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The queen, her pheromone & reproductive hegemony in honeybees

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The queen has the reproductive hegemony over the colony. Workers are refrained from developing their ovaries and this inhibition is in part due to the secretion of the queen mandibular pheromone by the queen. Numerous studies showed that dopamine has a strong implication in the regulation of worker sterility. Removing the queen from the colony induces an increase of dopamine levels in the brain and enhance the number of worker with developed ovaries. Feeding of HVA (component of the queen pheromone) not only reduces dopamine level in the brain but also impairs young worker to make negative associations which are in part dopamine dependant. Involvement of dopamine in the regulation worker reproduction and its sensibility to queen pheromone is still a mystery. However, using molecular and behavioural techniques studies are enhancing the understanding of the intricate relationship between dopamine the queen and the reproductive status of workers.