

Gene Expression Differences in Diurnal and Nocturnal Cichlids

This study aims to identify genes implicated in diurnal and nocturnal activity patterns in cichlid fish by analyzing differential gene expression (DEG) across four species:

- Diurnal species: *Tropheops kumwera* and *Astatotilapia calliptera*
- Nocturnal species: *Astatotilapia labrosus* and *Aulonocara stuartgranti*



T. kumwera



A. calliptera



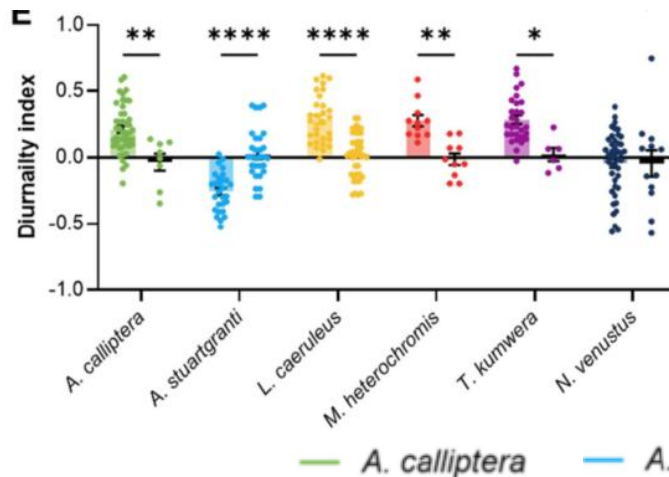
A. labrosus



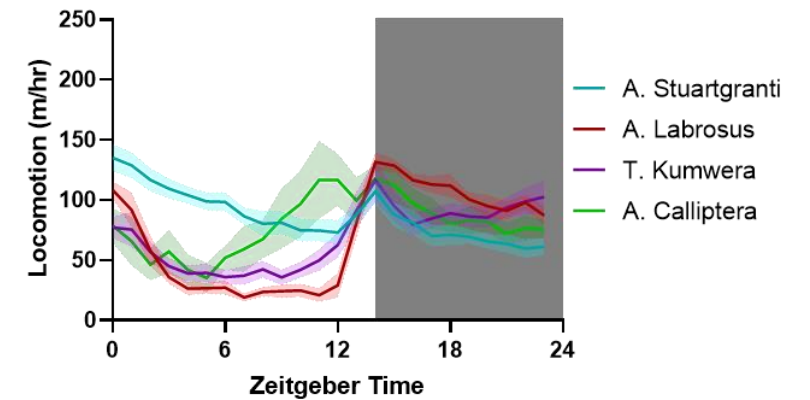
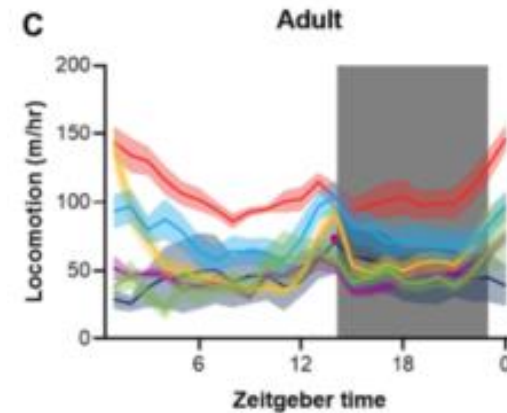
A. stuartgranti

Cichlids: Diurnality and Nocturnality

Species	Larva (Lloyd <i>et al</i>)	Adults (Lloyd <i>et al</i>)	My results
<i>T_kumwera</i>	Diurnal	Diurnal	Nocturnal
<i>A_calliptera</i>	Diurnal	Diurnal	Diurnal
<i>A_labrosus</i>	-	Nocturnal	Nocturnal
<i>A_stuartgranti</i>	Nocturnal	Nocturnal	Diurnal



(Lloyd et al)



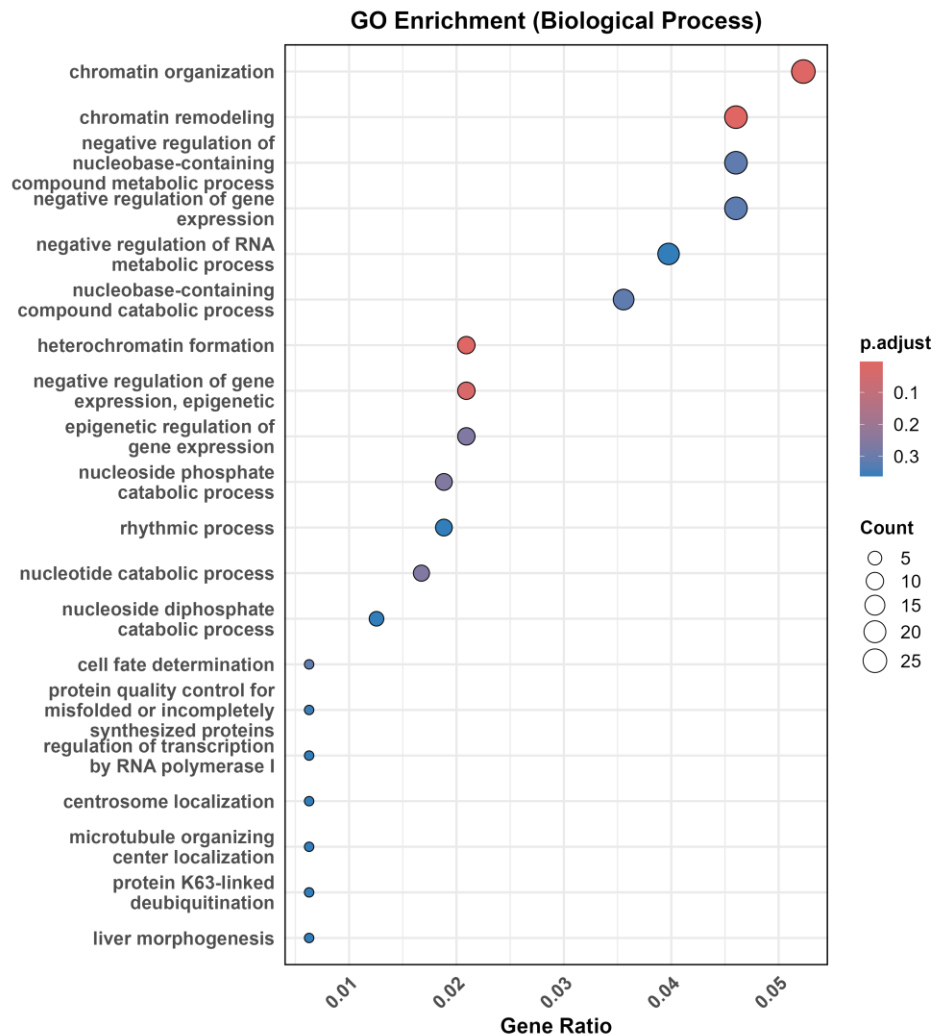
My results

DESeq Design

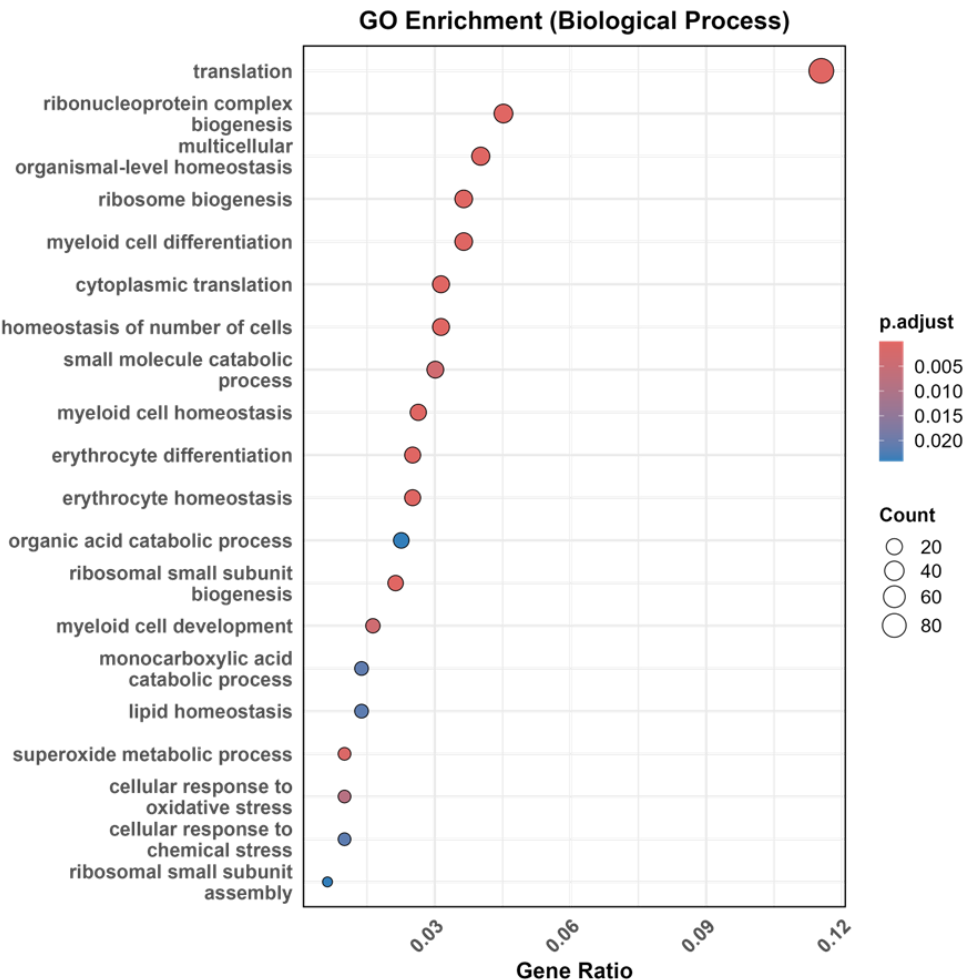
- `coldata <- data.frame(row.names = colnames(raw_counts),
 species,
 activity_pattern)`
- `dds <- DESeqDataSetFromMatrix(countData = raw_counts,
 colData = coldata,
 design = ~ activity_pattern)`

GO analysis: Diurnal vs Nocturnal

Upregulated



Downregulated



Genes in rhythmic process

SN	Gene	Function
1	btbd9	Sleep & locomotion
2	mtnr1aa	Melatonin receptor
3	nfil3-5	Circadian & immune regulation
4	nampt1	NAD+ metabolism
5	ezh2	Epigenetic regulation
6	bmal1a	Core circadian clock
7	prkaa2	Energy homeostasis
8	ncoa2	Hormone & metabolism regulation
9	timeless	Circadian clock regulation

