

# LANSING ANTIBODIES IN 3 YEAR POLIO SERA.

## QUALITATIVE TESTS IN SERA OF PATIENTS WHO HAD NO LANSING ANTIBODY 3 MONTHS AFTER ONSET.

Tests on 3 year sera only:

██████████, ██████████, ██████████, ██████████

Virus Used - LANSING POOL VI OF 2/5/51 - 10% in sal.

PROCEDURE: Centrifuge LANSING virus:  $S_u = 1:10$

Prepare following dilutions in saline -

1:20, 1:100, 1:500, 1:5000

★ To 0.2cc of each above 4 undiluted sera add 0.2cc of 1:20, 1:100, 1:500 virus

To 0.2cc amounts of saline, add 0.2cc amounts of virus 1:100, 1:500, + 1:5000

Code	Serum (3yr)	Final dilutions of virus			$10^{-4}$
		1:40	1:200	1:1000	
A	██████████	8	8	8	
B		8	8	8	
C		8	8	8	
D		8	8	8	
E				8	8

Lansing  
Antibody  
Tests

After mixtures have remained at room temp ( $22^{\circ}\text{C}$ ) for one hour, inoculate each mixture into 8 mice (18-20 gram - female Maxfield).

Amts of virus required - 0.8cc of 1:20 - prepare 1.4cc  
1.0cc of 1:100 - 0.4cc of 1:20 + 1.6cc saline  
1.0cc of 1:500 - 0.4cc of 1:100 + " "

0.2cc of 1:5000 - 0.2cc of 1:500 + 1.8cc "

No. of mice required - 120





March 9, 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 <sub>50</sub>			
C [REDACTED] SERUM 3 YEAR CONV. + LANSING VIRUS	1:40 C <sub>1</sub>	-	-	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8/8				
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7. number scrambled 10<sup>-3.4</sup>  
 11. number 1. no count 10<sup>-4.4</sup>  
 NI 10 orders

3. no serum on Ranch C

8 -





# Change in level of LANSING Antibodies in 3 years

## QUANTITATIVE TEST - VARYING Dilutions of SERUM vs. @ 50 PD<sub>50</sub> of Lansing Virus

PATIENTS - No LANSING Ab. in acute serum, 2 wks + 1 month after onset but present 3 months after onset.

§ [redacted] - 3 months<sup>+</sup> serum - 1:4, 1:16, 1:64, 1:256 = 32m  
 3 year " - Und, " " " = 40m

[redacted] - 3 month " - 1:4 " " " = 32  
 3 year " - Und, " " " = 40

- Lansing Ab present in acute (1:20) and 3 month serum (1:8) vs. 50 PD<sub>50</sub>

[redacted] 3 month serum = 1:4, 1:16, 1:64 = 24  
 3 year " = Und, 1:4, 1:16, 1:64, 1:256 = 40  
 208

Procedure: Prepare indicated 4 fold dilutions of sera as follows: 0.1cc of undil. serum + 0.3cc of saline or 0.1cc of dilut. " + " "

Distribute - 0.2cc amounts of undiluted serum or diluted sera in marked tubes, and 0.2cc of saline in one tube

Use same centrif. prep. of virus as in qualitative test { Virus - then prepare 1:100 dilution of centrifuged virus in saline - 5.4cc will be needed therefore prepare 6cc - 0.6cc of virus 1:10 + 5.4cc of saline.

leave at room temp (22°C) for 1 hour and inoculate 8 mice with each mixture - control last. 18-20 Gm - Maxfield female.

Indicated original dil. of serum vs. final 1:200 virus

Code	Serum	UND.	4	16	64	256	
F	[redacted] 3mo (11/11/47)			8	8	8	= 32
G	" - 3yr.	8	8	8	8	8	= 40
H	[redacted] - 3mo (11/24/47)		8	8	8	8	= 32
I	" - 3yr	8	8	8	8	8	= 40
J	[redacted] - 3mo (11/11/47)		8	8	8	8	= 32
K	" - 3yr	8	8	8	8	8	= 40
L	None - Saline						8

216 mice needed

224





March 9 1951  
 mortality 2/50

Specimen dil. 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

H  
 3 month serum

vs  
 Lansing  
 1:250.

No prev.  
 quantitat.  
 test.

1:4  
 (H<sub>1</sub>)

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2	-	-	-	-	D																															
3	-	-	-	-	-			PP	PP	D																										
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8	-	-	-	-	-																															

1:16  
 (H<sub>2</sub>)

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2	-	-	-	-	-			P	D																											
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1:64  
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1:256  
 (H<sub>4</sub>)

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7/8

7/8

8/8

8/8

Water  
 less  
 than 1:4  
 no real end point  
 (then...)  
 Final  
 Serum  
 dil 1:4









APR 4 - 1951

Lansing antibodies in 2 WK - 3 mo and 3 year polio sera.

Patients [redacted] and [redacted] from [redacted], who showed in their 3 mo. sera, [redacted] in the J. exp. Med. Oct. 1949, antibodies against Lansing virus, but failed to show antibodies in the neutralization test on March 9, 1951 (quantitative test).

### Qualitative test.

Virus used: Lansing pool VI, 2/5/51. 10% in saline.

Procedure: centrifuge Lansing virus. Sn = 1:10. → 1.7 cc in + 0.25 cc sediment

Prepare following dilutions in saline:

1:20, 1:100, 1:500, 1:5000.

To 0.2 cc of each above mentioned sera (3 mo serum Tennant and 3 mo serum from [redacted] 0.15 cc) add equal amounts of 1:20, 1:100, 1:500 virus

To 0.2 cc amounts of saline, add 0.2 cc amounts of virus 1:100, 1:500, 1:5000.

After mixtures have remained at room temp. (25°C) for one hour, inoculate each mixture into 8 mice (18-20 gram female, Maxfield).

Code	Serum.	1:40	1:200	$10^{-3}$	$10^{-4}$	Final dilution of virus.
A	3 mo serum 0.15 cc	8	8	8		
B	3 yr serum 0.20 cc	8	8	8		
C	2 WK Serum 5/2/49/4/30/20 cc	8	8	8		
D	3 mo serum 0.15 cc	8	8	8		
E	3 yr serum 0.20 cc	8	8	8		
F	Virus control (saline)		8	8	8	

Amounts of virus required: 0.9 of 1:20  
1, 1 " 1:100  
1, 1 " 1:500  
0.2 " 1:5000

Amounts of serum required: 0.6 cc of each (but 3 mo Tennant and 3 mo from [redacted] 0.45 cc)

No. of mice required: 144.

STANDARD B & P "NOTTEAR"

STANDARD B & P

April: 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  
 MAY: 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  
 April 4th 1951  
 Markabady L.D. 50

Specimen	Views 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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o/c

2/8

1/7

LD<sub>50</sub>  
= 10<sup>1.4</sup>

N.I.I.  
= 10<sup>2.9</sup>

= 800

\*\*  
discarded

\* pol. am.









April 4th 1951  
Monday

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

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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8/8

6/8

25  
- 4.33  
10

\* participate emi

Name of patient	AGE	Paralytic or N.P.	1947 Epid.	GENERATION OF VIRUS	1948			1948		1948		1951 test S.					LANSING antibody.		
					Virus titration and date	titer (in log)	Cum. titer.	NI based on Simult. Virus titer	NI based on Cum. Virus titer	Serum titer	Amount of P.D.50 on basis of: Simult. Cum. Virus titer	Amount of P.D.50 on basis of: Simult. Cum. Virus titer	Virus used.	Virus-titer in test.	Serum tested	Serum titer		Amount of P.D.50 on basis of: Simult. Cum. Virus titer	Amount of P.D.50 on basis of: Simult. Cum. Virus titer
█	8 yrs	P	Cinti III	Initial (3-16-48)	2.7	2.9	1/2 day	100+	80+	1:6	160	40	Same as 1948	3.3	3mo	1:256+	100	40	3mo: NEG. (1948)
			Qualit. serum test (4-8-48)	3	320+			250+	1:97+?	3yr					1:100?	3yr NI 10- (1951)			
			Quantit. serum test (6-13-48)	3.5+															
█	7 mo	P	Cinti II	Initial (5-14-48)	3	3.6	5d	3200+	800+	1:16	32	40	Same as 1948	4.5	3mo	1:256+	320	40	acute } NEG. (1948)
			Qualit. serum test (6-20-48)	4.2+?	5000+			1250+	1:107+?	3yr					1:256+	3mo: 1:100. (1951)			
			Quantit. serum test (9-20-48)	3.5															
█	13 yrs	P	AKRON II	Initial (4-19-48)	3.2	3.6	1d	500+	400+	undil.?	200	80	Same as 1948	4.2	3mo	1:256+	50	40	3mo: NEG. (1948)
			Qualit. serum test (5-18-48)	3.7+?	2WK			→	1:6	3yr					1:256+	3yr NI 10- (1951)			
			Quantit. serum test (10-14-48)	4+?	3mo			1000+	800+	1:32									
█	7 yrs	P	Cinti II	Initial (5-27-48)	3.8	4.1	2d	1000+	2500+	1:1	1000	125	Same as 1948	5.3	3mo	1:256+	1000	63	acute } NEG. (1948)
			Qualit. serum test (8-15-48)	3.7	2WK			→	1:8	3yr					1:256	3mo 1:4-, NI 800 (1951)			
			Quant. serum test (11-2-48)	5+?	3mo			1600+	4000+	1:26									
█	7 mo	P	Cinti II	Initial (3-16-48)	8.3	3.3	3d	160+	630+	0?	320	200	GEN I of 11-17-47 (not enough given left)	4.25	3mo	1:64+	180	200	acute: 1:20 } tested 3mo: 1:8 } 1948.
			Qualit. serum test (4-12-48)	2.7	3mo			100+	400+	1:3					2WK - , NI 250				
			Quant. serum test (9-8-48)	3.5+?											3mo NEG., NI 32 } 1951				
█	1 1/2 yrs	P	Cinti II	Initial (4-29-48)	3.2	3.8	3d	320+?	200	1:3	630	125	GEN III of 10-18-48 (ampule given II could not be produced)	4.5	3mo	1:64+	320	125	3mo: NEG. (1948)
			Qualit. serum test (6-17-48)	4+?	3mo			100+	63+?	1:13					3yr	1:64+			3yr NI=63 (1951) !!
			Quant. serum test (9-27-48)	4.5+?															
█	4 yrs	NP	Cinti II	Initial (2-27-48)	4.7+?	4.3	3d	3-	10-?		32	40	Same as 1948	4.2	3mo	0	32	40	3mo: NEG. (1948)
			Qualit. serum test (3-15-48)	3.7	3mo			16	63						3yr	0			3yr NI 10- (1951)
			Quant. serum test (5-20-48)	4.2+?	1mo			5+?	6										

patient

7 yr old. Paralytic polio (Cinti 1947). Gradual ultimate recovery.  
 Initial virus titration 5-27-48:  $10^{-3.8}$ . Cum. titer  $10^{-4.1}$   
 • Undil. serum vs. varying doses of virus 8-15-48: Virus control  $10^{-2.7}$ , acute serum (2d.)  
 NI based on virus titer in same test and on Cum. titer. 2500+. 3 mo serum  
 NI. double 1600+? and 4000+ resp.  
 • Serum dil. vs. single dose of virus. ( $10^{-2} = 1000 pD_{50}$  on basis of simult. virus titer  
 and  $125 pD_{50}$  on basis of Cum. titer). Acute serum 50% endpoint = 1:1, 2 wk serum  
 = 1:8 and 3 mo serum = 1:26. Virus titer =  $10^{-5.7}$ ?

1950 test.

• Serum dil. vs single dose of virus (final dil.  $10^{-2.3}$ ) = 63  $pD_{50}$  on basis of Cum.  
 virus titer and 1000  $pD_{50}$  on basis of Simult. Virus titer).  
 3 mo serum: undil 0000 - 1:4 0000 - 1:16 0000 - 1:64  $p_2$  0000 - 1:256  $p_{22}$  0000. Serum titer 1:256  
 3 yr serum: undil 0000 - 1:4 0000 - 1:16 0000 - 1:64  $p_9$   $p_{21}$  0000 - 1:256 NP 0000 Serum titer 1:  
 Virus control  $10^{-2.3} p_6 p_{10} p_{11} p_{14} - 10^{-2.2} p_6 p_{10} p_{14} NP - 10^{-4.3} p_{10} p_{10} p_{10} NP - 10^{-5.3} p_{13} p_{13} 00$ . Virus titer  $10^{-5.3}$   
 patient Tennant had no Lansing antibodies in acute, 2 wk and 3 mo serum but  
 present in 3 mo serum. Quant. test: 3 mo serum titer less than 1:4, 3 yr  
 serum about undiluted. Qualitative test: 3 mo serum NI 800, 3 yr serum  
 N.I. 50

patient

7 mo old Paralytic polio (Cinti 1947). Only left facial paralysis!  
 Gen II. Initial virus titration 3-16-48:  $10^{-3.3}$ . Cum. titer  $10^{-3.3}$   
 • Undil. serum vs. varying doses of virus 4-12-48. Virus control  $10^{-2.7}$ .  
 NI based on virus titration in same test and on Cum. Virus titer resp.,  
 acute serum (3 d.) 160+ and 630+ resp.; 3 mo serum 100+ and 400+ resp.  
 • Serum dil. vs. single dose of virus ( $10^{-1} = 320 pD_{50}$  on basis of simult. virus titer  
 and 200  $pD_{50}$  on basis of Cum. titer.) Acute serum 50% endpoint 0? 3 mo  
 serum 1:3.

1950 test.

• Serum dil. vs. single dose of virus (final dil.  $10^{-2}$ ) = 20  $pD_{50}$  on basis of  
 Cum. Virus titer and 100  $pD_{50}$  on basis of Simult. Virus titer).  
 3 mo serum: undil 0000 - 1:4 0000 - 1:16 0000 - 1:64 0000. No endpoint. (1:64+)  
 3 yr serum: undil 0000 - 1:4 0000 - 1:16 0000 1:64 NP 0000. Serum titer 1:64+  
 Virus control:  $10^{-2} p_6 p_7 p_8 p_{12} - 10^{-3} p_7 p_8 p_9 p_{12} - 10^{-4} p_6 p_{12} 00 - 10^{-5} p_{10} 000$ . Virus titer  $10^{-4.25}$   
 patient Roman had Lansing antibodies in acute serum (1:20) and also  
 present in 3 mo serum (1:8) vs. 50  $pD_{50}$   
 Qualitative test 1950: 3 mo serum less than 1:4 (undil. not tested) and  
 3 yr serum even no protection with undil. serum (against virus 1:200) (200  $pD_{50}$ )  
 Qualitative test 2 WK Serum NI 1:250 - 3 mo serum NI 1:32 - 3 yr serum  
 NI 10.

patient

1 1/2 yr. Paralytic polio (Cinti 1947).  
 Gen II. Initial virus titration 4-29-48  $10^{-3.2}$  Cum. titer  $10^{-3.8}$ .  
 • Undil. serum vs. varying doses of virus. 6-17-48. Virus control  $10^{-4.7}$ , acute  
 serum (3 d.) NI based on virus titer in same test 320+? and on Cum. titer 200,  
 3 mo serum double 100+ and 63+? resp.  
 • Serum dil. vs. single dose of virus ( $10^{-1.7} = 630 pD_{50}$  on basis of simult. virus titer and 125  $pD_{50}$  on  
 basis of Cum. titer.) Acute serum 50% endpoint 1:3, 3 mo serum 1:13.  
 Virus titer  $10^{4.5}$ ?

1950 test.

• Serum dil. vs. single dose of virus (final dil  $10^{-2} = 63 pD_{50}$  on basis of Cum. titer and 320  $pD_{50}$   
 on basis of Simult. titration).  
 3 mo serum: undil 0000 - 1:4 0000 - 1:16 0000 - 1:64 0000 Serum titer 1:64+ (no endpoint)  
 3 yr serum undil 0000 - 1:4 0000 - 1:16 0000 - 1:64 0000 Serum titer 1:64+ (no endpoint)  
 Virus titer  $10^{-4.5}$  (Virus control  $10^{-2} p_5 p_6 p_7 p_9 - 10^{-3} p_9 p_9 p_{10} 0 - 10^{-4} p_9 p_9 p_9 p_{17} - 10^{-5} p_{11} 000$ )  
 patient Risner had no Lansing antibody in 3 mo serum. Qualitative test 1950 with 3 yr serum  
 NI 63.

PATIENT [redacted], 2 yrs old. Paralytic polio (Cinti 1947). Prolonged convalescence.

Gen. III. Initial virus titration 3-16-48:  $10^{-2.7}$ . Cum. titer  $10^{-2.9}$

- Undil. serum vs. varying doses of virus 4-8-48: Virus control  $10^{-3}$ , acute serum ( $\frac{1}{2}$  day) less  $10^{-1}$ ?, 3 mo serum less  $10^{-0.5}$ ? Cum. virus titer  $10^{-2.9}$ . NI based on virus titer in simult. test and Cum. virus titer resp.: acute serum 100+ and 80+, 3 mo serum 320+ and 250+.
- Serum dil. vs. single dose of virus (final dil.  $10^{-2.3} = 40 PD_{50}$  on basis of Cum. titer and  $160 PD_{50}$  on basis of simult. titer of virus).  
Virus control:  $10^{-3.5}$ ? Acute serum 50% endpoint 1:6, 3 mo serum 1:97+?

1950 test:

- Serum dil. vs. single dose of virus (final dil.  $10^{-1.3} = 40 PD_{50}$  on basis of Cum. titer and  $100 PD_{50}$  on basis of simult. virus titer).  
Virus controls:  $10^{-1.3}$  P<sub>6</sub>, P<sub>7</sub>, P<sub>8</sub>, P<sub>9</sub> ·  $10^{-2.3}$  P<sub>17</sub>, NP, 0,  $10^{-3.3}$  P<sub>8</sub>, P<sub>9</sub>, 0, 0,  $10^{-4.3}$  P<sub>12</sub>, 0, 0.  
(Virus titer =  $10^{-3.3}$ )  
3 mo serum 1:16 P<sub>14</sub> 000 - 1:64 P<sub>14</sub> 00 - 1:256 00. Serum titer 1:256+?  
3 yr serum undil. 0000 - 1:4 0000 - 1:16 P<sub>24</sub> 00 - 1:64 00 - 1:256 P<sub>6</sub> P<sub>8</sub> P<sub>9</sub> P<sub>12</sub>.  
Titer of 3 yr serum 1:100?

patient fine had no Lansing antibody in 3 mo serum. Qualitative test:  
3 yr serum NI 10 or less.

PATIENT [redacted] E-7 mo old. Paralytic polio (Cinti 1947). Gradual recovery.

Gen. II. Initial virus titration 5-14-48:  $10^{-3}$ . Cum. virus titer  $10^{-3.6}$

- Undil. serum vs. varying doses of virus 6-28-48: Virus control  $10^{-4.2}$ , acute serum (5d) N.I. based on simult. virus titration 3200+, on Cum. virus titer 800+. 3 mo serum, N.I. ditto 5000+ and 1250+ resp.
- Serum dil. vs. single dose of virus (final dil.  $10^{-2} = 40 PD_{50}$  on basis of Cum. titer and  $32 PD_{50}$  on basis of simult. virus titer).  
Virus control:  $10^{-3.5}$  Acute serum 50% endpoint 1:16, 3 mo serum 1:107+?

1950 test:

- Serum dil. vs. single dose of virus (final dil.  $10^{-2} = 40 PD_{50}$  on basis of Cum. titer and 320 on basis of simult. titration).  
3 mo serum 1:16 00 - 1:64 000 - 1:256 0000. Serum titer 1:256+  
3 yr serum undil. 0000 - 1:4 000 - 1:16 000 - 1:64 NP 000 - 1:256 00. Serum titer 1:256+.  
Virus control:  $10^{-2}$  P<sub>6</sub>, P<sub>7</sub>, P<sub>9</sub> -  $10^{-3}$  P<sub>7</sub> P<sub>10</sub> P<sub>12</sub> NP -  $10^{-4}$  P<sub>6</sub> P<sub>7</sub> P<sub>11</sub> -  $10^{-5}$  0000. Virus titer  $10^{4.5}$

patient Rice had no Lansing antibody in acute, 2 wk and 1 mo serum, but present in 3 mo serum! 3 mo serum 1:100, 3 yr serum 1:100

patient [redacted] 13 yrs old. Paralytic polio (AKRON 1947). Ultimately recovered compl.

Gen. II. Initial virus titration 4-19-48:  $10^{-3.2}$ . Cum. titer  $10^{-3.6}$

- Undil. serum vs. varying doses of virus 5-18-48: Virus control  $10^{-3.7}$ , acute serum (1d.) NI based on simult. virus titration 800+, on Cum. virus titer 400+. 3 mo serum ditto 1000+ and 800+ resp.
- Serum dil. vs. single dose of virus (final dil.  $10^{-1.7} = 80 PD_{50}$  on basis of Cum. titer and  $200 PD_{50}$  on basis of simult. virus titer).  
Virus control  $10^{-4}$ ? Acute serum 50% endpoint: undiluted?, 2 wks serum 1:6, 3 mo serum 1:32.

1950 test:

- Serum dil. vs. single dose of virus. (final dil.  $10^{-2} = 40 PD_{50}$  on basis of Cum. titer and  $PD_{50}$  on basis of simult. virus titer)  
3 mo serum: 1:4 0000 - 1:16 0000 - 1:64 00 - 1:256 P<sub>9</sub> 000. Serum titer 1:256+  
3 yr serum: undil. 000 - 1:4 0000 - 1:16 0000 - 1:64 NP 00 - 1:256 0000. Serum titer 1:256+  
Virus control:  $10^{-2}$  P<sub>7</sub> P<sub>9</sub> P<sub>10</sub> P<sub>14</sub> -  $10^{-3}$  P<sub>7</sub> P<sub>9</sub> NP 0 -  $10^{-4}$  P<sub>9</sub> P<sub>13</sub> 00 -  $10^{-5}$  P<sub>7</sub> NP 00. Titer =  $10^{-4.2}$

patient Oberlin had no Lansing antibody in 3 mo serum.  
Qualitative test. 3 yr serum N.I. 10 or less.

patient [redacted] Non paralytic polio, 4 yrs old. Complete recovery in a few days.  
 Initial virus titration on 2-27-48:  $10^{-4.7}$ ? Cum. titer  $10^{-4.3}$   
 • Untit. serum vs. varying doses of virus 3-15-48: Virus titer  $10^{-3.7}$ . Antisera serum (3d.) NI based on virus titer in same test 3-, and on Cum. titer  $10^{-?}$ . 3 mo serum NI ditto 16 and 63 resp.  
 • Untit serum test repeated 5-20-48 but now with 3 mo serum and 8 mo serum: NI 3 mo serum 5+? and 6 resp. - 8 mo serum 32+? and 40. Virus titer in this test  $10^{-4.2}$ ?

1950 tests:  
 Serum dil. vs single dose of virus (final dil.  $10^{-2.7}$ ) = 40 p<sub>25</sub> on basis of Cum titer and 32 p<sub>25</sub> on basis of simultaneous virus titer.

3 mo serum: untit. 1:4, 1:16 all monkeys came down with paralysis.  
 3 yr " : untit. 1:4, 1:16 "  
 Virus titer:  $10^{-2.7}$ : p5p6p9 p9 =  $10^{-3.7}$  p5p6p11 p12 =  $10^{-4.7}$  10000 -  $10^{-5.7}$  10000. Titer  $10^{-4.2}$

Test started Aug 17-1951. (first day = Aug 18).

A	3 yr Rice serum untit. + Hof virus	1:500 (= final $10^{-3}$ )	:
B	" " " + " "	1:50 (= " $10^{-2}$ )	:
C	Virus control Hof. Virus	final dil. $10^{-4}$	: D4
D	" " " "	" "	$10^{-3}$
E	1 mo serum Hof. + Rice virus	1:500 (= final $10^{-3}$ )	:
F	" " " + " "	1:50 (= " $10^{-2}$ )	:
G	8 " " " + " "	1:500 (= " $10^{-3}$ )	:
H	8 " " " + " "	1:50 (= " $10^{-2}$ )	: D4
I	3 yr " " " + " "	1:500 (= " $10^{-3}$ )	:
K	3 " " " + " "	1:50 (= " $10^{-2}$ )	:
L	Virus control Rice Virus	final dil. $10^{-4}$	:
M	" " " "	" "	$10^{-3}$

Patent Hofekamp had no Lansing antibodies in 3 mo serum.  
 Qualitative test 3 yr serum NI 10 or less.

Repeats test to determine the N.I. of the 3 yrs [redacted] Serum for Laming Virus. Virus used: prot Vll Laming (1-11-52) 10% in saline). Equal amounts of anti. serum and virus distribution kept from the 2nd arm 2. - Serving in ca. 1/0.5cc (i.c.) kept in incubator.

[redacted] serum vs Virus $10^{-2}$ (1 time)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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0/10

[redacted] serum vs Virus $10^{-3}$ (1 time)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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0/9

[redacted] serum vs Virus $10^{-4}$ (1 time)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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0/9

D (non specific?)

Virus control. (Lansing)

6-20

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

Mortality

1 - D  
2 - PP  
3 - CNCP  
4 - CNCP  
5 - CNCP  
6 - PP  
7 - PP  
8 - PP  
9 - PP  
10 - PP

$10^{-2}$   
(final)

10/10

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

$10^{-3}$   
(final)

10/10

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

$10^{-4}$   
(final)

0/10

N.I.: Views + Serum =  $10^{6.5}$  or less  
" + saline =  $10^{3.5}$  or less  
N.I. = 100 on 3rd basis.



Virus control (Lansing)

7-15-

	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	
10 <sup>-2</sup>	1 - D	2 - PP PP D	3 - - - D	4 - - - PP D	5 - - - P D	6 - - - PP D	7 - - - PP D	8 - - - P D	9 D	10 D																			
Final																													
10 <sup>-3</sup>	1 - PP - PP D	2 - <del>CMS</del>	3 - - - P D	4 - - - PP D	5 - - - PP D	6 - - - PP D	7 - - - PP D	8 - - - PP D	9 - - - PP D	10 - - - PP D																			
Final																													
10 <sup>-4</sup>	1 CMS PP PP PP D	2 - CMS PP ?	3 - - - CMS	4 - - - CMS	5 - - - CMS	6 - - - CMS	7 - - - CMS	8 - - - CMS	9 - - - CMS	10 - - - CMS																			
Final																													

8/8

8/10

5/10

3 tubes = 3.8

NI = 25  
on basis of  
Swk. observed