UNIVERSITY OF DELAWARE

CENTER FOR BIOINFORMATICS & COMPUTATIONAL BIOLOGY

CBCB SEMINAR

4/25/2022

3:30-4:30PM

AP BioPharma Room 140

(590 Avenue 1743)

or via ZOOM: https://udel.zoom.us/j/93068494454

(Passcode: BINF)

bioinformatics.udel.edu

College of Engineering
CENTER FOR BIOINFORMATICS & COMPUTATIONAL BIOLOGY

BIOINFORMATICS SEMINAR

ANTHONY POMPETTI

Graduate Student, **UNIVERSITY OF DELAWARE**

PREDICTION OF ATF4 FUNCTION IN THE DEVELOPING LENS USING RNA-SEQ ANALYSIS

The development of the lens is an intriguing and unique process that involves careful orchestration of transcription factors to allow for its transparent but surprisingly cellular composition. Severe malformations of the eye occur when the genes encoding these transcription factors are mutated or have altered expression. One transcription factor of interest is ATF4, which has long been known to be involved in lens development, as mice lacking the ATF4 gene exhibit lens defects. RNA-seq was performed to take an unbiased look into the effect of ATF4 deletion on the embryonic lens transcriptome. Bioinformatic profiling and cross comparisons with prior microarray, RNA-seq, and ChiP-seq experiments were performed to predict the function of ATF4 in lens development. Preliminary results predict that a subset of the lens preferred transcriptome is regulated, and direct targeting of amino acid transport and synthesis is predicted. Wet lab experiments have already validated many of these bioinformatic predictions.

BIOGRAPHY

Anthony Pompetti is a master's student in the Bioinformatics and Computational Biology Program. He conducts under the supervision of Dr. Melinda Duncan from the Department of Biological Sciences. He is a UD alumnus who obtained a bachelor's degree in Biological Sciences where he started to develop his interest in Bioinformatics. Before joining the master's program, he was a veterinary technician for a practice in Delaware. Currently, his research interests are in transcriptomics where he performs cross experimental comparisons in the field of embryonic development.

SHWETA GHIMIRE

Graduate Student, **UNIVERSITY OF DELAWARE**

NOVEL ISOLATES OF *BACILLUS SUBTILIS* IMPROVED FCR AND CECUM MICROBIOTA IN BROILERS CHALLENGED WITH CLOSTRIDIUM PERFRINGENS

Necrotic Enteritis (NE) caused by Clostridium perfringens (CP) induced high mortality and low growth performance in poultry. Worldwide around 2 billion dollars is lost due to NE. FDA has implemented antibiotic phase out plan in poultry feeds due to concern of antibiotic resistance resulting in rising demands for antibiotic-alternatives. In this study, we examine if new *Bacillus subtilis* isolates 103a and 62a can control NE, improve FCR and cecum microbiota in broiler chickens. These isolates were selected for having strong antimicrobial and antioxidant properties. Our results showed that both strains of Bacillus inhibited CP. The probiotic isolates decreased mortality, lesion score, FCR, and antioxidant level of plasma, but had significantly higher microbiota richness, compared with the findings in the control group. Promising positive impacts are determined for both probiotic isolates in our pilot trial.

BIOGRAPHY

Shweta Ghimire is a master's student in the Bioinformatics and Computational Biology program. She is working as a RA under the supervision of Dr. Changqing Wu from Department of Animal and Food Sciences. She obtained her bachelor's degree in Veterinary Medicine and is a licensed Veterinarian in Nepal. Her research focus on use of novel isolates of Bacillus Subtilis in improving broiler's body weight, Feed conversion ratio, Necrotic enteritis lesion, and cecal microbiota in chicken challenged with Clostridium Perfringens. Her long-term goal is to pursue a career in veterinary medicine integrated with translational research on the topics of 'one-health' including animal/human food safety, sustainable and precision disease management, and antibiotic resistance.