To do list for each chapter

Chapter 2

* Edit caption for Figure 2.3
* Look for weight differences between treatments and on MO2/Pcrit, or maybe discuss how switching to mass-specific for post-hatch larvae may negate treatment effects.
* Use Q10 to correct for temperature differences and pretend Exp. 2 was done at 24C by multiplying by Q10.
  + A difference of 2C is not very big and in the wild they can see that daily, so it could be better to analyze it all as one dataset

Chapter 3

* Check survivorship vs ionocyte density again.
* Double check 95% CIs in Fig. 3.5 (RMR-Ionocyte relationship)
* Ionocyte Q10 – does capacity of enzymes change at 28C?
* Bin metabolic rate by ionocyte density in 100-200 bins or correct by Q10 or look at separately by temperature (dif linear regression lines for each temp)
  + Binning or temp correction might increase the R2 in 3.5B.
* Cluster analysis for RMR x Ionocyte density, for temperature clustering
* Gill ionocyte counting and analysis
* Gene expression status:
  + We can pull from the regeneron paper to get intro and discussion material.
  + Violin plots were made.
  + We were using linear regression with CO2 and temperature as continuous variables to analyze effects of CO2 and temperature.
  + I think we were going to do a summary table of results for each gene, could this be a table that also includes ionocyte density?

Chapter 4

* Symposium was good
* I had conversations with Roger and another person about using the idea of the “synthesizing unit” – I see this as similar to Michaelis-Menten dynamics – to get a curve of enzyme activity vs. oxygen, assuming oxygen becomes limiting based on Pcrit – but that probably won’t work because Pcrit is below the treatment levels for the other data, and it is acute vs chronic.
* Also got advice and saw some talks pertaining to using a damage variable based in a physiological/gene expression/metabolomic response borrowed from another species. Currently working on searching literature for best proxies we can use to fit a damage function.
  + Metabolomics concerns metabolites, the small molecules involved in cell metabolism (substrates, intermediates, and products).
  + Characterize the metabolites in a baseline vs stressor scenario
  + Changes in metabolites represent changes in metabolism, and I guess there are different types such as lipid, purine (adenine, adenosine, hypoxanthine), amino acid phenylalanine, and acylcarnitine molecules. Unclear right now what the meaning would be for the fish energy budget and I won’t be looking much further into it rn.