

equipment were given free to the local participants. The three years project was paid by The Velux foundation.

It has not yet succeeded in creating a sufficient population of bees in Greenland – the goal was 200 colonies. Last year the beekeepers wanted to create 50 new colonies, but because of a very bad summer, only 17 colonies were ready for the winter. A visit in South Greenland in July this summer will collect information about the present situation and describe it in the SICAMM Workshop.

A novel SNP-based tool for estimating C-lineage introgression in the dark honey bee (*Apis mellifera mellifera*)

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The natural distribution of the honeybee (*Apis mellifera* L.) has been changed by humans in recent decades to such an extent that the formerly widest-spread European subspecies, *Apis mellifera mellifera*, is threatened by extinction through introgression from highly divergent commercial strains in large tracts of its range. Conservation efforts for *A. m. mellifera* are underway in multiple European countries requiring reliable and cost-efficient molecular tools to identify purebred colonies.

Here, we developed four ancestry-informative SNP assays for high sample throughput genotyping using the iPLEX Mass Array system. Our customized assays were tested on DNA from individual and pooled, haploid and diploid honeybee samples extracted from different tissues using a diverse range of protocols.

The assays had a high genotyping success rate and yielded accurate genotypes. Performance assessed against whole-genome data showed that individual assays behaved well, although the most accurate introgression estimates were obtained for the four assays combined (117 SNPs). The best compromise between accuracy and genotyping costs was achieved when combining two assays (62 SNPs). We provide a ready-to-use cost-effective tool for accurate molecular identification and estimation of introgression levels to more effectively monitor and manage *A. m. mellifera* conservatories.

Natural selection of varroa tolerant *Apis mellifera mellifera* 'black bee' colonies in the Netherlands

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Since 2001 volunteer researchers participating in 'De Duurzame Bij' have been active in the selection program 'varroa tolerant *Apis mellifera* honey bee colonies' of De Duurzame Bij. Leading in our approach was and still is, the idea that we needed to find a balanced host-parasite relationship in our *Apis mellifera* colonies comparable to *Apis cerana* colonies.

In *Apis mellifera cerana* colonies an essential part of the varroa tolerance strategy is the fact that *varroa destructor* reproduction is suppressed in worker brood and mainly reproduce in drone brood. However in European *Apis mellifera* colonies varroa mites reproduce in worker as well as in drone brood cells although a reduced mite reproduction has been shown in non-treated adapted colonies resulting in a reduced growth of the mite population.