



**CBCB  
SEMINAR  
4/6/2020**

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## BIOINFORMATICS SEMINAR CHI ZHANG

*MS Student* UNIVERSITY OF DELAWARE

### A COMPARISON OF THE CHICKEN INTESTINAL MICROBIOME ASSOCIATED WITH AGE-, BREED- AND IMMUNE-RELATED DIFFERENCES

To characterize the dynamics of intestinal microbiome community and explore the host-microbe interactions in chicken, the present study analyzed and compared bacterial abundance data from intestinal samples, of two time points (day 15 and day 34 post-hatch), in groups of modern broilers (ROSS) after CpG injection, modern broilers without CpG injection, heritage broiler (Athens Canadian Random Bred, ACRB) chickens after CpG injection, and heritage broiler without CpG injection. We investigated phylum and order level relative abundance and compared different metrics of diversities to illustrate the dynamic composition of chicken gut microbiome community. We also performed principal component analysis (PCA) followed by phylogenetic visualization of species with high loading scores as components of the top principal components. The result identified the abundance of Firmicutes to be correlated with sampling time (age/growth of chickens) and/or CpG treatment in ROSS chickens. The abundance of Proteobacteria decreases over time in ROSS, but insensitive to CpG treatment. These trends indicate Firmicutes to Proteobacteria ratio to be a good indicator of chicken intestinal microbiome status.

## MATTHEW WALT

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### PREDICTIVE MODELING OF SUBSTANCE USE TREATMENT COMPLETION IN PREGNANT OPIOID USERS

Opioid use is increasing across the United States; some studies have found dramatic increases in the amount of overdose deaths due to opioid use in the last few years. The use of opioids by pregnant women can lead to neonatal abstinence syndrome requiring medication and extended hospital stays, and can cause developmental delays in combination with the home environment. The Treatment Episode Data Set - Discharges is a publically available data set containing info on all discharges from treatment from facilities in the U.S. that receive public funds. It is estimated that the TEDS-D covers up to 87% of treatment episodes in the United States. It is important to understand the factors relating to treatment completion as it has been recognized as a predictor for future success. My work has been working with the 2017 TEDS-D, attempting to understand the associations of various factors with treatment completion, and trying to build a model based on the data that can predict treatment completion for pregnant opioid users.

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