ₅₀	NEUTRALIZING INDEX
		1.6	2.3	3.0	4.0		
DIRECTORY OF LATE HUMAN MILK OF 7-24-50	WHOLE MILK	4/8	2/7	1/7	—	1.8	63
	SKIM	3/8	1/8	1/8	—	1.6	100
	CREAM	8/8	4/8	4/8	—	2.8	6
CONTROL	SALINE + LANSING	5/8	8/8	6/8	3/8	3.6	

OCT 10 1951

TEST FOR NEUTRALIZING SUBSTANCES AGAINST LANSING VIRUS
IN CREAM, SKIM AND WHOLE MILK - [REDACTED] "LATE" MILK.

PURPOSE:

TO determine the distribution of the Lansing neutralizing substance in Boston "late" milk.

VIRUS:

Lansing Virus - Pool VI of 2/5/51. 10% suspension in saline. Centrifuged 2000 rpm x 10 min to remove flocculent ppt.

PROCEDURE:

The cream from 50 mls of milk was separated by centrifugation at 2000 rpm x 15 min. 1.2 ml of cream - ratio of 1:416 to original. The cream was accordingly diluted with saline.
The original milk, skim and cream were individually added in 0.2 ml amounts to appropriate tubes containing 1:20, 1:100, 1:500 dilutions of Lansing virus in 0.2 ml amounts. Final dilutions of virus 1:40, 1:200, 10^{-3} . Controls consisted of 1:200, 10^{-3} , 10^{-4} dilutions of virus in saline.
Incubation one hour at room temperature.

MICE:

18-20 gram maxfield albino.

OCT 10 1957

SPECIMEN VIRUS NO. 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 28 29 30 31 32 33 34 35 MORTALITY L.D.

A

MILK
DIRECTORY-LATE
HUMAN MILK
OF 7/24/50

+

LANSING

WHOLE MILK

4/8

10^{-1.8}
N.I.T.
63

2/7

1/7

3/8

10^{-1.6}
N.I.T.
100

B

MILK
DIRECTORY-LATE
HUMAN MILK
7/24/50

+

LANSING
SKIM

SPECIMEN MORTALITY 4D50

B (cont)

1:200

MILK
DIRECTORY-LATE
HUMAN MILK
OF 7/24/50

+

LANSING

SKIM

1:40

C

MILK
DIRECTORY-LATE
HUMAN MILK
OF 7/24/50

+

LANSING

CREAM

1:200

1/8

1/8

8/8

6/8

10-2.8
NIT
11 6

OCT 10 1981

[illegible]

SUMMARY OF TEST OF OCTOBER 22, 1951

TEST FOR NEUTRALIZING SUBSTANCES AGAINST LANSING VIRUS IN CREAM, SKIM AND WHOLE MILK OF CGH HUMAN EARLY MILK POOL OF 5/29/50 A.M.

SPECIMEN	FRACTION	MORTALITY AT INDICATED FINAL DILUTION OF VIRUS				LOG OF LD 50	NEUTRALIZING INDEX
		1.6	2.3	3.0	4.0		
CGH POOL OF EARLY HUMAN MILK OF 5/29/50 A.M.	WHOLE MILK	3/8	1/8	0/8	-	1.5	160
	SKIM	1/8	3/7	0/8	-	1.5	160
	CREAM	8/8	7/8	6/8	-	3.2	3
CONTROL	SALINE + LANSING		8/8	8/8	2/8	3.7	

OCT 22 1951

TEST FOR NEUTRALIZING SUBSTANCES AGAINST LANSING VIRUS IN CREAM, SKIM AND WHOLE MILK - CGH "EARLY" POOL OF 5/29/50

PURPOSE:

TO determine the distribution of the Lansing neutralizing substance in "early" human milk - CGH Pool of 5/29/50 AM

VIRUS:

Lansing virus - Pool VI of 2/5/51, 10% suspension in saline. Centrifuged 2000 rpm x 30 minutes to remove flocculent ppt.

PROCEDURE:

The cream from 50 mls of milk was separated by centrifugation at 2000 rpm x 15 minutes and diluted to original volume of milk (1:22.8) with saline.

The original milk, skim and cream were individually added in 0.2 ml amounts to appropriate tubes containing 1:20, 1:100, 1:500 dilutions of Lansing in 0.2 ml amounts. Final dilution of virus - 1:40, 1:200, 10^{-3} . Controls consisted of 1:200, 10^{-3} , 10^{-4} dilution of Lansing in saline. Incubation 1 hr at room temperature.

MICE:

18.20 gram Mayfield albino.

OCT 22 1951

SPECIMEN	NRIB NO	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	28	29	30	31	32	33	34	35	MORTALITY	LD 50
A	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3/8	10 ^{-1.5}	
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CGH Pool of EARLY HUMAN MILK OF 5/29/00 AM																																						
+ LAUSING																																						
WHOLE MILK																																						
B																																						
CGH Pool of EARLY HUMAN MILK OF 5/29/00 AM																																						
+ LAUSING SKIM																																						

A

CGH Pool of
EARLY HUMAN
MILK OF 5/29/50 AM

+

LAUSING

WHOLE MILK

B

CGH Pool of
EARLY HUMAN
MILK OF 5/29/50 AM

+

LAUSING
SKIM

B (cont.)

1:200

CGH Pool of
EARLY HUMAN
MILK OF 1st 9/10 AM
+

LANSING

SKIM

3/7

0/8

C

CGH Pool of
EARLY HUMAN
MILK OF 1st 9/10 AM
+

LANSING

CREAM

1:200

10-3.2

N.I.

"

3

8/8

7/8

OCT 22 1951

SPECIMEN	VIRUS	NO	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	28	29	30	31	32	33	34	35	MORTALITY	LD 50	
C CGH POOL OF EARLY HUMAN MILK OF 5/29/50 AM + LANSLING CREAM	10^{-3}	1	-	-	-	-	-	-	-	-	-	-	-	-	-	?	P	P	D																					
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6/8

8/8

8/8

2/8

 $10^{-3.7}$

Directions for Use of Ethylene Oxide, According to [REDACTED]

and [REDACTED] Journal of Experimental Medicine, 1950, (May),

Volume 91, pages 449-458.

The ethylene oxide purchased from the Eastman Kodak Company, Rochester, New York, is furnished in a sealed ampule containing 100 ml of the liquid. The ampule is chilled before opening and the stock supply is kept in the cold in a glass-stoppered bottle, the stopper being lubricated with vaseline.

A measured quantity of the fluid to be sterilized is placed in an Erlenmeyer flask of suitable size, which is plugged with cotton and kept in the refrigerator or cold room for one hour prior to addition of the ethylene oxide. One part of the liquid ethylene oxide is then added by means of a chilled tuberculin syringe and needle to 100 parts of the fluid to be sterilized, the flask is agitated briskly to assure thorough admixture of the two components. After standing in the cold room or refrigerator for an additional hour, the flask is transferred to a 37° C air incubator and allowed to stand for 24 hours.

Ethylene oxide is a liquid which vaporizes at 10.7° C. It is explosive and care must be taken in its management to prevent accumulation of the vapor in the cold room, refrigerator or laboratory air. It is toxic to many forms of life, including man, and care must be taken to prevent inhalation of the vapor or aspiration of the liquid. For this reason, the use of syringe and needle is preferred to the pipette for measurement, whenever possible.

Punch for notebook

ALFRED I. DU PONT INSTITUTE
OF
THE NEMOURS FOUNDATION
WILMINGTON 99, DELAWARE

[REDACTED]
BACTERIOLOGY

[REDACTED]
BIOCHEMISTRY

June 14, 1950

[REDACTED]
MEDICAL DIRECTOR

[REDACTED]
The Children's Hospital
Research Foundation,
Cincinnati, Ohio.

[REDACTED]

I am much distressed that you have been unable to sterilize milk with ethylene oxide, and am at a loss to explain your results. There is nothing I can add to the directions published in the J. E. M. paper: no special tricks, nothing held out. We have sterilized at least 100 specimens of market cows milk during the past year and a half without failure, and have destroyed Staph. aureus in broth. The sterilizing ability of ethylene oxide is so powerful and widespread in its action on living organisms I cannot believe there exists a micro-organism resistant to its action. I may be wrong, however, and would be glad to test any organism which survives, if you will send a subculture to me.

The only technical difficulties I can think of are these: (1) The ethylene oxide may have vaporized before exerting its sterilizing effect. This would most likely occur if the oxide were added to warm fluids, which you certainly did not do. (2) 1% solution of ethylene oxide was added instead of pure ethylene oxide to a final concentration of 1 part to 100 parts of fluid to be sterilized. (3) The fluid to be sterilized was so cold (below 0°C) that when the ethylene oxide was added ice crystals formed (I have seen this happen in clear media). These crystals may contain the ethylene oxide, so that even distribution through the fluid does not occur. (I have not had a failure to sterilize due to this phenomenon). If crystals do form and persist throughout the 1 hour period in the cold room, a few shakings when the fluid is removed and allowed to warm up will melt them.

In the case of the mouse-brain suspension it might be thought that the particles of material contain bacteria in their interiors which are not reached by ethylene oxide. I cannot believe this is the case, however, since I have sterilized large ^{pieces} ~~bunches~~ of slaughter house beef bone placed in broth to which 1% final concentration of ethylene oxide was added in the usual way with successful sterilization. These bone pieces were heavily contaminated on the surface from handling, and presumably deep in the marrow fat, etc.

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June 14, 1950

I have a great deal of confidence in the ethylene oxide sterilization procedure. I hope your initial disappointments will not persuade you to abandon the method. I'm sure you can make it work.

Nisin is an antibiotic produced by S. lactis. It is a small molecule and is heat stable and hence is not lactenin nor your factor. There is a review in Florey et al "Antibiotics", Vol. 1, p. 502 ff. (Oxford, 1949).

I am much interested in your finding regarding the heat-lability of the anti-polio factor. Have you tried reducing agents to inactivate it yet?

Sincerely yours,

AW:ET

P. S. One of the somewhat difficult procedures is the measurement of cold liquid ethylene oxide with pipette or syringe. The oxide has a tendency to shoot from the tip. I have found that if the pipette or syringe be filled, allowed to drain, filled again, allowed to drain, and this procedure followed several times it is then easy to make accurate measurements. When finally filled for delivery, the pipette or syringe should be held tip down in a strictly vertical position until the fluid is delivered.

June 19, 1950

[REDACTED]
Alfred I. du Pont Institute
of the Nemours Foundation
Wilmington 99, Delaware

Dear [REDACTED]

Thank you very much for your detailed letter giving me the additional information on your experience with ethylene oxide. None of the factors which you mentioned that might have contributed to our failure to get a positive result obtained in our tests. However, I may say that the organism itself, which grew out in the milk ~~in the presence of ethylene oxide~~, was tested in subculture for its sensitivity to ethylene oxide and was found to be destroyed in booth culture. It would appear, therefore, that some factor in the fresh cows' milk may have interfered with the action of ethylene oxide. It is of interest that the other specimen in which the ethylene oxide was ineffective was also a fresh tissue extract. The mouse brain suspension was thoroughly centrifuged, and the supernatant liquid only was used. Whether or not certain fresh, unheated, milk specimens and tissue suspensions may contain an enzyme which caused the rapid breakdown of ethylene oxide in solution, thus preventing its sterilization effect, is something that would have to be considered if further tests with unpasteurized specimens of milk should yield similar results. We shall continue such tests from time to time, and I will let you know the results that we obtain.

treated with

With all good wishes,

Sincerely yours,

[REDACTED] I.D.

ABS:mjc

Notebook

ALFRED I. DU PONT INSTITUTE
OF
THE NEMOURS FOUNDATION
WILMINGTON 99, DELAWARE

June 22, 1950

[REDACTED]
The Children's Hospital
Research Foundation,
Elland Ave. and Bethesda,
Cincinnati, Ohio.

[REDACTED]
I am interested in your observations concerning the inactivating effect of fresh tissues and milk on ethylene oxide sterilization. The only experience I have had which might have any bearing on this subject is the sterilization of human milk which we have accomplished many times without difficulty. This milk was fresh, that is, had not been pasteurized or otherwise treated. All of the cow's milk experiments were done with market milk which had been pasteurized. I have also, of course, sterilized fresh serum without trouble.

I will be much interested to hear of your further adventures with the procedure and I greatly appreciate your keeping me posted.

Sincerely yours,
[REDACTED]

AW:ET