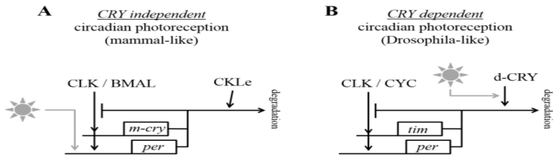
Searching for light-induced genes in hymenopteran insect - *Nasonia vitripennis* : transcription of 13% of the genes is regulated by light

Yifan Wang, Roelof Hut

Groningen Institute for Evolutionary Life Sciences, University of Groningen, The Netherlands

Yifan.wang@rug.nl

Introduction:



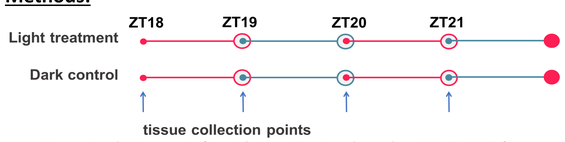
The aims of the study is to answer:

1. What are the circadian photoreceptors in *Nasonia vitripennis*?
2. What is the molecular mechanism underlying light entrainment in *Nasonia vitripennis*?

Hypothesis:

As *Nasonia* has a more mammalian-like clock system with light-insensitive CRY, it is hypothesized that there is light- induced gene induction like in mammalian clock light input pathway.

Methods:



- Unmated Nasonia females entrained under 14:10 LD for a week, treatment is given on Day 8 from ZT18
- **Treatment: light treatment or dark control**
- **Treatment Duration: 0.5h, 1h, 2h, 4h**
- **Collecting head tissue (100 heads per sample)**
- 30M 150bp paired end **mRNA RNAseq** by Illumina Novaseq6000☑

Results & Conclusion:

- In total, 1891 genes expression level changed significantly due to the light pulse
- CLOCK gene was significantly upregulated after 2 hrs of light pulse
- two interesting pathways: juvenile hormone and rhodopsin
- Gene set enrichment analysis and pathway analysis still need to be done for more insight into the light entrainment pathway in *Nasonia*

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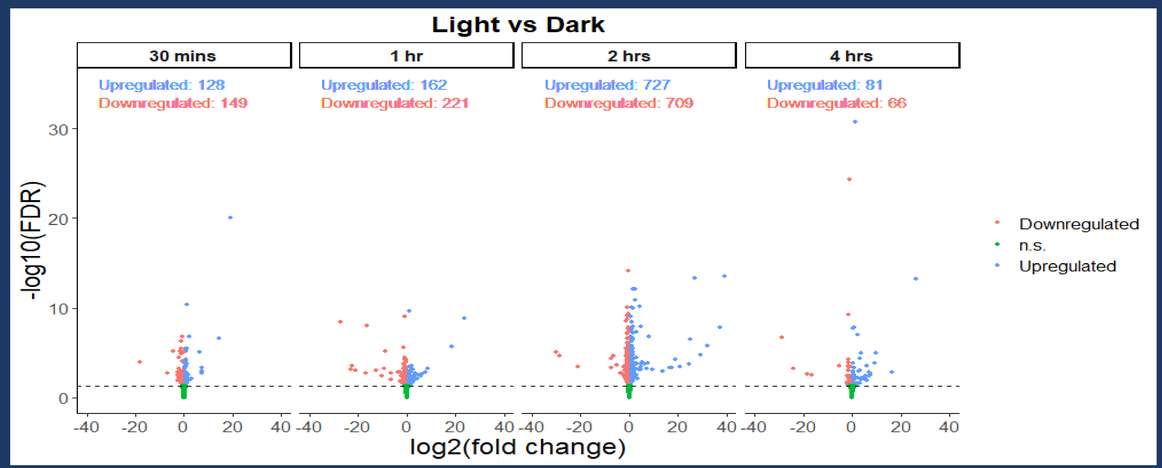
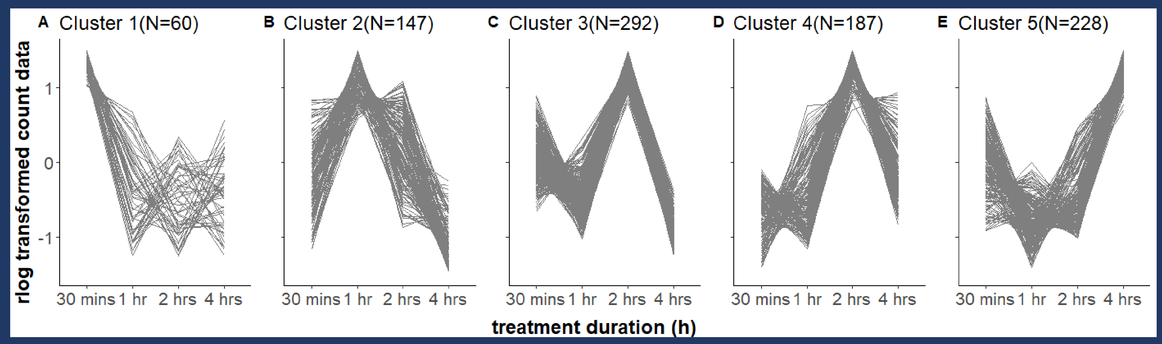
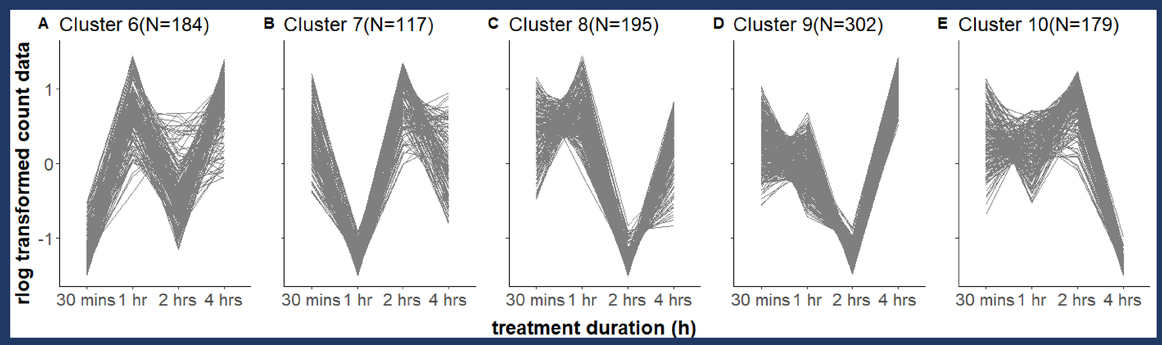


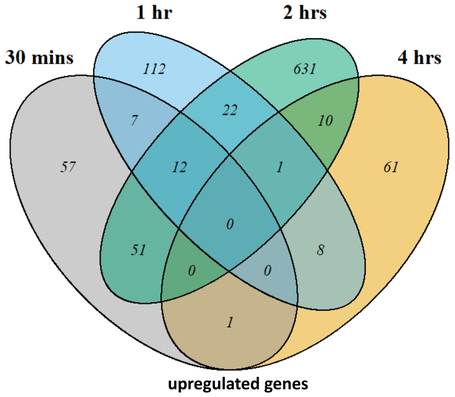
Volcano plots for each light vs dark contrast

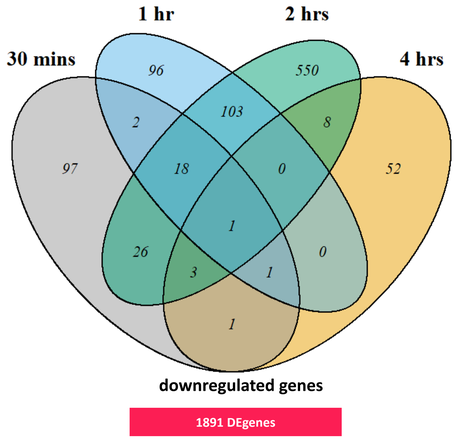


Gene expression peak at different time points

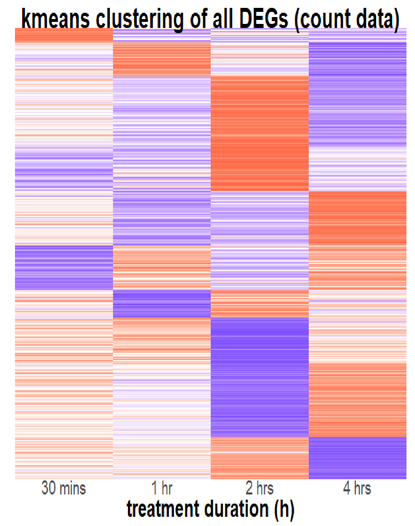


Gene expression dip at different time points





1891 DEgenes



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Comparative INsect CHRONobiology

MARIE CURIE ACTIONS

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