Flux Manuscript

Introduction:

* Background
* Holes to fill
* What we did to fill them

Methods:

* Strains, media, culture methods
* Experimental design
  + Treatments, general info, etc…
  + Evolutionary dynamics
  + Endpoint fitness assays
* Library construction and sequencing
* Sequence data processing and calculations
  + Sequence datasets
  + Barcode cross-contamination rate
  + Fitness calculations
* Statistical analysis
  + Analysis and visualization tools
  + Reads
  + Power analyses
  + Fitness change in 500 generations of evolution
  + Evolutionary dynamics

Results:

* **Initial Fitness**
  + *Figure: Histogram of initial fitness in 7 environments*
    - Pattern looks ‘normal’ and tight/narrow
    - On average, BC’s are more fit than reference initially
    - Discrepancy between reference and focal BC’s increases with higher stress environment
    - COPR 1.2 environment questionable – may not be able to accurately assay initial fitness in very high stress.
  + *Analysis: lmer for initial fitness predicted by treatment*
    - No effect of treatment on initial fitness in any of the 7 assay environments.
* **Power Analysis**
  + *Figure: 2 panels – (1) individual BC fitness increase / decrease, (2) treatment differences* 
    - Low power to detect individual BC fitness increase / decrease: 80% power to detect ~4.3% change in fitness
    - High power to detect treatment effects: 80% power to detect ~0.3% change in fitness
* **Error Analysis**
  + *Analysis: lm for covariates that effect error in DW among replicates.*
* **Treatment effects on DW**
  + *Figures: violins with lmer results heatmaps (x 8)*
  + *Figures: histograms with Fit0, Fit500, dw by env by treat*
  + *Analyses: lmers for treatment effect on DW*
* **~~Fitness increase / decrease in individual environments~~**
* **Fitness increase / decrease in 2 or 3 environments** 
  + *Figures: colorful stacked bar charts for increase and for decrease*
  + *Figures: X figures for fitness in two environments.*
  + Statistical analysis?
* **~~Within-well fitness patterns~~**
* **Longitudinal Dynamics Data (mmaxdev, tmaxdev, mmaxdiff, tmaxdiff, mmaxrate, tmaxrate, tcc)**
  + *Figures: value through time heatmaps*
  + *Figures: violins with lmer results heatmaps*
  + *Analyses: lmers for treatment effects on dynamics variables*
* **Extinction (from longitudinal data)**
  + *Table: CREATE THIS.*
  + *Statistical analysis?*

Discussion: