Weight Analysis of Dexamethasone Treated C57BL/6J Mice on a High Protein Diet

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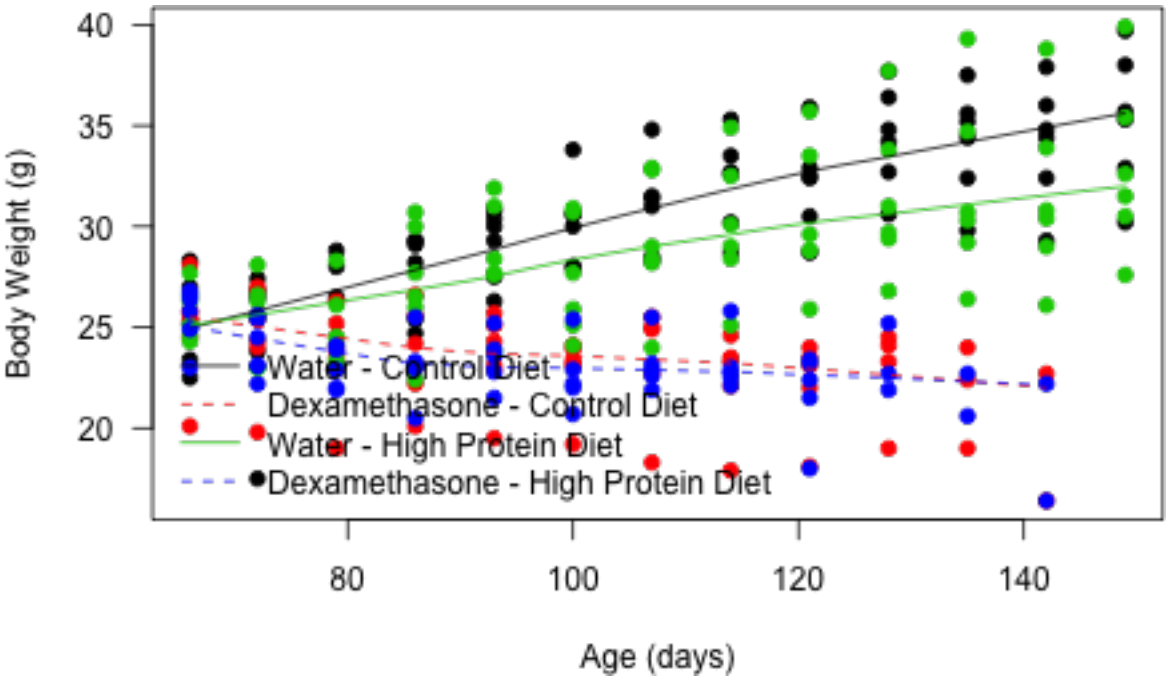
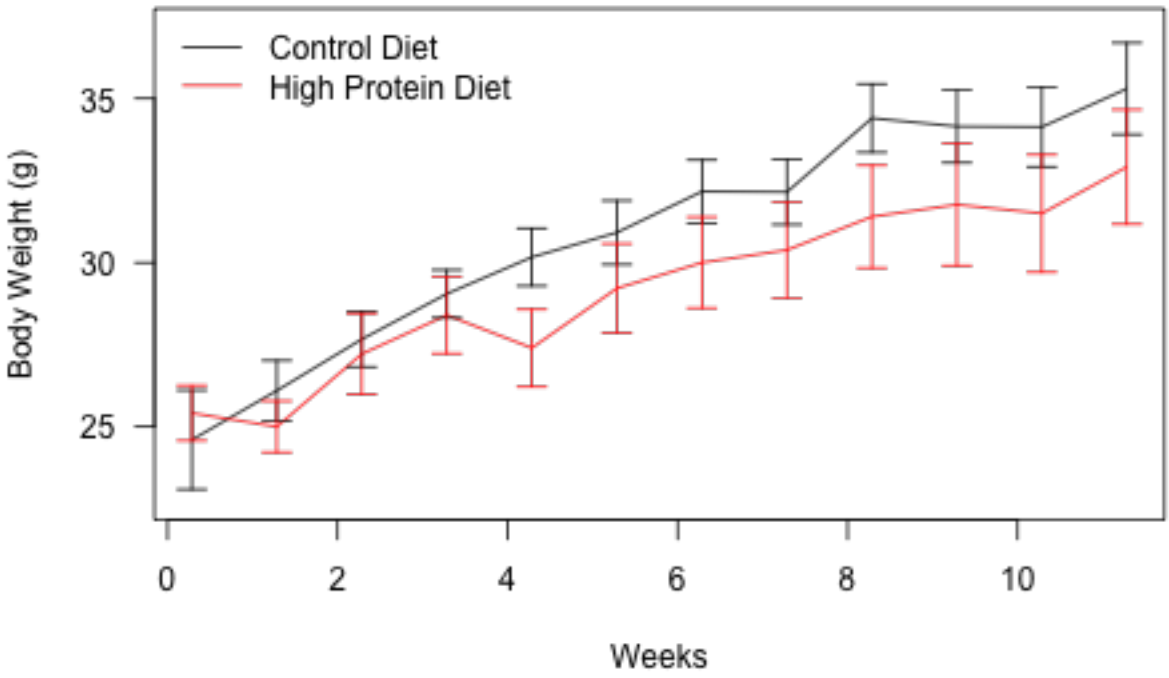
Data Entry

This was from combined weights over several measurements of C57BL/6J Mice on treated with dexamethasone and placed on a high protein or control diet. Some animals may appear multiple times in this analysis. Data is downloaded in csv format from the mousedb website. This includes only fed weights. These mice were treated with 10 mg/kg/day starting at 70 days of age.

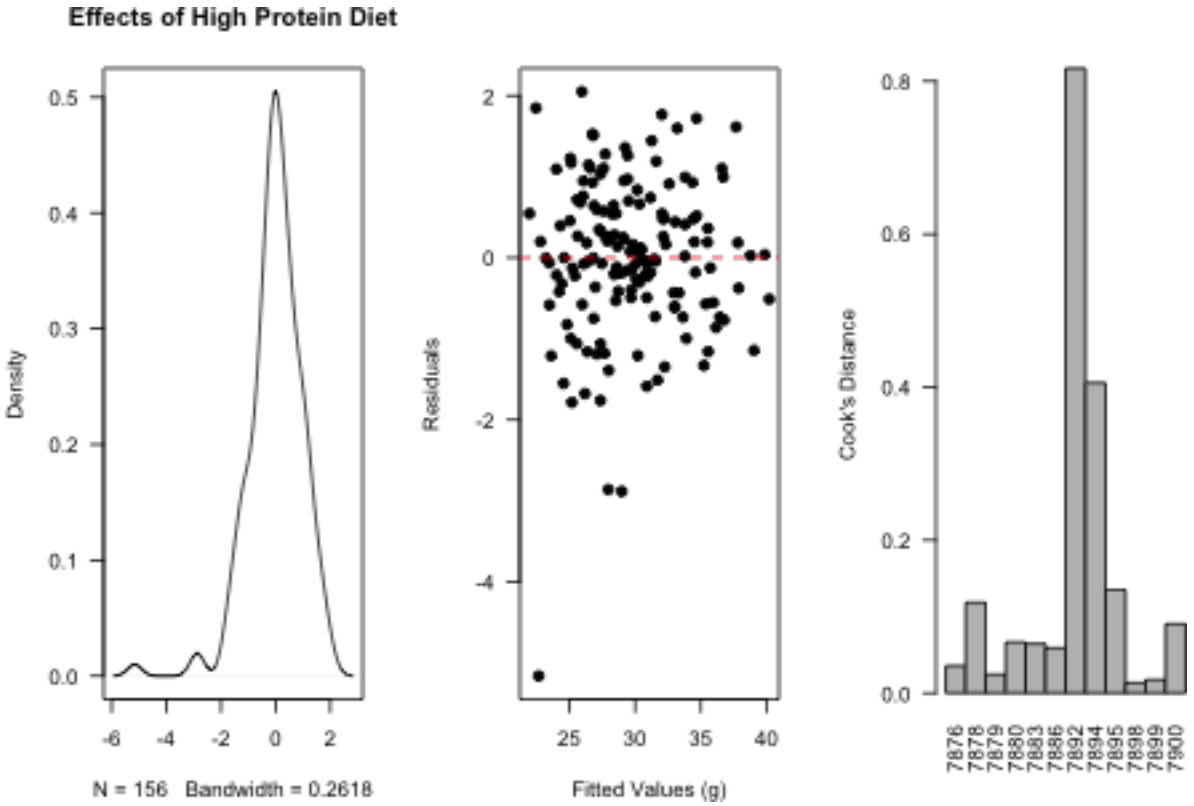
Data was downloaded from MouseDB then aand the data is saved as Body Weights and Composition.csv. These data are located in /Users/davebridges/Documents/Source/TissueSpecificTscKnockouts/Mouse Data/HPD and was most recently updated on Mon Sep 7 10:52:51 2015.

Body Weights



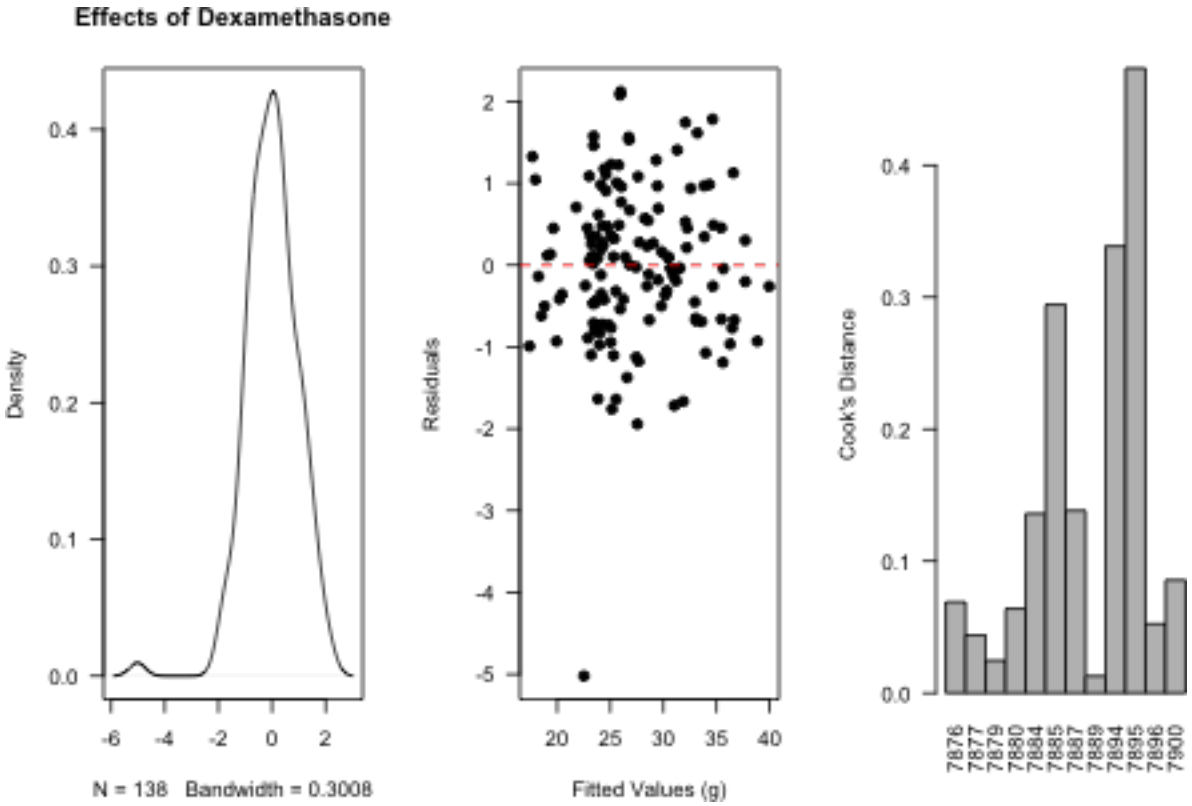

Control Diet
High Protein Diet
Body Weight (g)
35
30
25
0
2
4
6
8
10
Weeks

Effects of High Protein Diet on Body Weight (Water Only)



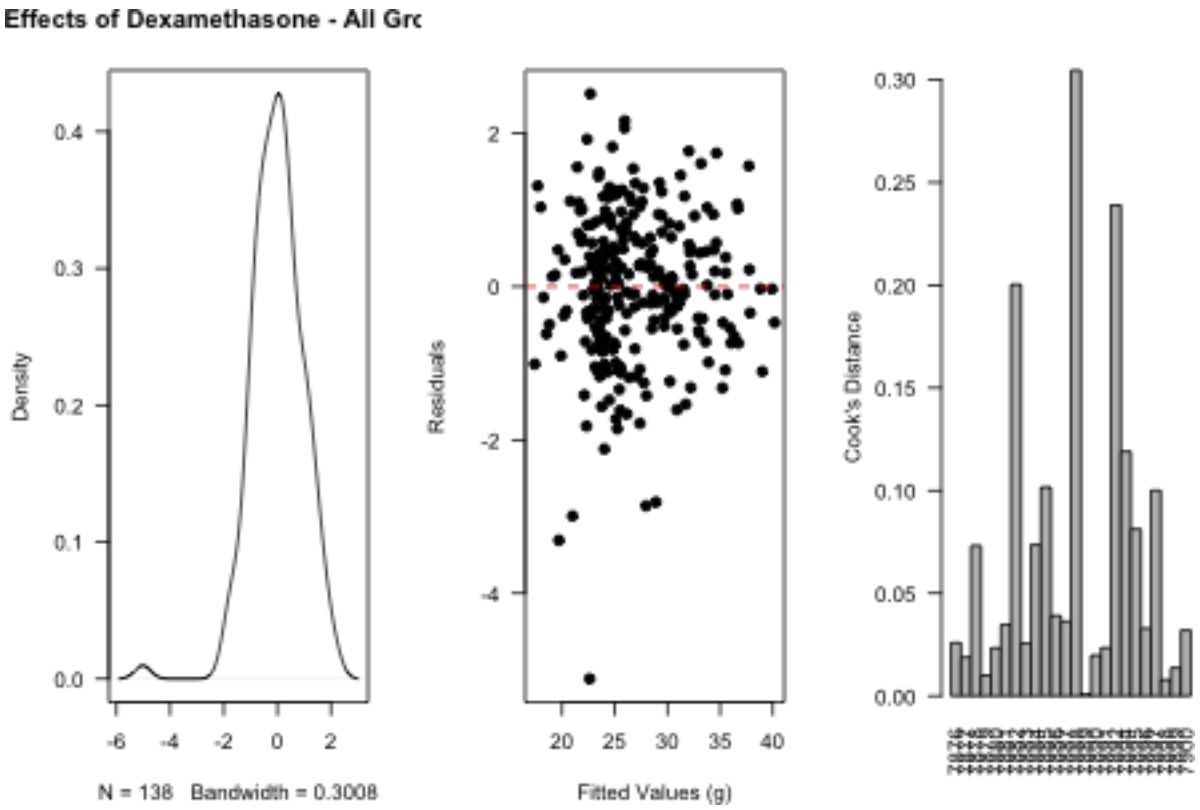
Based on linear fixed effects models, allowing for uncorrelated intercepts and slopes for the animals, within the water group, the High Protein Diet animals gained -0.26998g weight per week, or -3.23978g over the experiment. This is a -29.02327% change in body weight gain. This effect was significant with a p-value of 0.0368. The residuals of this model **did not meet** the presumption of normality via a Shapiro-Wilk test (p=0).

Effects of Dexamethasone on Body Weight (Control Diet Only)



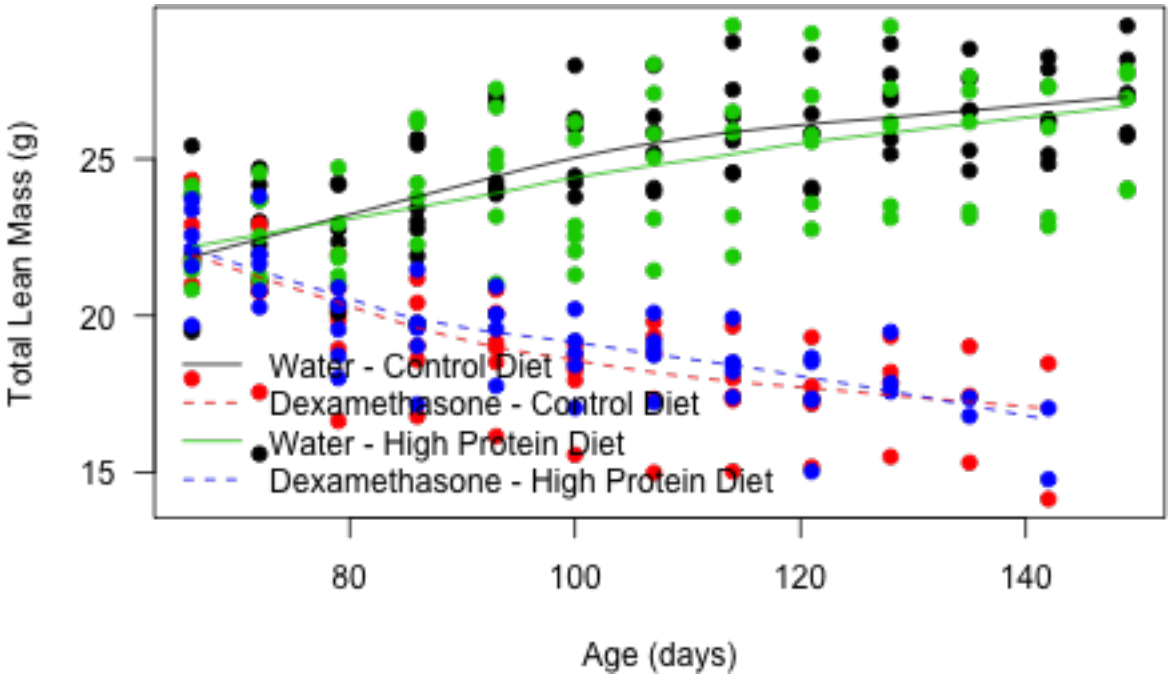
Based on linear fixed effects models, allowing for uncorrelated intercepts and slopes for the animals, within the control diet group, the dexamethasone-treated animals gained -1.15975g weight per week, or -13.91694g over the experiment. This is a -124.67362% change in body weight gain. This effect was significant with a p-value of 0. The residuals of this model met the presumption of normality via a Shapiro-Wilk test (p=0.00005).

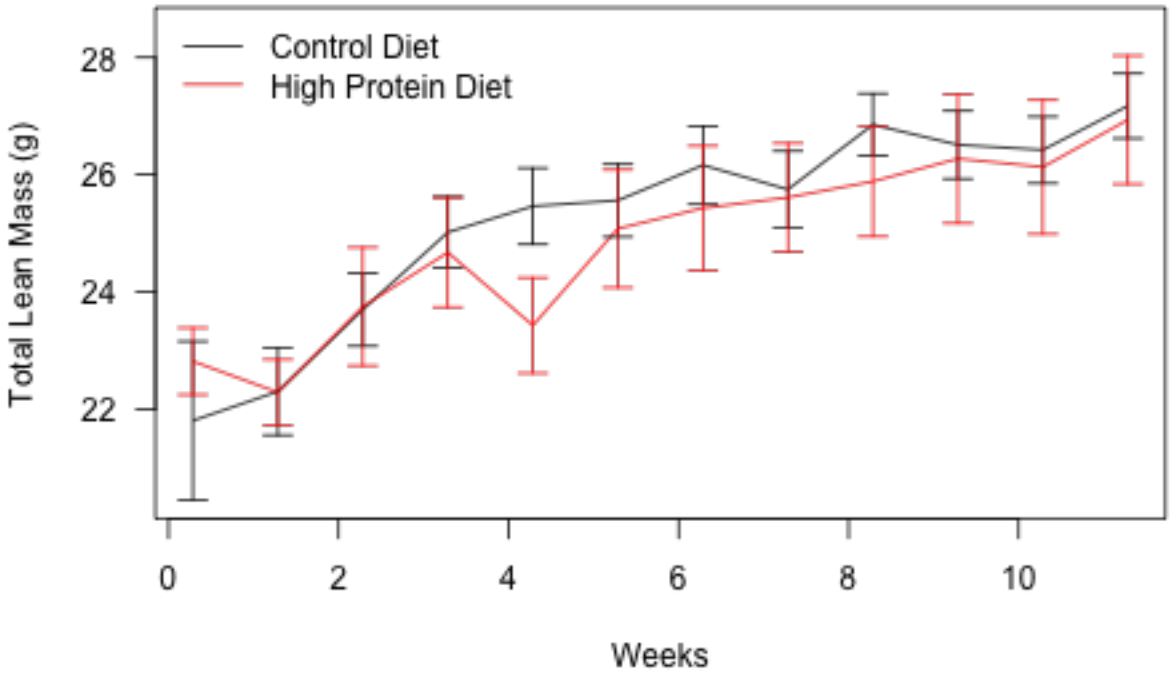
Combined Analysis



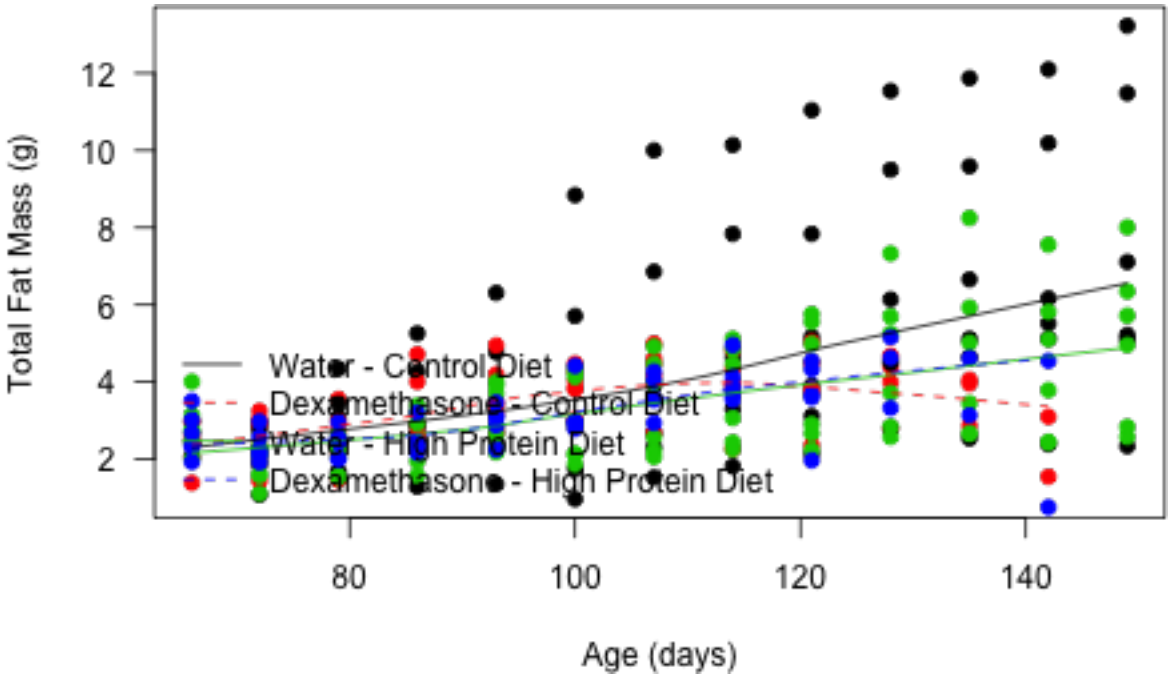
Pooling both groups together, with a linear fixed effects models, allowing for uncorrelated intercepts and slopes for the animals, the dexamethasone-treated animals gained -1.05408g weight per week, or -12.64902g over the experiment. This is a -119.42968% change in body weight gain. This effect was significant with a p-value of 0. The residuals of this model met the presumption of normality via a Shapiro-Wilk test (p=0).

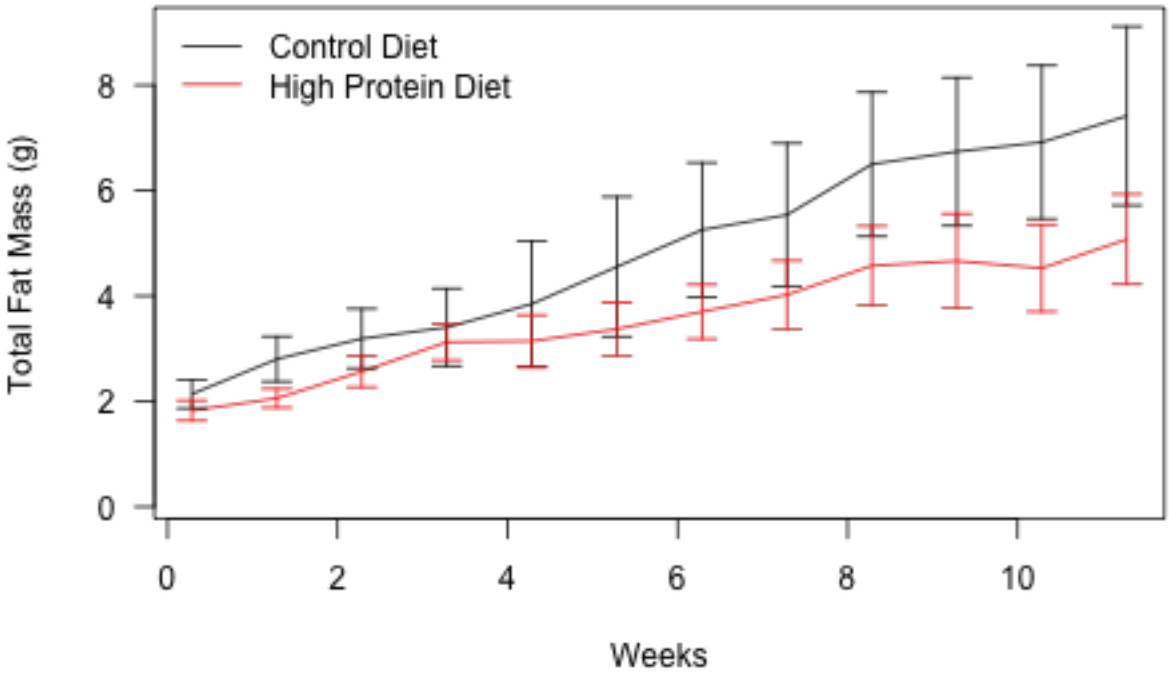
Lean Mass

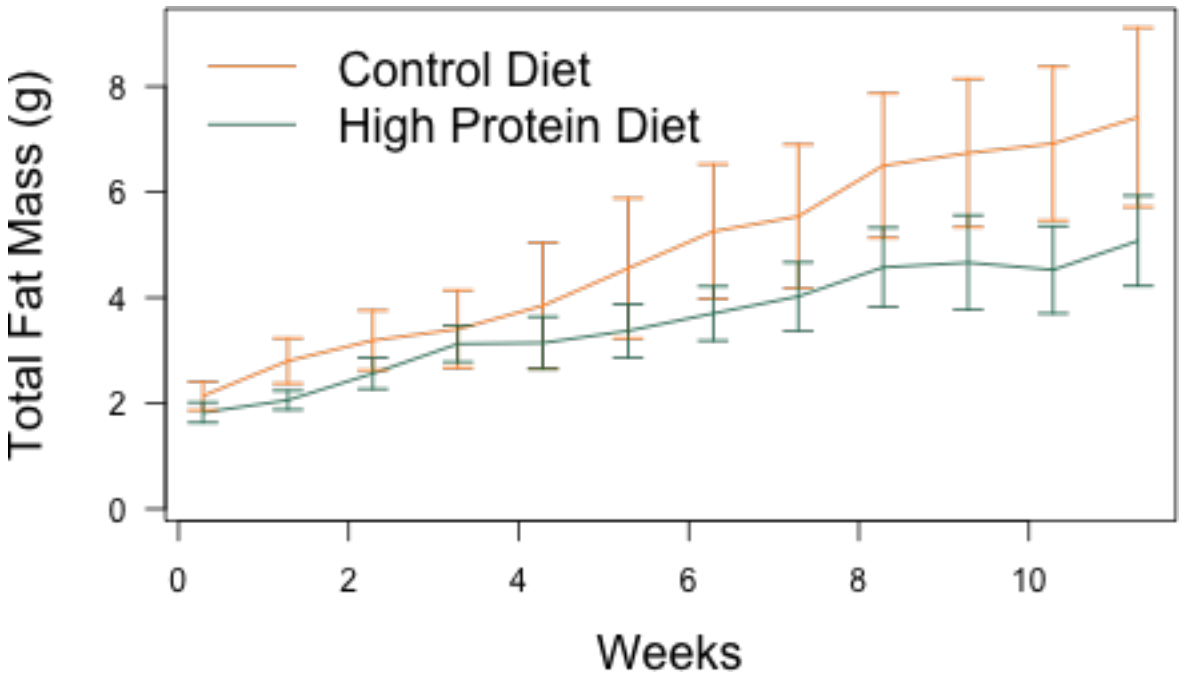

Total Lean Mass (g)
25
20
15
80
100
120
140
Age (days)
Water - Control Diet
Dexamethasone - Control Diet
Water - High Protein Diet
Dexamethasone - High Protein Diet


Total Lean Mass (g)
28
26
24
22
0
2
4
6
8
10
Weeks
Control Diet
High Protein Diet

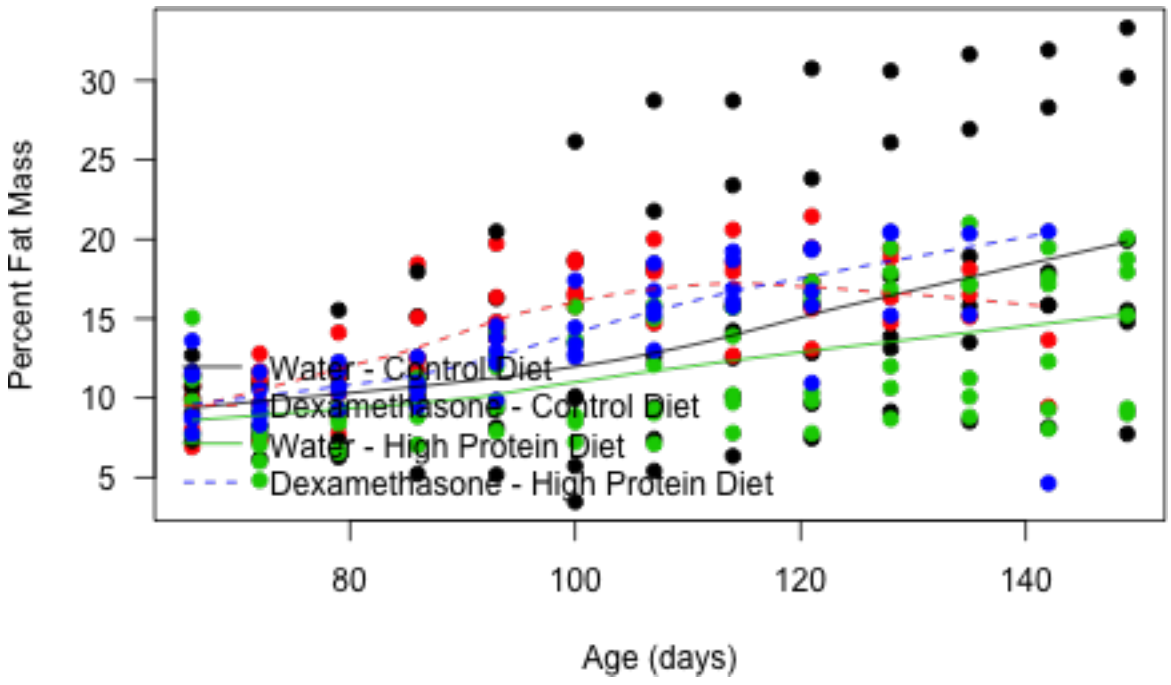
Fat Mass


Total Fat Mass (g)
12
10
8
6
4
2
80
100
120
140
Age (days)
Water - Control Diet
Dexamethasone - Control Diet
Water - High Protein Diet
Dexamethasone - High Protein Diet


Total Fat Mass (g)
8
6
4
2
0
0
2
4
6
8
10
Weeks
Control Diet
High Protein Diet

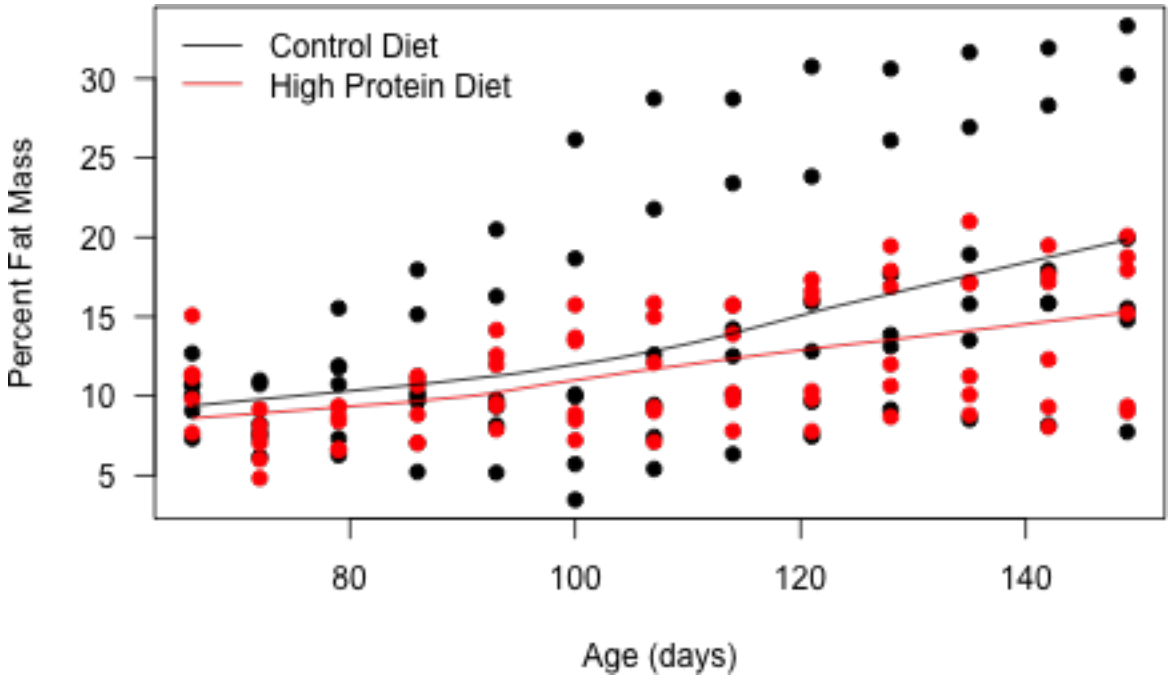


Percent Fat Mass



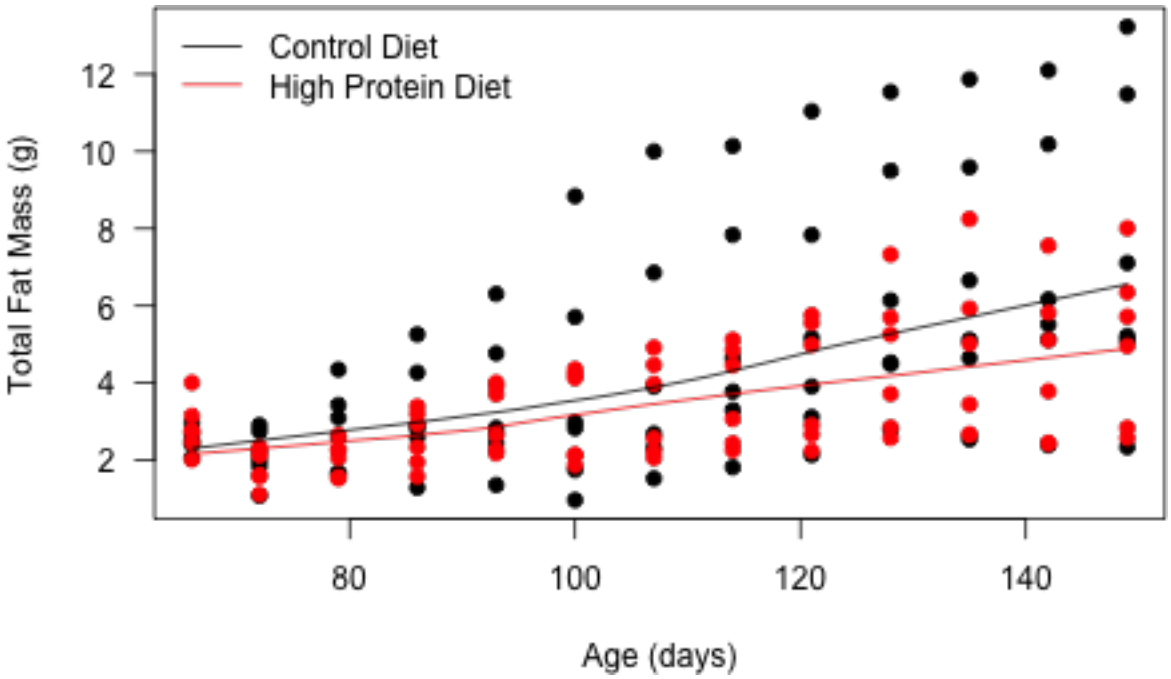
Effects of High Protein Diet Only

Percent Fat Mass



Based on a mixed linear model with a random slope and intercept for each animal, there was a significant decrease in the rate of percent fat mass with respect to time (Chisq = 5.69599, p=0.05796). This as an average difference of -0.46236 +/- 0.26817 percent fat per week, or a total of -11.88913 +/- 6.89588 over the course of the study. This is a 44.91657% reduction.

Total Fat Mass



Based on a mixed linear model with a random slope and intercept for each animal, there was a significant decrease in the rate of percent fat mass with respect to time (Chisq = 5.74781, p=0.05648). This as an average difference of -0.21508 +/- 0.12801 percent fat per week, or a total of -2.36589 +/- 1.40809 over the course of the study. This is a 46.0016% reduction.

Session Information

```
## R version 3.2.2 (2015-08-14)
## Platform: x86_64-apple-darwin13.4.0 (64-bit)
## Running under: OS X 10.10.4 (Yosemite)
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
## [1] influence.ME_0.9-6 lme4_1.1-8         Matrix_1.2-2
## [4] tidyr_0.2.0        dplyr_0.4.2        knitr_1.11
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_0.12.0     magrittr_1.5    splines_3.2.2   MASS_7.3-43
##  [5] lattice_0.20-33 R6_2.1.1        minqa_1.2.4     stringr_1.0.0
##  [9] tools_3.2.2     parallel_3.2.2  grid_3.2.2      nlme_3.1-121
## [13] DBI_0.3.1       htmltools_0.2.6 yaml_2.1.13     lazyeval_0.1.10
## [17] assertthat_0.1  digest_0.6.8    nloptr_1.0.4    formatR_1.2
## [21] evaluate_0.7.2  rmarkdown_0.7   stringi_0.5-5
```