Eighth International Symposium on Molecular Insect Science

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PROGRAMME BOOKLET

Supporting publications

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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 Frankliniella 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*

Title:

Olfactory receptors essential for the blood-feeding process of the major disease vector, *Aedes aegypti*

Authors & affiliations:

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Dong-In Kim, Soo Ho Lim, Gwang-Rae Noh, Gi-Youn Han Rustem A. Ilyasov and Hyung Wook Kwon*

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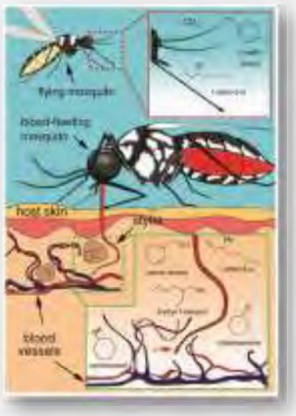
Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text/diagrams into it.)

The yellow fever mosquito, *Aedes aegypti* (*Ae. aegypti*) is a major disease vector for dengue virus, Zika virus, yellow fever and chikungunya. One of the poorly understood aspects of mosquito blood-feeding behaviours is how they target an optimal site in order to penetrate the skin and blood vessels without alerting the host animal. Here we provide new findings that the piercing-sucking stylet of Ae. *aegypti* is an essential apparatus for the final stage in blood feeding behaviour. Indeed, the stylet possesses olfactory receptor neurons that express two conventional olfactory receptors of *Ae. aegypti* (AaOrs), AaOr8 and AaOr49, together with the olfactory co-receptor (AaOrco). In vitrocalcium imaging using transfected cell lines demonstrated that AaOr8 and AaOr49 were activated by volatile compounds present in blood. Gene expression inhibition of these Ors interferes with blood-feeding behaviours. In silico protein modeling and mutaganasis also demonstrated structural interactions between these Ors and ligands. Taken together, we identified olfactory receptor neurons in the stylet involved in mosquito blood feeding behaviors, which in turn indicates that olfactory perception in the stylet is necessary and sufficient for mosquitoes to find host blood in order to rapidly acquire blood meals from a host animal.



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