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ABSTRACT BOOK

[P.15.360] Finding immune responsive proteins in the honey bee

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Honey bees are susceptible to a large range of parasites and pathogens, and infections can significantly affect colony health and productivity. Pesticide and antibiotic treatments are used to control disease outbreaks but are unsustainable for long term management. As pests evolve resistance towards these treatments, this results in unintentional selection of more virulent pests and less resistant bees. Consequently much research has focused on improving bee stock by selectively breeding for disease resistant traits. Once infected with a disease, bees mount innate immune responses, comprised of cellular and humoral defences. Therefore, breeding for immune competence would also increase disease resistance. This project aims to develop an immune response assay, providing a method for immunocompetence evaluation. Here we present findings from our initial immune response assay towards the fungal pathogen Nosema apis. Male honey bees were infected with N. apis and analysed using targeted protein quantitation through multiple reaction monitoring (MRM) mass spectrometry. Once further tested in other diseases, the panel of markers can be used to study immune response variations, potentially providing a platform for marker-directed breeding of more immune competent bees.

[P.15.361] Distribution and impacts of Aethina tumida Murray (Coleoptera: Nitidulidae) in Latin America

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The small hive beetle (SHB) Aethina tumida is a parasitic pest and scavenger of social bees, native to sub-Saharan Africa. Although in its native range it does not cause severe damage to strong colonies, it has invaded new areas, such as the USA and Australia, causing significant economic losses. Here, we present the current distribution of the SHB in Latin America, and discuss the strategies carried out in different countries to prevent its entrance or spread. The first report of its presence dates to 2007, in Coahuila, Mexico, a borderline state to the USA. Then it spread to other Mexican states and by 2012, it was detected in Yucatan and Quintana Roo, in the southern part of the country. Simultaneously it was also detected in Cuba, and continued spreading south, being found in El Salvador in 2013, Nicaragua in 2014 and Costa Rica in 2015. It was also detected in Sao Paulo (southeast of Brazil) in 2015, and in Río de Janeiro the following year; reaching by 2019 Mato Grosso do Sul (Midwest of Brazil). Although A. tumida does not significantly impact beekeeping in countries where Africanized bees are present, it negatively impacts the regulation of the hive products from these countries.
On the other hand, in the Andean and southern portion of South America (Bolivia, Perú, Chile, Argentina and Uruguay), there are to date no reports of the beetle`s presence. A workshop held in 2016 in the framework of RedLAC (Network for the development of familiar agriculture in LatinAmerica and the Caribbean), brought researchers and technicians of different countries to discuss strategies for the prevention and control of the beetle. The documents produced at this meeting were an important input for the animal sanitary agencies. Since then, different strategies have been drawn for its early detection, including sampling in risk areas, installation of sentinel apiaries with traps, and/or extension activities for beekeepers, among others. Within RedLAC and SOLATINA (Latin American Society for Bee Research), we aim to work together to strengthen and improve these strategies, while understanding the potential impacts of this pest for the bees in the region.

[P.15.362] Varroa mite impacts on queen bee quality in the Hawaiian archipelago

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In the midst of widespread pollinator declines, including high annual losses of *Apis mellifera* (honey bees), beekeepers struggle to pin-point the exact cause of their loss. While many factors impacting *A. mellifera* declines have been studied, little is known about the impact of the