Manuscript v0.2 Outline

*Genetic effects – gwas on the BLUPs from FL50 model and from other env cue models.*

*GxE effects – gwas on BLUPs from univariate models with heritability higher than FL50 in at least two common garden sites. Do GWAS on all eight sites, then use mash to analyze the allelic effect sizes across all sites for the top XK SNPs.*

*Find many candidates that mostly do/don’t overlap across these different, but correlated, environmental cues.*

*Also do this analysis for both subpops together to see if we can separate any peaks for these traits out from subpopulation structure. Maybe these results are messier and we can’t.*

*Then validate a few of these candidates/peaks with a cross that explicitly does break up subpopulation structure. Explore the effects of dominance – subpopulation trait dominance here. Can we validate any candidates from any of these GWAS using this cross? Then, do the effect sizes in the mapping population also validate the pattern of effects from mash for the candidate region? Can Li do a few more flowering time phenotypes?*

If I randomly drop down X Mb of QTL interval, how many of the significant GWAS hit SNPs fall into those random intervals?

Hard to do effect size and sign comparison because you’re never actually comparing upland vs lowland alleles – you might be stuck with positions.

Effect sizes or frequencies – changed allele frequencies in QTL mapping a lot compared to the natural distribution.

QTL that would be similar would be things that were divergent between upland and lowland and at high frequency, or fixed differences between upland and lowland. GWAS would capture those with high power. Things that were rare in the GWAS – you could see these in the cross.

Ideas for v0.3:

Results: h2 at single sites. Then h2 at all eight sites. And so there must be GxE, and there must be a lot of rank-changing GxE, in that we can’t predict ranks across sites.

Then: can we use environmental variables to improve our mapping?  
Then: can we confirm anything with QTL mapping?