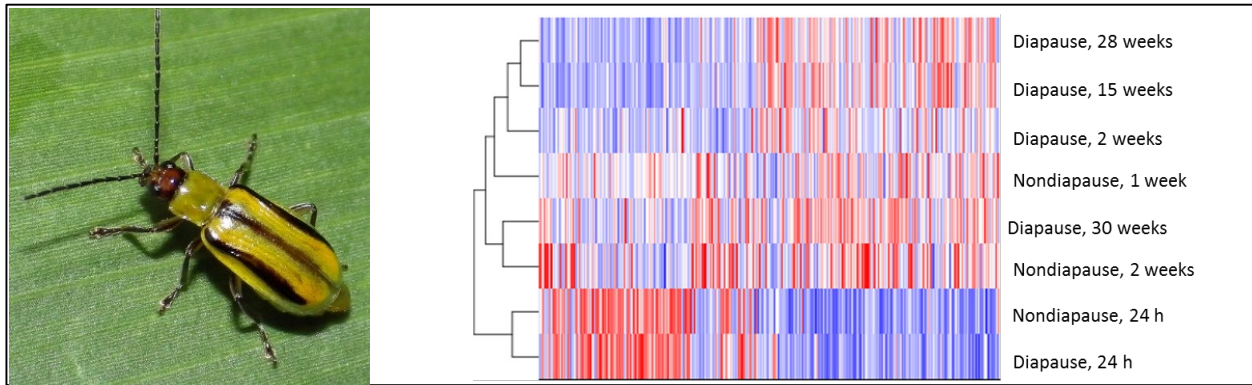


## PHYSIOLOGY

### Molecular Mechanisms of Diapause in the Corn Rootworm Complex



#### DESCRIPTION

The corn rootworm complex is one of the most devastating insect pests in North America, with an annual economic impact of around US\$1 billion. Diapause, a period of suspended development, is a critical life history adaptation that allows rootworms to synchronize their life cycle with their host plant.

For this project, we are examining how diapause is regulated in this species complex, to understand factors that initiate or terminate diapause and to identify factors that keep rootworm eggs locked in diapause.

The long-term goal of this project is identify targets that could be exploited to disrupt diapause. The ability to prevent diapause in the laboratory would significantly shorten the one-year life cycle and facilitate research efforts on corn rootworms. Importantly, the ability to disrupt diapause in the field would provide a new approach for pest control.

#### HOW THIS IS DIFFERENT THAN RELATED RESEARCH

While the ecological importance of diapause in corn rootworms is well-established, the means by which diapause is regulated has not been addressed. Furthermore, few attempts have been made to disrupt diapause in insects, particularly in species with an obligate diapause such as corn rootworms. This project will provide a comprehensive characterization of the regulation of diapause and generate targets that can be manipulated to break diapause.

#### MEMBER BENEFITS

- A list of candidate genes and processes that can be disrupted to manipulate diapause in corn rootworms.
- Tools for generating nondiapausing rootworm strains to accelerate research by member companies.
- Access to additional genomic resources for Western corn rootworm, and the first set of comprehensive transcriptomic resources for Northern corn rootworm.