

## **Study reveals similarities between bee brains and human brains**

February 26 2020, by Mark Hathaway



Paul Szyszka catches honey bees from the bee hive at the roof of the Zoology Department. Credit: University of Otago. Credit: University of Otago

In a discovery that could open new avenues for understanding of the brain, researchers have found similarities between the brain activity of honey bees and humans.



The research revealed that alpha oscillations in bees (the wave-like electrical activity brains generate) have similar properties as in our human brains.

Paul Szyszka, Lecturer in the University of Otago's Department of Zoology, says "as alpha oscillations are associated with brain functions such as; attention, memory, and consciousness, bee brains may provide new avenues to understanding how our own brains work."

"Experiments on humans are expensive, logistically difficult, and time consuming. Moreover, recordings from individual identified neurons are not possible in human brains. By studying the brains of bees we can overcome these limitations and apply that knowledge to research, and eventually perhaps even to treatment, of <u>human brains</u>."

Szyszka, who collaborated with Dr. Tzvetan Popov of the University of Heidelberg in Germany, intends to extend the understanding of this fundamental research at the University of Otago.

The study involved regular honey bees from outdoor hives. In the laboratory they were stimulated with odors, with microscopic electrodes recording their brain activity.





Harnessed honey bees feed on sucrose solution from a pipette. Credit: University of Otago.

"It is fascinating to see how bees can learn to associate odors with food in a similar way to humans. What we want to do now is examine how these alpha oscillations change in different situations. As a neuroethologist, I'm interested in how bees' <u>alpha oscillations</u> change during natural behaviors, for example when a bee forages or sleeps," Szyszka says.

Szyszka is now in search of students looking to master in Zoology or Neuroscience in a project to further examine the relationship between <u>brain</u> waves and learning and memory.

The research has been published today in the journal *Proceedings of the Royal Society B*.

**More information:** Tzvetan Popov et al. Alpha oscillations govern interhemispheric spike timing coordination in the honey bee brain, *Proceedings of the Royal Society B: Biological Sciences* (2020). DOI: 10.1098/rspb.2020.0115

Provided by University of Otago

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