

# Post High Protein Diet CLAMS

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*May 29, 2015*

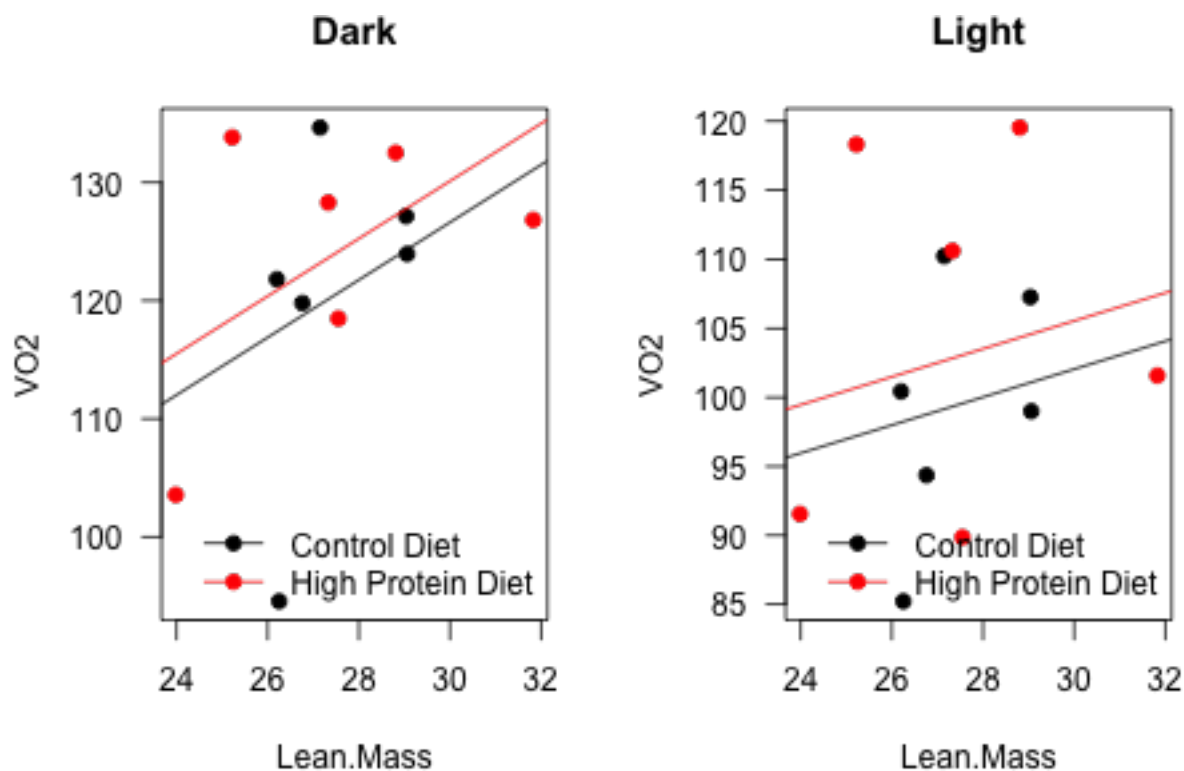
The input files were CLAMS MRI Data.xlsx for the echoMRI data. This script was most recently updated on Tue Sep 8 15:20:29 2015 and includes the following number of animals.

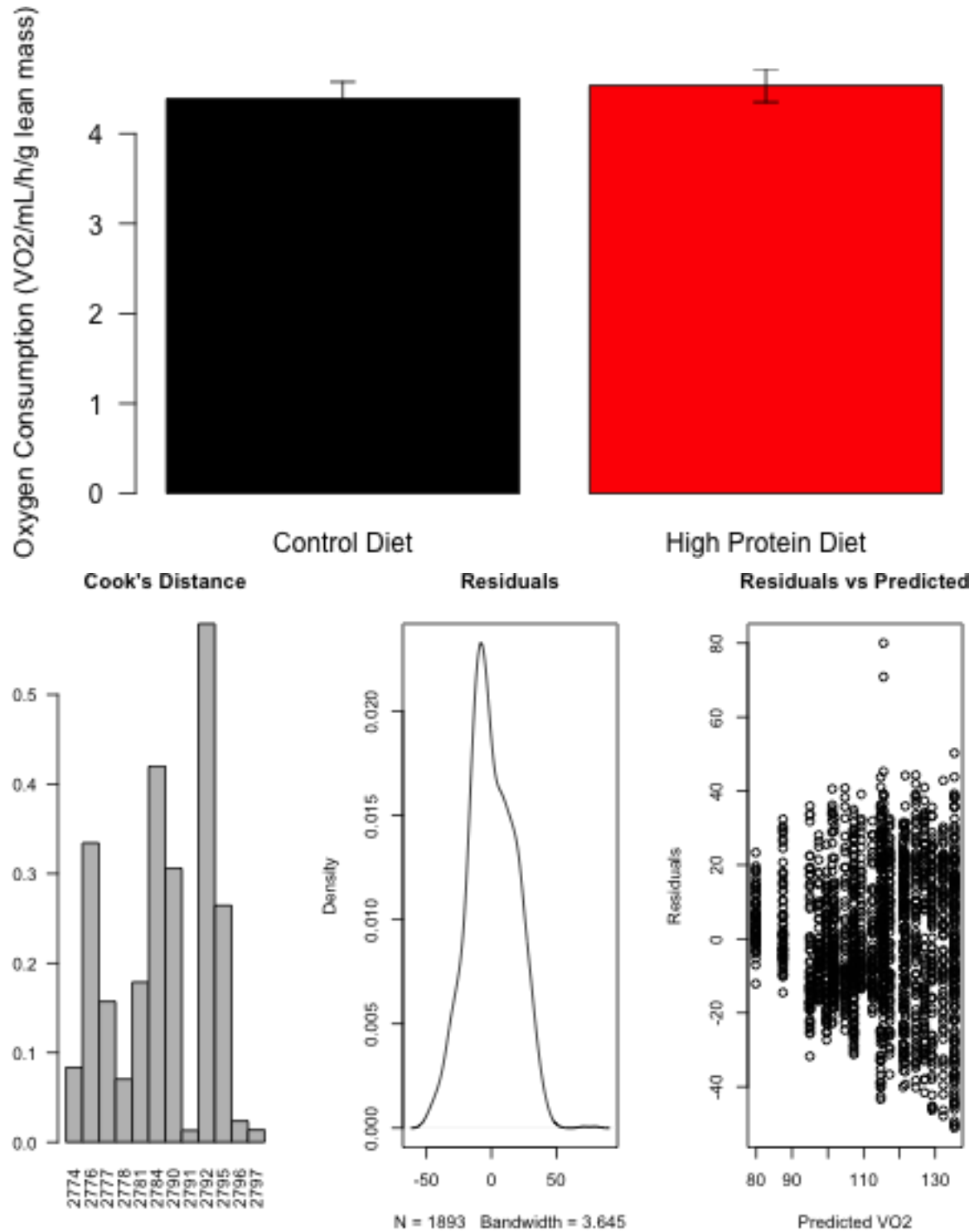
The following animals/data were removed from this analysis due to data that was either not collected (ie measurements after the run was complete) or data that was clearly incorrect (airflow problems):

Treatment	Males
Control Diet	6
High Protein Diet	6

## Resting Metabolic Rate

The VO<sub>2</sub> levels were first merged to average over light and dark cycles, removing the first 20 measurements. To analyse these data we performed an ANCOVA analysis using lean body mass as the primary covariate.



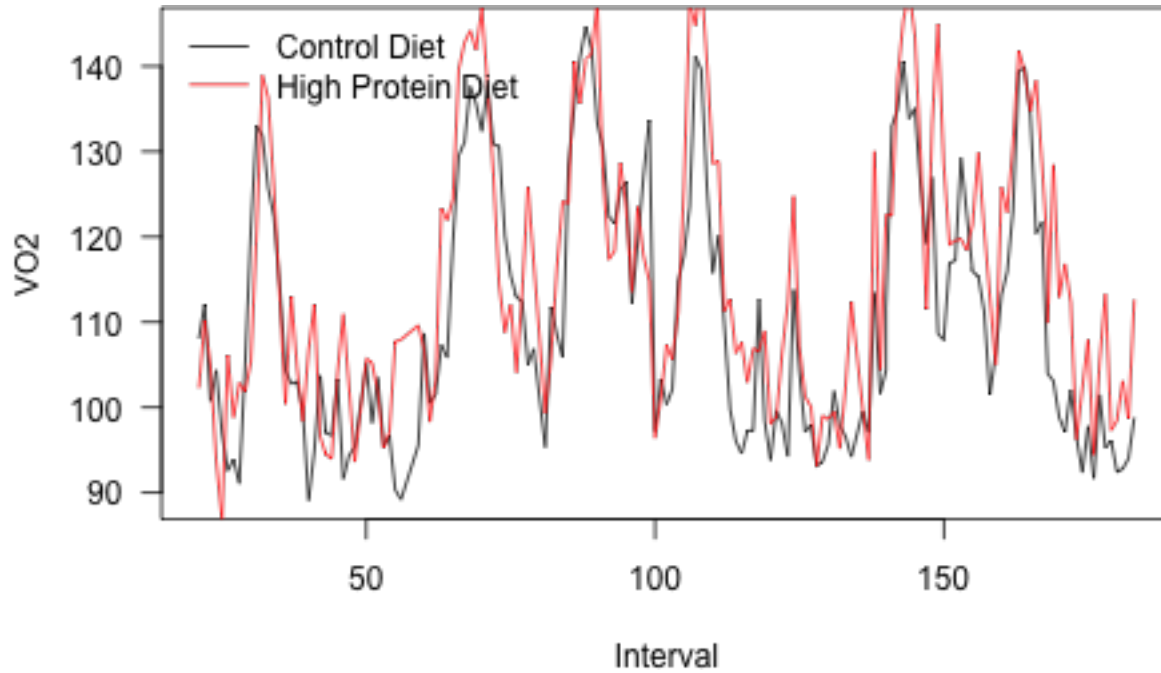


We first checked whether normality was maintained in the residuals from the ANCOVA. These results are summarized below:

Table 2: ANCOVA Analysis for Effect of Diet on VO2

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Lean.Mass	1	282.1	282.1	2.208	0.1529

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Light.Dark	1	2349.4	2349.4	18.390	0.0004
Treatment	1	129.2	129.2	1.011	0.3266
Residuals	20	2555.2	127.8	NA	NA



The residuals of this model were normally distributed ( $p=0.7224$ ) via a Shapiro-Wilk Test. According to this ANCOVA, the double knockouts have 4.6407 higher VO<sub>2</sub>, a reduction of 3.7357%

Alternatively we used a mixed linear model, with non-interacting covariates for the Light cycle, the lean mass and the diet. A Chi-squared test comparing a model with or without the Diet term yielded a p-value of 0.4337 for the males. The residuals of this model were **not normally distributed** ( via Shapiro-Wilk Test).

# Body Weights and Composition

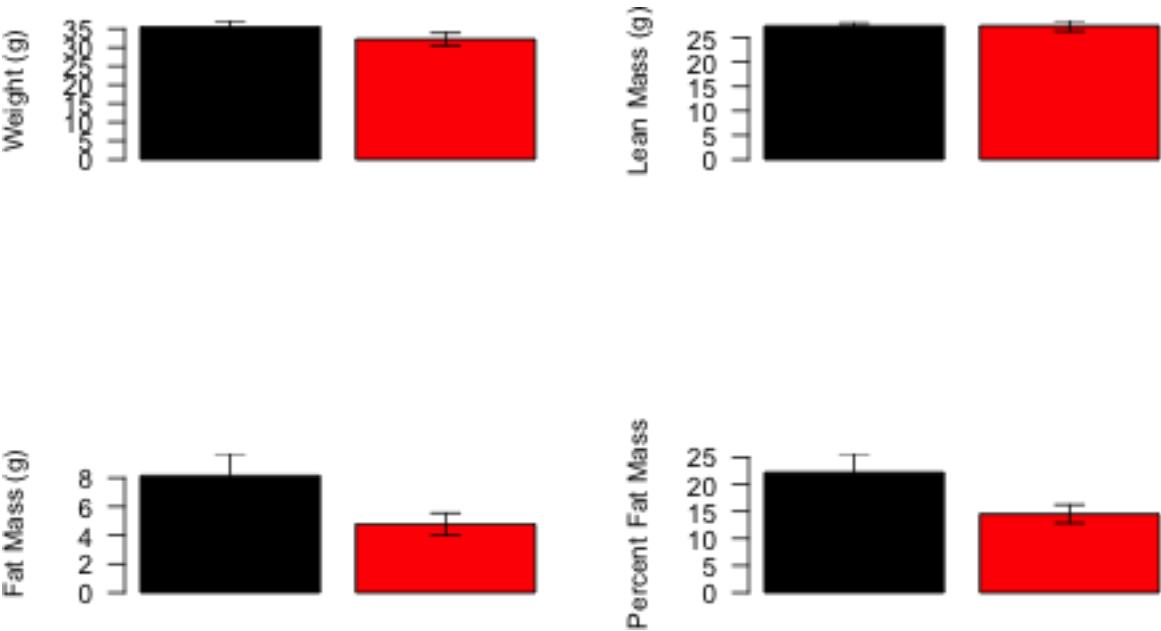
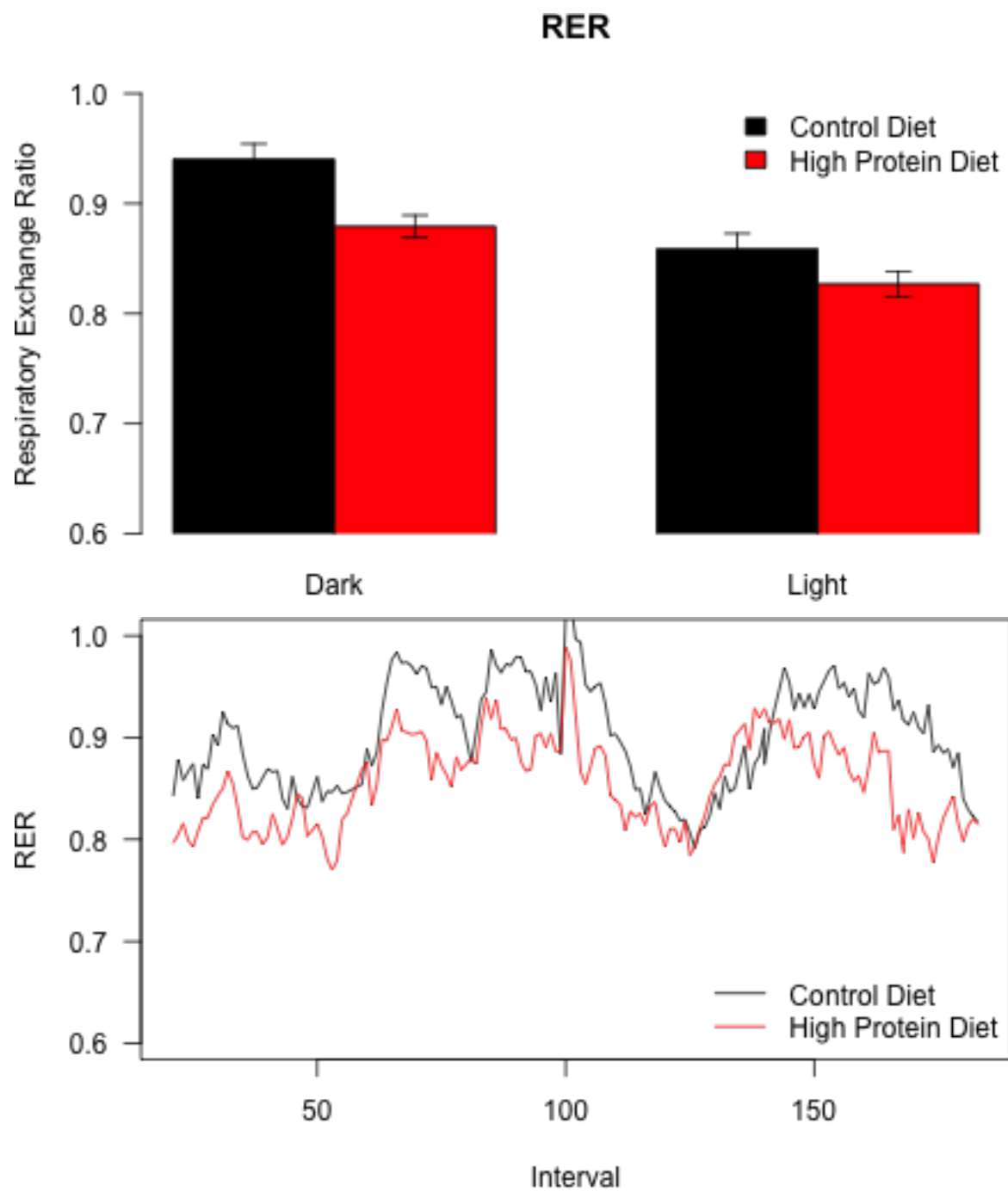
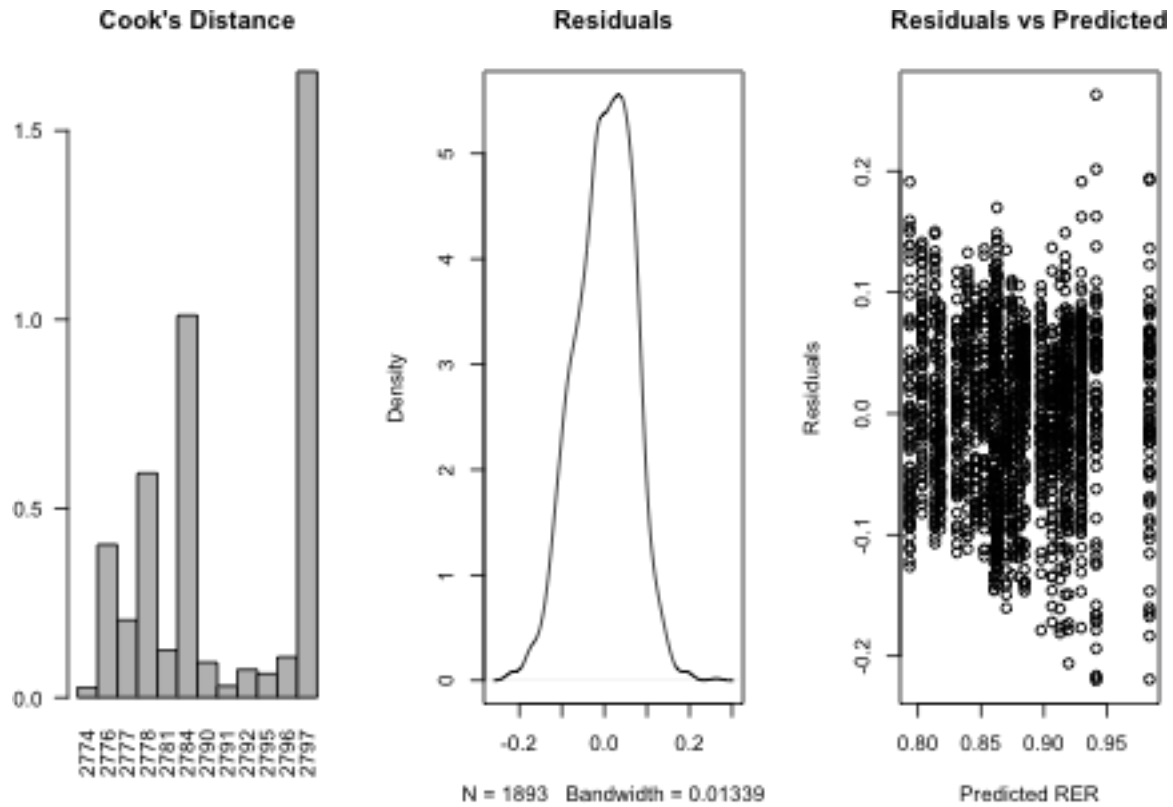


Table 3: Statistical Tests for Body Composition

	Shapiro	Levene	Wilcox	Welch	Student
Body Weight	0.4481	0.9653	0.2403	0.1847	0.1845
Fat Mass	0.4432	0.0769	0.1320	0.0906	0.0795
Percent Fat Mass	0.2101	0.1054	0.1320	0.0873	0.0762
Lean Mass	0.0768	0.2695	1.0000	0.9733	0.9730

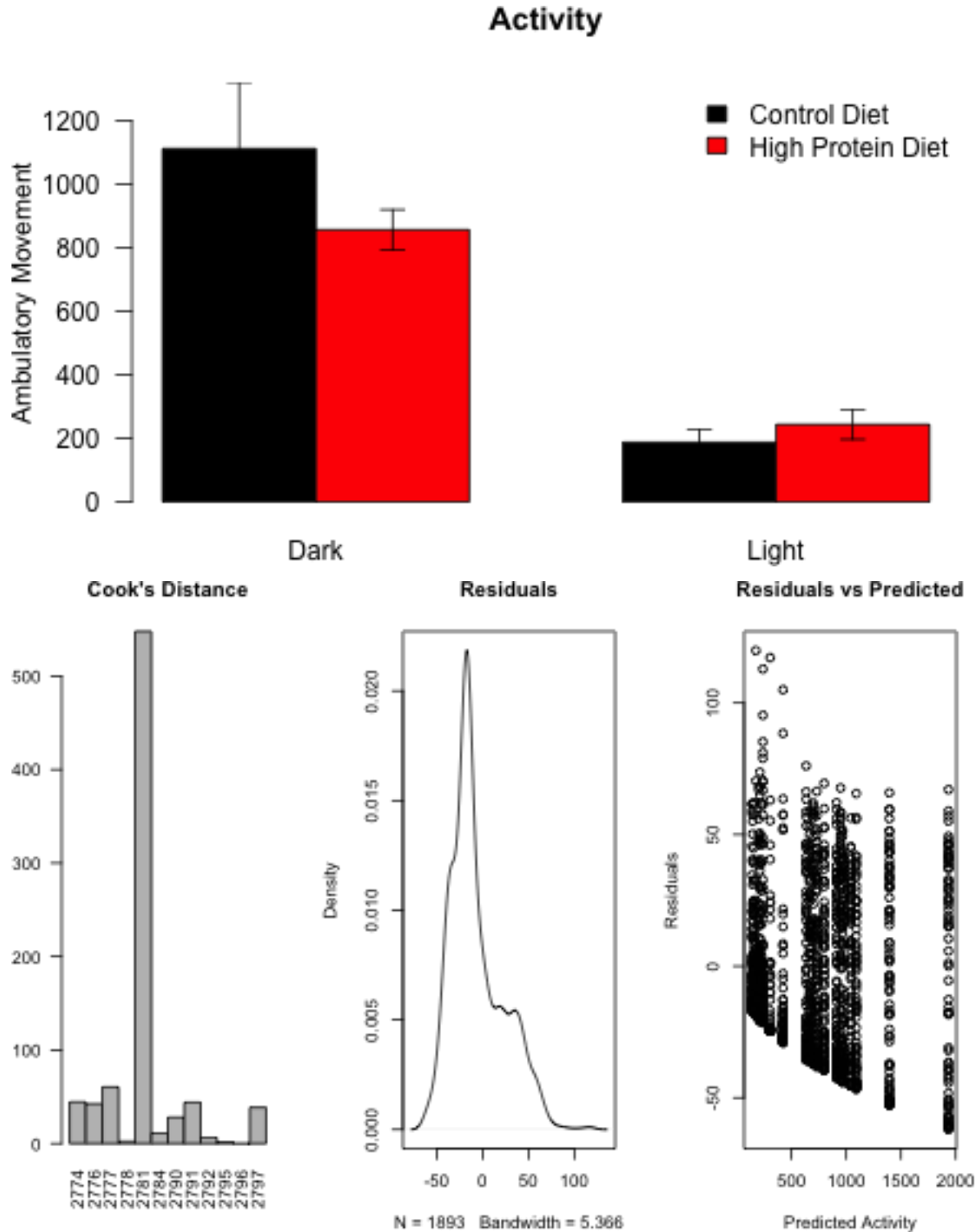
## Respiratory Exchange Rate





Alternatively we used a mixed linear model, with non-interacting covariates for the Light cycle and the diet. A Chi-squared test comparing a model with or without the diet term yielded a p-value of 0.0038 for the males.

## Activity Data



Alternatively we used a mixed linear model, with non-interacting covariates for the Light cycle and the diet. A Chi-squared test comparing a model with or without the Genotype term yielded a p-value of 0.5042 for the males.

## 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] tidyr_0.2.0      car_2.0-26      influence.ME_0.9-6
## [4] lme4_1.1-8       Matrix_1.2-2    reshape2_1.4.1
## [7] xtable_1.7-4     lubridate_1.3.3 dplyr_0.4.2
## [10] xlsx_0.5.7       xlsxjars_0.6.1  rJava_0.9-7
## [13] knitr_1.11
##
## loaded via a namespace (and not attached):
## [1] Rcpp_0.12.0      formatR_1.2      nloptr_1.0.4     plyr_1.8.3
## [5] highr_0.5        tools_3.2.2      digest_0.6.8     evaluate_0.7.2
## [9] memoise_0.2.1    nlme_3.1-121     lattice_0.20-33  mgcv_1.8-7
## [13] DBI_0.3.1        yaml_2.1.13      parallel_3.2.2   SparseM_1.7
## [17] stringr_1.0.0    grid_3.2.2       nnet_7.3-10      R6_2.1.1
## [21] rmarkdown_0.7    minqa_1.2.4      magrittr_1.5     htmltools_0.2.6
## [25] splines_3.2.2    MASS_7.3-43      assertthat_0.1   pbkrtest_0.4-2
## [29] quantreg_5.11    stringi_0.5-5    lazyeval_0.1.10
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