

# A RE-ANALYSIS OF THE UNIVERSITY OF WISCONSIN 1mA COW EXPOSURE DATA

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In a 2003 presentation (1) entitled "*Dairy Cow Responses to the Electrical Environment: A Summary of Research Conducted at the University of Wisconsin-Madison*," published in the proceedings of "*Stray Voltage and Dairy Farms*," a conference at Camp Hill, Pennsylvania, D.J. Reinemann recounted five manuscripts, (2) through (6), prepared by himself and L.G. Sheffield, et al, dealing with physiological responses of dairy cows to electrical exposures. Two of these manuscripts, (3) and (6), deal specifically with immune function responses. On page 77 of his presentation, Reinemann makes the following observation: "Although possible effects on IL 1 and IL2 and IgA concentrations were observed, these effects were not large enough to suggest major alterations in immune function by electric currents." This statement prompted interest in the data underlying manuscripts (3) and (6). The University of Wisconsin produced these data from (3) and (6) which are attached as appendices A and B respectively. It is the purpose of this discussion to present correct statistical analyses of these data and draw valid conclusions.

Using cows as experimental units, two short-term randomized controlled experiments were conducted at the University of Wisconsin-Madison facilities to determine whether exposure to 1mA currents caused changes in immune function responses.

In (3), twelve cows in stanchions were exposed to 1mA of 60 cycle current from front to rear hooves by floor contact for two weeks. Twelve cows under the same conditions were not exposed to current and served as controls. Eight stalls were constructed, four of which were equipped to produce current, and 8 cows were randomized to the stalls. Cows were monitored

for three weeks, and samples were drawn on days 3, 7, 10, 14, 17 and 21. The 1mA current was applied intermittently, 10 minutes on and 10 minutes off, during the last two weeks. This setup was replicated at three different time intervals for a total of 12 treatment cows and 12 control cows. A collection of 13 immune function responses were measured on each sample. The data are summarized in Table 1, where  $dif = (\text{day 17} + \text{day 21}) - (\text{day 3} + \text{day 7})$ . We define  $dif2$  as  $dif/2$  so that  $dif2$  is the difference in the mean response in week three from the mean response in week one. This response was chosen to aid in controlling measurement error.

The correct statistical model for analysis of this experimental design is a two-way crossed with one degree of freedom for treatment and two degrees of freedom for replications (7). Table 2 is a statistically correct version of Table II in (3) which shows very substantial differences from the incorrect P-values offered in Table II of (3). Details of the analysis of variance F tests are presented by the SAS output in Appendix C.

There is a highly statistically significant ( $P < .004$ ) increase in IL1 serum levels in cows exposed to 1mA current. This effect went unreported in (3) due to the choice of an incorrect analysis.

In addition, there are statistically significant decreases in Chem ( $P < .06$ ) and IL2serum ( $P < .07$ ), which were not seen in (3). The independent t-tests used in (3) ignored the replicate factor and grossly inflated the statistical variation or error term used in calculating P-values.

Sheffield directed a follow-up experiment using a more direct means of delivering a 1mA current with a device glued to the cow's rump with terminals wired to the cow. Twenty cows were randomized; ten to treatment (or exposure) and ten to control. Cows were exposed to 1mA for three weeks. Blood samples were collected, and "expression analysis of mRNA in bovine

leukocytes” was used to quantify responses. Sheffield’s manuscript describing the experiment and his results are attached as Appendix D. As mentioned earlier, the data underlying Sheffield’s Table 1 are attached as Appendix B.

As can be easily seen in Appendix B, IL1a increases ( $P=8.74E-06$ ) in cows receiving the 1mA exposure as does IL1b ( $P=2.55E-06$ ). This finding tightly corroborates the previous finding in the re-analysis of (3). In addition, it is easily seen that exposure to 1mA decreases ( $P=4.98E-06$ ) levels of IL2 which also corroborates the finding in the re-analysis. The data sets in Appendices A and B, taken together, offer uncommonly strong statistical evidence of immune system changes caused by short term exposure to 1mA of current.

The data in Appendix B also show that 1mA of current also decreases IL10, IgJ, and IgAHC.

## REFERENCES

- (1) Reinemann, D.J., 2003. Dairy Cow Response to the Electrical Environment: A Summary of Research Conducted at the University of Wisconsin-Madison Proceeding from "Stray Voltage and Dairy Farms," Conference at Camp Hill, Pennsylvania, April 9-11, 2003. Page 72-81.
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- (3) Reinemann, D.J., M.D. Rasmussen, L.G. Sheffield, M.C. Wiltbank and S.D. LeMire, 1999. Dairy Cow Response to Electrical Environment, Final Report, Part III. Immune Function Response to Low Level Electrical Current Exposure. Report to the Minnesota Public Utilities Commission, June 30, 1999. [Referred to as reference 17 in reference(1)].
- (4) Reinemann, D.J., S.D. LeMire, M.D. Rasmussen, M.C. Wiltbank, L.G. Sheffield, 1999. Comparison of Behavioral and Physiological Response to Electrical Shock in Lactating Dairy Cows, ASAE Paper No. 993154, Written for Presentation at the 1999 ASAE/CSAE International Meeting, Toronto, Canada, July 18-21. [Referred to as reference 18 in reference(1)].
- (5) Reinemann, D.J., M.C. Wiltbank, L.G. Sheffield, M.D. Rasmussen and S.D. LeMire, 2003. Comparison of Behavioral and Physiological Responses to Electric Shock in Lactating Dairy Cows. Transactions of the ASAE, In Press. Reinemann, D.J., M.D. Rasmussen and S.D. LeMire, 2002. Milking Performance of Dairy Cows Subjected to Electrical Current and Induced Milking Machine Problems. Transactions of ASAE. [Referred to as reference 19 in reference(1)].
- (6) Sheffield, L.G., D.J. Reinemann, M.D. Rasmussen, M.C. Wiltbank, and S.D. LeMire, 2003. Immune Function Response to Low-Level Electrical Current Exposure. J. Dairy Sci. A copy of a manuscript of this title was obtained from the University of Wisconsin. In reference (1), a manuscript of this title is listed as reference (20). [Referred to as reference 20 in reference(1)].
- (7) Snedecor, G.W., Cochran, W.G., *Statistical Methods*, 6<sup>th</sup> Edition, Iowa University Press, 1967.

## **TABLE 1**

IL1SERUM: Interleuken 1 serum (pg/ml)

Trial	Treatment/		Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
	Cow	Control							
1	3910	T	1.79	2.37	2.14	2.14	2.27	2.00 T	0.11
1	4066	T	2.61	2.24	1.59	2.34	1.85	2.11 T	-0.89
1	4106	C	2.17	2.00	1.61	1.63	2.13	2.10	0.06
1	4134	C	5.35	4.96	4.40	1.98	4.64	5.20	-0.47
1	4161	T	1.66	1.92	2.05	1.91	2.14	2.29 T	0.85
1	4192	T	2.22	1.75	1.83	2.57	2.48	1.74 T	0.25
1	4212	C	2.44	2.17	1.77	1.46	1.85	2.18	-0.58
1	4230	C	2.15	1.46	1.27	1.54	1.94	1.77	0.10
2	3861	T	1.82	2.27	3.90	4.30	2.57	4.25 T	2.73
2	4052	C	3.27	2.28	2.87	2.02	2.01	2.99	-0.55
2	4078	C	1.29	1.51	1.74	2.25	2.22	2.50	1.92
2	4084	T	1.84	2.20	2.42	3.02	3.51	2.87 T	2.34
2	4239	C	3.10	2.64	3.59	3.50	3.37	2.38	0.01
2	4243	T	1.03	1.82	3.21	2.79	2.43	2.30 T	1.88
2	4246	C	3.45	4.44	4.64	4.15	4.09	3.15	-0.65
2	4262	T	1.44	1.34	2.04	1.62	2.20	2.47 T	1.89
3	3970	C	3.12	2.47	2.81	2.45	2.58	2.01	-1.00
3	3987	T	3.76	3.62	3.97	3.08	4.11	4.45 T	1.18
3	3996	C	2.60	3.59	3.15	3.62	3.00	3.61	0.42
3	4057	T	5.35	5.43	5.32	5.22	5.35	5.01 T	-0.42
3	4105	C	4.71	5.42	5.13	5.30	5.19	5.37	0.43
3	4157	T	2.67	3.45	3.67	3.22	2.84	3.44 T	0.16
3	4279	T	1.81	2.30	2.43	1.92	3.34	1.82 T	1.05
3	4286	C	5.07	2.01	5.31	4.16	3.30	2.54	-1.24

dif=(day 17+ day 21) - (day 3+ day 7)

chem: chemiluminescence (RLU)

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
1	3910	T	8.51	8.50	9.12	8.87	8.76	8.99 T	0.74
1	4066	T	8.96	9.99	10.19	10.68	10.15	9.13 T	0.33
1	4106	C	7.61	9.99	10.61	9.07	9.90	11.35	3.65
1	4134	C	7.52	7.06	9.21	9.07	8.75	9.17	3.34
1	4161	T	8.76	9.00	10.07	8.99	9.70	8.38 T	0.32
1	4192	T	8.71	8.76	9.51	9.39	9.53	10.04 T	2.10
1	4212	C	9.01	9.06	9.82	9.14	9.81	10.02	1.76
1	4230	C	8.48	8.78	9.80	8.89	9.89	10.01	2.64
2	3861	T	8.42	9.90	10.42	9.62	9.44	8.65 T	-0.23
2	4052	C	10.28	9.60	11.16	10.25	10.53	9.89	0.54
2	4078	C	8.85	9.98	11.14	9.40	10.56	10.67	2.40
2	4084	T	9.99	9.49	10.85	9.75	9.64	9.53 T	-0.31
2	4239	C	9.57	9.92	11.02	9.19	9.84	9.17	-0.48
2	4243	T	10.07	10.68	11.46	10.11	10.17	9.64 T	-0.94
2	4246	C	8.71	8.99	10.45	8.49	9.96	8.45	0.71
2	4262	T	9.59	9.97	10.65	9.71	9.83	9.67 T	-0.06
3	3970	C	8.17	8.87	8.66	9.46	9.21	8.92	1.09
3	3987	T	9.21	9.29	9.17	9.67	9.19	8.85 T	-0.46
3	3996	C	9.06	8.41	8.38	8.84	8.40	8.59	-0.48
3	4057	T	8.87	8.48	8.73	9.61	8.09	8.74 T	-0.52
3	4105	C	8.61	8.79	8.28	8.79	7.72	8.04	-1.64
3	4157	T	8.19	8.89	8.88	9.15	8.88	9.24 T	1.04
3	4279	T	8.33	8.67	8.62	8.81	7.87	9.58 T	0.45
3	4286	C	9.87	9.87	9.02	8.51	8.85	9.03	-1.86

dif=(day 17+ day 21) - (day 3+ day 7)

cortisol: Cortisol (ng/ml)

Trial	Cow	Treatment/		Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
		Control	T							
1	3910	T	T	1.56	2.05	1.47	2.24	0.30	1.40	-1.91
1	4066	T	T	2.25	1.79	2.31	0.79	2.01	0.10	-1.93
1	4106	C	C	1.77	0.64	-0.11	0.77	0.79	2.55	0.93
1	4134	C	C	1.29	1.55	1.63	1.95	1.75	2.02	0.93
1	4161	T	T	1.28	1.99	2.30	1.28	1.72	1.18	-0.37
1	4192	T	T	1.02	1.10	1.96	0.88	1.65	-0.11	-0.58
1	4212	C	C	2.41	2.29	2.30	0.79	1.69	1.64	-1.37
1	4230	C	C	1.97	0.64	0.14	1.24	2.01	0.53	-0.07
2	3861	T	T	2.87	1.13	2.35	0.05	2.97	2.64	1.61
2	4052	C	C	2.17	1.61	2.69	0.81	2.61	0.44	-0.73
2	4078	C	C	2.48	2.87	2.01	0.90	2.21	1.13	-2.01
2	4084	T	T	1.59	2.03	2.72	1.52	1.58	2.03	-0.01
2	4239	C	C	1.06	0.56	1.48	1.78	1.78	-0.11	0.05
2	4243	T	T	0.88	0.18	2.39	0.62	-0.36	1.40	-0.02
2	4246	C	C	1.19	2.24	3.04	1.97	2.17	1.62	0.36
2	4262	T	T	1.19	0.34	2.25	-0.60	1.99	-0.16	0.30
3	3970	C	C	0.00	1.08	1.25	-0.16	-0.92	0.14	-1.86
3	3987	T	T	2.38	1.82	1.36	0.47	1.31	0.77	-2.12
3	3996	C	C	1.97	2.06	2.33	0.26	2.63	2.15	0.75
3	4057	T	T	1.01	1.54	1.12	1.55	0.56	1.29	-0.70
3	4105	C	C	1.75	1.63	1.49	0.74	0.69	1.44	-1.25
3	4157	T	T	0.69	1.41	1.94	0.37	1.96	1.54	1.40
3	4279	T	T	1.19	1.81	1.84	1.15	1.93	0.90	-0.17
3	4286	C	C	0.64	3.50	1.42	2.42	2.16	1.03	-0.95

dif=(day 17+ day 21) - (day 3+ day 7)



igvitro: Ig G Production (micro g)/ml)

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
1	3910	T	3.78	3.87	3.64	4.77	4.47	4.91 T	1.73
1	4066	T	3.85	5.23	5.09	4.53	3.83	4.54 T	-0.71
1	4106	C	4.09	3.89	3.26	4.49	4.78	4.68	1.48
1	4134	C	5.42	5.17	4.96	5.06	4.94	5.00	-0.65
1	4161	T	4.68	4.83	4.47	4.33	4.34	3.76 T	-1.41
1	4192	T	4.08	5.40	4.33	3.87	3.91	3.69 T	-1.88
1	4212	C	4.90	4.13	4.06	3.71	3.89	3.78	-1.36
1	4230	C	4.86	4.93	4.22	4.52	4.48	4.09	-1.22
2	3861	T	3.69	3.89	3.40	3.61	3.97	3.66 T	0.05
2	4052	C	4.13	4.19	3.95	4.28	4.41	4.29	0.38
2	4078	C	3.30	3.14	2.83	3.26	3.43	3.22	0.21
2	4084	T	4.08	3.78	3.66	3.47	3.37	3.58 T	-0.91
2	4239	C	5.05	5.46	5.12	4.65	4.80	5.00	-0.71
2	4243	T	4.95	4.80	4.60	4.95	4.85	4.87 T	-0.03
2	4246	C	5.29	5.53	5.07	5.23	5.04	4.97	-0.81
2	4262	T	3.89	4.03	4.39	3.83	4.13	3.56 T	-0.23
3	3970	C	4.94	4.84	4.65	4.81	4.84	4.86	-0.08
3	3987	T	3.91	3.09	3.26	3.22	3.26	3.30 T	-0.44
3	3996	C	4.67	4.33	4.30	4.63	4.14	4.53	-0.33
3	4057	T	4.08	4.19	3.61	4.25	3.97	4.03 T	-0.27
3	4105	C	2.94	3.00	3.18	2.77	3.00	3.04	0.10
3	4157	T	4.78	4.72	4.68	4.65	4.75	4.56 T	-0.19
3	4279	T	4.84	4.66	5.02	4.73	4.84	4.83 T	0.17
3	4286	C	5.02	5.12	4.85	4.86	4.93	4.83	-0.38

dif=(day 17+ day 21) - (day 3+ day 7)

ii2vitro: Interleukin 2 in vitro (pg/ml)

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
1	3910	T	5.65	5.45	5.56	5.62	4.96	5.01 T	-1.13
1	4066	T	5.58	5.75	5.48	5.54	5.49	5.67 T	-0.17
1	4106	C	5.11	4.70	5.65	5.00	5.45	5.41	1.05
1	4134	C	5.60	5.59	4.48	4.84	5.00	4.35	-1.84
1	4161	T	5.08	4.89	4.93	5.23	4.85	5.48 T	0.36
1	4192	T	5.47	5.41	5.21	4.84	5.60	4.93 T	-0.35
1	4212	C	4.46	4.44	5.69	5.38	6.06	5.42	2.58
1	4230	C	5.60	5.37	4.66	5.11	5.65	4.44	<u>-0.88</u>
2	3861	T	5.40	5.58	5.14	4.63	5.52	4.90 T	-0.56
2	4052	C	5.54	5.48	5.15	4.77	5.25	5.38	-0.39
2	4078	C	5.10	5.24	4.94	5.47	5.01	5.25	-0.08
2	4084	T	5.55	5.20	4.74	5.04	5.38	5.06 T	-0.31
2	4239	C	5.17	5.25	5.07	5.44	5.34	4.98	-0.10
2	4243	T	5.74	5.18	5.56	4.87	4.98	5.56 T	-0.38
2	4246	C	5.09	4.87	4.87	5.04	5.09	5.04	0.17
2	4262	T	5.44	5.45	5.13	5.51	4.53	4.42 T	<u>-1.94</u>
3	3970	C	4.69	4.30	4.29	4.52	4.33	4.29	-0.37
3	3987	T	5.66	4.31	4.54	4.30	4.32	4.37 T	-1.28
3	3996	C	4.30	4.75	4.30	4.30	4.32	4.44	-0.29
3	4057	T	4.30	4.30	4.30	5.03	4.29	4.31 T	0.00
3	4105	C	4.74	4.60	4.74	4.83	4.88	4.95	0.49
3	4157	T	4.84	5.06	4.40	4.46	4.30	4.78 T	-0.82
3	4279	T	4.75	4.31	4.41	5.55	4.60	4.55 T	0.09
3	4286	C	4.30	4.53	4.69	4.34	4.80	4.73	0.70

dif=(day 17+ day 21) - (day 3+ day 7)

il1vitro: Interleuken (1 in vitro (pg/ml))

Trial	Cow	Treatment/		Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
		Control								
1	3910	T		5.97	5.90	5.77	5.96	5.99	5.81 T	-0.07
1	4066	T		5.86	5.83	5.79	5.81	5.84	5.82 T	-0.03
1	4106	C		5.96	5.77	5.80	6.06	5.81	5.84	-0.08
1	4134	C		5.77	5.75	5.69	5.88	5.72	5.65	-0.15
1	4161	T		5.94	5.93	5.98	5.93	5.95	5.94 T	0.02
1	4192	T		5.91	5.88	5.94	5.89	5.83	5.85 T	-0.11
1	4212	C		5.89	5.77	5.78	6.00	5.78	6.02	0.14
1	4230	C		6.01	5.87	5.92	5.92	5.89	5.93	-0.06
2	3861	T		5.89	5.84	5.84	5.85	6.01	5.89 T	0.17
2	4052	C		5.87	5.86	5.82	5.75	5.85	5.84	-0.04
2	4078	C		6.31	5.91	5.84	5.92	5.82	5.78	-0.62
2	4084	T		5.81	5.77	5.85	5.74	5.84	5.83 T	0.09
2	4239	C		5.73	5.74	5.86	5.69	5.77	5.78	0.08
2	4243	T		5.92	5.87	5.88	5.81	5.91	5.89 T	0.01
2	4246	C		5.91	5.78	5.78	5.78	5.89	5.88	0.08
2	4262	T		5.93	5.84	6.01	5.86	5.88	5.86 T	-0.03
3	3970	C		5.71	5.75	5.74	5.70	5.69	5.64	-0.13
3	3987	T		5.77	5.75	5.70	5.72	5.74	5.65 T	-0.13
3	3996	C		5.82	5.82	5.88	5.75	5.77	5.75	-0.12
3	4057	T		5.69	5.70	5.78	5.87	5.76	5.85 T	0.22
3	4105	C		5.70	5.68	5.75	5.70	5.73	5.66	0.01
3	4157	T		5.76	5.72	5.71	5.71	5.64	5.68 T	-0.16
3	4279	T		5.81	5.80	5.75	5.80	5.77	5.71 T	-0.13
3	4286	C		6.18	5.72	5.66	5.67	5.67	5.61	-0.62

diff=(day 17+ day 21) - (day 3+ day 7)

igaserum: Ig A Serum (mg/ml)

Trial	Cow	Treatment/Control		Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
		T	C							
1	3910	T	C	0.59	0.18	0.64	0.64	0.64	0.41	0.28
1	4066	T	C	-0.03	-0.30	-0.58	-0.63	-0.09	-0.11	0.13
1	4106	C	C	-1.47	-1.35	-1.83	-1.35	-1.39	-1.27	0.16
1	4134	C	C	-1.61	-1.71	-1.83	-1.71	-1.39	-1.43	0.50
1	4161	T	T	0.64	0.59	0.83	-0.22	0.64	0.64	0.05
1	4192	T	T	0.79	0.47	0.34	0.10	-0.69	0.26	-1.69
1	4212	C	C	0.41	0.47	0.26	-0.69	-0.11	0.26	-0.73
1	4230	C	C	-1.35	-1.90	-1.66	-0.94	-1.77	-1.66	<u>-0.18</u>
2	3861	T	T	-0.39	-0.39	-0.43	-0.45	-0.34	-0.51	-0.07
2	4052	C	C	-1.27	-1.31	-1.24	-1.51	-1.20	-1.39	-0.01
2	4078	C	C	-1.20	-0.80	-1.08	-0.99	-1.14	-0.97	-0.11
2	4084	T	T	-0.33	-0.30	-0.29	-0.25	-0.26	-0.24	0.13
2	4239	C	C	-0.39	-0.45	-0.48	-0.48	-0.40	-0.45	-0.01
2	4243	T	T	-0.49	-0.36	-0.22	-0.33	-0.30	-0.34	0.21
2	4246	C	C	-1.14	-1.27	-0.99	-1.17	-0.99	-1.02	0.40
2	4262	T	T	-0.37	-0.45	-0.39	-0.37	-0.45	-0.42	<u>-0.05</u>
3	3970	C	C	-1.27	-1.27	-1.24	-1.24	-1.31	-1.35	-0.12
3	3987	T	T	-0.22	-0.82	-0.19	-0.13	-0.16	-0.20	0.68
3	3996	C	C	-1.27	-1.24	-1.24	-1.24	-1.20	-1.31	0.00
3	4057	T	T	-0.11	-0.54	-0.49	-0.16	-0.27	-0.34	0.04
3	4105	C	C	-1.14	-0.54	-0.73	-1.27	-1.24	-1.11	-0.67
3	4157	T	T	-0.67	-1.20	-0.84	-0.82	-0.92	-0.89	0.06
3	4279	T	T	-1.11	-0.97	-0.82	-1.24	-1.17	-1.02	-0.11
3	4286	C	C	-1.31	-1.35	-1.24	-1.24	-1.47	-1.24	-0.05

dif=(day 17+ day 21) - (day 3+ day 7)

iggserum: (Ig G Serum (mg/ml))

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
1	3910	T	1.86	1.81	1.86	2.01	1.82	1.92 T	0.07
1	4066	T	2.49	2.53	2.51	2.39	2.50	2.52 T	0.00
1	4106	C	2.54	2.47	2.50	2.53	2.56	2.46	0.01
1	4134	C	2.48	2.49	2.46	2.32	2.38	2.53	-0.06
1	4161	T	2.47	2.43	2.37	2.40	2.28	2.31 T	-0.31
1	4192	T	1.36	1.31	0.96	1.22	0.99	1.28 T	-0.40
1	4212	C	2.44	2.37	2.26	2.33	2.36	2.38	-0.07
1	4230	C	1.76	1.53	1.57	0.64	1.44	1.31	-0.54
2	3861	T	2.73	2.58	2.78	2.60	2.48	2.72 T	-0.11
2	4052	C	2.44	2.42	2.41	2.42	2.40	2.45	-0.01
2	4078	C	2.51	2.52	2.53	2.42	2.41	2.40	-0.22
2	4084	T	2.34	2.32	2.34	2.31	2.31	2.46 T	0.11
2	4239	C	2.30	2.34	2.62	2.31	2.31	2.30	-0.03
2	4243	T	2.60	2.35	2.71	2.43	2.32	2.09 T	-0.54
2	4246	C	2.46	2.44	2.38	2.39	2.32	2.30	-0.28
2	4262	T	2.42	2.36	2.42	2.32	2.31	2.30 T	-0.17
3	3970	C	2.29	2.17	2.36	2.26	2.49	2.43	0.46
3	3987	T	2.51	2.48	2.45	2.49	2.44	2.54 T	-0.01
3	3996	C	2.47	2.47	2.44	2.46	2.45	2.48	-0.01
3	4057	T	2.53	2.50	2.50	2.48	2.49	2.53 T	-0.01
3	4105	C	2.35	2.39	2.36	2.35	2.37	2.39	0.02
3	4157	T	2.30	2.35	2.32	2.31	2.42	2.53 T	0.30
3	4279	T	2.42	2.44	2.40	2.42	2.55	2.35 T	0.04
3	4286	C	2.07	1.96	1.97	1.99	2.01	2.00	-0.02

dif=(day 17+ day 21) - (day 3+ day 7)

pwm: Pokeweed (DPM)

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
1	3910	T	8.98	7.78	8.84	8.85	9.18	9.00 T	1.42
1	4066	T	7.95	8.16	4.38	7.90	8.87	8.41 T	1.17
1	4106	C	8.69	6.24	4.25	6.94	8.83	9.04	2.94
1	4134	C	8.82	7.55	8.80	4.84	8.82	8.97	1.42
1	4161	T	8.57	7.77	8.85	6.74	8.74	8.57 T	0.97
1	4192	T	8.86	7.71	6.41	6.91	8.97	8.77 T	1.17
1	4212	C	8.41	7.08	3.99	4.38	8.78	9.27	2.56
1	4230	C	8.48	7.64	7.99	7.77	8.99	8.99	1.86
2	3861	T	9.34	9.60	9.68	9.07	9.78	9.87 T	0.71
2	4052	C	9.30	9.85	9.92	9.55	9.65	9.47	-0.03
2	4078	C	9.50	10.11	10.00	9.41	9.74	9.51	-0.36
2	4084	T	9.63	10.04	10.75	9.83	9.75	9.51 T	-0.41
2	4239	C	9.55	10.06	10.04	9.55	10.25	9.62	0.26
2	4243	T	9.14	10.09	10.08	9.76	10.03	9.70 T	0.50
2	4246	C	9.45	9.85	9.88	9.55	9.59	9.26	-0.45
2	4262	T	9.77	10.23	10.71	10.04	9.84	9.63 T	-0.53
3	3970	C	8.02	9.64	9.77	9.64	9.46	10.28	2.08
3	3987	T	7.95	10.24	10.43	9.84	9.78	10.32 T	1.91
3	3996	C	8.78	10.53	10.09	10.45	10.10	10.35	1.14
3	4057	T	8.67	10.09	9.98	9.84	9.67	9.54 T	0.45
3	4105	C	8.36	10.90	10.18	10.36	9.70	10.25	0.69
3	4157	T	8.36	9.90	9.54	9.72	10.17	10.00 T	1.91
3	4279	T	8.80	10.63	10.30	10.22	10.07	10.39 T	1.03
3	4286	C	8.96	9.13	10.10	10.18	10.05	10.45	2.41

dif=(day 17+ day 21) - (day 3+ day 7)

staph: Staphaureus (DPM)

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
1	3910	T	8.34	6.35	8.28	8.27	7.88	7.47 T	0.66
1	4066	T	7.70	7.34	3.66	6.54	8.25	7.58 T	0.79
1	4106	C	7.97	4.77	4.13	5.36	7.68	7.43	2.37
1	4134	C	8.28	6.82	7.68	4.19	7.89	7.82	0.61
1	4161	T	7.28	6.81	7.90	4.80	7.91	8.21 T	2.03
1	4192	T	8.36	7.00	6.29	4.65	8.89	6.88 T	0.41
1	4212	C	7.83	5.50	4.20	4.11	7.82	8.63	3.12
1	4230	C	7.98	6.85	7.28	6.28	8.59	8.44	2.20
2	3861	T	8.12	8.36	8.44	7.16	8.83	8.60 T	0.95
2	4052	C	8.71	9.22	9.01	8.74	9.00	8.92	-0.01
2	4078	C	8.00	8.79	7.72	7.09	8.77	8.37	0.35
2	4084	T	8.57	8.96	9.32	8.37	8.26	8.12 T	-1.15
2	4239	C	8.54	9.30	8.90	8.41	8.88	8.87	-0.09
2	4243	T	7.83	8.91	8.43	8.17	8.66	8.60 T	0.52
2	4246	C	8.74	9.13	8.87	8.90	8.31	8.85	-0.71
2	4262	T	8.97	9.66	10.04	9.08	9.25	9.13 T	-0.25
3	3970	C	6.96	8.57	7.78	8.46	8.20	8.85	1.52
3	3987	T	7.59	9.18	9.23	8.24	8.64	8.86 T	0.73
3	3996	C	7.75	9.32	8.99	8.69	8.91	8.99	0.83
3	4057	T	7.75	8.79	8.60	8.11	8.39	6.61 T	-1.54
3	4105	C	6.99	9.40	8.55	8.48	8.72	8.66	0.99
3	4157	T	7.87	9.06	8.49	8.22	9.04	8.86 T	0.97
3	4279	T	8.34	9.69	9.15	9.00	9.14	9.44 T	0.55
3	4286	C	8.61	7.36	9.71	9.12	9.36	9.43	2.82

dif=(day 17+ day 21) - (day 3+ day 7)

phg: Phytohemagglutini (DMP)

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
1	3910	T	7.94	6.93	8.99	5.72	8.82	8.90 T	2.85
1	4066	T	8.04	6.67	6.18	4.55	8.72	8.29 T	2.30
1	4106	C	7.80	7.18	4.36	8.68	8.98	8.42	2.42
1	4134	C	8.48	7.10	9.12	8.21	9.12	8.91	2.45
1	4161	T	7.97	6.90	4.26	5.11	8.47	9.37 T	2.97
1	4192	T	8.06	7.33	8.80	8.19	8.97	9.16 T	2.74
1	4212	C	8.69	7.33	9.56	5.32	8.49	9.02	1.49
1	4230	C	8.20	5.86	4.13	4.61	8.53	8.35	<u>2.82</u>
2	3861	T	8.73	8.84	9.09	8.78	9.46	9.53 T	1.42
2	4052	C	8.68	9.22	9.30	8.42	9.47	9.01	0.58
2	4078	C	8.58	9.39	9.27	9.12	9.31	8.93	0.27
2	4084	T	9.02	9.18	10.24	9.15	9.11	8.68 T	-0.41
2	4239	C	9.09	9.71	9.74	9.29	9.69	9.37	0.26
2	4243	T	9.95	10.06	10.50	9.96	9.93	9.77 T	-0.31
2	4246	C	8.58	9.61	9.36	9.63	9.40	9.46	0.67
2	4262	T	8.95	9.49	9.28	9.25	9.27	9.13 T	<u>-0.04</u>
3	3970	C	7.09	8.83	8.64	8.95	8.67	9.54	2.29
3	3987	T	7.84	9.89	10.05	9.43	9.54	9.41 T	1.22
3	3996	C	8.54	9.97	9.81	9.92	9.73	9.89	1.11
3	4057	T	8.04	9.35	9.39	9.32	9.33	8.88 T	0.82
3	4105	C	7.81	10.43	10.01	9.88	9.94	9.98	1.68
3	4157	T	8.14	9.81	9.48	9.69	9.90	9.89 T	1.84
3	4279	T	8.64	9.91	9.89	9.64	9.67	9.86 T	0.98
3	4286	C	8.93	8.48	10.05	9.83	9.66	10.51	2.76

diff=(day 17+ day 21) - (day 3+ day 7)



il2serum: Interleukin 2 in serum (pg/ml)

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
1	3910	T	3.29	3.17	3.28	3.45	3.27	3.17 T	-0.02
1	4066	T	3.10	2.66	2.99	2.97	2.80	2.77 T	-0.19
1	4106	C	3.28	3.19	3.07	3.74	3.13	2.88	-0.46
1	4134	C	2.20	2.12	2.20	2.74	2.27	2.10	0.05
1	4161	T	3.31	3.40	3.31	3.23	3.27	3.27 T	-0.17
1	4192	T	2.82	2.94	2.78	2.65	2.57	2.71 T	-0.48
1	4212	C	2.72	2.45	2.50	2.79	2.63	2.69	0.15
1	4230	C	3.29	3.29	3.45	3.41	3.26	3.18	-0.14
2	3861	T	3.18	2.91	2.53	2.42	2.66	2.33 T	-1.10
2	4052	C	2.81	3.12	2.85	3.14	2.88	2.75	-0.30
2	4078	C	3.27	3.25	3.00	3.25	3.02	2.96	-0.54
2	4084	T	3.08	2.93	2.90	2.64	2.62	2.76 T	-0.63
2	4239	C	2.79	2.69	2.75	2.48	2.68	2.65	-0.15
2	4243	T	3.19	3.04	3.04	2.68	3.25	3.15 T	0.17
2	4246	C	3.13	2.82	2.78	2.81	2.79	3.03	-0.13
2	4262	T	3.45	3.38	3.40	3.18	3.10	3.31 T	-0.42
3	3970	C	2.50	2.60	2.46	2.62	2.56	2.76	0.22
3	3987	T	2.13	2.03	2.04	2.17	2.05	2.04 T	-0.07
3	3996	C	2.41	2.32	2.44	2.31	2.50	2.52	0.29
3	4057	T	2.01	2.01	2.02	2.02	2.01	2.03 T	0.02
3	4105	C	2.02	2.01	2.01	2.05	2.04	2.02	0.03
3	4157	T	2.44	2.35	2.11	2.27	2.33	2.35 T	-0.11
3	4279	T	2.57	2.80	2.79	3.24	2.13	2.56 T	-0.68
3	4286	C	2.01	2.23	2.01	2.02	2.10	2.24	0.10

dif=(day 17+ day 21) - (day 3+ day 7)

cona: Conconavalin A (DPM)

Trial	Cow	Treatment/ Control	Day 3	Day 7	Day 10	Day 14	Day 17	Day 21	dif
			6.14	6.05	9.17	4.62	7.28	9.03 T	
1	3910	T	6.41	6.00	5.24	6.90	6.32	8.17 T	2.08
1	4066	T	5.99	5.06	5.38	6.75	6.85	9.05	4.85
1	4106	C	7.30	5.89	6.86	6.13	8.13	8.79	3.73
1	4134	C	5.56	5.93	6.55	5.36	6.86	9.01 T	4.38
1	4161	T	5.80	5.85	6.72	6.31	7.68	9.29 T	5.32
1	4192	T	5.27	5.17	6.90	4.34	6.45	9.24	5.25
1	4212	C	5.24	5.57	7.03	5.78	6.97	8.12	<u>4.28</u>
1	4230	C	8.61	8.79	9.21	7.61	9.27	9.51 T	1.38
2	3861	T	8.95	8.98	8.81	8.36	9.41	8.23	-0.29
2	4052	C	9.12	9.57	8.87	8.58	9.03	8.50	-1.16
2	4078	C	9.68	9.34	10.77	8.64	8.89	8.19 T	-1.94
2	4084	T	8.80	10.01	9.83	9.33	9.92	9.08	0.19
2	4239	C	10.00	10.20	10.71	9.83	9.58	9.18 T	-1.44
2	4243	T	8.11	9.58	9.10	8.87	9.09	8.24	-0.36
2	4246	C	9.05	9.60	9.68	9.19	8.34	8.25 T	-2.06
2	4262	T	6.33	8.96	8.59	8.55	7.85	9.84	<u>2.40</u>
3	3970	C	7.39	9.58	9.53	9.54	8.86	9.74 T	1.63
3	3987	T	6.90	10.02	9.66	9.89	9.39	9.72	2.19
3	3996	C	7.46	8.99	8.41	8.95	8.69	8.03 T	0.27
3	4057	T	6.96	10.11	9.50	9.77	9.19	9.06	1.18
3	4105	C	7.38	9.88	9.45	9.84	9.31	9.95 T	2.00
3	4157	T	7.88	10.14	10.16	9.54	9.29	9.76 T	1.03
3	4279	T	8.66	7.57	10.13	10.09	9.38	9.40	2.55

dif=(day 17+ day 21) - (day 3+ day 7)

## **TABLE 2**

Table 2: Re-analysis of Table II (3), copy attached, using the two-way crossed model.  
 Data analyzed as difference of natural logs, n of controls = 12, n of treatments = 12, DPM = Disintegration per minute, RLU = Relative Light Units

Main Response Variables	dif 2 controls	Mean difference (trt-contl)	P-value F <sup>1</sup> test 18
	dif 2 treatments		
Conconavalin A ln(DPM)	1.034	-.335	.12
	.699		
Phytohemagglutinin ln(DPM)	.783	-1.01	.39
	.683		
Chemiluminescence PMA, ln(RLU)	.484	-3.84	.06
	.103		
Secondary Response Variables			
S.aureus, ln(DPM)	.538	-.389	.05
	.195		
Pokeweed, ln(DPM)	.605	-.176	.17
	.492		
IgG Serum, ln(mg/mL)	-.031	-.012	.80
	-.043		
IgG in vitro ln(mg/mL)	-.14	-.032	.86
	-.172		
IgA Serum, ln(mg/mL)	-.034	.020	.84
	-.014		
IL1 Serum, ln(pg/mL)	-.065	.532	.004
	.464		
IL1 in vitro, ln(pg/mL)	-.063	.057	.19
	-.006		
IL2 Serum, ln(pg/mL)	-.037	-.117	.07
	-.153		
IL2 in vitro, ln(pg/mL)	.043	-.314	.13
	-.270		
Cortisol, ln (ng/mL)	-.188	.030	.89
	-.218		

Table II. Summary statistics for immune function measures. The main questions are indicated in Bold. *Data analyzed as difference of natural logs, n of controls = 12, n of treatments = 12, DPM = Disintegration per minute, RLU = Relative Light Units*

Main Response Variables	Mean Change of Controls	Mean Difference (Treatment-Control)	P-value Two Tailed Independent Test
	Mean Change of Treatments		
<b>Conconavalin A ln(DPM)</b>	1.267	-0.247	0.724
	1.020		
<b>Phytohemagglutinin ln(DPM)</b>	0.799	-0.128	0.647
	0.671		
<b>Chemiluminescence PMA, ln(RLU)</b>	0.483	-0.414	0.280
	0.069		
Secondary Response Variables			
<b><i>S. aureus</i>, ln(DPM)</b>	0.632	-0.637	0.038
	-0.005		
<b>Pokeweed, ln(DPM)</b>	0.668	-0.286	0.272
	0.382		
<b>IgG Serum, ln(mg/mL)</b>	-0.034	0.017	0.771
	-0.017		
<b>IgG in vitro, ln(mg/mL)</b>	-0.154	-0.035	0.862
	-0.189		
<b>IgA Serum, ln(mg/mL)</b>	-0.005	0.017	0.796
	0.012		
<b>IL1 Serum, ln(pg/mL)</b>	-0.085	0.535	0.071
	0.450		
<b>IL1 in vitro, ln(pg/mL)</b>	-0.063	0.041	0.410
	-0.022		
<b>IL2 Serum, ln(pg/mL)</b>	-0.041	-0.098	0.218
	-0.139		
<b>IL2 in vitro, ln(pg/mL)</b>	-0.060	-0.203	0.351
	-0.263		
<b>Cortisol, ln(ng/mL)</b>	-0.427	0.044	0.900
	-0.383		

# **APPENDIX A**

**Appendix III. Immune function data for replicates 1, 2 and 3.**

**ID CODES**

Rep. There were three separate replicates which started on 11/28/98, 01/09/99 and 4/10/99.

stall: Stall number.

cow: This is the cow's number.

Response variables:

- cona: Concanavalin A (DPM)
- phg: Phytohemagglutani (DPM)
- chem: Chemiluminescence (RLU)
- staph: Staph aureus (DPM)
- pwm: Pokeweed (DPM)
- iggserum: Ig G Serum (mg/ml)
- igaserum: Ig A Serum (mg/ml)
- il1serum: Interleukin 1 serum (pg/ml)
- il1vitro: Interleukin 1 in vitro (pg/ml)
- il2serum: Interleukin 2 in serum (pg/ml)
- il2vitro: Interleukin 2 in vitro (pg/ml)
- igvitro: Ig G Production ((micro g)/ml)
- cortisol: Cortisol (ng/ml).

day: Day in Trial of observation (Day 3 and 7 were in Control Weeks).

ln\_resp: Natural log of response

trial	cow	variable	trt	day	resp	ln_resp	1	3910	iggserum	T	21	6.8	1.92
1	3910	chem	T	3	4961.0	8.51	1	3910	igvitro	T	3	44.0	3.78
1	3910	chem	T	7	4932.0	8.50	1	3910	igvitro	T	7	48.0	3.87
1	3910	chem	T	10	9100.0	9.12	1	3910	igvitro	T	10	38.0	3.64
1	3910	chem	T	14	7119.0	8.87	1	3910	igvitro	T	14	118.0	4.77
1	3910	chem	T	17	6383.0	8.76	1	3910	igvitro	T	17	87.0	4.47
1	3910	chem	T	21	8039.0	8.99	1	3910	igvitro	T	21	136.0	4.91
1	3910	cona	T	3	466.0	6.14	1	3910	il1serum	T	3	6.0	1.79
1	3910	cona	T	7	425.0	6.05	1	3910	il1serum	T	7	10.7	2.37
1	3910	cona	T	10	9579.0	9.17	1	3910	il1serum	T	10	8.5	2.14
1	3910	cona	T	14	101.0	4.62	1	3910	il1serum	T	14	8.5	2.14
1	3910	cona	T	17	1449.0	7.28	1	3910	il1serum	T	17	9.7	2.27
1	3910	cona	T	21	8366.0	9.03	1	3910	il1serum	T	21	7.4	2.00
1	3910	cortisol	T	3	4.8	1.56	1	3910	il1vitro	T	3	391.1	5.97
1	3910	cortisol	T	7	7.8	2.05	1	3910	il1vitro	T	7	366.6	5.90
1	3910	cortisol	T	10	4.4	1.47	1	3910	il1vitro	T	10	321.7	5.77
1	3910	cortisol	T	14	9.4	2.24	1	3910	il1vitro	T	14	386.3	5.96
1	3910	cortisol	T	17	1.4	0.30	1	3910	il1vitro	T	17	400.3	5.99
1	3910	cortisol	T	21	4.1	1.40	1	3910	il1vitro	T	21	334.4	5.81
1	3910	igaserum	T	3	1.8	0.59	1	3910	il2serum	T	3	27.0	3.29
1	3910	igaserum	T	7	1.2	0.18	1	3910	il2serum	T	7	23.7	3.17
1	3910	igaserum	T	10	1.9	0.64	1	3910	il2serum	T	10	26.5	3.28
1	3910	igaserum	T	14	1.9	0.64	1	3910	il2serum	T	14	31.4	3.45
1	3910	igaserum	T	17	1.9	0.64	1	3910	il2serum	T	17	26.2	3.27
1	3910	igaserum	T	21	1.5	0.41	1	3910	il2serum	T	21	23.7	3.17
1	3910	iggserum	T	3	6.4	1.86	1	3910	il2vitro	T	3	285.4	5.65
1	3910	iggserum	T	7	6.1	1.81	1	3910	il2vitro	T	7	232.8	5.45
1	3910	iggserum	T	10	6.4	1.86	1	3910	il2vitro	T	10	259.0	5.56
1	3910	iggserum	T	14	7.5	2.01	1	3910	il2vitro	T	14	276.0	5.62
1	3910	iggserum	T	17	6.2	1.82	1	3910	il2vitro	T	17	142.5	4.96

1	3910	il2vitro	T	21	149.2	5.01	1	4066	igvitro	T	14	93.0	4.53
1	3910	phg	T	3	2820.0	7.94	1	4066	igvitro	T	17	46.0	3.83
1	3910	phg	T	7	1025.0	6.93	1	4066	igvitro	T	21	94.0	4.54
1	3910	phg	T	10	8010.0	8.99	1	4066	il1serum	T	3	13.6	2.61
1	3910	phg	T	14	305.0	5.72	1	4066	il1serum	T	7	9.4	2.24
1	3910	phg	T	17	6758.0	8.82	1	4066	il1serum	T	10	4.9	1.59
1	3910	phg	T	21	7333.0	8.90	1	4066	il1serum	T	14	10.3	2.34
1	3910	pwm	T	3	7909.0	8.98	1	4066	il1serum	T	17	6.4	1.85
1	3910	pwm	T	7	2382.0	7.78	1	4066	il1serum	T	21	8.3	2.11
1	3910	pwm	T	10	6875.0	8.84	1	4066	il1vitro	T	3	349.4	5.86
1	3910	pwm	T	14	7005.0	8.85	1	4066	il1vitro	T	7	339.3	5.83
1	3910	pwm	T	17	9747.0	9.18	1	4066	il1vitro	T	10	328.0	5.79
1	3910	pwm	T	21	8086.0	9.00	1	4066	il1vitro	T	14	333.5	5.81
1	3910	staph	T	3	4175.0	8.34	1	4066	il1vitro	T	17	343.8	5.84
1	3910	staph	T	7	575.0	6.35	1	4066	il1vitro	T	21	336.4	5.82
1	3910	staph	T	10	3947.0	8.28	1	4066	il2serum	T	3	22.1	3.10
1	3910	staph	T	14	3908.0	8.27	1	4066	il2serum	T	7	14.3	2.66
1	3910	staph	T	17	2657.0	7.88	1	4066	il2serum	T	10	19.9	2.99
1	3910	staph	T	21	1761.0	7.47	1	4066	il2serum	T	14	19.5	2.97
1	4066	chem	T	3	7777.0	8.96	1	4066	il2serum	T	17	16.5	2.80
1	4066	chem	T	7	21843.0	9.99	1	4066	il2serum	T	21	16.0	2.77
1	4066	chem	T	10	26623.0	10.19	1	4066	il2vitro	T	3	263.9	5.58
1	4066	chem	T	14	43407.0	10.68	1	4066	il2vitro	T	7	315.1	5.75
1	4066	chem	T	17	25513.0	10.15	1	4066	il2vitro	T	10	238.7	5.48
1	4066	chem	T	21	9198.0	9.13	1	4066	il2vitro	T	14	254.4	5.54
1	4066	cona	T	3	605.0	6.41	1	4066	il2vitro	T	17	243.1	5.49
1	4066	cona	T	7	402.0	6.00	1	4066	il2vitro	T	21	291.3	5.67
1	4066	cona	T	10	189.0	5.24	1	4066	phg	T	3	3112.0	8.04
1	4066	cona	T	14	997.0	6.90	1	4066	phg	T	7	786.0	6.67
1	4066	cona	T	17	555.0	6.32	1	4066	phg	T	10	483.0	6.18
1	4066	cona	T	21	3524.0	8.17	1	4066	phg	T	14	95.0	4.55
1	4066	cortisol	T	3	9.5	2.25	1	4066	phg	T	17	6120.0	8.72
1	4066	cortisol	T	7	6.0	1.79	1	4066	phg	T	21	4003.0	8.29
1	4066	cortisol	T	10	10.1	2.31	1	4066	pwm	T	3	2823.0	7.95
1	4066	cortisol	T	14	2.2	0.79	1	4066	pwm	T	7	3515.0	8.16
1	4066	cortisol	T	17	7.5	2.01	1	4066	pwm	T	10	80.0	4.38
1	4066	cortisol	T	21	1.1	0.10	1	4066	pwm	T	14	2689.0	7.90
1	4066	igaserum	T	3	1.0	-0.03	1	4066	pwm	T	17	7138.0	8.87
1	4066	igaserum	T	7	0.7	-0.30	1	4066	pwm	T	21	4473.0	8.41
1	4066	igaserum	T	10	0.6	-0.58	1	4066	staph	T	3	2214.0	7.70
1	4066	igaserum	T	14	0.5	-0.63	1	4066	staph	T	7	1539.0	7.34
1	4066	igaserum	T	17	0.9	-0.09	1	4066	staph	T	10	39.0	3.66
1	4066	igaserum	T	21	0.9	-0.11	1	4066	staph	T	14	692.0	6.54
1	4066	iggserum	T	3	12.1	2.49	1	4066	staph	T	17	3829.0	8.25
1	4066	iggserum	T	7	12.6	2.53	1	4066	staph	T	21	1958.0	7.58
1	4066	iggserum	T	10	12.3	2.51	1	4106	chem	C	3	2022.0	7.61
1	4066	iggserum	T	14	10.9	2.39	1	4106	chem	C	7	21836.0	9.99
1	4066	iggserum	T	17	12.2	2.50	1	4106	chem	C	10	40668.0	10.61
1	4066	iggserum	T	21	12.4	2.52	1	4106	chem	C	14	8669.0	9.07
1	4066	igvitro	T	3	47.0	3.85	1	4106	chem	C	17	19878.0	9.90
1	4066	igvitro	T	7	187.0	5.23	1	4106	chem	C	21	84892.0	11.35
1	4066	igvitro	T	10	163.0	5.09	1	4106	cona	C	3	399.0	5.99



1	4106	cona	C	7	158.0	5.06	1	4106	il2vitro	C	21	224.1	5.41
1	4106	cona	C	10	217.0	5.38	1	4106	phg	C	3	2444.0	7.80
1	4106	cona	C	14	852.0	6.75	1	4106	phg	C	7	1314.0	7.18
1	4106	cona	C	17	941.0	6.85	1	4106	phg	C	10	78.0	4.36
1	4106	cona	C	21	8499.0	9.05	1	4106	phg	C	14	5887.0	8.68
1	4106	cortisol	C	3	5.9	1.77	1	4106	phg	C	17	7932.0	8.98
1	4106	cortisol	C	7	1.9	0.64	1	4106	phg	C	21	4555.0	8.42
1	4106	cortisol	C	10	0.9	-0.11	1	4106	pwm	C	3	5955.0	8.69
1	4106	cortisol	C	14	2.2	0.77	1	4106	pwm	C	7	512.0	6.24
1	4106	cortisol	C	17	2.2	0.79	1	4106	pwm	C	10	70.0	4.25
1	4106	cortisol	C	21	12.8	2.55	1	4106	pwm	C	14	1035.0	6.94
1	4106	igaserum	C	3	0.2	-1.47	1	4106	pwm	C	17	6858.0	8.83
1	4106	igaserum	C	7	0.3	-1.35	1	4106	pwm	C	21	8415.0	9.04
1	4106	igaserum	C	10	0.2	-1.83	1	4106	staph	C	3	2900.0	7.97
1	4106	igaserum	C	14	0.3	-1.35	1	4106	staph	C	7	118.0	4.77
1	4106	igaserum	C	17	0.3	-1.39	1	4106	staph	C	10	62.0	4.13
1	4106	igaserum	C	21	0.3	-1.27	1	4106	staph	C	14	212.0	5.36
1	4106	iggserum	C	3	12.7	2.54	1	4106	staph	C	17	2166.0	7.68
1	4106	iggserum	C	7	11.8	2.47	1	4106	staph	C	21	1694.0	7.43
1	4106	iggserum	C	10	12.2	2.50	1	4134	chem	C	3	1853.0	7.52
1	4106	iggserum	C	14	12.6	2.53	1	4134	chem	C	7	1165.0	7.06
1	4106	iggserum	C	17	13.0	2.56	1	4134	chem	C	10	9969.0	9.21
1	4106	iggserum	C	21	11.7	2.46	1	4134	chem	C	14	8720.0	9.07
1	4106	igvitro	C	3	60.0	4.09	1	4134	chem	C	17	6292.0	8.75
1	4106	igvitro	C	7	49.0	3.89	1	4134	chem	C	21	9647.0	9.17
1	4106	igvitro	C	10	26.0	3.26	1	4134	cona	C	3	1484.0	7.30
1	4106	igvitro	C	14	89.0	4.49	1	4134	cona	C	7	361.0	5.89
1	4106	igvitro	C	17	119.0	4.78	1	4134	cona	C	10	950.0	6.86
1	4106	igvitro	C	21	108.0	4.68	1	4134	cona	C	14	460.0	6.13
1	4106	il1serum	C	3	8.7	2.17	1	4134	cona	C	17	3406.0	8.13
1	4106	il1serum	C	7	7.4	2.00	1	4134	cona	C	21	6553.0	8.79
1	4106	il1serum	C	10	5.0	1.61	1	4134	cortisol	C	3	3.7	1.29
1	4106	il1serum	C	14	5.1	1.63	1	4134	cortisol	C	7	4.7	1.55
1	4106	il1serum	C	17	8.4	2.13	1	4134	cortisol	C	10	5.1	1.63
1	4106	il1serum	C	21	8.2	2.10	1	4134	cortisol	C	14	7.0	1.95
1	4106	il1vitro	C	3	389.4	5.96	1	4134	cortisol	C	17	5.8	1.75
1	4106	il1vitro	C	7	319.7	5.77	1	4134	cortisol	C	21	7.6	2.02
1	4106	il1vitro	C	10	330.6	5.80	1	4134	igaserum	C	3	0.2	-1.61
1	4106	il1vitro	C	14	426.4	6.06	1	4134	igaserum	C	7	0.2	-1.71
1	4106	il1vitro	C	17	332.4	5.81	1	4134	igaserum	C	10	0.2	-1.83
1	4106	il1vitro	C	21	344.5	5.84	1	4134	igaserum	C	14	0.2	-1.71
1	4106	il2serum	C	3	26.7	3.28	1	4134	igaserum	C	17	0.3	-1.39
1	4106	il2serum	C	7	24.2	3.19	1	4134	igaserum	C	21	0.2	-1.43
1	4106	il2serum	C	10	21.6	3.07	1	4134	iggserum	C	3	11.9	2.48
1	4106	il2serum	C	14	42.1	3.74	1	4134	iggserum	C	7	12.1	2.49
1	4106	il2serum	C	17	22.9	3.13	1	4134	iggserum	C	10	11.7	2.46
1	4106	il2serum	C	21	17.7	2.88	1	4134	iggserum	C	14	10.2	2.32
1	4106	il2vitro	C	3	165.7	5.11	1	4134	iggserum	C	17	10.8	2.38
1	4106	il2vitro	C	7	109.9	4.70	1	4134	iggserum	C	21	12.5	2.53
1	4106	il2vitro	C	10	283.8	5.65	1	4134	igvitro	C	3	225.0	5.42
1	4106	il2vitro	C	14	147.7	5.00	1	4134	igvitro	C	7	176.0	5.17
1	4106	il2vitro	C	17	232.3	5.45	1	4134	igvitro	C	10	143.0	4.96

1	4134	igvitro	C	14	157.0	5.06	1	4161	cona	T	7	378.0	5.93
1	4134	igvitro	C	17	140.0	4.94	1	4161	cona	T	10	700.0	6.55
1	4134	igvitro	C	21	149.0	5.00	1	4161	cona	T	14	212.0	5.36
1	4134	il1serum	C	3	211.6	5.35	1	4161	cona	T	17	955.0	6.86
1	4134	il1serum	C	7	142.9	4.96	1	4161	cona	T	21	8160.0	9.01
1	4134	il1serum	C	10	81.7	4.40	1	4161	cortisol	T	3	3.6	1.28
1	4134	il1serum	C	14	7.2	1.98	1	4161	cortisol	T	7	7.3	1.99
1	4134	il1serum	C	17	103.7	4.64	1	4161	cortisol	T	10	10.0	2.30
1	4134	il1serum	C	21	181.9	5.20	1	4161	cortisol	T	14	3.6	1.28
1	4134	il1vitro	C	3	321.8	5.77	1	4161	cortisol	T	17	5.6	1.72
1	4134	il1vitro	C	7	313.4	5.75	1	4161	cortisol	T	21	3.3	1.18
1	4134	il1vitro	C	10	297.0	5.69	1	4161	igaserum	T	3	1.9	0.64
1	4134	il1vitro	C	14	358.8	5.88	1	4161	igaserum	T	7	1.8	0.59
1	4134	il1vitro	C	17	305.8	5.72	1	4161	igaserum	T	10	2.3	0.83
1	4134	il1vitro	C	21	284.4	5.65	1	4161	igaserum	T	14	0.8	-0.22
1	4134	il2serum	C	3	9.0	2.20	1	4161	igaserum	T	17	1.9	0.64
1	4134	il2serum	C	7	8.3	2.12	1	4161	igaserum	T	21	1.9	0.64
1	4134	il2serum	C	10	9.0	2.20	1	4161	iggserum	T	3	11.8	2.47
1	4134	il2serum	C	14	15.5	2.74	1	4161	iggserum	T	7	11.4	2.43
1	4134	il2serum	C	17	9.7	2.27	1	4161	iggserum	T	10	10.7	2.37
1	4134	il2serum	C	21	8.1	2.10	1	4161	iggserum	T	14	11.0	2.40
1	4134	il2vitro	C	3	269.2	5.60	1	4161	iggserum	T	17	9.8	2.28
1	4134	il2vitro	C	7	267.1	5.59	1	4161	iggserum	T	21	10.1	2.31
1	4134	il2vitro	C	10	88.0	4.48	1	4161	igvitro	T	3	108.0	4.68
1	4134	il2vitro	C	14	126.2	4.84	1	4161	igvitro	T	7	125.0	4.83
1	4134	il2vitro	C	17	148.1	5.00	1	4161	igvitro	T	10	87.0	4.47
1	4134	il2vitro	C	21	77.4	4.35	1	4161	igvitro	T	14	76.0	4.33
1	4134	phg	C	3	4834.0	8.48	1	4161	igvitro	T	17	77.0	4.34
1	4134	phg	C	7	1215.0	7.10	1	4161	igvitro	T	21	43.0	3.76
1	4134	phg	C	10	9143.0	9.12	1	4161	il1serum	T	3	5.2	1.66
1	4134	phg	C	14	3662.0	8.21	1	4161	il1serum	T	7	6.8	1.92
1	4134	phg	C	17	9159.0	9.12	1	4161	il1serum	T	10	7.8	2.05
1	4134	phg	C	21	7412.0	8.91	1	4161	il1serum	T	14	6.8	1.91
1	4134	pwm	C	3	6800.0	8.82	1	4161	il1serum	T	17	8.5	2.14
1	4134	pwm	C	7	1894.0	7.55	1	4161	il1serum	T	21	9.9	2.29
1	4134	pwm	C	10	6638.0	8.80	1	4161	il1vitro	T	3	381.8	5.94
1	4134	pwm	C	14	127.0	4.84	1	4161	il1vitro	T	7	376.1	5.93
1	4134	pwm	C	17	6772.0	8.82	1	4161	il1vitro	T	10	396.6	5.98
1	4134	pwm	C	21	7870.0	8.97	1	4161	il1vitro	T	14	374.7	5.93
1	4134	staph	C	3	3952.0	8.28	1	4161	il1vitro	T	17	381.9	5.95
1	4134	staph	C	7	920.0	6.82	1	4161	il1vitro	T	21	378.6	5.94
1	4134	staph	C	10	2156.0	7.68	1	4161	il2serum	T	3	27.4	3.31
1	4134	staph	C	14	66.0	4.19	1	4161	il2serum	T	7	29.9	3.40
1	4134	staph	C	17	2682.0	7.89	1	4161	il2serum	T	10	27.4	3.31
1	4134	staph	C	21	2500.0	7.82	1	4161	il2serum	T	14	25.2	3.23
1	4161	chem	T	3	6359.0	8.76	1	4161	il2serum	T	17	26.2	3.27
1	4161	chem	T	7	8095.0	9.00	1	4161	il2serum	T	21	26.2	3.27
1	4161	chem	T	10	23685.0	10.07	1	4161	il2vitro	T	3	161.4	5.08
1	4161	chem	T	14	8025.0	8.99	1	4161	il2vitro	T	7	132.9	4.89
1	4161	chem	T	17	16299.0	9.70	1	4161	il2vitro	T	10	138.6	4.93
1	4161	chem	T	21	4338.0	8.38	1	4161	il2vitro	T	14	187.1	5.23
1	4161	cona	T	3	260.0	5.56	1	4161	il2vitro	T	17	128.2	4.85

1	4161	il2vitro	T	21	239.5	5.48	1	4192	igvitro	T	14	48.0	3.87
1	4161	phg	T	3	2884.0	7.97	1	4192	igvitro	T	17	50.0	3.91
1	4161	phg	T	7	988.0	6.90	1	4192	igvitro	T	21	40.0	3.69
1	4161	phg	T	10	71.0	4.26	1	4192	il1serum	T	3	9.2	2.22
1	4161	phg	T	14	165.0	5.11	1	4192	il1serum	T	7	5.8	1.75
1	4161	phg	T	17	4752.0	8.47	1	4192	il1serum	T	10	6.2	1.83
1	4161	phg	T	21	11710.0	9.37	1	4192	il1serum	T	14	13.1	2.57
1	4161	pwm	T	3	5254.0	8.57	1	4192	il1serum	T	17	11.9	2.48
1	4161	pwm	T	7	2373.0	7.77	1	4192	il1serum	T	21	5.7	1.74
1	4161	pwm	T	10	6972.0	8.85	1	4192	il1vitro	T	3	368.1	5.91
1	4161	pwm	T	14	847.0	6.74	1	4192	il1vitro	T	7	357.9	5.88
1	4161	pwm	T	17	6263.0	8.74	1	4192	il1vitro	T	10	379.4	5.94
1	4161	pwm	T	21	5262.0	8.57	1	4192	il1vitro	T	14	361.7	5.89
1	4161	staph	T	3	1450.0	7.28	1	4192	il1vitro	T	17	341.9	5.83
1	4161	staph	T	7	903.0	6.81	1	4192	il1vitro	T	21	348.9	5.85
1	4161	staph	T	10	2697.0	7.90	1	4192	il2serum	T	3	16.8	2.82
1	4161	staph	T	14	122.0	4.80	1	4192	il2serum	T	7	19.0	2.94
1	4161	staph	T	17	2733.0	7.91	1	4192	il2serum	T	10	16.0	2.78
1	4161	staph	T	21	3662.0	8.21	1	4192	il2serum	T	14	14.1	2.65
1	4192	chem	T	3	6045.0	8.71	1	4192	il2serum	T	17	13.1	2.57
1	4192	chem	T	7	6362.0	8.76	1	4192	il2serum	T	21	15.0	2.71
1	4192	chem	T	10	13451.0	9.51	1	4192	il2vitro	T	3	238.4	5.47
1	4192	chem	T	14	12016.0	9.39	1	4192	il2vitro	T	7	224.0	5.41
1	4192	chem	T	17	13788.0	9.53	1	4192	il2vitro	T	10	183.2	5.21
1	4192	chem	T	21	22905.0	10.04	1	4192	il2vitro	T	14	126.4	4.84
1	4192	cona	T	3	331.0	5.80	1	4192	il2vitro	T	17	270.5	5.60
1	4192	cona	T	7	347.0	5.85	1	4192	il2vitro	T	21	138.3	4.93
1	4192	cona	T	10	832.0	6.72	1	4192	phg	T	3	3158.0	8.06
1	4192	cona	T	14	552.0	6.31	1	4192	phg	T	7	1521.0	7.33
1	4192	cona	T	17	2159.0	7.68	1	4192	phg	T	10	6611.0	8.80
1	4192	cona	T	21	10851.0	9.29	1	4192	phg	T	14	3612.0	8.19
1	4192	cortisol	T	3	2.8	1.02	1	4192	phg	T	17	7848.0	8.97
1	4192	cortisol	T	7	3.0	1.10	1	4192	phg	T	21	9546.0	9.16
1	4192	cortisol	T	10	7.1	1.96	1	4192	pwm	T	3	7052.0	8.86
1	4192	cortisol	T	14	2.4	0.88	1	4192	pwm	T	7	2222.0	7.71
1	4192	cortisol	T	17	5.2	1.65	1	4192	pwm	T	10	609.0	6.41
1	4192	cortisol	T	21	0.9	-0.11	1	4192	pwm	T	14	998.0	6.91
1	4192	igaserum	T	3	2.2	0.79	1	4192	pwm	T	17	7851.0	8.97
1	4192	igaserum	T	7	1.6	0.47	1	4192	pwm	T	21	6423.0	8.77
1	4192	igaserum	T	10	1.4	0.34	1	4192	staph	T	3	4259.0	8.36
1	4192	igaserum	T	14	1.1	0.10	1	4192	staph	T	7	1098.0	7.00
1	4192	igaserum	T	17	0.5	-0.69	1	4192	staph	T	10	540.0	6.29
1	4192	igaserum	T	21	1.3	0.26	1	4192	staph	T	14	105.0	4.65
1	4192	iggserum	T	3	3.9	1.36	1	4192	staph	T	17	7264.0	8.89
1	4192	iggserum	T	7	3.7	1.31	1	4192	staph	T	21	970.0	6.88
1	4192	iggserum	T	10	2.6	0.96	1	4212	chem	C	3	8155.0	9.01
1	4192	iggserum	T	14	3.4	1.22	1	4212	chem	C	7	8589.0	9.06
1	4192	iggserum	T	17	2.7	0.99	1	4212	chem	C	10	18425.0	9.82
1	4192	iggserum	T	21	3.6	1.28	1	4212	chem	C	14	9349.0	9.14
1	4192	igvitro	T	3	59.0	4.08	1	4212	chem	C	17	18159.0	9.81
1	4192	igvitro	T	7	221.0	5.40	1	4212	chem	C	21	22582.0	10.02
1	4192	igvitro	T	10	76.0	4.33	1	4212	cona	C	3	195.0	5.27

1	4212	cona	C	7	176.0	5.17
1	4212	cona	C	10	988.0	6.90
1	4212	cona	C	14	77.0	4.34
1	4212	cona	C	17	632.0	6.45
1	4212	cona	C	21	10253.0	9.24
1	4212	cortisol	C	3	11.1	2.41
1	4212	cortisol	C	7	9.9	2.29
1	4212	cortisol	C	10	10.0	2.30
1	4212	cortisol	C	14	2.2	0.79
1	4212	cortisol	C	17	5.4	1.69
1	4212	cortisol	C	21	5.2	1.64
1	4212	igaserum	C	3	1.5	0.41
1	4212	igaserum	C	7	1.6	0.47
1	4212	igaserum	C	10	1.3	0.26
1	4212	igaserum	C	14	0.5	-0.69
1	4212	igaserum	C	17	0.9	-0.11
1	4212	igaserum	C	21	1.3	0.26
1	4212	iggserum	C	3	11.5	2.44
1	4212	iggserum	C	7	10.7	2.37
1	4212	iggserum	C	10	9.6	2.26
1	4212	iggserum	C	14	10.3	2.33
1	4212	iggserum	C	17	10.6	2.36
1	4212	iggserum	C	21	10.8	2.38
1	4212	igvitro	C	3	134.0	4.90
1	4212	igvitro	C	7	62.0	4.13
1	4212	igvitro	C	10	58.0	4.06
1	4212	igvitro	C	14	41.0	3.71
1	4212	igvitro	C	17	49.0	3.89
1	4212	igvitro	C	21	44.0	3.78
1	4212	il1serum	C	3	11.4	2.44
1	4212	il1serum	C	7	8.8	2.17
1	4212	il1serum	C	10	5.9	1.77
1	4212	il1serum	C	14	4.3	1.46
1	4212	il1serum	C	17	6.4	1.85
1	4212	il1serum	C	21	8.9	2.18
1	4212	il1vitro	C	3	359.8	5.89
1	4212	il1vitro	C	7	321.7	5.77
1	4212	il1vitro	C	10	322.8	5.78
1	4212	il1vitro	C	14	403.6	6.00
1	4212	il1vitro	C	17	325.3	5.78
1	4212	il1vitro	C	21	412.8	6.02
1	4212	il2serum	C	3	15.1	2.72
1	4212	il2serum	C	7	11.6	2.45
1	4212	il2serum	C	10	12.2	2.50
1	4212	il2serum	C	14	16.3	2.79
1	4212	il2serum	C	17	13.9	2.63
1	4212	il2serum	C	21	14.8	2.69
1	4212	il2vitro	C	3	86.4	4.46
1	4212	il2vitro	C	7	85.0	4.44
1	4212	il2vitro	C	10	296.8	5.69
1	4212	il2vitro	C	14	217.8	5.38
1	4212	il2vitro	C	17	426.4	6.06

1	4212	il2vitro	C	21	225.8	5.42
1	4212	phg	C	3	5966.0	8.69
1	4212	phg	C	7	1531.0	7.33
1	4212	phg	C	10	14232.0	9.56
1	4212	phg	C	14	204.0	5.32
1	4212	phg	C	17	4851.0	8.49
1	4212	phg	C	21	8229.0	9.02
1	4212	pwm	C	3	4478.0	8.41
1	4212	pwm	C	7	1183.0	7.08
1	4212	pwm	C	10	54.0	3.99
1	4212	pwm	C	14	80.0	4.38
1	4212	pwm	C	17	6509.0	8.78
1	4212	pwm	C	21	10586.0	9.27
1	4212	staph	C	3	2508.0	7.83
1	4212	staph	C	7	245.0	5.50
1	4212	staph	C	10	67.0	4.20
1	4212	staph	C	14	61.0	4.11
1	4212	staph	C	17	2489.0	7.82
1	4212	staph	C	21	5601.0	8.63
1	4230	chem	C	3	4799.0	8.48
1	4230	chem	C	7	6476.0	8.78
1	4230	chem	C	10	18098.0	9.80
1	4230	chem	C	14	7236.0	8.89
1	4230	chem	C	17	19690.0	9.89
1	4230	chem	C	21	22329.0	10.01
1	4230	cona	C	3	188.0	5.24
1	4230	cona	C	7	263.0	5.57
1	4230	cona	C	10	1127.0	7.03
1	4230	cona	C	14	324.0	5.78
1	4230	cona	C	17	1065.0	6.97
1	4230	cona	C	21	3357.0	8.12
1	4230	cortisol	C	3	7.2	1.97
1	4230	cortisol	C	7	1.9	0.64
1	4230	cortisol	C	10	1.2	0.14
1	4230	cortisol	C	14	3.5	1.24
1	4230	cortisol	C	17	7.5	2.01
1	4230	cortisol	C	21	1.7	0.53
1	4230	igaserum	C	3	0.3	-1.35
1	4230	igaserum	C	7	0.2	-1.90
1	4230	igaserum	C	10	0.2	-1.66
1	4230	igaserum	C	14	0.4	-0.94
1	4230	igaserum	C	17	0.2	-1.77
1	4230	igaserum	C	21	0.2	-1.66
1	4230	iggserum	C	3	5.8	1.76
1	4230	iggserum	C	7	4.6	1.53
1	4230	iggserum	C	10	4.8	1.57
1	4230	iggserum	C	14	1.9	0.64
1	4230	iggserum	C	17	4.2	1.44
1	4230	iggserum	C	21	3.7	1.31
1	4230	igvitro	C	3	129.0	4.86
1	4230	igvitro	C	7	138.0	4.93
1	4230	igvitro	C	10	68.0	4.22

1	4230	igvitro	C	14	92.0	4.52	2	3861	cona	T	7	6558.0	8.79
1	4230	igvitro	C	17	88.0	4.48	2	3861	cona	T	10	9984.0	9.21
1	4230	igvitro	C	21	60.0	4.09	2	3861	cona	T	14	2011.0	7.61
1	4230	il1serum	C	3	8.6	2.15	2	3861	cona	T	17	10636.0	9.27
1	4230	il1serum	C	7	4.3	1.46	2	3861	cona	T	21	13458.0	9.51
1	4230	il1serum	C	10	3.6	1.27	2	3861	cortisol	T	3	17.7	2.87
1	4230	il1serum	C	14	4.7	1.54	2	3861	cortisol	T	7	3.1	1.13
1	4230	il1serum	C	17	6.9	1.94	2	3861	cortisol	T	10	10.5	2.35
1	4230	il1serum	C	21	5.9	1.77	2	3861	cortisol	T	14	1.1	0.05
1	4230	il1vitro	C	3	407.2	6.01	2	3861	cortisol	T	17	19.5	2.97
1	4230	il1vitro	C	7	355.4	5.87	2	3861	cortisol	T	21	14.0	2.64
1	4230	il1vitro	C	10	371.6	5.92	2	3861	igaserum	T	3	0.7	-0.39
1	4230	il1vitro	C	14	373.9	5.92	2	3861	igaserum	T	7	0.7	-0.39
1	4230	il1vitro	C	17	361.2	5.89	2	3861	igaserum	T	10	0.7	-0.43
1	4230	il1vitro	C	21	377.7	5.93	2	3861	igaserum	T	14	0.6	-0.45
1	4230	il2serum	C	3	26.9	3.29	2	3861	igaserum	T	17	0.7	-0.34
1	4230	il2serum	C	7	26.9	3.29	2	3861	igaserum	T	21	0.6	-0.51
1	4230	il2serum	C	10	31.4	3.45	2	3861	iggserum	T	3	15.4	2.73
1	4230	il2serum	C	14	30.3	3.41	2	3861	iggserum	T	7	13.2	2.58
1	4230	il2serum	C	17	26.0	3.26	2	3861	iggserum	T	10	16.1	2.78
1	4230	il2serum	C	21	24.1	3.18	2	3861	iggserum	T	14	13.5	2.60
1	4230	il2vitro	C	3	270.8	5.60	2	3861	iggserum	T	17	12.0	2.48
1	4230	il2vitro	C	7	215.7	5.37	2	3861	iggserum	T	21	15.2	2.72
1	4230	il2vitro	C	10	105.2	4.66	2	3861	igvitro	T	3	40.0	3.69
1	4230	il2vitro	C	14	166.2	5.11	2	3861	igvitro	T	7	49.0	3.89
1	4230	il2vitro	C	17	283.3	5.65	2	3861	igvitro	T	10	30.0	3.40
1	4230	il2vitro	C	21	85.0	4.44	2	3861	igvitro	T	14	37.0	3.61
1	4230	phg	C	3	3642.0	8.20	2	3861	igvitro	T	17	53.0	3.97
1	4230	phg	C	7	349.0	5.86	2	3861	igvitro	T	21	39.0	3.66
1	4230	phg	C	10	62.0	4.13	2	3861	il1serum	T	3	6.2	1.82
1	4230	phg	C	14	100.0	4.61	2	3861	il1serum	T	7	9.6	2.27
1	4230	phg	C	17	5047.0	8.53	2	3861	il1serum	T	10	49.2	3.90
1	4230	phg	C	21	4211.0	8.35	2	3861	il1serum	T	14	73.9	4.30
1	4230	pwm	C	3	4838.0	8.48	2	3861	il1serum	T	17	13.0	2.57
1	4230	pwm	C	7	2072.0	7.64	2	3861	il1serum	T	21	69.9	4.25
1	4230	pwm	C	10	2963.0	7.99	2	3861	il1vitro	T	3	362.4	5.89
1	4230	pwm	C	14	2373.0	7.77	2	3861	il1vitro	T	7	343.0	5.84
1	4230	pwm	C	17	8027.0	8.99	2	3861	il1vitro	T	10	344.3	5.84
1	4230	pwm	C	21	8008.0	8.99	2	3861	il1vitro	T	14	347.5	5.85
1	4230	staph	C	3	2935.0	7.98	2	3861	il1vitro	T	17	406.9	6.01
1	4230	staph	C	7	947.0	6.85	2	3861	il1vitro	T	21	360.1	5.89
1	4230	staph	C	10	1456.0	7.28	2	3861	il2serum	T	3	24.1	3.18
1	4230	staph	C	14	535.0	6.28	2	3861	il2serum	T	7	18.3	2.91
1	4230	staph	C	17	5392.0	8.59	2	3861	il2serum	T	10	12.6	2.53
1	4230	staph	C	21	4617.0	8.44	2	3861	il2serum	T	14	11.3	2.42
2	3861	chem	T	3	4519.0	8.42	2	3861	il2serum	T	17	14.3	2.66
2	3861	chem	T	7	19962.0	9.90	2	3861	il2serum	T	21	10.3	2.33
2	3861	chem	T	10	33440.0	10.42	2	3861	il2vitro	T	3	221.9	5.40
2	3861	chem	T	14	15034.0	9.62	2	3861	il2vitro	T	7	264.4	5.58
2	3861	chem	T	17	12553.0	9.44	2	3861	il2vitro	T	10	171.4	5.14
2	3861	chem	T	21	5717.0	8.65	2	3861	il2vitro	T	14	102.9	4.63
2	3861	cona	T	3	5513.0	8.61	2	3861	il2vitro	T	17	250.5	5.52

2	3861	il2vitro	T	21	134.0	4.90	2	4052	igvitro	C	14	72.0	4.28
2	3861	phg	T	3	6178.0	8.73	2	4052	igvitro	C	17	82.0	4.41
2	3861	phg	T	7	6890.0	8.84	2	4052	igvitro	C	21	73.0	4.29
2	3861	phg	T	10	8829.0	9.09	2	4052	il1serum	C	3	26.2	3.27
2	3861	phg	T	14	6502.0	8.78	2	4052	il1serum	C	7	9.8	2.28
2	3861	phg	T	17	12894.0	9.46	2	4052	il1serum	C	10	17.7	2.87
2	3861	phg	T	21	13835.0	9.53	2	4052	il1serum	C	14	7.5	2.02
2	3861	pwm	T	3	11375.0	9.34	2	4052	il1serum	C	17	7.4	2.01
2	3861	pwm	T	7	14812.0	9.60	2	4052	il1serum	C	21	19.9	2.99
2	3861	pwm	T	10	16023.0	9.68	2	4052	il1vitro	C	3	355.7	5.87
2	3861	pwm	T	14	8664.0	9.07	2	4052	il1vitro	C	7	350.5	5.86
2	3861	pwm	T	17	17634.0	9.78	2	4052	il1vitro	C	10	338.3	5.82
2	3861	pwm	T	21	19356.0	9.87	2	4052	il1vitro	C	14	313.4	5.75
2	3861	staph	T	3	3369.0	8.12	2	4052	il1vitro	C	17	347.1	5.85
2	3861	staph	T	7	4288.0	8.36	2	4052	il1vitro	C	21	343.4	5.84
2	3861	staph	T	10	4634.0	8.44	2	4052	il2serum	C	3	16.6	2.81
2	3861	staph	T	14	1288.0	7.16	2	4052	il2serum	C	7	22.6	3.12
2	3861	staph	T	17	6815.0	8.83	2	4052	il2serum	C	10	17.3	2.85
2	3861	staph	T	21	5437.0	8.60	2	4052	il2serum	C	14	23.1	3.14
2	4052	chem	C	3	29018.0	10.28	2	4052	il2serum	C	17	17.8	2.88
2	4052	chem	C	7	14702.0	9.60	2	4052	il2serum	C	21	15.6	2.75
2	4052	chem	C	10	70098.0	11.16	2	4052	il2vitro	C	3	254.7	5.54
2	4052	chem	C	14	28327.0	10.25	2	4052	il2vitro	C	7	238.7	5.48
2	4052	chem	C	17	37604.0	10.53	2	4052	il2vitro	C	10	172.7	5.15
2	4052	chem	C	21	19694.0	9.89	2	4052	il2vitro	C	14	117.8	4.77
2	4052	cona	C	3	7673.0	8.95	2	4052	il2vitro	C	17	189.7	5.25
2	4052	cona	C	7	7908.0	8.98	2	4052	il2vitro	C	21	217.4	5.38
2	4052	cona	C	10	6734.0	8.81	2	4052	phg	C	3	5857.0	8.68
2	4052	cona	C	14	4274.0	8.36	2	4052	phg	C	7	10111.0	9.22
2	4052	cona	C	17	12213.0	9.41	2	4052	phg	C	10	10893.0	9.30
2	4052	cona	C	21	3748.0	8.23	2	4052	phg	C	14	4527.0	8.42
2	4052	cortisol	C	3	8.8	2.17	2	4052	phg	C	17	12941.0	9.47
2	4052	cortisol	C	7	5.0	1.61	2	4052	phg	C	21	8172.0	9.01
2	4052	cortisol	C	10	14.7	2.69	2	4052	pwm	C	3	10935.0	9.30
2	4052	cortisol	C	14	2.3	0.81	2	4052	pwm	C	7	18883.0	9.85
2	4052	cortisol	C	17	13.6	2.61	2	4052	pwm	C	10	20309.0	9.92
2	4052	cortisol	C	21	1.6	0.44	2	4052	pwm	C	14	14110.0	9.55
2	4052	igaserum	C	3	0.3	-1.27	2	4052	pwm	C	17	15494.0	9.65
2	4052	igaserum	C	7	0.3	-1.31	2	4052	pwm	C	21	12915.0	9.47
2	4052	igaserum	C	10	0.3	-1.24	2	4052	staph	C	3	6048.0	8.71
2	4052	igaserum	C	14	0.2	-1.51	2	4052	staph	C	7	10060.0	9.22
2	4052	igaserum	C	17	0.3	-1.20	2	4052	staph	C	10	8175.0	9.01
2	4052	igaserum	C	21	0.3	-1.39	2	4052	staph	C	14	6269.0	8.74
2	4052	iggserum	C	3	11.5	2.44	2	4052	staph	C	17	8087.0	9.00
2	4052	iggserum	C	7	11.3	2.42	2	4052	staph	C	21	7509.0	8.92
2	4052	iggserum	C	10	11.1	2.41	2	4078	chem	C	3	7000.0	8.85
2	4052	iggserum	C	14	11.2	2.42	2	4078	chem	C	7	21506.0	9.98
2	4052	iggserum	C	17	11.0	2.40	2	4078	chem	C	10	68673.0	11.14
2	4052	iggserum	C	21	11.6	2.45	2	4078	chem	C	14	12070.0	9.40
2	4052	igvitro	C	3	62.0	4.13	2	4078	chem	C	17	38427.0	10.56
2	4052	igvitro	C	7	66.0	4.19	2	4078	chem	C	21	42885.0	10.67
2	4052	igvitro	C	10	52.0	3.95	2	4078	cona	C	3	9132.0	9.12

2	4078	cona	C	7	14348.0	9.57	2	4078	il2vitro	C	21	191.4	5.25
2	4078	cona	C	10	7107.0	8.87	2	4078	phg	C	3	5344.0	8.58
2	4078	cona	C	14	5323.0	8.58	2	4078	phg	C	7	11942.0	9.39
2	4078	cona	C	17	8355.0	9.03	2	4078	phg	C	10	10576.0	9.27
2	4078	cona	C	21	4901.0	8.50	2	4078	phg	C	14	9144.0	9.12
2	4078	cortisol	C	3	12.0	2.48	2	4078	phg	C	17	11072.0	9.31
2	4078	cortisol	C	7	17.6	2.87	2	4078	phg	C	21	7567.0	8.93
2	4078	cortisol	C	10	7.5	2.01	2	4078	pwm	C	3	13404.0	9.50
2	4078	cortisol	C	14	2.5	0.90	2	4078	pwm	C	7	24482.0	10.11
2	4078	cortisol	C	17	9.2	2.21	2	4078	pwm	C	10	22105.0	10.00
2	4078	cortisol	C	21	3.1	1.13	2	4078	pwm	C	14	12253.0	9.41
2	4078	igaserum	C	3	0.3	-1.20	2	4078	pwm	C	17	17050.0	9.74
2	4078	igaserum	C	7	0.5	-0.80	2	4078	pwm	C	21	13485.0	9.51
2	4078	igaserum	C	10	0.3	-1.08	2	4078	staph	C	3	2985.0	8.00
2	4078	igaserum	C	14	0.4	-0.99	2	4078	staph	C	7	6546.0	8.79
2	4078	igaserum	C	17	0.3	-1.14	2	4078	staph	C	10	2255.0	7.72
2	4078	igaserum	C	21	0.4	-0.97	2	4078	staph	C	14	1196.0	7.09
2	4078	iggserum	C	3	12.3	2.51	2	4078	staph	C	17	6438.0	8.77
2	4078	iggserum	C	7	12.4	2.52	2	4078	staph	C	21	4337.0	8.37
2	4078	iggserum	C	10	12.6	2.53	2	4084	chem	T	3	21727.0	9.99
2	4078	iggserum	C	14	11.3	2.42	2	4084	chem	T	7	13174.0	9.49
2	4078	iggserum	C	17	11.1	2.41	2	4084	chem	T	10	51741.0	10.85
2	4078	iggserum	C	21	11.0	2.40	2	4084	chem	T	14	17193.0	9.75
2	4078	igvitro	C	3	27.0	3.30	2	4084	chem	T	17	15392.0	9.64
2	4078	igvitro	C	7	23.0	3.14	2	4084	chem	T	21	13783.0	9.53
2	4078	igvitro	C	10	17.0	2.83	2	4084	cona	T	3	15935.0	9.68
2	4078	igvitro	C	14	26.0	3.26	2	4084	cona	T	7	11367.0	9.34
2	4078	igvitro	C	17	31.0	3.43	2	4084	cona	T	10	47458.0	10.77
2	4078	igvitro	C	21	25.0	3.22	2	4084	cona	T	14	5670.0	8.64
2	4078	il1serum	C	3	3.6	1.29	2	4084	cona	T	17	7269.0	8.89
2	4078	il1serum	C	7	4.5	1.51	2	4084	cona	T	21	3605.0	8.19
2	4078	il1serum	C	10	5.7	1.74	2	4084	cortisol	T	3	4.9	1.59
2	4078	il1serum	C	14	9.5	2.25	2	4084	cortisol	T	7	7.7	2.03
2	4078	il1serum	C	17	9.2	2.22	2	4084	cortisol	T	10	15.2	2.72
2	4078	il1serum	C	21	12.2	2.50	2	4084	cortisol	T	14	4.6	1.52
2	4078	il1vitro	C	3	552.5	6.31	2	4084	cortisol	T	17	4.9	1.58
2	4078	il1vitro	C	7	368.3	5.91	2	4084	cortisol	T	21	7.7	2.03
2	4078	il1vitro	C	10	342.2	5.84	2	4084	igaserum	T	3	0.7	-0.33
2	4078	il1vitro	C	14	372.8	5.92	2	4084	igaserum	T	7	0.7	-0.30
2	4078	il1vitro	C	17	335.9	5.82	2	4084	igaserum	T	10	0.8	-0.29
2	4078	il1vitro	C	21	324.5	5.78	2	4084	igaserum	T	14	0.8	-0.25
2	4078	il2serum	C	3	26.2	3.27	2	4084	igaserum	T	17	0.8	-0.26
2	4078	il2serum	C	7	25.8	3.25	2	4084	igaserum	T	21	0.8	-0.24
2	4078	il2serum	C	10	20.1	3.00	2	4084	iggserum	T	3	10.4	2.34
2	4078	il2serum	C	14	25.7	3.25	2	4084	iggserum	T	7	10.2	2.32
2	4078	il2serum	C	17	20.5	3.02	2	4084	iggserum	T	10	10.4	2.34
2	4078	il2serum	C	21	19.2	2.96	2	4084	iggserum	T	14	10.1	2.31
2	4078	il2vitro	C	3	164.3	5.10	2	4084	iggserum	T	17	10.1	2.31
2	4078	il2vitro	C	7	187.9	5.24	2	4084	iggserum	T	21	11.7	2.46
2	4078	il2vitro	C	10	140.3	4.94	2	4084	igvitro	T	3	59.0	4.08
2	4078	il2vitro	C	14	236.3	5.47	2	4084	igvitro	T	7	44.0	3.78
2	4078	il2vitro	C	17	149.8	5.01	2	4084	igvitro	T	10	39.0	3.66



2	4084	igvitro	T	14	32.0	3.47	2	4239	cona	C	7	22202.0	10.01
2	4084	igvitro	T	17	29.0	3.37	2	4239	cona	C	10	18564.0	9.83
2	4084	igvitro	T	21	36.0	3.58	2	4239	cona	C	14	11247.0	9.33
2	4084	il1serum	T	3	6.3	1.84	2	4239	cona	C	17	20354.0	9.92
2	4084	il1serum	T	7	9.0	2.20	2	4239	cona	C	21	8790.0	9.08
2	4084	il1serum	T	10	11.2	2.42	2	4239	cortisol	C	3	2.9	1.06
2	4084	il1serum	T	14	20.5	3.02	2	4239	cortisol	C	7	1.8	0.56
2	4084	il1serum	T	17	33.3	3.51	2	4239	cortisol	C	10	4.4	1.48
2	4084	il1serum	T	21	17.6	2.87	2	4239	cortisol	C	14	6.0	1.78
2	4084	il1vitro	T	3	332.5	5.81	2	4239	cortisol	C	17	6.0	1.78
2	4084	il1vitro	T	7	322.1	5.77	2	4239	cortisol	C	21	0.9	-0.11
2	4084	il1vitro	T	10	346.9	5.85	2	4239	igaserum	C	3	0.7	-0.39
2	4084	il1vitro	T	14	311.9	5.74	2	4239	igaserum	C	7	0.6	-0.45
2	4084	il1vitro	T	17	342.8	5.84	2	4239	igaserum	C	10	0.6	-0.48
2	4084	il1vitro	T	21	340.5	5.83	2	4239	igaserum	C	14	0.6	-0.48
2	4084	il2serum	T	3	21.9	3.08	2	4239	igaserum	C	17	0.7	-0.40
2	4084	il2serum	T	7	18.8	2.93	2	4239	igaserum	C	21	0.6	-0.45
2	4084	il2serum	T	10	18.1	2.90	2	4239	iggserum	C	3	10.0	2.30
2	4084	il2serum	T	14	14.0	2.64	2	4239	iggserum	C	7	10.4	2.34
2	4084	il2serum	T	17	13.8	2.62	2	4239	iggserum	C	10	13.7	2.62
2	4084	il2serum	T	21	15.8	2.76	2	4239	iggserum	C	14	10.1	2.31
2	4084	il2vitro	T	3	257.8	5.55	2	4239	iggserum	C	17	10.1	2.31
2	4084	il2vitro	T	7	180.7	5.20	2	4239	iggserum	C	21	10.0	2.30
2	4084	il2vitro	T	10	114.8	4.74	2	4239	igvitro	C	3	156.0	5.05
2	4084	il2vitro	T	14	153.9	5.04	2	4239	igvitro	C	7	236.0	5.46
2	4084	il2vitro	T	17	216.8	5.38	2	4239	igvitro	C	10	168.0	5.12
2	4084	il2vitro	T	21	157.0	5.06	2	4239	igvitro	C	14	105.0	4.65
2	4084	phg	T	3	8248.0	9.02	2	4239	igvitro	C	17	121.0	4.80
2	4084	phg	T	7	9655.0	9.18	2	4239	igvitro	C	21	149.0	5.00
2	4084	phg	T	10	27880.0	10.24	2	4239	il1serum	C	3	22.3	3.10
2	4084	phg	T	14	9383.0	9.15	2	4239	il1serum	C	7	14.0	2.64
2	4084	phg	T	17	9027.0	9.11	2	4239	il1serum	C	10	36.3	3.59
2	4084	phg	T	21	5890.0	8.68	2	4239	il1serum	C	14	33.2	3.50
2	4084	pwm	T	3	15220.0	9.63	2	4239	il1serum	C	17	28.9	3.37
2	4084	pwm	T	7	22824.0	10.04	2	4239	il1serum	C	21	10.8	2.38
2	4084	pwm	T	10	46719.0	10.75	2	4239	il1vitro	C	3	306.7	5.73
2	4084	pwm	T	14	18579.0	9.83	2	4239	il1vitro	C	7	312.6	5.74
2	4084	pwm	T	17	17182.0	9.75	2	4239	il1vitro	C	10	350.3	5.86
2	4084	pwm	T	21	13521.0	9.51	2	4239	il1vitro	C	14	296.5	5.69
2	4084	staph	T	3	5274.0	8.57	2	4239	il1vitro	C	17	320.7	5.77
2	4084	staph	T	7	7810.0	8.96	2	4239	il1vitro	C	21	323.1	5.78
2	4084	staph	T	10	11157.0	9.32	2	4239	il2serum	C	3	16.2	2.79
2	4084	staph	T	14	4336.0	8.37	2	4239	il2serum	C	7	14.7	2.69
2	4084	staph	T	17	3847.0	8.26	2	4239	il2serum	C	10	15.6	2.75
2	4084	staph	T	21	3364.0	8.12	2	4239	il2serum	C	14	11.9	2.48
2	4239	chem	C	3	14272.0	9.57	2	4239	il2serum	C	17	14.6	2.68
2	4239	chem	C	7	20413.0	9.92	2	4239	il2serum	C	21	14.1	2.65
2	4239	chem	C	10	61180.0	11.02	2	4239	il2vitro	C	3	175.6	5.17
2	4239	chem	C	14	9796.0	9.19	2	4239	il2vitro	C	7	190.0	5.25
2	4239	chem	C	17	18703.0	9.84	2	4239	il2vitro	C	10	158.6	5.07
2	4239	chem	C	21	9599.0	9.17	2	4239	il2vitro	C	14	230.1	5.44
2	4239	cona	C	3	6602.0	8.80	2	4239	il2vitro	C	17	207.7	5.34



2	4239	il2vitro	C	21	145.0	4.98	2	4243	igvitro	T	14	141.0	4.95
2	4239	phg	C	3	8822.0	9.09	2	4243	igvitro	T	17	128.0	4.85
2	4239	phg	C	7	16536.0	9.71	2	4243	igvitro	T	21	130.0	4.87
2	4239	phg	C	10	17010.0	9.74	2	4243	il1serum	T	3	2.8	1.03
2	4239	phg	C	14	10848.0	9.29	2	4243	il1serum	T	7	6.2	1.82
2	4239	phg	C	17	16117.0	9.69	2	4243	il1serum	T	10	24.8	3.21
2	4239	phg	C	21	11683.0	9.37	2	4243	il1serum	T	14	16.2	2.79
2	4239	pwm	C	3	13984.0	9.55	2	4243	il1serum	T	17	11.3	2.43
2	4239	pwm	C	7	23291.0	10.06	2	4243	il1serum	T	21	10.0	2.30
2	4239	pwm	C	10	23034.0	10.04	2	4243	il1vitro	T	3	371.5	5.92
2	4239	pwm	C	14	14078.0	9.55	2	4243	il1vitro	T	7	355.8	5.87
2	4239	pwm	C	17	28155.0	10.25	2	4243	il1vitro	T	10	359.3	5.88
2	4239	pwm	C	21	15118.0	9.62	2	4243	il1vitro	T	14	335.3	5.81
2	4239	staph	C	3	5108.0	8.54	2	4243	il1vitro	T	17	367.3	5.91
2	4239	staph	C	7	10912.0	9.30	2	4243	il1vitro	T	21	362.1	5.89
2	4239	staph	C	10	7306.0	8.90	2	4243	il2serum	T	3	24.3	3.19
2	4239	staph	C	14	4514.0	8.41	2	4243	il2serum	T	7	20.9	3.04
2	4239	staph	C	17	7200.0	8.88	2	4243	il2serum	T	10	21.0	3.04
2	4239	staph	C	21	7116.0	8.87	2	4243	il2serum	T	14	14.7	2.68
2	4243	chem	T	3	23713.0	10.07	2	4243	il2serum	T	17	25.8	3.25
2	4243	chem	T	7	43609.0	10.68	2	4243	il2serum	T	21	23.4	3.15
2	4243	chem	T	10	94827.0	11.46	2	4243	il2vitro	T	3	309.5	5.74
2	4243	chem	T	14	24517.0	10.11	2	4243	il2vitro	T	7	177.1	5.18
2	4243	chem	T	17	26063.0	10.17	2	4243	il2vitro	T	10	259.5	5.56
2	4243	chem	T	21	15292.0	9.64	2	4243	il2vitro	T	14	130.1	4.87
2	4243	cona	T	3	22038.0	10.00	2	4243	il2vitro	T	17	146.0	4.98
2	4243	cona	T	7	26920.0	10.20	2	4243	il2vitro	T	21	258.7	5.56
2	4243	cona	T	10	44871.0	10.71	2	4243	phg	T	3	20944.0	9.95
2	4243	cona	T	14	18498.0	9.83	2	4243	phg	T	7	23420.0	10.06
2	4243	cona	T	17	14519.0	9.58	2	4243	phg	T	10	36166.0	10.50
2	4243	cona	T	21	9684.0	9.18	2	4243	phg	T	14	21263.0	9.96
2	4243	cortisol	T	3	2.4	0.88	2	4243	phg	T	17	20480.0	9.93
2	4243	cortisol	T	7	1.2	0.18	2	4243	phg	T	21	17443.0	9.77
2	4243	cortisol	T	10	11.0	2.39	2	4243	pwm	T	3	9360.0	9.14
2	4243	cortisol	T	14	1.9	0.62	2	4243	pwm	T	7	24022.0	10.09
2	4243	cortisol	T	17	0.7	-0.36	2	4243	pwm	T	10	23893.0	10.08
2	4243	cortisol	T	21	4.1	1.40	2	4243	pwm	T	14	17361.0	9.76
2	4243	igaserum	T	3	0.6	-0.49	2	4243	pwm	T	17	22608.0	10.03
2	4243	igaserum	T	7	0.7	-0.36	2	4243	pwm	T	21	16373.0	9.70
2	4243	igaserum	T	10	0.8	-0.22	2	4243	staph	T	3	2524.0	7.83
2	4243	igaserum	T	14	0.7	-0.33	2	4243	staph	T	7	7388.0	8.91
2	4243	igaserum	T	17	0.7	-0.30	2	4243	staph	T	10	4573.0	8.43
2	4243	igaserum	T	21	0.7	-0.34	2	4243	staph	T	14	3519.0	8.17
2	4243	iggserum	T	3	13.5	2.60	2	4243	staph	T	17	5791.0	8.66
2	4243	iggserum	T	7	10.5	2.35	2	4243	staph	T	21	5430.0	8.60
2	4243	iggserum	T	10	15.0	2.71	2	4246	chem	C	3	6056.0	8.71
2	4243	iggserum	T	14	11.4	2.43	2	4246	chem	C	7	8017.0	8.99
2	4243	iggserum	T	17	10.2	2.32	2	4246	chem	C	10	34536.0	10.45
2	4243	iggserum	T	21	8.1	2.09	2	4246	chem	C	14	4859.0	8.49
2	4243	igvitro	T	3	141.0	4.95	2	4246	chem	C	17	21245.0	9.96
2	4243	igvitro	T	7	122.0	4.80	2	4246	chem	C	21	4667.0	8.45
2	4243	igvitro	T	10	99.0	4.60	2	4246	cona	C	3	3340.0	8.11

2	4246	cona	C	7	14532.0	9.58	2	4246	il2vitro	C	21	153.7	5.04
2	4246	cona	C	10	8959.0	9.10	2	4246	phg	C	3	5333.0	8.58
2	4246	cona	C	14	7088.0	8.87	2	4246	phg	C	7	14966.0	9.61
2	4246	cona	C	17	8886.0	9.09	2	4246	phg	C	10	11608.0	9.36
2	4246	cona	C	21	3795.0	8.24	2	4246	phg	C	14	15219.0	9.63
2	4246	cortisol	C	3	3.3	1.19	2	4246	phg	C	17	12048.0	9.40
2	4246	cortisol	C	7	9.4	2.24	2	4246	phg	C	21	12815.0	9.46
2	4246	cortisol	C	10	21.0	3.04	2	4246	pwm	C	3	12750.0	9.45
2	4246	cortisol	C	14	7.2	1.97	2	4246	pwm	C	7	18968.0	9.85
2	4246	cortisol	C	17	8.8	2.17	2	4246	pwm	C	10	19514.0	9.88
2	4246	cortisol	C	21	5.1	1.62	2	4246	pwm	C	14	14093.0	9.55
2	4246	igaserum	C	3	0.3	-1.14	2	4246	pwm	C	17	14574.0	9.59
2	4246	igaserum	C	7	0.3	-1.27	2	4246	pwm	C	21	10541.0	9.26
2	4246	igaserum	C	10	0.4	-0.99	2	4246	staph	C	3	6232.0	8.74
2	4246	igaserum	C	14	0.3	-1.17	2	4246	staph	C	7	9213.0	9.13
2	4246	igaserum	C	17	0.4	-0.99	2	4246	staph	C	10	7146.0	8.87
2	4246	igaserum	C	21	0.4	-1.02	2	4246	staph	C	14	7348.0	8.90
2	4246	iggserum	C	3	11.7	2.46	2	4246	staph	C	17	4075.0	8.31
2	4246	iggserum	C	7	11.5	2.44	2	4246	staph	C	21	6955.0	8.85
2	4246	iggserum	C	10	10.8	2.38	2	4262	chem	T	3	14570.0	9.59
2	4246	iggserum	C	14	10.9	2.39	2	4262	chem	T	7	21288.0	9.97
2	4246	iggserum	C	17	10.2	2.32	2	4262	chem	T	10	42151.0	10.65
2	4246	iggserum	C	21	10.0	2.30	2	4262	chem	T	14	16520.0	9.71
2	4246	igvitro	C	3	198.0	5.29	2	4262	chem	T	17	18657.0	9.83
2	4246	igvitro	C	7	251.0	5.53	2	4262	chem	T	21	15798.0	9.67
2	4246	igvitro	C	10	159.0	5.07	2	4262	cona	T	3	8485.0	9.05
2	4246	igvitro	C	14	186.0	5.23	2	4262	cona	T	7	14806.0	9.60
2	4246	igvitro	C	17	154.0	5.04	2	4262	cona	T	10	16034.0	9.68
2	4246	igvitro	C	21	144.0	4.97	2	4262	cona	T	14	9840.0	9.19
2	4246	il1serum	C	3	31.6	3.45	2	4262	cona	T	17	4173.0	8.34
2	4246	il1serum	C	7	84.9	4.44	2	4262	cona	T	21	3828.0	8.25
2	4246	il1serum	C	10	103.9	4.64	2	4262	cortisol	T	3	3.3	1.19
2	4246	il1serum	C	14	63.7	4.15	2	4262	cortisol	T	7	1.4	0.34
2	4246	il1serum	C	17	59.7	4.09	2	4262	cortisol	T	10	9.5	2.25
2	4246	il1serum	C	21	23.4	3.15	2	4262	cortisol	T	14	0.6	-0.60
2	4246	il1vitro	C	3	370.2	5.91	2	4262	cortisol	T	17	7.4	1.99
2	4246	il1vitro	C	7	322.2	5.78	2	4262	cortisol	T	21	0.9	-0.16
2	4246	il1vitro	C	10	322.8	5.78	2	4262	igaserum	T	3	0.7	-0.37
2	4246	il1vitro	C	14	324.7	5.78	2	4262	igaserum	T	7	0.6	-0.45
2	4246	il1vitro	C	17	362.4	5.89	2	4262	igaserum	T	10	0.7	-0.39
2	4246	il1vitro	C	21	359.4	5.88	2	4262	igaserum	T	14	0.7	-0.37
2	4246	il2serum	C	3	23.0	3.13	2	4262	igaserum	T	17	0.6	-0.45
2	4246	il2serum	C	7	16.8	2.82	2	4262	igaserum	T	21	0.7	-0.42
2	4246	il2serum	C	10	16.1	2.78	2	4262	iggserum	T	3	11.3	2.42
2	4246	il2serum	C	14	16.6	2.81	2	4262	iggserum	T	7	10.6	2.36
2	4246	il2serum	C	17	16.2	2.79	2	4262	iggserum	T	10	11.3	2.42
2	4246	il2serum	C	21	20.8	3.03	2	4262	iggserum	T	14	10.2	2.32
2	4246	il2vitro	C	3	162.9	5.09	2	4262	iggserum	T	17	10.1	2.31
2	4246	il2vitro	C	7	130.0	4.87	2	4262	iggserum	T	21	10.0	2.30
2	4246	il2vitro	C	10	130.7	4.87	2	4262	igvitro	T	3	49.0	3.89
2	4246	il2vitro	C	14	154.4	5.04	2	4262	igvitro	T	7	56.0	4.03
2	4246	il2vitro	C	17	162.5	5.09	2	4262	igvitro	T	10	81.0	4.39

2	4262	igvitro	T	14	46.0	3.83	3	3970	cona	C	7	7784.0	8.96
2	4262	igvitro	T	17	62.0	4.13	3	3970	cona	C	10	5372.0	8.59
2	4262	igvitro	T	21	35.0	3.56	3	3970	cona	C	14	5190.0	8.55
2	4262	il1serum	T	3	4.2	1.44	3	3970	cona	C	17	2575.0	7.85
2	4262	il1serum	T	7	3.8	1.34	3	3970	cona	C	21	18714.0	9.84
2	4262	il1serum	T	10	7.7	2.04	3	3970	cortisol	C	3	1.0	0.00
2	4262	il1serum	T	14	5.1	1.62	3	3970	cortisol	C	7	3.0	1.08
2	4262	il1serum	T	17	9.1	2.20	3	3970	cortisol	C	10	3.5	1.25
2	4262	il1serum	T	21	11.8	2.47	3	3970	cortisol	C	14	0.9	-0.16
2	4262	il1vitro	T	3	376.3	5.93	3	3970	cortisol	C	17	0.4	-0.92
2	4262	il1vitro	T	7	344.4	5.84	3	3970	cortisol	C	21	1.2	0.14
2	4262	il1vitro	T	10	406.0	6.01	3	3970	igaserum	C	3	0.3	-1.27
2	4262	il1vitro	T	14	350.4	5.86	3	3970	igaserum	C	7	0.3	-1.27
2	4262	il1vitro	T	17	357.6	5.88	3	3970	igaserum	C	10	0.3	-1.24
2	4262	il1vitro	T	21	352.3	5.86	3	3970	igaserum	C	14	0.3	-1.24
2	4262	il2serum	T	3	31.6	3.45	3	3970	igaserum	C	17	0.3	-1.31
2	4262	il2serum	T	7	29.5	3.38	3	3970	igaserum	C	21	0.3	-1.35
2	4262	il2serum	T	10	29.9	3.40	3	3970	iggserum	C	3	9.9	2.29
2	4262	il2serum	T	14	23.9	3.18	3	3970	iggserum	C	7	8.8	2.17
2	4262	il2serum	T	17	22.2	3.10	3	3970	iggserum	C	10	10.6	2.36
2	4262	il2serum	T	21	27.3	3.31	3	3970	iggserum	C	14	9.6	2.26
2	4262	il2vitro	T	3	230.3	5.44	3	3970	iggserum	C	17	12.1	2.49
2	4262	il2vitro	T	7	232.3	5.45	3	3970	iggserum	C	21	11.4	2.43
2	4262	il2vitro	T	10	169.5	5.13	3	3970	igvitro	C	3	140.0	4.94
2	4262	il2vitro	T	14	246.0	5.51	3	3970	igvitro	C	7	126.0	4.84
2	4262	il2vitro	T	17	92.9	4.53	3	3970	igvitro	C	10	105.0	4.65
2	4262	il2vitro	T	21	83.2	4.42	3	3970	igvitro	C	14	123.0	4.81
2	4262	phg	T	3	7693.0	8.95	3	3970	igvitro	C	17	127.0	4.84
2	4262	phg	T	7	13262.0	9.49	3	3970	igvitro	C	21	129.0	4.86
2	4262	phg	T	10	10679.0	9.28	3	3970	il1serum	C	3	22.7	3.12
2	4262	phg	T	14	10429.0	9.25	3	3970	il1serum	C	7	11.8	2.47
2	4262	phg	T	17	10616.0	9.27	3	3970	il1serum	C	10	16.6	2.81
2	4262	phg	T	21	9225.0	9.13	3	3970	il1serum	C	14	11.6	2.45
2	4262	pwm	T	3	17537.0	9.77	3	3970	il1serum	C	17	13.2	2.58
2	4262	pwm	T	7	27594.0	10.23	3	3970	il1serum	C	21	7.5	2.01
2	4262	pwm	T	10	44699.0	10.71	3	3970	il1vitro	C	3	301.5	5.71
2	4262	pwm	T	14	22968.0	10.04	3	3970	il1vitro	C	7	314.7	5.75
2	4262	pwm	T	17	18760.0	9.84	3	3970	il1vitro	C	10	310.2	5.74
2	4262	pwm	T	21	15221.0	9.63	3	3970	il1vitro	C	14	297.5	5.70
2	4262	staph	T	3	7846.0	8.97	3	3970	il1vitro	C	17	296.6	5.69
2	4262	staph	T	7	15660.0	9.66	3	3970	il1vitro	C	21	282.8	5.64
2	4262	staph	T	10	22859.0	10.04	3	3970	il2serum	C	3	12.2	2.50
2	4262	staph	T	14	8785.0	9.08	3	3970	il2serum	C	7	13.5	2.60
2	4262	staph	T	17	10406.0	9.25	3	3970	il2serum	C	10	11.7	2.46
2	4262	staph	T	21	9201.0	9.13	3	3970	il2serum	C	14	13.8	2.62
3	3970	chem	C	3	3529.0	8.17	3	3970	il2serum	C	17	12.9	2.56
3	3970	chem	C	7	7146.0	8.87	3	3970	il2serum	C	21	15.9	2.76
3	3970	chem	C	10	5745.0	8.66	3	3970	il2vitro	C	3	109.1	4.69
3	3970	chem	C	14	12807.0	9.46	3	3970	il2vitro	C	7	73.4	4.30
3	3970	chem	C	17	10041.0	9.21	3	3970	il2vitro	C	10	73.2	4.29
3	3970	chem	C	21	7485.0	8.92	3	3970	il2vitro	C	14	92.2	4.52
3	3970	cona	C	3	563.0	6.33	3	3970	il2vitro	C	17	75.6	4.33

3	3970	il2vitro	C	21	73.1	4.29	3	3987	igvitro	T	14	25.0	3.22
3	3970	phg	C	3	1197.0	7.09	3	3987	igvitro	T	17	26.0	3.26
3	3970	phg	C	7	6807.0	8.83	3	3987	igvitro	T	21	27.0	3.30
3	3970	phg	C	10	5680.0	8.64	3	3987	il1serum	T	3	42.8	3.76
3	3970	phg	C	14	7692.0	8.95	3	3987	il1serum	T	7	37.3	3.62
3	3970	phg	C	17	5826.0	8.67	3	3987	il1serum	T	10	52.8	3.97
3	3970	phg	C	21	13848.0	9.54	3	3987	il1serum	T	14	21.8	3.08
3	3970	pwm	C	3	3034.0	8.02	3	3987	il1serum	T	17	60.7	4.11
3	3970	pwm	C	7	15297.0	9.64	3	3987	il1serum	T	21	85.6	4.45
3	3970	pwm	C	10	17562.0	9.77	3	3987	il1vitro	T	3	319.9	5.77
3	3970	pwm	C	14	15381.0	9.64	3	3987	il1vitro	T	7	314.7	5.75
3	3970	pwm	C	17	12789.0	9.46	3	3987	il1vitro	T	10	298.7	5.70
3	3970	pwm	C	21	29282.0	10.28	3	3987	il1vitro	T	14	303.8	5.72
3	3970	staph	C	3	1056.0	6.96	3	3987	il1vitro	T	17	309.8	5.74
3	3970	staph	C	7	5250.0	8.57	3	3987	il1vitro	T	21	284.7	5.65
3	3970	staph	C	10	2384.0	7.78	3	3987	il2serum	T	3	8.4	2.13
3	3970	staph	C	14	4732.0	8.46	3	3987	il2serum	T	7	7.6	2.03
3	3970	staph	C	17	3645.0	8.20	3	3987	il2serum	T	10	7.7	2.04
3	3970	staph	C	21	6957.0	8.85	3	3987	il2serum	T	14	8.8	2.17
3	3987	chem	T	3	9981.0	9.21	3	3987	il2serum	T	17	7.8	2.05
3	3987	chem	T	7	10881.0	9.29	3	3987	il2serum	T	21	7.7	2.04
3	3987	chem	T	10	9637.0	9.17	3	3987	il2vitro	T	3	288.0	5.66
3	3987	chem	T	14	15846.0	9.67	3	3987	il2vitro	T	7	74.4	4.31
3	3987	chem	T	17	9818.0	9.19	3	3987	il2vitro	T	10	94.1	4.54
3	3987	chem	T	21	6940.0	8.85	3	3987	il2vitro	T	14	74.1	4.30
3	3987	cona	T	3	1622.0	7.39	3	3987	il2vitro	T	17	75.2	4.32
3	3987	cona	T	7	14518.0	9.58	3	3987	il2vitro	T	21	78.9	4.37
3	3987	cona	T	10	13735.0	9.53	3	3987	phg	T	3	2548.0	7.84
3	3987	cona	T	14	13869.0	9.54	3	3987	phg	T	7	19784.0	9.89
3	3987	cona	T	17	7019.0	8.86	3	3987	phg	T	10	23075.0	10.05
3	3987	cona	T	21	17008.0	9.74	3	3987	phg	T	14	12518.0	9.43
3	3987	cortisol	T	3	10.8	2.38	3	3987	phg	T	17	13969.0	9.54
3	3987	cortisol	T	7	6.2	1.82	3	3987	phg	T	21	12164.0	9.41
3	3987	cortisol	T	10	3.9	1.36	3	3987	pwm	T	3	2827.0	7.95
3	3987	cortisol	T	14	1.6	0.47	3	3987	pwm	T	7	27985.0	10.24
3	3987	cortisol	T	17	3.7	1.31	3	3987	pwm	T	10	33988.0	10.43
3	3987	cortisol	T	21	2.2	0.77	3	3987	pwm	T	14	18774.0	9.84
3	3987	igaserum	T	3	0.8	-0.22	3	3987	pwm	T	17	17736.0	9.78
3	3987	igaserum	T	7	0.4	-0.82	3	3987	pwm	T	21	30461.0	10.32
3	3987	igaserum	T	10	0.8	-0.19	3	3987	staph	T	3	1969.0	7.59
3	3987	igaserum	T	14	0.9	-0.13	3	3987	staph	T	7	9693.0	9.18
3	3987	igaserum	T	17	0.9	-0.16	3	3987	staph	T	10	10181.0	9.23
3	3987	igaserum	T	21	0.8	-0.20	3	3987	staph	T	14	3772.0	8.24
3	3987	iggserum	T	3	12.3	2.51	3	3987	staph	T	17	5626.0	8.64
3	3987	iggserum	T	7	11.9	2.48	3	3987	staph	T	21	7042.0	8.86
3	3987	iggserum	T	10	11.6	2.45	3	3996	chem	C	3	8583.0	9.06
3	3987	iggserum	T	14	12.1	2.49	3	3996	chem	C	7	4495.0	8.41
3	3987	iggserum	T	17	11.5	2.44	3	3996	chem	C	10	4373.0	8.38
3	3987	iggserum	T	21	12.7	2.54	3	3996	chem	C	14	6881.0	8.84
3	3987	igvitro	T	3	50.0	3.91	3	3996	chem	C	17	4458.0	8.40
3	3987	igvitro	T	7	22.0	3.09	3	3996	chem	C	21	5397.0	8.59
3	3987	igvitro	T	10	26.0	3.26	3	3996	cona	C	3	992.0	6.90

3	3996	cona	C	7	22576.0	10.02	3	3996	il2vitro	C	21	84.8	4.44
3	3996	cona	C	10	15689.0	9.66	3	3996	phg	C	3	5113.0	8.54
3	3996	cona	C	14	19770.0	9.89	3	3996	phg	C	7	21353.0	9.97
3	3996	cona	C	17	11937.0	9.39	3	3996	phg	C	10	18251.0	9.81
3	3996	cona	C	21	16669.0	9.72	3	3996	phg	C	14	20398.0	9.92
3	3996	cortisol	C	3	7.2	1.97	3	3996	phg	C	17	16805.0	9.73
3	3996	cortisol	C	7	7.9	2.06	3	3996	phg	C	21	19773.0	9.89
3	3996	cortisol	C	10	10.3	2.33	3	3996	pwm	C	3	6533.0	8.78
3	3996	cortisol	C	14	1.3	0.26	3	3996	pwm	C	7	37575.0	10.53
3	3996	cortisol	C	17	13.9	2.63	3	3996	pwm	C	10	24003.0	10.09
3	3996	cortisol	C	21	8.6	2.15	3	3996	pwm	C	14	34377.0	10.45
3	3996	igaserum	C	3	0.3	-1.27	3	3996	pwm	C	17	24314.0	10.10
3	3996	igaserum	C	7	0.3	-1.24	3	3996	pwm	C	21	31267.0	10.35
3	3996	igaserum	C	10	0.3	-1.24	3	3996	staph	C	3	2332.0	7.75
3	3996	igaserum	C	14	0.3	-1.24	3	3996	staph	C	7	11164.0	9.32
3	3996	igaserum	C	17	0.3	-1.20	3	3996	staph	C	10	8050.0	8.99
3	3996	igaserum	C	21	0.3	-1.31	3	3996	staph	C	14	5921.0	8.69
3	3996	iggserum	C	3	11.8	2.47	3	3996	staph	C	17	7388.0	8.91
3	3996	iggserum	C	7	11.8	2.47	3	3996	staph	C	21	8047.0	8.99
3	3996	iggserum	C	10	11.5	2.44	3	4057	chem	T	3	7084.0	8.87
3	3996	iggserum	C	14	11.7	2.46	3	4057	chem	T	7	4818.0	8.48
3	3996	iggserum	C	17	11.6	2.45	3	4057	chem	T	10	6170.0	8.73
3	3996	iggserum	C	21	12.0	2.48	3	4057	chem	T	14	14913.0	9.61
3	3996	igvitro	C	3	107.0	4.67	3	4057	chem	T	17	3256.0	8.09
3	3996	igvitro	C	7	76.0	4.33	3	4057	chem	T	21	6240.0	8.74
3	3996	igvitro	C	10	74.0	4.30	3	4057	cona	T	3	1736.0	7.46
3	3996	igvitro	C	14	103.0	4.63	3	4057	cona	T	7	8029.0	8.99
3	3996	igvitro	C	17	63.0	4.14	3	4057	cona	T	10	4498.0	8.41
3	3996	igvitro	C	21	93.0	4.53	3	4057	cona	T	14	7717.0	8.95
3	3996	il1serum	C	3	13.4	2.60	3	4057	cona	T	17	5966.0	8.69
3	3996	il1serum	C	7	36.3	3.59	3	4057	cona	T	21	3057.0	8.03
3	3996	il1serum	C	10	23.2	3.15	3	4057	cortisol	T	3	2.8	1.01
3	3996	il1serum	C	14	37.5	3.62	3	4057	cortisol	T	7	4.7	1.54
3	3996	il1serum	C	17	20.0	3.00	3	4057	cortisol	T	10	3.1	1.12
3	3996	il1serum	C	21	36.9	3.61	3	4057	cortisol	T	14	4.7	1.55
3	3996	il1vitro	C	3	337.0	5.82	3	4057	cortisol	T	17	1.8	0.56
3	3996	il1vitro	C	7	338.7	5.82	3	4057	cortisol	T	21	3.7	1.29
3	3996	il1vitro	C	10	358.9	5.88	3	4057	igaserum	T	3	0.9	-0.11
3	3996	il1vitro	C	14	315.3	5.75	3	4057	igaserum	T	7	0.6	-0.54
3	3996	il1vitro	C	17	320.1	5.77	3	4057	igaserum	T	10	0.6	-0.49
3	3996	il1vitro	C	21	312.7	5.75	3	4057	igaserum	T	14	0.9	-0.16
3	3996	il2serum	C	3	11.2	2.41	3	4057	igaserum	T	17	0.8	-0.27
3	3996	il2serum	C	7	10.1	2.32	3	4057	igaserum	T	21	0.7	-0.34
3	3996	il2serum	C	10	11.5	2.44	3	4057	iggserum	T	3	12.6	2.53
3	3996	il2serum	C	14	10.1	2.31	3	4057	iggserum	T	7	12.2	2.50
3	3996	il2serum	C	17	12.2	2.50	3	4057	iggserum	T	10	12.2	2.50
3	3996	il2serum	C	21	12.4	2.52	3	4057	iggserum	T	14	12.0	2.48
3	3996	il2vitro	C	3	73.4	4.30	3	4057	iggserum	T	17	12.1	2.49
3	3996	il2vitro	C	7	116.0	4.75	3	4057	iggserum	T	21	12.6	2.53
3	3996	il2vitro	C	10	73.4	4.30	3	4057	igvitro	T	3	59.0	4.08
3	3996	il2vitro	C	14	73.7	4.30	3	4057	igvitro	T	7	66.0	4.19
3	3996	il2vitro	C	17	75.2	4.32	3	4057	igvitro	T	10	37.0	3.61

3	4057	igvitro	T	14	70.0	4.25	3	4105	cona	C	7	24520.0	10.11
3	4057	igvitro	T	17	53.0	3.97	3	4105	cona	C	10	13349.0	9.50
3	4057	igvitro	T	21	56.0	4.03	3	4105	cona	C	14	17456.0	9.77
3	4057	il1serum	T	3	210.9	5.35	3	4105	cona	C	17	9812.0	9.19
3	4057	il1serum	T	7	227.4	5.43	3	4105	cona	C	21	8614.0	9.06
3	4057	il1serum	T	10	204.9	5.32	3	4105	cortisol	C	3	5.8	1.75
3	4057	il1serum	T	14	184.9	5.22	3	4105	cortisol	C	7	5.1	1.63
3	4057	il1serum	T	17	210.7	5.35	3	4105	cortisol	C	10	4.5	1.49
3	4057	il1serum	T	21	150.2	5.01	3	4105	cortisol	C	14	2.1	0.74
3	4057	il1vitro	T	3	296.2	5.69	3	4105	cortisol	C	17	2.0	0.69
3	4057	il1vitro	T	7	298.7	5.70	3	4105	cortisol	C	21	4.2	1.44
3	4057	il1vitro	T	10	323.2	5.78	3	4105	igaserum	C	3	0.3	-1.14
3	4057	il1vitro	T	14	352.9	5.87	3	4105	igaserum	C	7	0.6	-0.54
3	4057	il1vitro	T	17	315.8	5.76	3	4105	igaserum	C	10	0.5	-0.73
3	4057	il1vitro	T	21	347.0	5.85	3	4105	igaserum	C	14	0.3	-1.27
3	4057	il2serum	T	3	7.5	2.01	3	4105	igaserum	C	17	0.3	-1.24
3	4057	il2serum	T	7	7.5	2.01	3	4105	igaserum	C	21	0.3	-1.11
3	4057	il2serum	T	10	7.5	2.02	3	4105	iggserum	C	3	10.5	2.35
3	4057	il2serum	T	14	7.6	2.02	3	4105	iggserum	C	7	10.9	2.39
3	4057	il2serum	T	17	7.5	2.01	3	4105	iggserum	C	10	10.6	2.36
3	4057	il2serum	T	21	7.6	2.03	3	4105	iggserum	C	14	10.5	2.35
3	4057	il2vitro	T	3	73.5	4.30	3	4105	iggserum	C	17	10.7	2.37
3	4057	il2vitro	T	7	73.5	4.30	3	4105	iggserum	C	21	10.9	2.39
3	4057	il2vitro	T	10	73.5	4.30	3	4105	igvitro	C	3	19.0	2.94
3	4057	il2vitro	T	14	153.2	5.03	3	4105	igvitro	C	7	20.0	3.00
3	4057	il2vitro	T	17	73.2	4.29	3	4105	igvitro	C	10	24.0	3.18
3	4057	il2vitro	T	21	74.4	4.31	3	4105	igvitro	C	14	16.0	2.77
3	4057	phg	T	3	3115.0	8.04	3	4105	igvitro	C	17	20.0	3.00
3	4057	phg	T	7	11443.0	9.35	3	4105	igvitro	C	21	21.0	3.04
3	4057	phg	T	10	11999.0	9.39	3	4105	il1serum	C	3	111.1	4.71
3	4057	phg	T	14	11104.0	9.32	3	4105	il1serum	C	7	225.1	5.42
3	4057	phg	T	17	11258.0	9.33	3	4105	il1serum	C	10	169.3	5.13
3	4057	phg	T	21	7217.0	8.88	3	4105	il1serum	C	14	199.5	5.30
3	4057	pwm	T	3	5851.0	8.67	3	4105	il1serum	C	17	179.6	5.19
3	4057	pwm	T	7	24149.0	10.09	3	4105	il1serum	C	21	215.4	5.37
3	4057	pwm	T	10	21529.0	9.98	3	4105	il1vitro	C	3	300.1	5.70
3	4057	pwm	T	14	18700.0	9.84	3	4105	il1vitro	C	7	293.2	5.68
3	4057	pwm	T	17	15789.0	9.67	3	4105	il1vitro	C	10	313.4	5.75
3	4057	pwm	T	21	13945.0	9.54	3	4105	il1vitro	C	14	298.4	5.70
3	4057	staph	T	3	2328.0	7.75	3	4105	il1vitro	C	17	309.2	5.73
3	4057	staph	T	7	6572.0	8.79	3	4105	il1vitro	C	21	288.1	5.66
3	4057	staph	T	10	5406.0	8.60	3	4105	il2serum	C	3	7.5	2.02
3	4057	staph	T	14	3318.0	8.11	3	4105	il2serum	C	7	7.5	2.01
3	4057	staph	T	17	4421.0	8.39	3	4105	il2serum	C	10	7.5	2.01
3	4057	staph	T	21	743.0	6.61	3	4105	il2serum	C	14	7.8	2.05
3	4105	chem	C	3	5469.0	8.61	3	4105	il2serum	C	17	7.7	2.04
3	4105	chem	C	7	6539.0	8.79	3	4105	il2serum	C	21	7.5	2.02
3	4105	chem	C	10	3925.0	8.28	3	4105	il2vitro	C	3	114.9	4.74
3	4105	chem	C	14	6599.0	8.79	3	4105	il2vitro	C	7	99.1	4.60
3	4105	chem	C	17	2249.0	7.72	3	4105	il2vitro	C	10	114.6	4.74
3	4105	chem	C	21	3096.0	8.04	3	4105	il2vitro	C	14	125.1	4.83
3	4105	cona	C	3	1050.0	6.96	3	4105	il2vitro	C	17	131.2	4.88

3	4105	il2vitro	C	21	141.4	4.95	3	4157	igvitro	T	14	105.0	4.65
3	4105	phg	C	3	2460.0	7.81	3	4157	igvitro	T	17	116.0	4.75
3	4105	phg	C	7	33897.0	10.43	3	4157	igvitro	T	21	96.0	4.56
3	4105	phg	C	10	22171.0	10.01	3	4157	il1serum	T	3	14.4	2.67
3	4105	phg	C	14	19506.0	9.88	3	4157	il1serum	T	7	31.4	3.45
3	4105	phg	C	17	20745.0	9.94	3	4157	il1serum	T	10	39.4	3.67
3	4105	phg	C	21	21513.0	9.98	3	4157	il1serum	T	14	25.0	3.22
3	4105	pwm	C	3	4267.0	8.36	3	4157	il1serum	T	17	17.1	2.84
3	4105	pwm	C	7	54194.0	10.90	3	4157	il1serum	T	21	31.2	3.44
3	4105	pwm	C	10	26316.0	10.18	3	4157	il1vitro	T	3	317.7	5.76
3	4105	pwm	C	14	31651.0	10.36	3	4157	il1vitro	T	7	304.6	5.72
3	4105	pwm	C	17	16325.0	9.70	3	4157	il1vitro	T	10	301.6	5.71
3	4105	pwm	C	21	28192.0	10.25	3	4157	il1vitro	T	14	303.3	5.71
3	4105	staph	C	3	1085.0	6.99	3	4157	il1vitro	T	17	281.4	5.64
3	4105	staph	C	7	12068.0	9.40	3	4157	il1vitro	T	21	292.9	5.68
3	4105	staph	C	10	5168.0	8.55	3	4157	il2serum	T	3	11.5	2.44
3	4105	staph	C	14	4794.0	8.48	3	4157	il2serum	T	7	10.5	2.35
3	4105	staph	C	17	6114.0	8.72	3	4157	il2serum	T	10	8.3	2.11
3	4105	staph	C	21	5743.0	8.66	3	4157	il2serum	T	14	9.7	2.27
3	4157	chem	T	3	3598.0	8.19	3	4157	il2serum	T	17	10.2	2.33
3	4157	chem	T	7	7243.0	8.89	3	4157	il2serum	T	21	10.4	2.35
3	4157	chem	T	10	7215.0	8.88	3	4157	il2vitro	T	3	126.9	4.84
3	4157	chem	T	14	9372.0	9.15	3	4157	il2vitro	T	7	157.9	5.06
3	4157	chem	T	17	7220.0	8.88	3	4157	il2vitro	T	10	81.4	4.40
3	4157	chem	T	21	10340.0	9.24	3	4157	il2vitro	T	14	86.4	4.46
3	4157	cona	T	3	1601.0	7.38	3	4157	il2vitro	T	17	73.7	4.30
3	4157	cona	T	7	19465.0	9.88	3	4157	il2vitro	T	21	118.9	4.78
3	4157	cona	T	10	12742.0	9.45	3	4157	phg	T	3	3427.0	8.14
3	4157	cona	T	14	18728.0	9.84	3	4157	phg	T	7	18164.0	9.81
3	4157	cona	T	17	11055.0	9.31	3	4157	phg	T	10	13128.0	9.48
3	4157	cona	T	21	20927.0	9.95	3	4157	phg	T	14	16099.0	9.69
3	4157	cortisol	T	3	2.0	0.69	3	4157	phg	T	17	19998.0	9.90
3	4157	cortisol	T	7	4.1	1.41	3	4157	phg	T	21	19724.0	9.89
3	4157	cortisol	T	10	7.0	1.94	3	4157	pwm	T	3	4294.0	8.36
3	4157	cortisol	T	14	1.5	0.37	3	4157	pwm	T	7	19896.0	9.90
3	4157	cortisol	T	17	7.1	1.96	3	4157	pwm	T	10	13941.0	9.54
3	4157	cortisol	T	21	4.7	1.54	3	4157	pwm	T	14	16689.0	9.72
3	4157	igaserum	T	3	0.5	-0.67	3	4157	pwm	T	17	26086.0	10.17
3	4157	igaserum	T	7	0.3	-1.20	3	4157	pwm	T	21	22043.0	10.00
3	4157	igaserum	T	10	0.4	-0.84	3	4157	staph	T	3	2613.0	7.87
3	4157	igaserum	T	14	0.4	-0.82	3	4157	staph	T	7	8580.0	9.06
3	4157	igaserum	T	17	0.4	-0.92	3	4157	staph	T	10	4844.0	8.49
3	4157	igaserum	T	21	0.4	-0.89	3	4157	staph	T	14	3730.0	8.22
3	4157	iggserum	T	3	10.0	2.30	3	4157	staph	T	17	8448.0	9.04
3	4157	iggserum	T	7	10.5	2.35	3	4157	staph	T	21	7058.0	8.86
3	4157	iggserum	T	10	10.2	2.32	3	4279	chem	T	3	4147.0	8.33
3	4157	iggserum	T	14	10.1	2.31	3	4279	chem	T	7	5820.0	8.67
3	4157	iggserum	T	17	11.3	2.42	3	4279	chem	T	10	5569.0	8.62
3	4157	iggserum	T	21	12.5	2.53	3	4279	chem	T	14	6706.0	8.81
3	4157	igvitro	T	3	119.0	4.78	3	4279	chem	T	17	2614.0	7.87
3	4157	igvitro	T	7	112.0	4.72	3	4279	chem	T	21	14498.0	9.58
3	4157	igvitro	T	10	108.0	4.68	3	4279	cona	T	3	2648.0	7.88



3	4279	cona	T	7	25365.0	10.14	3	4279	il2vitro	T	21	94.5	4.55
3	4279	cona	T	10	25865.0	10.16	3	4279	phg	T	3	5678.0	8.64
3	4279	cona	T	14	13876.0	9.54	3	4279	phg	T	7	20131.0	9.91
3	4279	cona	T	17	10780.0	9.29	3	4279	phg	T	10	19823.0	9.89
3	4279	cona	T	21	17308.0	9.76	3	4279	phg	T	14	15423.0	9.64
3	4279	cortisol	T	3	3.3	1.19	3	4279	phg	T	17	15878.0	9.67
3	4279	cortisol	T	7	6.1	1.81	3	4279	phg	T	21	19196.0	9.86
3	4279	cortisol	T	10	6.3	1.84	3	4279	pwm	T	3	6616.0	8.80
3	4279	cortisol	T	14	3.2	1.15	3	4279	pwm	T	7	41260.0	10.63
3	4279	cortisol	T	17	6.9	1.93	3	4279	pwm	T	10	29813.0	10.30
3	4279	cortisol	T	21	2.5	0.90	3	4279	pwm	T	14	27375.0	10.22
3	4279	igaserum	T	3	0.3	-1.11	3	4279	pwm	T	17	23734.0	10.07
3	4279	igaserum	T	7	0.4	-0.97	3	4279	pwm	T	21	32430.0	10.39
3	4279	igaserum	T	10	0.4	-0.82	3	4279	staph	T	3	4174.0	8.34
3	4279	igaserum	T	14	0.3	-1.24	3	4279	staph	T	7	16125.0	9.69
3	4279	igaserum	T	17	0.3	-1.17	3	4279	staph	T	10	9448.0	9.15
3	4279	igaserum	T	21	0.4	-1.02	3	4279	staph	T	14	8107.0	9.00
3	4279	iggserum	T	3	11.3	2.42	3	4279	staph	T	17	9317.0	9.14
3	4279	iggserum	T	7	11.5	2.44	3	4279	staph	T	21	12550.0	9.44
3	4279	iggserum	T	10	11.0	2.40	3	4286	chem	C	3	19272.0	9.87
3	4279	iggserum	T	14	11.2	2.42	3	4286	chem	C	7	19272.0	9.87
3	4279	iggserum	T	17	12.8	2.55	3	4286	chem	C	10	8249.0	9.02
3	4279	iggserum	T	21	10.5	2.35	3	4286	chem	C	14	4962.0	8.51
3	4279	igvitro	T	3	126.0	4.84	3	4286	chem	C	17	6974.0	8.85
3	4279	igvitro	T	7	106.0	4.66	3	4286	chem	C	21	8309.0	9.03
3	4279	igvitro	T	10	152.0	5.02	3	4286	cona	C	3	5786.0	8.66
3	4279	igvitro	T	14	113.0	4.73	3	4286	cona	C	7	1940.0	7.57
3	4279	igvitro	T	17	127.0	4.84	3	4286	cona	C	10	25066.0	10.13
3	4279	igvitro	T	21	125.0	4.83	3	4286	cona	C	14	24124.0	10.09
3	4279	il1serum	T	3	6.1	1.81	3	4286	cona	C	17	11810.0	9.38
3	4279	il1serum	T	7	10.0	2.30	3	4286	cona	C	21	12060.0	9.40
3	4279	il1serum	T	10	11.3	2.43	3	4286	cortisol	C	3	1.9	0.64
3	4279	il1serum	T	14	6.8	1.92	3	4286	cortisol	C	7	33.2	3.50
3	4279	il1serum	T	17	28.2	3.34	3	4286	cortisol	C	10	4.2	1.42
3	4279	il1serum	T	21	6.2	1.82	3	4286	cortisol	C	14	11.2	2.42
3	4279	il1vitro	T	3	334.9	5.81	3	4286	cortisol	C	17	8.7	2.16
3	4279	il1vitro	T	7	329.9	5.80	3	4286	cortisol	C	21	2.8	1.03
3	4279	il1vitro	T	10	314.9	5.75	3	4286	igaserum	C	3	0.3	-1.31
3	4279	il1vitro	T	14	331.1	5.80	3	4286	igaserum	C	7	0.3	-1.35
3	4279	il1vitro	T	17	320.0	5.77	3	4286	igaserum	C	10	0.3	-1.24
3	4279	il1vitro	T	21	301.5	5.71	3	4286	igaserum	C	14	0.3	-1.24
3	4279	il2serum	T	3	13.0	2.57	3	4286	igaserum	C	17	0.2	-1.47
3	4279	il2serum	T	7	16.5	2.80	3	4286	igaserum	C	21	0.3	-1.24
3	4279	il2serum	T	10	16.2	2.79	3	4286	iggserum	C	3	7.9	2.07
3	4279	il2serum	T	14	25.5	3.24	3	4286	iggserum	C	7	7.1	1.96
3	4279	il2serum	T	17	8.5	2.13	3	4286	iggserum	C	10	7.2	1.97
3	4279	il2serum	T	21	12.9	2.56	3	4286	iggserum	C	14	7.3	1.99
3	4279	il2vitro	T	3	115.3	4.75	3	4286	iggserum	C	17	7.5	2.01
3	4279	il2vitro	T	7	74.6	4.31	3	4286	iggserum	C	21	7.4	2.00
3	4279	il2vitro	T	10	82.1	4.41	3	4286	igvitro	C	3	152.0	5.02
3	4279	il2vitro	T	14	256.0	5.55	3	4286	igvitro	C	7	167.0	5.12
3	4279	il2vitro	T	17	99.2	4.60	3	4286	igvitro	C	10	128.0	4.85



3	4286	igvitro	C	14	129.0	4.86
3	4286	igvitro	C	17	138.0	4.93
3	4286	igvitro	C	21	125.0	4.83
3	4286	il1serum	C	3	159.3	5.07
3	4286	il1serum	C	7	7.5	2.01
3	4286	il1serum	C	10	202.7	5.31
3	4286	il1serum	C	14	64.0	4.16
3	4286	il1serum	C	17	27.0	3.30
3	4286	il1serum	C	21	12.7	2.54
3	4286	il1vitro	C	3	482.0	6.18
3	4286	il1vitro	C	7	304.0	5.72
3	4286	il1vitro	C	10	286.1	5.66
3	4286	il1vitro	C	14	289.4	5.67
3	4286	il1vitro	C	17	290.6	5.67
3	4286	il1vitro	C	21	273.9	5.61
3	4286	il2serum	C	3	7.5	2.01
3	4286	il2serum	C	7	9.3	2.23
3	4286	il2serum	C	10	7.5	2.01
3	4286	il2serum	C	14	7.5	2.02
3	4286	il2serum	C	17	8.1	2.10
3	4286	il2serum	C	21	9.4	2.24
3	4286	il2vitro	C	3	73.5	4.30
3	4286	il2vitro	C	7	93.1	4.53
3	4286	il2vitro	C	10	109.1	4.69
3	4286	il2vitro	C	14	76.9	4.34
3	4286	il2vitro	C	17	121.4	4.80
3	4286	il2vitro	C	21	113.8	4.73
3	4286	phg	C	3	7540.0	8.93
3	4286	phg	C	7	4822.0	8.48
3	4286	phg	C	10	23118.0	10.05
3	4286	phg	C	14	18618.0	9.83
3	4286	phg	C	17	15679.0	9.66
3	4286	phg	C	21	36809.0	10.51
3	4286	pwm	C	3	7768.0	8.96
3	4286	pwm	C	7	9267.0	9.13
3	4286	pwm	C	10	24232.0	10.10
3	4286	pwm	C	14	26390.0	10.18
3	4286	pwm	C	17	23114.0	10.05
3	4286	pwm	C	21	34399.0	10.45
3	4286	staph	C	3	5475.0	8.61
3	4286	staph	C	7	1565.0	7.36
3	4286	staph	C	10	16547.0	9.71
3	4286	staph	C	14	9117.0	9.12
3	4286	staph	C	17	11564.0	9.36
3	4286	staph	C	21	12494.0	9.43

## **APPENDIX B**



GMC5F	HexoMini	MSF70	IGFRB	IGFIR	IG61VC	IG62HC	ipi	IG4VC	IL1B	IL1B	IL1A	IL1B	IL2Rec	IL3	IL4	IL6	IL8	IL10	IL12B	IL13	IL15	IL16	mb1	mb2
470.63	1299.25	783.08	514.47	531.14	1042.33	1028.61	1139.3	748.81	969.02	1016.63	985.03	830.28	777.8	586.66	1155.63	1022.61	826.11	718.85	691.43	560.09	761.61	1112.71	753.14	899.42
474.72	1580.91	1206.58	434	1000.54	1528.61	1530.48	1205.9	1751.81	1103.91	952.2	845.81	1173.67	855.38	982.39	796.18	661.33	1133.63	1035.4	697.48	1056.53	720.83	954.44	538.25	615.15
676.2	1407.24	1751.11	370	443.69	1325.21	1207.64	623.46	468.7	945.21	1138.37	443.83	782.28	1018.13	985.29	920.03	1280.36	1133.07	863.8	815.32	627.38	827.46	446.63	618.33	852.93
597.51	1173.87	627.86	795.15	849.17	1121.7	1207.64	877.43	438.03	733.71	985.08	322.86	1233.5	1479.39	784.02	683.73	1031.66	1788.77	1077.34	333.42	981.13	958.33	384.33	1012.35	817.54
587.56	1267.3	1279.5	930.05	637.74	1295.39	1254.62	620.09	931.95	970.01	1037.83	708.81	1043.64	892.24	784.87	879.2	1705.76	1016.89	1130.28	901.8	595.3	1168.12	691.61	1298.59	1308.06
1105.21	1883.16	1389.3	535.55	333.55	2131.83	1381.45	768.37	1021.74	880.32	931.51	933.81	933.81	891.64	891.64	553.83	985.67	1094.28	894.89	331.48	957.89	911.86	784.11	1006.47	1084.66
598.01	1364.44	2243.11	832.89	382.69	2309.68	624.34	1184.5	928.65	656.34	642.27	762.86	571.27	485.08	809.17	796.27	1481.5	1310.93	1024.28	642.2	864.05	632.84	1060.18	922.34	855.13
359.37	1300.47	286.94	286.94	1041.16	1314.59	1833.09	1314.59	928.65	832.64	640.86	570.07	1103.04	798.86	1085.39	815.8	892.26	11127	771.23	306.25	1183.89	480.89	442.54	1261.31	1043.9
734.69	1782.07	2629.99	824.9	424.8	1318.24	674.86	1521.67	981.79	944.86	1237.34	746.53	985.53	585.38	895.56	1109.29	850.27	726.76	1220.95	388.06	593.67	803.24	655	946.3	935.32
342.23	1037.58	324.4	424.8	341.36	1885.48	2274.34	1145.97	463.29	944.86	1237.34	746.53	985.53	585.38	895.56	1109.29	850.27	726.76	1220.95	388.06	593.67	803.24	655	946.3	935.32
1041.75	1976.06	1094.18	687.13	519.1	1510.19	1859.84	644.24	492.03	1666.27	1459.98	946	542.56	1268.53	695.5	930.43	411.63	950.31	405.78	312.32	723.84	646.13	706.53	520.04	665.49
985.44	1300.75	701.02	396.31	334.1	1749.9	1101.63	529.63	325.97	1565.26	2011.83	771.61	321.13	876.58	691.53	854.78	1318.11	851.82	539.58	802.07	541.18	910.23	724.04	841.87	723.33
455.49	1794.97	1915.56	637.66	695.84	1517.52	2403.09	330.64	409.24	1774.36	1895.11	588.5	781.53	762.03	1272.07	1110.33	1077.38	843.41	641.9	346.92	894.03	955.03	802.05	1203.12	840.12
489.99	1250.28	1918.88	228.95	521.19	1909.43	952.65	378.87	419.85	1000.76	1497.17	544.87	376.64	906.88	855.89	794.86	951.12	1001.11	349.89	358.87	788.21	739.11	970.25	981.08	732.7
824.95	1859.24	2936.55	288.05	658.4	2106.47	1558.98	649.18	536.33	1337.37	1868.72	522.3	373.54	1540.23	1228.67	1228.67	620.99	1153.78	610.41	468.73	1245.35	657.59	946.31	1516.15	1076.51
862.86	1389.19	2082.15	553.06	660.65	2403.79	1020.61	601.63	523.6	1703.69	1498.4	879.19	586.47	902.35	1235.91	1274.22	920.66	1122.64	649.34	273.82	770.66	779.3	963.95	1389.19	1095.06
733.18	1605.52	2992.97	609.45	874.92	1901.55	1355.79	382.12	273.62	1436.88	1702.46	914.02	470.72	1022.39	1012.66	1322.99	656.08	825.78	640.21	338.92	983.79	1230.04	1330.04	1089.59	1174.59
551.43	1118.8	1944.83	440.83	442.23	1545.86	1125.04	303.71	518.75	1188.26	1082.42	793.53	384.61	828.79	722.67	1203.37	1451.97	814.82	430.85	246.45	590.59	872.24	458.86	1099.38	907.06
711.74	1208.85	1131.08	767.54	342.21	1083.15	1775.84	284.81	397.9	1169.19	1857.38	508.34	431.38	832.64	809.17	983.27	1103.37	809.85	345.48	413.86	437.44	947.01	778.75	774.77	1006.11
660.95	1210.3	2283.6	910.92	650.74	1796.89	2529.44	309.31	382.51	1541.92	1668.89	925.19	321.97	1042.08	1094.69	852.45	1211.7	995.57	450.66	521.93	445.5	716.167	1005.22	862.38	870.98
588.633	1421.631	1385.581	603.577	647.426	1606.034	1334.638	1014.079	867.185	869.069	927.548	617.114	952.451	825.798	899.956	867.63	1138.782	1013.254	1008.951	556.819	640.78	716.167	698.848	1041.199	938.138
729.378	1472.346	1899.682	571.99	589.938	1750.475	1566.791	439.395	427.981	1438.378	1651.137	734.385	459.055	998.39	945.18	1028.459	872.798	937.81	506.81	487.889	886.673	850.369	858.8	1025.157	908.995
1.239105	1.035674	1.371181	0.84924	0.911205	1.089936	1.175668	0.433295	0.493529	1.655079	1.780109	1.189999	0.481972	1.209	1.050251	1.185366	0.854244	0.925543	0.502116	0.732534	0.816709	1.187389	1.22688	0.984593	0.968935
0.146104	0.697135	0.118799	0.774904	0.585757	0.449073	0.343082	0.218205	0.003211	0.748206	2.556206	0.170283	4.988206	0.130407	0.718312	0.11164	0.276408	0.289868	2.938209	0.121306	0.171109	0.119141	0.167228	0.896894	0.717653

9.





## **APPENDIX C**

The ANOVA Procedure

Dependent Variable: dif2

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.76243021	0.15248604	0.65	0.6675
Error	18	4.24364375	0.23575799		
Corrected Total	23	5.00607396			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.152301	-427.6396	0.485549	-0.113542

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.59063438	0.59063438	2.51	0.1309
TRIAL	2	0.16631458	0.08315729	0.35	0.7075
TRT*TRIAL	2	0.00548125	0.00274062	0.01	0.9884



*The ANOVA Procedure**Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.23275000	0.04655000	2.08	0.1153
Error	18	0.40275000	0.02237500		
Corrected Total	23	0.63550000			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.366247	-157.4555	0.149583	-0.095000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.08166667	0.08166667	3.65	0.0721
TRIAL	2	0.13457500	0.06728750	3.01	0.0747
TRT*TRIAL	2	0.01650833	0.00825417	0.37	0.6966

*The ANOVA Procedure*

*Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.04290833	0.00858167	0.83	0.5449
Error	18	0.18608750	0.01033819		
Corrected Total	23	0.22899583			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.187376	-294.0055	0.101677	-0.034583

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.01926667	0.01926667	1.86	0.1890
TRIAL	2	0.01213333	0.00606667	0.59	0.5664
TRT*TRIAL	2	0.01150833	0.00575417	0.56	0.5827

The ANOVA Procedure

Dependent Variable: dif2

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	4.38062083	0.87612417	5.81	0.0023
Error	18	2.71397500	0.15077639		
Corrected Total	23	7.09459583			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.617459	194.5550	0.388299	0.199583

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	1.67481667	1.67481667	11.11	0.0037
TRIAL	2	1.92668958	0.96334479	6.39	0.0080
TRT*TRIAL	2	0.77911458	0.38955729	2.58	0.1032

*The ANOVA Procedure**Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.16418333	0.03283667	0.55	0.7336
Error	18	1.06705000	0.05928056		
Corrected Total	23	1.23123333			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.133349	-1007.487	0.243476	-0.024167

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.00240000	0.00240000	0.04	0.8428
TRIAL	2	0.06283958	0.03141979	0.53	0.5975
TRT*TRIAL	2	0.09894375	0.04947188	0.83	0.4502

The ANOVA Procedure

Dependent Variable: dif2

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.12460521	0.02492104	0.12	0.9862
Error	18	3.74219375	0.20789965		
Corrected Total	23	3.86679896			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.032224	-292.2041	0.455960	-0.156042

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.00585937	0.00585937	0.03	0.8685
TRIAL	2	0.11497708	0.05748854	0.28	0.7616
TRT*TRIAL	2	0.00376875	0.00188438	0.01	0.9910

*The ANOVA Procedure**Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.08860833	0.01772167	1.50	0.2395
Error	18	0.21288750	0.01182708		
Corrected Total	23	0.30149583			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.293896	-293.2649	0.108752	-0.037083

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.00081667	0.00081667	0.07	0.7957
TRIAL	2	0.08716458	0.04358229	3.68	0.0456
TRT*TRIAL	2	0.00062708	0.00031354	0.03	0.9739

*The ANOVA Procedure**Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	4.07693333	0.81538667	9.08	0.0002
Error	18	1.61651250	0.08980625		
Corrected Total	23	5.69344583			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.716075	57.95524	0.299677	0.517083

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.18550417	0.18550417	2.07	0.1678
TRIAL	2	3.50926458	1.75463229	19.54	<.0001
TRT*TRIAL	2	0.38216458	0.19108229	2.13	0.1481

*The ANOVA Procedure**Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	4.03709271	0.80741854	4.01	0.0128
Error	18	3.62810625	0.20156146		
Corrected Total	23	7.66519896			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.526678	115.4252	0.448956	0.388958

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.90675938	0.90675938	4.50	0.0481
TRIAL	2	2.49235833	1.24617917	6.18	0.0090
TRT*TRIAL	2	0.63797500	0.31898750	1.58	0.2327



*The ANOVA Procedure**Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	8.10429688	1.62085938	7.23	0.0007
Error	18	4.03351875	0.22408438		
Corrected Total	23	12.13781563			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.667690	160.8070	0.473376	0.294375

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.88358438	0.88358438	3.94	0.0625
TRIAL	2	5.09948125	2.54974063	11.38	0.0006
TRT*TRIAL	2	2.12123125	1.06061562	4.73	0.0223

*The ANOVA Procedure**Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	5.28932083	1.05786417	13.41	<.0001
Error	18	1.41952500	0.07886250		
Corrected Total	23	6.70884583			

R-Square	Coeff Var	Root MSE	dif2/Mean
0.788410	38.31604	0.280825	0.732917

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.06100417	0.06100417	0.77	0.3907
TRIAL	2	4.88440833	2.44220417	30.97	<.0001
TRT*TRIAL	2	0.34390833	0.17195417	2.18	0.1419

The ANOVA Procedure

Dependent Variable: dif2

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	25.32925000	5.06585000	19.64	<.0001
Error	18	4.64296250	0.25794236		
Corrected Total	23	29.97221250			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.845091	58.62976	0.507880	0.866250

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.67335000	0.67335000	2.61	0.1236
TRIAL	2	24.63144375	12.31572188	47.75	<.0001
TRT*TRIAL	2	0.02445625	0.01222813	0.05	0.9538

*The ANOVA Procedure**Dependent Variable: dif2*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1.86385000	0.37277000	1.28	0.3141
Error	18	5.22850000	0.29047222		
Corrected Total	23	7.09235000			

R-Square	Coeff Var	Root MSE	dif2 Mean
0.262797	-266.1505	0.538955	-0.202500

Source	DF	Anova SS	Mean Square	F Value	Pr > F
TRT	1	0.00540000	0.00540000	0.02	0.8931
TRIAL	2	0.36926875	0.18463437	0.64	0.5411
TRT*TRIAL	2	1.48918125	0.74459063	2.56	0.1048

# **APPENDIX D**

## Impact of Low AC Currents on Immune Function of Dairy Cattle

Lewis G. Sheffield

### ABSTRACT

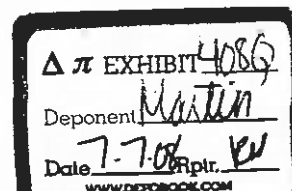
Dairy cows were exposed to low (1 mA) AC currents with waveforms designed to match those found on commercial farms. After 3 weeks exposure, most measures of gene expression in leukocytes (immune system cells) were unaffected. However, four possible changes were noted: 1) a slight increase in interleukin 1 mRNA 2) a moderate decrease in interleukin 2 and 3) interleukin 10 mRNA and a decrease in IgA related mRNAs. These changes were modest compared with those usually associated with infection or inflammation processes. Whether they could have longer term consequences is not entirely clear, particularly because only a small subset of immune system regulators were affected. These results suggest that electrical effects on disease processes are likely to be modest, probably more long-term and likely to be very difficult to detect in small samples.

### INTRODUCTION

Behavioral responses of dairy cows to electrical current have been widely reported and reviewed (Aneshasley et al., 1992; Henke-Drenkard et al., 1985; Lefcourt, 1982; Lefcourt et al., 1985; Lefcourt et al., 1986; Reinemann et al., 1999). Alterations in animal behavior have been reported in response to as little as 2 mA of 60 Hz AC current, although sensitivity appears to be highly variable among animals and among exposure pathways.

Endocrine changes in response to current has also been examined. Serum concentrations of prolactin, glucocorticoids and norepinephrine were unaffected by electrical exposure (Lefcourt, 1982) although 2 cows with exceptionally strong behavioral responses exhibited increased epinephrine concentrations. Although milking-induced prolactin release is not altered in cows exposed to current during milking, milking-induced cortisol release may be altered in cows exposed to electrical currents at milking (Aneshasley et al., 1992; Henke-Drenkard et al., 1985). In addition, milking-induced oxytocin release has been reported to be delayed in cows exposed to electric currents during milking, although milk yield, milk composition and milking time were unaffected (Henke-Drenkard et al., 1985; Lefcourt et al., 1986).

Stress-induced immune dysfunction has been widely reported (Dorshkind and Horseman, 2000; Sapolsky et al., 2000). In laboratory animals, electrical shock has been reported to suppress immune function (Kusnecov and Rabin, 1993; Weisse et al., 1990). Lay reports of stray voltage problems often include increased disease incidence. In a study of 40 cows (10 control and 30 exposed to various voltages) Gorewit et al. (1992a, b) failed to find an effect of electrical exposure on milk yield, mastitis, body weight or reproductive performance. In a field study of a single farm with 1-2 V waterline-to-cow voltage (estimated to give 3.6 - 4.9 mA current), Southwick et al. (1992) determined that the main source of on-farm voltage was the primary neutral wire. Isolation of the farm neutral from the primary neutral reduced on-farm voltage exposure to a negligible level. However, in periods when the farm was disconnected, they observed no difference in milk production, somatic cell count or water consumption compared to



periods when the farm was connected. In contrast, an epidemiological study of 15,725 Swedish Red and White and Swedish Friesian cows in 150 herds, 33 of which used electric cow trainers, determined that the use of electric cow trainers was correlated with increased risk of silent heat, clinical mastitis, ketosis and culling (Oltenacu et al., 1998). However, there have been no controlled studies on the impact of electrical exposure of dairy cows on immune function. Because immune function is likely to be a major determinant of animal health, the objective of this research was to determine if low electrical currents (just below the level commonly thought to cause behavioral reactions) alter immune function of dairy cattle.

In a previous study, we observed that electrical exposure of dairy cattle had minimal effect on most immune function measures, including chemiluminescence and lymphocyte blastogenesis. An increase in serum IL1 approached significance at  $P < 0.10$ , whereas a decrease in serum IL2 approached significance at  $P < 0.10$ . The only measurement to reach significance at  $P < 0.05$  was serum IgA concentration (lowered by electrical exposure).

## MATERIALS AND METHODS

### Animals

All procedures were approved by the CALS IACUC. Twenty multiparous lactating Holstein cows were used, as described in Table 1. Ten were assigned control treatment, and 10 to receive current of 1 mA. Other than current application, animals were housed and treated under the herd's standard operating procedures. They were housed in a stanchion barn, fed ad libitum, provided water ad libitum and milked twice daily.

Blood samples ~~was were~~ collected via the tail vein immediately prior to applying current and at the end of a three week exposure period. Milk samples were collected on the morning and evening of blood sample collection.

### Current Delivery

A delivery device was designed and produced by Gaskee Engineering. The device (Figure 1) uses battery power, and produces a defined waveform. The device can be programmed to deliver any current up to 20 mA, and any desired waveform. The waveform used is similar to 60 Hz, but includes harmonics as determined on commercial dairy farms (Phase I report by D. Allanbaughm). Battery life was determined to be approximately 36 hours. Batteries were changed daily. Two sets of rechargeable battery packs were prepared so that one was recharging while the other was in use.

A cloth holder was fabricated to hold the device and power supply and allow ready access to the battery for changing. This was attached to the cow with glue used to hold KMar heat detection pads in place. Electrodes were placed in the upper part of each leg. A patch of skin was washed, shaved of hair, washed again and dried. After drying, an EKG electrode was placed on the skin and the lead from the device attached. This was covered with a piece of vet-wrap, which was held in place with glue. A small fold was placed in the lead and held in place with a piece of vet wrap and glue. This fold was found to dramatically decrease strain on the attachment of the lead to the electrode and greatly improved reliability. Figure 2 shows a cow with the device in place.

Devices were programmed to deliver a waveform essentially identical to that found on commercial farms (Phase I report) at a level of 1 mA (0.5 mA/side). Current was applied for 3 weeks, and the integrity of leads and devices were checked twice daily.

### **DNA arrays**

The initial step in generating DNA arrays was to use display profiling to generate a series of 12,000 DNA fragments, resulting from 900 PCR reactions as previously described (Smuga-Otto et al., 2002). After quality control by PAGE and melting curve analysis, some 11,000 of these were determined to be useful. These were used in a preliminary screen consisting of pooled blood samples to identify possible candidate genes. In addition, genes of known importance in regulating immune function (particularly members of the interleukin family) were included. Furthermore, control genes not expected to change were included. Two of these, actin and GAPDH, were used to normalize expression data across blots. In addition, the arrays included non-bovine genes that were expected to give no signal (negative controls).

### **DNA array analysis**

Leukocytes were isolated from bovine blood as previously described (Lohuis et al., 1990). Briefly, blood was layered over an equal volume of Histopaque (Sigma Chemical Co., St. Louis, MO) and centrifuged at 600 g for 30 minutes at room temperature. The leukocyte layer was then washed 2 times with Hank's Balanced Salt Solution (HBSS) and cell counted with a hemocytometer. RNA was isolated from the cells using commercially available kits (Quiagen), reverse transcribed in the presence of <sup>32</sup>P-dCTP and hybridized to arrays. After washing, <sup>32</sup>P was detected using a phosphorimage analysis instrument (Packard) and spot intensity determined. Intensity of each spot was calculated as a ratio of intensity to the mean of actin and GAPDH intensity, and intensity of spots resulting from control and exposed cows compared.

## **RESULTS AND DISCUSSION**

Milk production was unaffected by current exposure ( $66.4 \pm 1.2$  vs  $65.9 \pm 0.9$  lbs/day in control and exposed, respectively). Behavior of the cows was not noticeably affected.

In the array analysis, the negative control genes were undetectable, as was expected. Of the genes analyzed in detail (Table 1) most were unaffected by current exposure. There was a tendency for IL1a and IL1b mRNA to increase slightly ( $P < 0.10$ ), but it did not reach significance at  $P < 0.05$ . However, IL2 mRNA was significantly decreased ( $P < 0.05$ ), as was IL10 mRNA. In addition, mRNA for the constant region of IgA heavy chain and the IgA secretory piece were decreased. These results reflect previous studies of serum interleukin and IgA levels, in which a marginal increase in serum IL1 was noted, and a decrease in IL2 and IgA. In the previous study, a valid assay for serum IL10 was not available, but the present study suggests that serum IL10 levels may decrease in response to current exposure.

Several major questions are raised by these results. Most measures were not affected, suggesting that those that were could be Type I errors, due to the large number of hypotheses tested. However, three of the variables were also identified in a previous study, suggesting the possibility that these could be real effects. The magnitude of effect was relatively small, compared to that often observed in the literature in response to major immune system challenges



(such as infections or bacterial toxins). However, the possibility exists that such small changes in immune function over long times could have important consequences for disease resistance, particularly when considered over long time periods. Thus, one question is the long term consequences of such changes on animal health. No controlled long-term studies of this type are available. An epidemiological study by Oltenacu et al., (1998) that found mastitis and reproductive problems were associated with the use of cow trainers. This could suggest impacts of electrical exposure, but other explanations are also possible, including that herds with such problems may be more likely to use cow trainers to solve them. Furthermore, the exposures from cow trainers is of much shorter duration and substantially higher intensity than used in the present study.

Interestingly, IL2 and IL10, which were decreased in this study, appear to be important regulators of IgA production. IgA is an important factor in mucosal immunity (such as respiratory surfaces, GI tract and the mammary gland). Specific examination of such mucosal responses would be an interesting follow-up.

Another question raised by these studies is the exact mechanism by which electrical exposures of this magnitude might affect gene expression. Very high exposures can alter membrane properties, including poration. Electrical exposures also have a variety of chemical effects, which could conceivably affect protein structure or other chemical messages in cells. However, these effects have been studied using very high exposures, with little data available at lower exposures. Whether lower exposures can alter membrane properties or protein structures sufficiently to induce a response is unclear.

In conclusion, these studies suggest that electrical impacts on immune function are of relatively small impact compared with infection and inflammation. Any effects observed appear to affect only a small subset of immune system regulators, compared with most disease processes, which affect a wider spectrum of regulators. As a result, impacts of electrical exposure on animal health and disease is likely to be difficult to detect reliably, particularly without examining large populations.

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Figure 2. Cow with device in place. NOTE: the cow trainers in the barn were turned off for this study to prevent any exposures other than from the device.

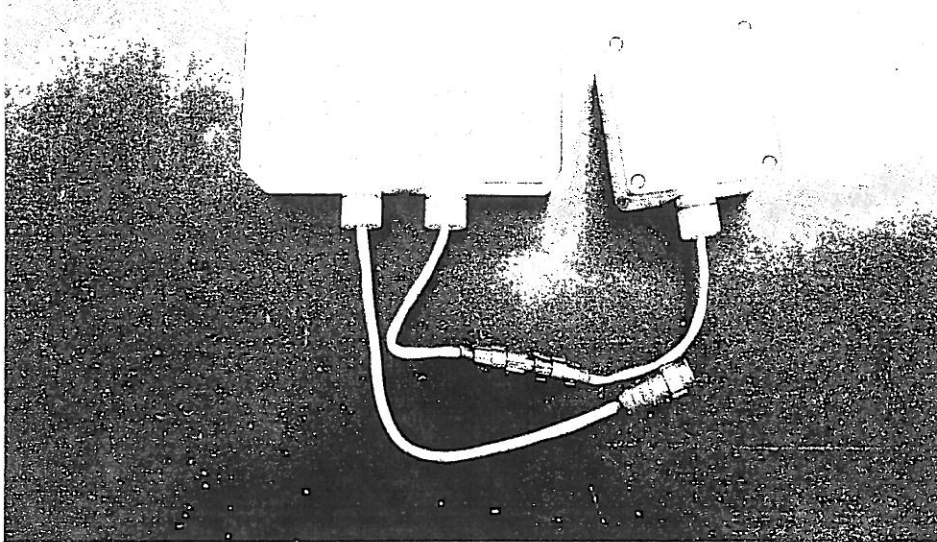


Figure 1. Device used to deliver electrical current. Control device is on left, battery pack on right. The wire from the left of the device is where electrodes are attached.

QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

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Table 1. Expression analysis of mRNA in bovine leukocytes. Fold = fold increase (>1) or decrease (<1) of current exposed relative to control. ND = Not detected. Control = control mRNA used for normalization. \* = P<0.10. \*\* = P<0.05.

Gene	Fold	Gene	Fold
ACK2	.92	Integrin b1	.99
Actin	Control	Integrin 2	.97
Adenylate Cyclase	1.03	Klebsella 16S	ND
ATP Synthase	1.14	Lactoperoxidase	1.32
c-fos	1.19	Leptin	1.01
c-jun	.91	mmp1	.98
Ca-ATPase	1.02	mmp3	1.00
Casein Kinase I	1.03	mmp9	1.11
Casein Kinase II	1.14	PLC (PL)	1.09
CD14	.97	PLCa	1.12
CD23	.89	PGD synthase	1.31
CD3	1.11	pGEM7	ND
CD8	.83	PGSH2	1.28
cdk1	.98	pim-1	.83
Cleavage PolyA	1.26	PKA beta catalytic	.92
CREB1	.93	PKA-C-alpha	.96
CREB2	1.16	PKA RII beta	.89
Cu/Zn SOD	1.31	PKC alpha	.91
dsemolein	.79	PKG1 alpha	1.09
FAS	1.12	PKG 1 beta	1.18
FASligand	1.21	R RAS GAP	1.12
Gap	ND	Rho kinase	1.39
GAPDH	Control	Rho GDI	1.34
Glutathione Peroxidase	1.32	STAT1	1.47
Glutathion Trans IV	1.18	STAT2	1.21
GM-CSF	1.24	STAT3	1.39
Hexokinase I	1.04	STAT4	1.03
HSP 70	1.38	STAT5a	1.41
IGF-I R Beta	.95	STAT5b	1.39
IGF-I Receptor	.91	Tau PK II	.94
IgG1 HC	1.09	TEK	.86
IgG2 HC	1.18	TGF beta1	.95

IgJ	.43**	TGF BP	.89
IgA HC	.49**	Tie 1	.91
IL1 a	1.66*	Tie 2	.94
IL1 b	1.78*	TIMP3	.99
IL1 antagonist	1.19	TNF alpha	1.19
IL2	.48**	TNF R	1.07
IL2 receptor	1.21	Tissue Plasminogen Activator	1.15
IL3	1.05	Urokinase	1.10
IL4	1.19		
IL6	.85		
IL8	.93		
IL10	.50**		
IL12a	.73		
IL13	.82		
IL15	1.19		
IL16	1.23		