SRP BIOINFORMATICS AND STATISTICS WORKSHOP
JUNE 27-28, 2019
ALS 4000

DAY 1: THURSDAY JUNE 27TH

8:00 – 8:30 AM: ARRIVAL, SETUP

RNASEQ I: OVERVIEW OF CONCEPTS AND TOOLS

8:30 – 9:30 AM: RNASEQ OVERVIEW (LECTURE)

                              EXPERIMENTAL DESIGN FOR OMICS STUDIES

                              RNA ISOLATION/LIBRARY PREP- CONSIDERATIONS AND CONCERNS

9:30-10:00 AM: POST-SEQUENCING QC (LECTURE)

                              FASTQC

                              TRIMMING

10:00-10:30 AM: PRIMARY PROCESSING AND QC (LECTURE)

                              RNASEQ PROCESSING STEPS AND TOOLS (OVERVIEW)

10:30-10:45:   BREAK

10:45-12:45 PM: INTRO TO R / R STUDIO (HANDS-ON)

                              REFRESHER AND INTRODUCTION TO R STUDIO

                              CONSTRUCTING PLOTS IN R, SUBSETTING DATA

12:45-1:45 PM: LUNCH (ON YOUR OWN)

1:45 - 2:45 PM: POWER ANALYSIS IN R & STUDY DESIGN (LECTURE AND HANDS-ON)

                              COMPONENTS OF POWER ANALYSIS, WHAT TO CONSIDER

                              EXAMPLE LINES OF CODE

RNASEQ II: RNASEQ DATA ANALYSIS IN R

2:45 - 3:45 PM: DESEQ (HANDS-ON)

                              NORMALIZATION

                              STATISTICAL ANALYSIS

                                  Scripts: DESeq_Workshop

3:45-4:00 PM: **BREAK**

4:00 – 5:00 PM: SEMINAR: MARK JANKOWSKI

BEING AN ECOTOXICOLOGIST IN EPA REGION 10: HARNESSING DATA TO SUPPORT DECISION-MAKING NOW (MORE EMPIRICAL DATA) AND INTO THE FUTURE (MORE MECHANISTIC DATA)

DAY 2: FRIDAY JUNE 28TH

RNASEQ II: RNASEQ DATA ANALYSIS IN R (CONTINUED)

8:30-10:00 AM: QC AND DATA VISUALIZATION (HANDS-ON)

QC AND OUTLIERS

DATA ANALYSIS AND VISUALIZATION IN R

Scripts: Transcriptomic_Outlier_Finder_Workshop

Make_Colored_PCA_Plot_Workshop

makeVolcanoPlot_Workshop

Make_Heat_Map_Workshop

makeVenn_Workshop

10:00-10:15 AM: **BREAK**

RNASEQ III: BIOINFORMATICS TOOLS

10:15-11:30 AM: OMICS DATA INTEGRATION (LECTURE AND HANDS-ON)

OVERVIEW OF CONCEPTS

INTRODUCTION TO BRM AND OTHER WEB TOOLS

CASE STUDIES WITH ZEBRAFISH DATA:

CROSS-SPECIES DATA INTEGRATION

MIRNA TARGET PREDICTION AND DATA INTEGRATION

11:30-12:30 PM: LUNCH (ON YOUR OWN)

12:30 -2:00 PM: NETWORK ANALYSIS AND VISUALIZATION

CYTOSCAPE, R

Scripts: MINET_Workshop

Determine_edge_cutoff_Workshop

Filter_and_Create_Network_NEW_Workshop

Find_Modules_Workshop

2:00-3:00 PM: DATA VISUALIZATION WITH TRELLISCOPE (HANDS-ON)