

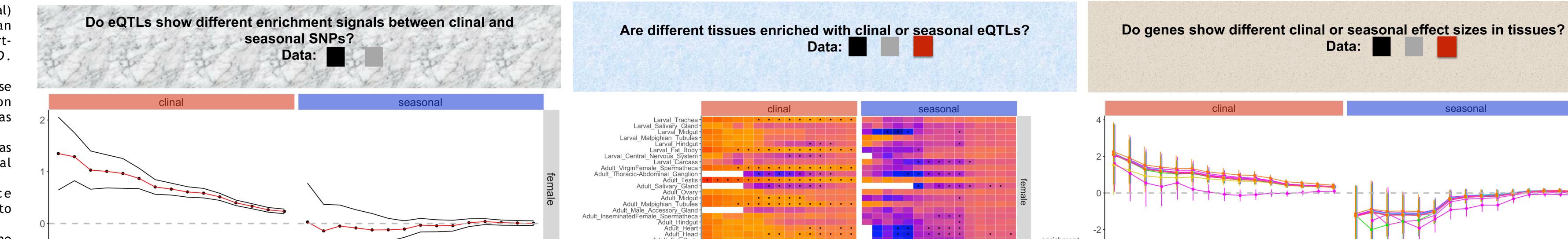
## A meta-analysis suppests different anaptive meetantsms between elinal and seasonal anapaiton in D. metanogasier

RESULTS

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## INTRODUCTION

- Clinal (spatial) and seasonal (temporal) environmental heterogeneity can maintain genetic variation in shortlived organisms, such as D. melanogaster
- Similar phenotypic changes in response to clinal and seasonal selection pressures were observed, such as fecundity and starvation tolerance
- Similarity in genetic features, such as Fst between clinal and seasonal populations were also observed
- ♦ However, functional evidence connecting genetic architecture to phenotypes are lacking
- We use eQTL data combined with gene

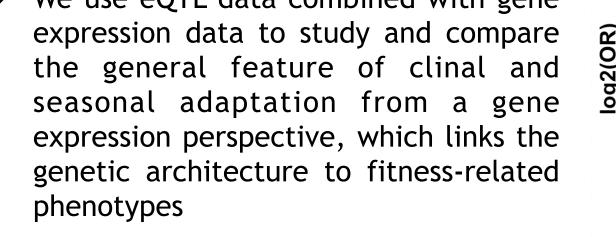


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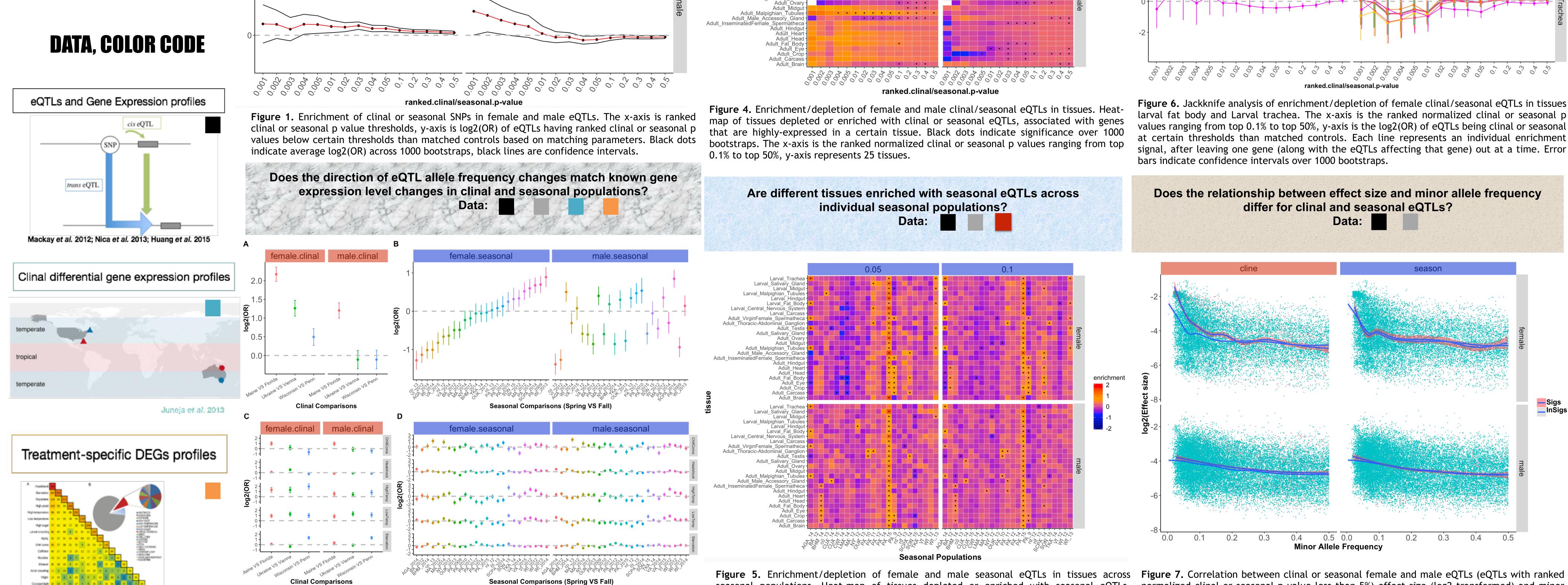
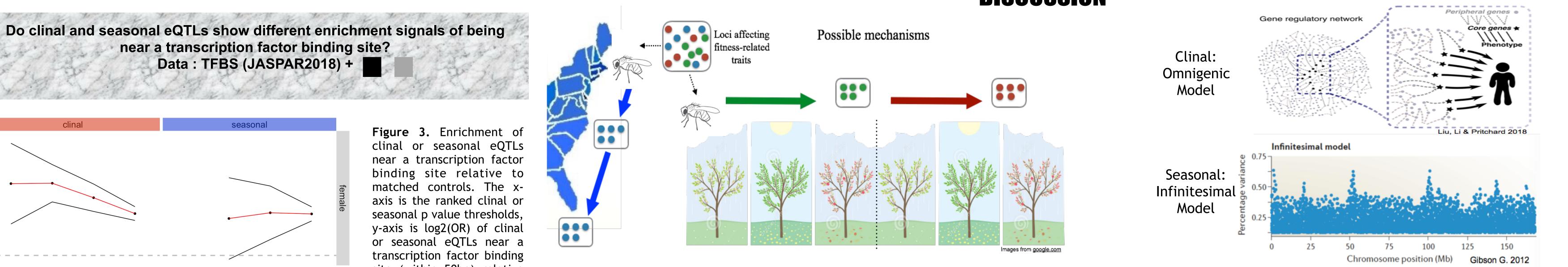


Figure 2. The concordance of allele frequency change of female and male eQTLs associated with, (A,B) 32 genes differentially expressed between high and low latitudinal populations, or (C,D) genes differentially expressed under certain treatment, compared to matched controls. (A,C) 3 independent clinal comparisons using 6 latitudinal distinct populations and (B,D) 25 seasonal comparisons using 25 populations with both spring and fall samples, with the assumption that gene expression patterns should be similar between northern and spring populations, and similar between southern and fall populations. Error bars indicate confidence intervals with 1000 bootstraps.

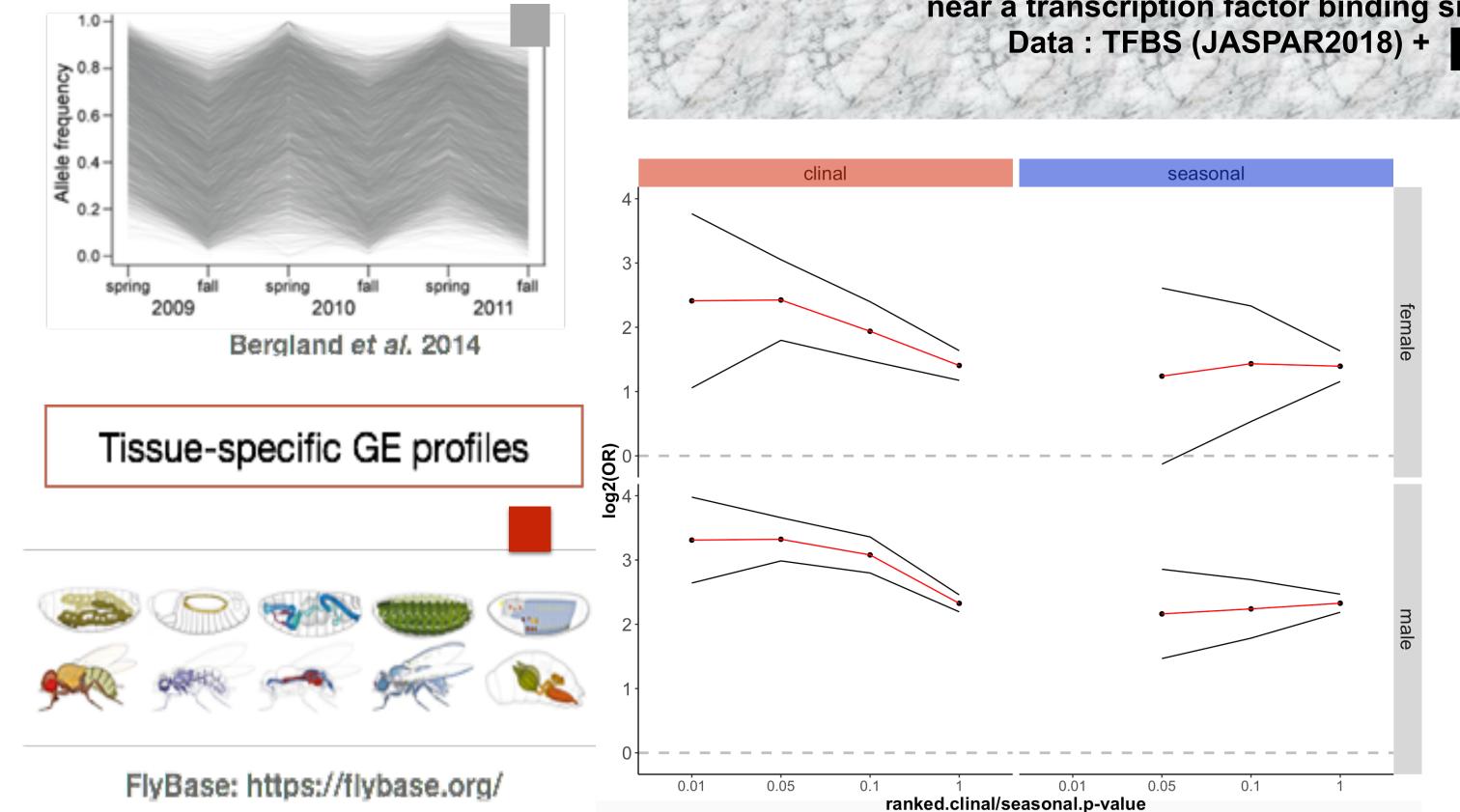
Figure 7. Correlation between clinal or seasonal female and male eQTLs (eQTLs with ranked seasonal populations. Heat-map of tissues depleted or enriched with seasonal eQTLs, normalized clinal or seasonal p value less than 5%) effect size (log2 transformed) and minor associated with genes that are highly-expressed in a certain tissue in each seasonal allele frequency (averaged across 40 geographic populations). Red dots are clinal or seasonal population, at top 5% and top 10% seasonal p value thresholds. Black dots indicate eQTLs while blue dots are non-clinal or non-seasonal eQTLs. Red regression lines (Sigs) significance over 1000 bootstraps. The x-axis is individual seasonal populations, y-axis indicate fitted non-linear regression of the clinal or seasonal eQTLs; Blue lines (InSigs) indicate fitted non-linear regression of the controls (non-clinal or non-seasonal eQTLs). represents 25 tissues.

DISCUSSION

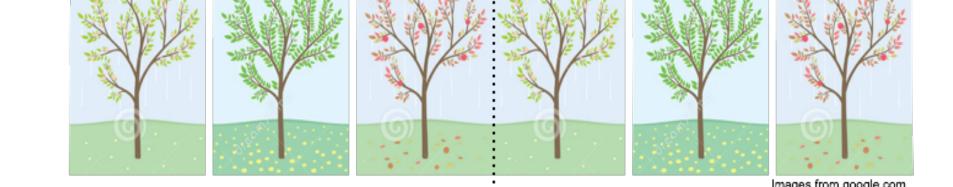


Clinal/Seasonal SNPs and Allele frequencies

Zhou et al. 2012



site (within 50bp) relative to matched controls based on matching parameters. Black dots indicate average log2(OR) across 1000 bootstraps, black lines are confidence intervals. Note at 1% seasonal p value threshold, for both female and male eQTLs, average log2(OR) are infinite.



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