

Monitoring solitary and honey bee health by DNA analyses

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Wild solitary and managed honey bees are important pollinators, contributing to valuable crop harvests and biodiverse flowering landscapes. However, bees' work is threatened by many factors, ranging from land and farm management habits, natural parasites and pathogens, to climate effects. One way of analysing the interaction of bees with their environment is based on classifying collected pollen. Its diversity is crucial for the bees' fitness. Pollen can be classified by nucleic acid analyses. DNA sequencing has become both affordable and small-scale, hence mobile. This opens the door to applying diagnostic nucleic acid analyses in medicine at bedside as well as in environmental sciences in the field. But how discriminative is this technique when applied to pollen classification or pathogen resistance markers? Based on our research on wild bee health in agro-environments and Varroa-resistant honey bee breeding, I introduce into our current understanding of the biological problem setting and first results.