P2.1 The male sexual marking pheromones of the *Bombus laesus* group.

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Since its description by Krüger, there is so much confusion in the taxonomy of the *Bombus laesus*-group and this one has always raised discussion within the scientific community. Previously considered as a separate subgenus (*Laesobombus* Skorikov), now included into the *Thoracobombus* Dalla Torre, *Bombus mocsaryi* and *Bombus laesus* were merged into a single taxon called *Bombus laesus*. In this paper we attempt to shed some light in this confusion by studying the male cephalic labial secretion. This chemical composition is reported for the first time. The bumblebee male cephalic labial secretions act as sexual attracting pheromones and they are known as generally very species-specific. Therefore, the strong differences between the secretion on *B. mocsaryi* and *B. laesus* lead to take these taxa as good separated species.

P2.2 The isolation and identification of phagostimulants within honeybee pollens.

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Previous approximations have suggested that pollination via animals contributes to the reproduction of around 225.000 angiosperm species globally. Indeed, estimates indicate that as much as 33% of all our food could be derived from primarily bee pollinated crops. In financial terms, this could be as much as €153bn worth of agricultural produce annually.
One theory for the decline of honeybee populations currently being is that bees become more susceptible to disease through reduced colony strength over the winter period. Commercial beekeepers may feed high protein supplemental diets to colonies to both increase nutrient diversity, and stimulate brood production. The intended result is an increase in both bee numbers, and colony strength. Typically though, these diets are not as acceptable to bees as natural pollen, and previous studies have documented that the addition of some natural pollen (or pollen extract) to supplemental diets improves their uptake.
It is therefore believed that pollens contain naturally occurring phagostimulatory compounds which increase honeybee feeding. Isolating and identifying these stimulants may assist in maintaining good levels of honeybee nutrition, through enhancing the palatability of food supplements which beekeepers may provide. This is being attempted through a series of pollen extractions fractionations, coupled with bioassay feeding trials, with UK colonies.

P2.3 Chemical signatures of nurses and foragers influence the transmission of the parasitic mite *Varroa destructor* among beehives.

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The factors which induce *Varroa destructor* to abandon a collapsing bee colony to infest other hives are not completely known. Previous researches have shown that mites prefer to ride on nurse bees, recognizing them from foragers via cuticular hydrocarbons; but in highly infested or close to collapse colonies, we would expect mites to adopt a strategy that allows them to move onto foragers. Using binary choice tests, we explored if mites change their preference for hosts with different tasks when colony infestation increases.
Our results shows that the mite behaviour depends on the level of mite infestation. We found that, at low infestation rate, mites remain within the hive and promote their reproduction by riding nurse bees that have a distinct cuticular chemical signature with respect to foragers. However, GC-MS analyses show that the chemical signatures of nurses and foragers overlap when the level of infestation increases. This chemical homogenization between bees with different tasks does not provide mites with discrimination cues, promoting a rise in the percentage of mites departing from infested hives by riding foragers.

P2.4 Variation in oral acute toxicity of thiamethoxam according to the volume administered in Algerian honeybees.

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Thiamethoxam is a neurotoxic systemic insecticide belonging to the neonicotinoid family. Approved under the trade Algeria Actara WG 25%, the plant protection product is recognized toxic to the bees after acute exposure. However, this product is persistent, has a significant residual activity and accumulates in plants. It is therefore necessary to completely reassess its toxicity. To do this, we determined the sensitivity of the Saharan and Tellian honeybee, *Apis mellifera sahariensis* and *Apis mellifera intermissa*, to thiamethoxam by testing the acute oral toxicity on worker bees in the laboratory. The study is based on determining the LD_{50} according to the volume administrated. Each batch of bees were fed 100, 200, 500 and 1000µl (5, 10, 25 and 50µl per bee) 55,5% (w/v) sucrose solution with increasing doses (1, 10, 20, 50, 70 and 90 ng per bee) of thiamethoxam dissolved in acetone, for trial treatments, and 55,5% (w/v) sucrose solution supplemented with acetone, control treatments. The results showed that the toxicity is manifested by acute symptoms of early neurotoxicity and cumulative mortalities that occur 24 hours after treatment. The LD_{50} varies with the volume administered. Indeed, the LD_{50} values decrease with increasing volume, and there is an inverse relationship between the LD_{50} obtained and administered volumes.