BIRK HAMSTERS

A

HAMSTER NO	A	0	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
582	16	14	14	14	14																									
571	19	18	19	20	22																									
187	13	12	D																											
43	13	D																												
180	16	D																												
180	13	D																												
59	14	D																												
192	11	D																												

13
15
19
19

Average Weight

% P, CNS, D

% DEAD

HAMSTERS CORTISOL

HAMSTER 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

96.0 9

93

189

9.9

19 | 189.0

171

180

171

90

Average Weight

% P, CNS, D

% DEAD

Method for Scoring Severity of Paralysis in Surviving Hamsters

To be applied at end of experiment

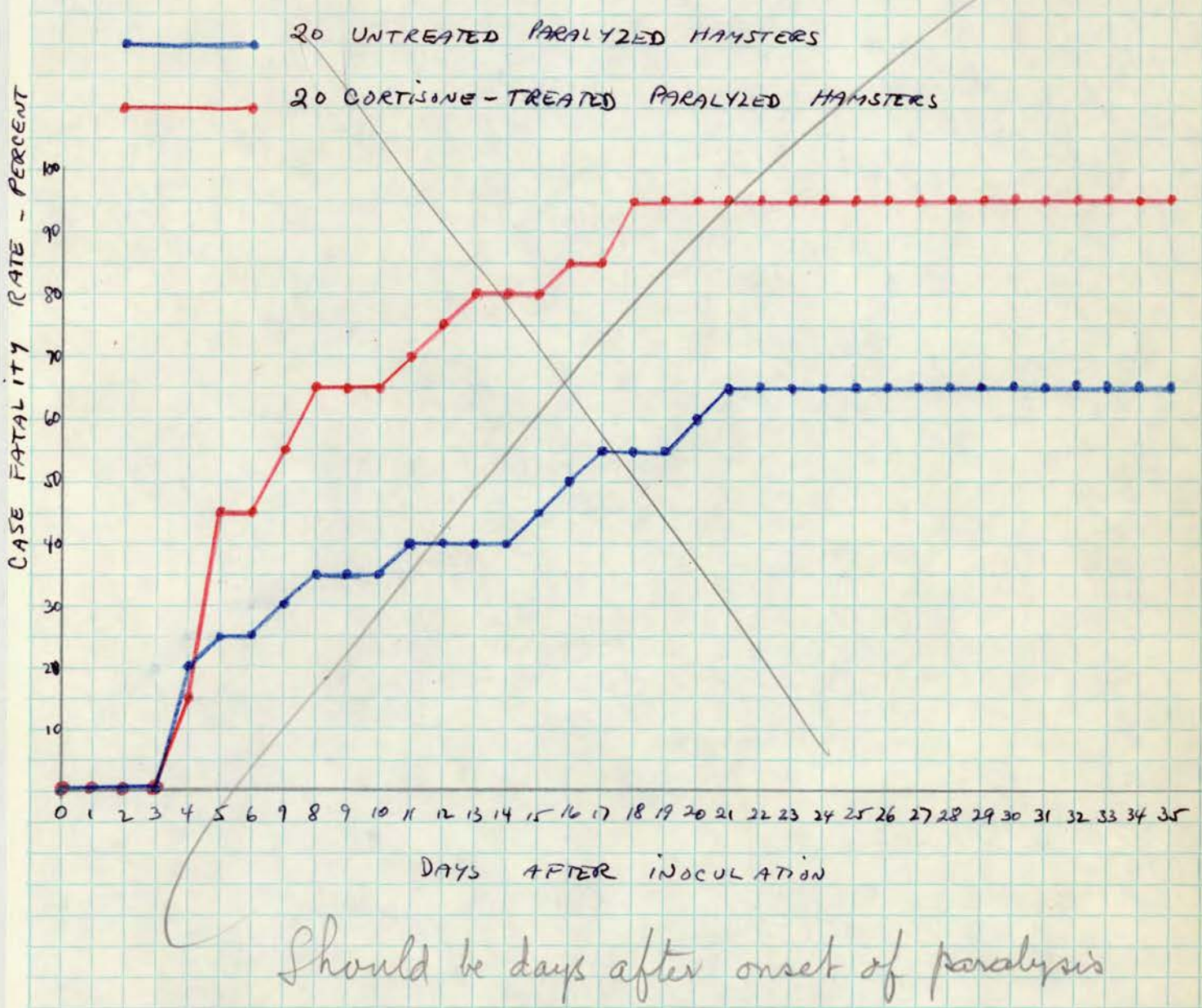
Part affected	Slight or transit	Partial	Very severe or complete
Right fore	0.5	1	2
Left fore			2
Right rear			2
Left rear			2
Cranial and/or back			2
			10

Maximum Score is 10

Minimum Score is 0.5

STANDARD B&P "NOTEAR"

COMPARISON OF CASE FATALITY RATES BETWEEN UNTREATED HAMSTERS AND THOSE INOCULATED WITH 5 MG CORTISONE AT ONSET OF PARALYSIS



Should be days after onset of paralysis

16
16
18
16
16
20
[illegible]
[illegible]
17
17
[illegible]
[illegible]
24
[illegible]
18
[illegible]
[illegible]
19
15
16
179

17.3

17.9

5
24
24
24
17
17
24
24
17
25
18

214

3

3
22
20
23
23
24
14
17
16
21
15

195

19.5

4
16
22
19
23
17
21
19
22
14
15

188

5
19
16
18
19
17
20
19
22
16
22

188

3
24
19
22
24
22
21
16
21
22
17

208

26.8

Edith Sprague
909 4th Street, S. E.
Minneapolis 4, Minn.

SOCIETY OF AMERICAN BACTERIOLOGISTS

The Netherland Plaza Cincinnati, Ohio May 16-20 1949

Forty ninth General Meeting

Institution _____

Hotel _____ Room No. _____

Date of Registration

JUL 10 1952

THE EFFECT OF CORTISONE ON LANSING VIRUS INFECTION IN HAMSTERS WHEN ADMINISTERED (A) AT TIME OF ONSET OF SIGNS AND (B) ON THE TENTH DAY AFTER INOCULATION TO HAMSTERS SHOWING NO SIGNS OF INFECTION.

PURPOSE: Previous experiments have shown that Cortisone when given on the day of inoculation of virus greatly enhances Lansing poliomyelitis in hamsters, increasing both morbidity and mortality. However, it is not known whether Cortisone is capable of converting the mild type of poliomyelitis seen in untreated hamsters into the invariably fatal type of disease once the disease process has started, or whether it is necessary to administer the Cortisone before infection sets in.

It has also been shown that untreated hamsters inoculated with Lansing virus 1:100 the greatest # majority of animals show signs by the tenth day after inoculation, the mortality being about 50%. It is not known what effect Cortisone would have on the remainder of the animals if administered at a time when no more animals are expected to show signs of disease. In other words, will Cortisone produce its effect in animals which ordinarily would not be expected to develop poliomyelitis?

The purpose of this experiment is thefe twofold - (a) Does Cortisone produce its enhancing effect when administered to hamsters after infection has set in? (b) Will Cortisone have an effect on animals inoculated with virus, but which ordinarily would not be expected to show signs of infection?

PROCEDURE: 102
100 hamsters weighing 14-20 grams were inoculated with Lansing virus 1:100. During the first ten days after inoculation every other hamster which showed signs of infection received 5 mg of Cortisone intramuscularly. On the tenth day after inoculation half of the remaining uninoculated hamsters were given 5 mg of Cortisone.

VIRUS: Lansing virus Pool VII of 11/11/52. 10% resuspension in saline. Centrifuged 2000 rpm x 10 min to remove flocculent ppt.
0.05 ml of 1:100 i.c.

HAMSTERS: 14-20 gram Lakeview ♂ hamsters.

1 transfer prostrate and dead on 7/12/52 - found on checking - no treatment.
5 " dead on 7/13/52 — no signs - all eaten.
1 " dead on 7/14/52 - no signs - eaten.
1 " dead on 7/20/52 - no signs

For Appendix

TABLE 10.

Experiment of July 10, 1952

Effect of Giving Cortisone Shortly After Onset of Paralysis

Control Group

Hamster No.	Involvement at onset	Score	Max Subsequent Involvement	Death days after onset
1 (724)	LF	2	LF, RF	2
2 (726)	RF	2	RF, LF, RR	S – Residual RF+RR
3 (728)	LF	2	LF, RF	2
4 (730)	RF, LF	4		1
5 (732)	RF, LF	4	RF, LF, RR, LR	18
6 (734)	RF	2	RF, LF	S – Residual RF+LF
7 (736)	RF	2	RF, LF	17
8 (738)	LF	2	RF, LF	14
9 (740)	LF	2	RF, LF, RR, LR	12
10 (742)	LF, RF	4	—	2
11 (744)	RR, LR	4	RF, LF, RR, LR	13
12 (746)	Salivation	2	—	1
13 (748)	RF	2	RF, LF	4
14 (750)	RF	2	RF, LF	S – resid. RF+LF
15 (752)	RF	2	RF, LF	S – " " "
16 (754)	LF	2	no extension	6
17 (758)	RR	2	RR transitory; then RR	S – resid. RR
18 (760)	CNS	2	—	<1
19 (762)	RF	2	Transitory – lasted 13 days	S – no residual
20 (763)	LR	2	LR, RR – lasted only 10 "	S – no residual

$\frac{50}{20} = 2.5$

Cortisone Group

		Score		
1 (723)	LF	2	—	2
2 (725)	LF	2	LF, RF	3
3 (727)	LR	2	LR, RR, RF	2
4 (729)	LF, RF	4	—	2
5 (731)	LF	2	LF transitory; then LR	15
6 (733)	RF	2	RF, LF	5
7 (735)	LF, RF	4	—	2
8 (737)	LF	2	LF, RF	2
9 (739)	LF	2	—	4
10 (741)	RF	2	RF, LF, CNS	2
11 (743)	RF	2	Prostrate	4
12 (745)	RF, LF	4	—	2
13 (747)	LF	2	Prostrate	8
14 (749)	RF	2	RF, LF	4
15 (751)	Salivation	2	Prostrate	1
16 (753)	RR, LR	4	—	11
17 (755)	RF	2	RF, LF	6
18 (757)	RF	2	RF, LF	Survived – residual RF+LF
19 (759)	RF	2	RF, LF	12
20 (761)	CNS	2	—	5

$\frac{48}{20} = 2.4$

Group	Hamster No. in order of selection	Involvement at onset	Maximum involvement	Death days after onset	Residual paralysis in survivors
Untreated controls	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				
	19				
	20				
Cortisone 5mg. once	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				
	19				
	20				

JUL 10 1952

A

LANSING VIRUS – 1:100 ONLY – 0.05 ml INTRACEREBRALLY.

(THESE HAMSTERS REPRESENT 50% OF THE TOTAL NUMBER SHOWING SIGNS OF LANSING INFECTION DURING THE FIRST TEN DAYS AFTER INOCULATION)

HAMSTER NO.		Days 1 2 3 4 … 33
1	724	– P P P D
✓ 2	726	– P P PPPPPPPPWPWP P P P P P P P P P P P P P P P P P P P P P P P P
3	728	– P P P D
4	730	– – P P D
5	732	– – PPPPPPPPPPPPPPPPPPPPPP W PPP PPPPPP PPPPPPP D
✓ 6	734	– – PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP PPPP
7	736	– – PPPPPPPPPPPPPPPPPPPPPPPPPPPPPP D
8	738	– – P P PPPPPPPPPWPWPWPWPWPWPWPW D
9	740	– – P PPPPPPP PPPPPPP PPPPPPPPPW D
10	742	– – PPPP D
11	744	– – PPPPPPPPPWPWPWPWPWP PPPPPPPP D
12	746	– – SAL D
13	748	– – – PPPPPPP D
✓ 14	750	– – – PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP PPPP
✓ 15	752	– – – – P P P P P P P P P P PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP PPPP
16	754	– – – – P P P P P P D LOST WEIGHT – EMACIATED AT DEATH
17	563 756	– – – – SAL SAL ? ? – – Probably not polio – removed to group C – contrasted
✓ 18	NO TAG 357 758	– – – – – P P P P P P P P – – – – – – P P P P P P P P P P P P P P
19	760	– – – – – – CNS D
✓ 20	762	– – – – – – – – – P P P P P P P P P P P P W W W W W W W – – – –
Lost tag 563	763	– – – – – – – – – – – P PPPPPPPPPPPPPPPPP [illegible] – – – – – – – – –

CASE FATALITY RATE %: 0 0 0 20 25 25 30 35 35 35 40 40 40 45 50 55 55 55 55 60 65

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

818, 781 and 784 transferred to this box on 8/21/52

All 7 present on 8/21/52

B

LANSING VIRUS - 1:100 - 0.05 ML. INTRACEREBRALLY
CORTISONE - 5 MG - INTRAMUSCULARLY.
(THESE HAMSTERS REPRESENT THE REMAINING 50% SHOWING SIGNS DURING THE FIRST TEN DAYS. EACH ANIMAL RECEIVED CORTISONE ON FIRST DAY OF PARALYSIS)

HAMSTER 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

	HAMSTER NO.	Days 1–28
1	723	— P P D
2	725	— P P P P P D
3	727	— P P P D
4	729	— P P P P D
5	731	— — P P P W W W — — P PWPWPWPWPWPWPW D
6	733	— — PPPPPP PPPPP D
7	735	— — P P P P D
8	737	— — P PPPP D
9	739	— — P P P P D
10	741	— — PPPPP CNS CNS D
11	743	— — P P P PPR D
12	745	— — P P P P D
13	747	— — — P P P P PPPPPPPPPR D
14	749	— — — P P P PPP D
15	751	— — — SAL PR D
16	753	— — — — PPPPPPPP PPPPPPPPPPP PP D
17	755	— — — — P PPPPPPPPP D
18 ✓	757	— — — — P P P P PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP PPPP
19	759	— — — — — P P P PPPPPPPPPPPPPPPPP D
20	761	— — — — — — — — CNS CNS CNS CNS CNS CNS D.

795, 799 + 800 from group D transferred to this box on 8/21/52 ✓

795 + 799 — dead 8/30/52

CASE FATALITY RATE % 0 0 0 15 45 45 55 65 65 65 70 75 80 80 80 85 85 95

$X^2 = 6.5$, $P = 0.01$ — not with Yates correction

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

Present 8/21/52

7-10-52

C. LANSING VIRUS ONLY - 1:100 - 0.05 ML. INTRACEREBRALLY

THESE HAMSTERS REPRESENT HALF OF THE ANIMALS WHICH SHOWED NO SIGNS OF LANSING INFECTION UP TO AND INCLUDING THE TENTH DAY AFTER INOCULATION OF THE VIRUS, I.E. 7/20/52

	HAMSTER NO.	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
1	343 ~~756~~	– –
2	405 ~~764~~	– –
3	388 ~~765~~	– –
4	766	– –
5	380 ~~767~~	– –
6	NEW TAG 819 → 768	– –
7	101 ~~769~~	– –
8	770	– –
9	NO TAG PAINTED 817 → 387 771	– –
10	820 → 772	– –
11	773	– –
12	819 ~~774~~	– –
13	775	– –
14	NEW TAG 818 → 776	– – – – – – – – – – – P P W W W W – – – – – – – – – – –

818 tag present 8/21/52 — transferred to box A

9-8-52 — 820 dead

C₂ LANSING VIRUS ONLY – 1:100 – 0.05 ML. INTRACEREBRALLY

THESE HAMSTERS ALSO REPRESENT HALF OF THE ANIMALS WHICH SHOWED NO SIGNS OF LANSING INFECTION UP TO AND INCLUDING THE TENTH DAY AFTER INOCULATION OF THE VIRUS – AND ALSO BELONG TO THE SAME GROUP AS C₁

	HAMSTER 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	
15	777	–	–	–	–	–	–	–	–	–	–	D																							
16	778	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	✓
17	779	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	✓
18	780	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	D* No virus on mouse passage from cord																		
19	781	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	P	P	P	P	P	P	P	P	P	P	P		P	P	W
20	~~782~~ 353 PAINTED	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	✓
21	555 ~~783~~	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	✓
22	784	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	P	P	P	P	P	P	P	P	P	P	W	W	W		W	W	
23	785	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	✓
24	786	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	✓
25	787	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	✓
26	788	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓
27	789	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓

8/21/52 – 781 – no paw
784 – on now } transferred to box A

* This animal when first examined appeared to be perfectly normal. Several minutes later was found to have difficulty in breathing although diaphragm seemed normal – Cheyne-Stokes respiration. Difficulty in moving although no paralysis was evident. Died less than an hour later. Brain vessels on autopsy was greatly engorged. No hemmorhage evident. Cortex-Cerebellum, spinal cord – brain stem removed to test for Lansing and/or bacterial contamination.
BAP 000

7-10-52

D₁ LANSING VIRUS - 1:100 - 0.05 ML. INTRACEREBRALLY
CORTISONE - 5 MG - I.M.

THESE ANIMALS REPRESENT THE REMAINING HALF OF THOSE WHICH SHOWED NO SIGNS OF LANSING INFECTION UP TO AND INCLUDING THE TENTH DAY AFTER INOCULATION OF THE VIRUS. CORTISONE WAS ADMINISTERED ON THE TENTH DAY AFTER VIRUS INOCULATION - 7/20/52

	HAMSTER 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
1	790	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	E	E	E	E	E Rogu	E	(D)								
2	791	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
3	792	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
4	178 / 793	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
5	794	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
6	795	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		P	P 8/12
7	193 / 796	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
8	797	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
9	798	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
10	799	-	-	-	-	-	-	-	-	-	-	-	-	-	E	E	-	-	-	-	-	-	-	-	-	8/4 P	P	P	P	P	P		P	P
11	800	-	-	-	-	-	-	-	-	-	-	-	-	-	PE	PE	PP	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P
12	801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
13	802	-	-	-	-	-	-	-	-	-	-	-	-	-	EE ?	EF ?	?	?	(D)															
14	803	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-

↑ CORTISONE (day 10)

8/20
795 - still par left front & left rear
799 - still par right front
800 - still left front
} transferred to box B

Note: 795 + 799 / found dead 8/30/52

D₂

LAUSING VIRUS – 1:100 – 0.05 ML INTRACEREBRALLY
CORTISONE – 5 MG – I.M.

THESE ANIMALS ARE PART OF THE SAME GROUP AS D₁. THEY ALSO REPRESENT HALF OF THE REMAINING ANIMALS WHICH SHOWED NO SIGNS OF LANSING INFECTION UP TO AND INCLUDING THE TENTH DAY AFTER INOCULATION AND ALSO RECEIVED 5MG OF CORTISONE ON 7/20/52.

	HAMSTER 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	
15	804	-	-	-	-	-	-	-	-	-	-	P	P	P	EE P	D																			
16	805	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	✓
17	806	-	-	-	-	-	-	-	-	-	-	-	-	-	EE T	EE T	EE ?	?		D * NO VIROS															
18	807	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	✓
19	808	-	-	-	-	-	-	-	-	-	-	P	D																						
20	809	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	PW P	PW P	PW P	PW P	PW P	PW P	D									
21	810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	✓
22	811	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	✓
23	812	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EE	D																		
24	813	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	✓
25	814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	✓
26	815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	✓
27	191 (816)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	✓

← CORTISONE

All present and OK on 8/21

* Cortex, cerebellum and spinal cord brain stem removed and passed into mice to test for presence of Lansing virus. BAP 000

NOT CHECKED Special

JUL 28 1952

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		1	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-		
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		3	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-		
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AUGUST 1, 1952

8-31

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