

INSECTS – ALTERNATIVE MODEL ORGANISMS FOR STUDIES OF HUMAN DISEASES

Summary

Over the last decade the interest of using invertebrates, including insects, as model organisms in studies of human diseases has rapidly increased. Until now, hundreds of papers which demonstrate the possibility of using insect models in studies on human neurodegenerative diseases, diabetes, obesity or heart diseases were published. The rapid development of molecular biology techniques, physiological and pharmacological bioassays, as well as genome sequencing of fruit fly *Drosophila melanogaster*, red flour beetle *Tribolium castaneum*, silkworm

Bombyx mori and honey bee *Apis mellifera* also provides a strong methodological support for this research approach. As a result of these studies a number of insect genes, orthologs of human genes known to be responsible for the development of various diseases, and many proteins encoded by these genes were identified. Also morphological and physiological phenotypes of different genes and the action of some drugs applied in neurodegenerative and cardiac diseases in humans have been characterized in insects.