Eighth International Symposium on Molecular Insect Science

7 - 10 July 2019 • Sitges, nr Barcelona, Spain

PROGRAMME BOOKLET

Supporting publications

www.elsevier.com/molecular-insect-science

Y. Hong, B. Kang, S. Jeong*, *Chonbuk National University, Republic of Korea*

[P2.08] Understanding the molecular and neural basis of olfaction in red palm weevil using gene silencing and odor-evoked brain activity studies.
J. Johny*[1], M. Paoli[2], C.G. Galizia[2], M.A. Al-Saleh[1], B. Antony[1], [1]*King Saud University, Saudi Arabia,* [2]*University of Konstanz, Germany*

[P2.09] A study on habitats and behavioral characteristics of hornet wasp (Hymenoptera: Vespidae: *Vespa orientalis*), An important medical-health pest
R. Dehghani[1], H. Kassiri*[1], [1]*Kashan University of Medical Sciences, Iran,* [2]*Ahvaz Jundishapur University of Medical Sciences, Iran*

[P2.10] Olfactory receptors essential for the blood-feeding process of the major disease vector, *Aedes aegypti*
D.I. Kim*[1,2], S.H. Lim[1,2], G.R. Noh[1,2], G.Y. Han[1,2], R.A. Ilyasov[2], H.W. Kwon[1,2], [1]*Incheon National University, Republic of Korea,* [2]*Convergence Research Center for Insect Vectors, Republic of Korea*

[P2.11] Mechanism of acetic acid avoidance in *Drosophila*
Y. Lee, *Kookmin University, Republic of Korea*

[P2.12] Discovering the umami receptor in the Western honey bee, *Apis mellifera*
H.W. Kwon[1,2], S.H. Lim*[1,2], J.W. Jung[1,2], H.S. Lee[1,2], G.Y. Han[1,2], R.A. Ilyasov[2], [1]*Incheon National University, Republic of Korea,* [2]*Convergence Research Center for Insect Vectors, Republic of Korea*

[P2.13] Enhanced gene expression of enzymes involved in dopamine biosynthesis by a juvenile hormone analog in male honey bees
T. Watanabe*, K. Matushima, K. Sasaki, *Tamagawa University, Japan*

[P2.14] Genetic variability of a winter-emerging Chironomidae in trout streams of southeastern Minnesota
L.C. Ferrington Jr., *University of Minnesota, USA*

[P2.15] Comparative transcriptomes of larval fat body in *Helicoverpa assulta* under different temperature conditions
D.W. Lee*[1], K.H. Kim[2], [1]*Kyungsung University, Republic of Korea,* [2]*Rural Development Administration, Republic of Korea*

[P2.16] Biological response to chlorpyriphos of two alpine chironomid species (*Diamesa* spp.)
A.B. Muñiz -González*[1], J.L. Martínez-Guitarte[1], V. Lencioni[2], [1]*Universidad Nacional de Educacion a Distancia (UNED), Spain,* [2]*MUSE-Museo delle Scienze, Italy*

[P2.17] Investigation on the ice fly *Diamesa steinboecki* thermal tolerance with a molecular approach
A.B. Muñiz-González*[1], J.L. Martínez-Guitarte[1], V. Lencioni[1,2], [1]*Universidad Nacional de Educacion a Distancia (UNED), Spain,* [2]*, MUSE-Museo delle Scienze, Italy*

[P2.18] Hologenome profiling of Frakliniella occidentalis reveals a complex microbiome and confirms the presence of two novel symbionts
J. Bhart*, M. Hitchings, P. Facey, R. Del Sol, *Swansea University, UK*

[P2.19] Gut microbiota of field-collected and laboratory-selected insecticide resistant larvae of *Spodoptera frugiperda* and the diversity of insecticide degrading bacteria
A.F.F. Gomes, C. Omoto, F.L. Cônsoli*, *University of São Paulo, Brazil*

[P2.20] Presence of bacterial endosymbionts in mites of economic importance in Spanish citrus orchards
T. Pina[2,1], J. Cruz-Miralles[1], M. Cabedo-Lopez[1], J.A. Jaques[1], B. Sabater-Muñoz[3], M.A. Hurtado*[1], [1]*Universitat Jaume I de Castelló, Spain,* [2]*Universitat de Valencia, Spain,* [3]*Instituto de Biologia Molecular y Celular de Plantas, Spain*

[P2.21] Differential mating behaviours of a tetracycline-treated *Tetranychus urticae* laboratory strain and their effect on mite microbiota
M. Cabedo-Lopez[1], J. Cruz-Miralles[1], T. Pina[2,1], J.F. Alzate-Restrepo[3], O. Coltell[1], V. Ibañez-Gual[1], B. Sabater-Muñoz[4], J.A. Jaques[1], M.A. Hurtado*[1], [1]*Universitat Jaume I de Castelló, Spain,* [2]*Universitat de Valencia, Spain,* [3]*Universidad de Antioquia, Colombia,* [4]*Instituto de Biologia Molecular y Celular de Plantas, Spain*

[P2.22] Two complete mitochondrial genomes of the invasive species, *Metcalfa pruinosa* (Hemiptera: Flatidae): genomic comparison among species of Fulgoroidea and selection of variable sites useful for population genetic analysis
N.R. Jeong*[1], K.H. Lee[1], J.S. Jeong[1], M.J. Kim[1], G-S. Lee[2], W. Lee[3], I. Kim[1], [1]*Chonnam National University, Republic of Korea,* [2]*National Academy of Agricultural Science, Republic of Korea,* [3]*Gyeongsang National University, Republic of Korea*

[P2.23] Microbial dynamics of Xyleborus affinis during its cycle life
L.A. Ibarra-Juarez[1], M.A. Burton[1], L. Cruz[1,2], E. Ibarra-Laclette[1], D. Desgarennes[1], M. Vázquez-Rosas-Landa[1], A. Alonso-Sánchez[1], E. Villafan[1], G. Hanako-Rosas[1], A. Lamelas*[1], [1]*Instituto de Ecología A. C, Mexico,* [2]*University of Florida, USA,* [3]*3Max-Planck-Institute for Chemical Ecology, Germany,* [4]*Julius-Maximilians-University of Würzburg, Germany,* [5]*Joint Unit of Research in Genomics and Health, Foundation for the Promotion of Health and Biomedical Research in the Valencian Community (FISABIO) and Institute of Integrative Systems Biology (Univers, Spain,* [6]*CIBER en Epidemiología y Salud Pública, Spain*

Nutrition sensor regulates neuropeptide in the hypopharyngeal gland of honeybee

Givoun Han1. Sooho Lim\ Sujin Lee1, Rustem A. Ilyasov12, Ural Yunusbaev1 and Hyung Wook Kwon1

1 Department of Biological Sciences & Convergence Research Center for Insect Vectors, College of Life Science and Bioengineering,
Incheon National University, Incheon, Republic of Korea

2Ufa Federal Research Center, Institute of Biochemistry and Genetics, Russian Academy of Sciences, Ufa, Russia

(Correspondence should be addressed to hwkwon@inu.ac.kr)

Abstract

In honeybees, nutrient sensors affect the ability to perceive chemosensory, change behavior, social behavior and labor division. Signals detected by nutrition sensors are affected by neuropeptides during sensory communication(Nassel et al., 2019). Currently, 35 neuropeptides are identified in honeybee but some of them did not defined yet (Yeoh et al., 2017). Royal jelly, which is given to larvae from housework nursing bees is important in terms of protein supply. These neuropeptides may have siginificatnt roles in developing tissues and social behaviors in honey bees. Here we identified one of the gustatory receptors tha showed differential expression patterns during caste development in honeybees. Thus, we here delved into the potential interaction of this Gr with neuropeptides using differentially Expressed Gene (DEG) analysis approach in hypopharyngeal grand where honeybees produce royal jelly. DEG analysis shows 7 neuropeptides are down regulated and 13 neuropeptides are up regulated in honey bees. Especially, insulin-like peptidel (ILP1), ILP2, which play a role for insulin-signaling pathway were down regulated. Our study indicates that chemosensory receptor not only detect nutrient in peripheral organ such as proboscis and antennae, but this also is likely involved in growth and development with neuropeptides. Key words: Gustatory receptor, Hypopharyngeal gland, RNA interference, DEG analysis, Insulin signaling pathway. RNA interference data shows us that AmGr-X is essential for the survival and growth of bees. According to DEG & GO analysis, AmGr-X knockdown can affect a variety of factors such as neuropeptides and metabolic processes, etc.

Han G.Y., Lim S.H., Lee S.J., Ilyasov R.A., Yunusbaev U.B., Kwon H.W. Nutrition sensor regulates neuropeptide in the hypopharyngeal gland of honeybee // Proceedings of the 8th International Symposium on Molecular Insect Science (MOLI) 07-10 July 2019. Spain, Barcelona: Elsevier. 2019. P. 93.