Lab # 11:

Please e-mail code, graphs and answers to questions to [bsmit269@uncc.edu](mailto:bsmit269@uncc.edu) and [afodor@uncc.edu](mailto:afodor@uncc.edu)

Please have lab submitted (whatever you have) before class on Mon., April 20.

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This week we have the same dataset as last week:

<http://afodor.github.io/classes/stats2015/prePostPhylum.txt>

(1) Perform a PCA on this dataset (from columns to 5 and 10, where the taxa data are). Plot the first two principle components against each other. What % variance do these two co-ordinates capture? Using par(mfrow=c(3,1)) make a visualization of this graph colored three ways: (a) colored by timepoint (the column "time"); (b) colored by genotype and (c) colored by cage.

(2) Fit a mixed linear model for the first two PCA axes (that is, fit two models, one for each of the first two PCA axes). Have your models set time and genotype as fixed terms and cage as a random term. Using the ANOVA function, determine if genotype and time are significantly different for axes 1 and 2 (and give the p-values in your answer).