

The biochemical buzz on career changes in bees

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Scientists are reporting differences in the brains of nurse bees and forager bees.
Credit: The American Chemical Society

Adults facing unexpected career changes, take note. Scientists from Brazil and Cuba are reporting that honey bees — a mainstay for behavioral research that cannot be done in other animals — change their brains before transitioning to that new job. Appears in the current edition of ACS' monthly *Journal of Proteome Research*, the research provides valuable insight into the biochemistry behind the behavior, feats of navigation, and social organization in these animals.

In the study, Marcelo Valle de Sousa and colleagues point out that worker [bees](#) begin adult life by performing tasks in the nest such as brood nursing. By 2-3 weeks of age, however, these females —

equivalent to middle age in human years —switch to foraging for nectar and pollen. Foraging requires a new skill set that includes uncanny ability to navigate to and from feeding sites, communicating the location of food to other bees, and flights of hundreds of miles in a lifetime.

The researchers collected and analyzed hundreds of bee brains, comparing the proteins scripted by the genes in nurses and foragers in order to find proteins related to the genetic and behavioral shifts during these career transitions. The brains of nurse bees have higher levels of certain "royal jelly" proteins involved in caste determination. Experienced foragers, in contrast, over expressed proteins linked to energy production and other activities.

"Our study demonstrated clear brain proteome differences between honey bee nurse and forager subcastes with distinct social roles," the study says. - AD

More information: "Proteomic Analysis of Honey Bee Brain upon Ontogenetic and Behavioral Development," pubs.acs.org/stoken/presspac/p.../10.1021/pr800823r

Provided by American Chemical Society ([news](#) : [web](#))

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