Assessing the Role of the Transcriptional Repressor BLMP-1 in the Molting Timer of *C. elegans*

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**The Molting Cycle of *C. elegans***

- *C. elegans* larvae molt 4 times at 8-10 hour intervals.
- A sleep-like state, known as lethargus, accompanies each molt during which locomotion is reduced and feeding ceases.
- The old cuticle is shed during the process of ecdysis, marking the beginning of a new life stage when feeding resumes.
- Adult animals do not molt.
- Findings about the molting timer may apply to biological clocks in mammals.

**BLMP-1 as a Component of the Molting Timer in *C. elegans***

BLMP-1, the B lymphocyte-induced maturation protein, plays a role in cell specification and differentiation in other species. Furthermore, BLMP-1 acts as a transcriptional repressor. The *blmp-1* gene is a target of NHR-23, which is a nuclear hormone receptor known to activate genes involved in the process of molting.

I hypothesize that a transcriptional feedback loop between RORα/NHR-23 and BLMP-1 operates in the molting timer.

**Conclusions and Discussion**

In order to determine whether BLMP-1 is involved in the timing of the molting cycle in *C. elegans*, I examined how it alters the pace in mutants, how it oscillates in expression, and how it interacts with other components of the molting timer, namely NHR-23.

- *Blmp-1* mutants reach adulthood earlier relative to wild type animals, when both are released from starvation at the same time.
- *Blmp-1* expression oscillates in the epidermis, similar to known components of the molting cycle timer.
- *Blmp-1* levels are influenced by the presence of NHR-23.

Biological rhythms are key features of animal development. A deeper understanding of the molting timer may lead to insights about the biological clocks pertinent to human circadian rhythms and aging.

**Future Directions**

In order to better understand other functions of BLMP-1 in the molting timer it is useful to consider the following:

- How does BLMP-1 interact with NHR-23 and how does it fit in the regulatory circuit?
- How does *blmp-1* interact with let-7 and other components of the molting timer?
- Using higher resolution confocal laser microscopy is it possible to detect BLMP-1 expression in other cells?

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