

# Fly genome could help us improve health and our environment

October 13 2014

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The house fly might be a worldwide pest, but its genome will provide information that could improve our lives. From insights into pathogen immunity, to pest control and decomposing waste, the 691 Mb genome has been sequenced and analyzed by a global consortium of scientists, and is published in the open access journal *Genome Biology*.

The [genome](#) highlights detoxification and [immune system genes](#) that are unique to the insect, and could be subjects of further study to help humans deal with toxic and disease causing environments.

The house fly (*Musca domestica*) lives on human and animal waste. They are an important species for scientific study because of their roles as waste decomposers and as carriers of over 100 human diseases, including typhoid, tuberculosis and worms. Fly transmitted trachoma alone causes 6 million cases of childhood blindness each year.

Because the house fly is so intimately involved in human processes, the researchers say sequencing its genome will have implications for human health, identifying the genes that allow the flies to live in toxic environments.

The lead author of the paper Jeff Scott, Cornell University, says: "House flies are a fascinating insect for scientists in many areas, such as developmental biology, sex determination, immunity, toxicology and physiology. The completed genome will be a phenomenal tool for researchers in all of these fields and will facilitate rapid advancements"

The consortium of scientists sequenced the genomes of six female houseflies, creating a 691 Mb long sequence. They compared it to the 123 Mb *Drosophila melanogaster* genome, to give an indication of the genes that were unique to house fly, and could be candidates for further study.

The comparison showed that the fly had many more immune genes, and that these were of a higher diversity than in the *Drosophila* genome. Understanding how this fly is immune to the human diseases it carries could help scientists to create treatments or vaccines for these diseases.

The fly genome also contained unique detoxification genes, which produce proteins that help the fly break down waste. Information about these genes could help us to handle human waste and improve the environment.

**More information:** [genomebiology.com/2014/15/10/466](http://genomebiology.com/2014/15/10/466)

Provided by BioMed Central

Citation: Fly genome could help us improve health and our environment (2014, October 13) retrieved 25 April 2024 from <https://phys.org/news/2014-10-genome-health-environment.html>

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