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蚊虫血餐前后转录组分析研究进展

肖菲菲[1, 2], 黄恩炯[2], 张建明[2], 关雄[1]*

1.福建农林大学生物农药与化学生物学教育部重点实验室, 福州 350002;

2.福建国际旅行卫生保健中心, 福州 350001

Research advances on the analysis of blood-induced transcriptome changes in mosquitoes

XIAO Fei-fei[1, 2], HUANG En-jiong[2], ZHANG Jian-ming[2], GUAN Xiong[1]*

(1.Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, Fujian Agriculture and Forestry University, Fuzhou 3500022, China;

2.Fujian International Travel Health Care Center, Fuzhou 350001, China)

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摘要 吸血是蚊虫传染疾病的主要途径。吸血前后, 蚊虫体内的代谢途径会发生一系列变化。转录组分析可以从整体水平上反映细胞中基因表达情及调控规律。特对蚊虫吸血前后基因表达及代谢途径等变化进行综述。

关键词: 蚊虫 转录组 血餐

Abstract: Hematophagy, blood-feeding, is a behaviour exhibited by most arthropod vectors of human pathogens. Hematophagous mosquitoes can transmit many diseases by blood-feeding. It causes a large number of deaths each year all over the world. The female generally feeds to repletion on a single blood meal and then proceeds to use this nutrition as the basis for the development of batch of eggs. A series of changes such as gene expression may occur after blood meal. Availability of several mosquitoes' genome sequences provides unique opportunities to study different aspects of biology, including identification of genes and pathways relevant to the developmental processes of individual life stages. However, development of novel

vector control strategies requires a thorough detailed understanding of mosquito biology. Transcriptome analysis is a recently developed approach to transcriptome profiling that uses deep-sequencing technologies. It provides a comprehensive understanding of gene expression and its regulation. It also provides a far more precise measurement of levels of transcripts and their isoforms than any other methods. Transcriptome analysis has been successfully used in several mosquitoes and also achieved much useful information. Females of non-blood-feeding and blood feeding differ in many morphological, behavioural, and physiological traits, largely caused by differences in gene expression. The expression patterns of different genes are discussed in the context of female mosquitoes' physiological responses to blood feeding, including blood digestion, peritrophic matrix formation, egg development, and immunity. The changes of gene expression expose the main molecular differences between non-blood-feeding female and blood-feeding female. The present paper would summarize the current status of the transcriptome changes in mosquitoes induced by blood-feeding. It provides a valuable resource for the future studies.
Keywords： mosquito transcriptome blood meal
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Corresponding Authors: 关雄, Email:guanxfafu@126.com
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