

P 239

THE BEST OF BOTH WORLDS TO IMPROVE *VARROA DESTRUCTOR* RESISTANCE SELECTIONMatthieu Guichard¹, Vincent Dietemann^{2,3}, Markus Neuditschko⁴, [Benjamin Dainat](#)¹¹Swiss Bee Research Centre, Agroscope, Bern, Switzerland²Swiss Bee Research Centre, Agroscope, Bern, Switzerland³Department of Ecology and Evolution, University of Lausanne, Lausanne, Switzerland⁴Animal GenoPhenomics, Agroscope, Posieux, Switzerland**Abstract**

Infestation by *Varroa destructor* remains the biggest threat to the health of honey bees of European origin. Attempts to breed resistant lines have started several decades ago and follow two general approaches: the use of modern animal breeding techniques involving animal models and breeding values based on one or a few resistance phenotypes and, at the other end of the spectrum, relying on natural selection of unidentified locally adapted resistance traits. To date, neither of these approaches produced broadly available commercial stock which beekeepers can keep and maintain without varroacidal treatments. We propose a paradigm shift by combining these diametrically opposed approaches to give nature more scope to select local resistance traits while using modern breeding and beekeeping techniques to foster genetic progress and prevent large-scale die-offs, which are inherently linked to survival selection. In addition, we propose to better consider the so far neglected co-evolutionary processes between host, parasite, associated pathogens, and microbiome. We will also present Plan-B-omics, a four-year proof-of-principle project which will test such approach by relying on metagenomics to include beneficial microbes and pathogens towards a co-selection process for increased honey bee colony health and survival.