MASTER THESIS

Evolution of sex determining pathways in insects

Musca domestica

The common housefly is a member of Diptera (true flies). Different sex determination mechanisms exist in natural housefly populations making it an ideal system for investigating the plasticity of this developmental pathway at the molecular level.

Tribolium castaneum

The red flour beetle is a coleopteran species. Thanks to the availability of a large set of genetic tools it has become a highly accessible model for studying the molecular basis of fate choices in development.

Contact information

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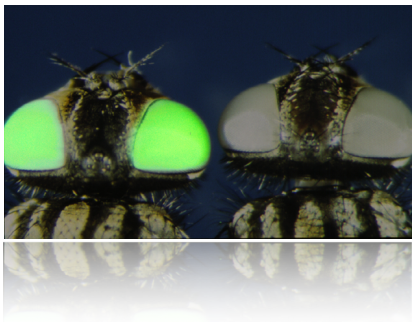
Almost all species throughout the animal kingdom produce two sexually distinct phenotypes, females and males. Nevertheless, many different mechanisms seem to exist which select and fix the sexual fate of a developing individual. In insects, for instance, dominant male or female determiners, parental genotypes, haplo-diploidy, or even environmental cues are employed as primary signals to instruct male or female development.



A functional study of key determinants in flies and beetles

Our research group is interested in investigating the molecular basis of this diversity. We would like to understand in what respect the underlying genetic pathways differ in holometabolous insects. Using state-of-the-art technologies (transgenesis, RNAi, CRISPR/Cas9) we are currently examining the functions of candidate genes in insect models such as the common housefly *Musca domestica* and the red flour beetle *Tribolium castaneum*.