



University of
Lethbridge

NEWS RELEASE

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Alberta researchers to study honey bee viruses

A team of Alberta researchers has received grants worth \$400,000 to study honey bee viruses.



Drs. Trushar Patel, a Canada Research Chair and associate professor of Chemistry & Biochemistry at the University of Lethbridge, and Shelley Hoover, a ULethbridge associate professor in Biological Sciences and honey bee expert, are teaming up with Drs. Wade Abbott, a scientist at Agriculture and Agri-Food Canada, and Lara Mahal, Canada Excellence Research Chair in Glycomics at the

University of Alberta, to better understand how these honey bee-infecting viruses are transmitted and how they interact with their host.

"Understanding the mechanisms of honey bee viruses is crucial for developing effective strategies to protect these vital pollinators," says Dr. Dena McMartin, ULethbridge vice-president of research. "The collaborative efforts of these researchers will pave the way for innovative solutions to combat these viruses and ensure the sustainability of our agricultural ecosystems."

"Right now, no therapeutics are available to fight these viruses," says Patel. "We need to know more about how these RNA viruses infect honey bees before we can develop tools to combat the viruses."

Honey bees are vital to agriculture and food production around the world, accounting for over \$7 billion worth of food, honey and other bee products in Canada alone. In 2023, Alberta was home to nearly 40 per cent of honey bee colonies in Canada, and Alberta bees produced the same amount of the country's honey. The production of hybrid canola seeds in southern Alberta depends on managed honey and leafcutter bees.

However, since 2006, Canadian bee colonies have experienced increased winter mortality, with over 50 per cent mortality in some regions in some years. Major factors influencing

mortality are parasites, viral and bacterial infections, weather, forage availability, queen bee quality and the use of pesticides.

Viruses, such as deformed wing virus (DWV) and sacbrood virus (SBV), are an important part of the problem. These viruses hijack the bee's cellular machinery and cause disease that spreads through a colony, resulting in lost productivity and even colony death.

The study is expected to take two to three years and will boost understanding of how these RNA viruses interact with host proteins.

“The proposed work represents what we believe is the first focused effort on identifying honey bee proteins necessary for viral replication,” he says. “This work will lay a strong foundation for further research work directed towards developing potential therapeutics against bee-infecting viruses,” says Patel. “Training highly qualified personnel is also a crucial component of our interdisciplinary work.”

Funding for the project came through the Agriculture Funding Consortium and was provided by Alberta Innovates and Results Driven Agriculture Research (RDAR), as well as through the Canadian Glycomics Network (GlycoNet) Research Pipeline Program.

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Our University's Blackfoot name is Iniskim, meaning Sacred Buffalo Stone. The University is located in traditional Blackfoot Confederacy territory. We honour the Blackfoot people and their traditional ways of knowing in caring for this land, as well as all Indigenous Peoples who have helped shape and continue to strengthen our University community.