

## Genetic improvement of the Black Soldier Fly

**Supervisor:** Prof Chris Jiggins ([c.jiggins@zoo.cam.ac.uk](mailto:c.jiggins@zoo.cam.ac.uk))

**Department/Institute:** Zoology

**Industrial Partner:** Better Origin

**Research area:** Sustainable agriculture and insect genomics

### Project outline:

The black soldier fly (BSF, *Hermetia illucens*) is a promising insect species in the global food industry due to its ability to convert organic waste into biomass. The student will work with our Industrial Partner in order to explore different approaches towards genetic improvement of this species for the industry. The project will investigate the global genetic diversity, population structure and the genetic basis for economically important traits in the BSF. It will involve generating and analysing a large data set of genome sequences for BSF populations from around the world.

Bioinformatics and large scale data handling skills will form an important part of the project, as well as population genomics hypothesis testing. Different strains will also be tested for performance on different feedstocks in order to investigate naturally occurring genetic variation in economically relevant traits. The student will also use artificial selection on economically important traits such as growth rate to explore their potential for genetic improvement. Genome resequencing of selected lines will be used to identify genome regions controlling key traits under selection. Overall this project will provide important information on the genetics of this economically important but poorly studied species.

**BBSRC DTP main strategic theme:** Bioscience for sustainable agriculture and food

**BBSRC DTP secondary strategic theme:** Understanding the rules of life, Bioscience for renewable resources and clean growth