THE UNIVERSITY of EDINBURGH

News Release

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Gene study boosts bid to keep British bees safe from disease

Efforts to protect the UK's native honey bees could be helped by research that maps their entire genetic make-up.

Experts also analysed the genetic profile of bacteria and other organisms that live inside bees, to shed new light on emerging diseases that threaten bee colonies.

Researchers say their findings could help to safeguard native bee populations from the effects of infectious diseases through improved health monitoring.

Bees play a vital role in helping to pollinate crops and wild plants, so minimising risks to them is crucial.

A team led by the University of Edinburgh analysed the entire genetic makeup of bee colonies from across the UK and compared them with recently imported bees.

They found that bees from some hives in Scotland were genetically very similar to the UK's native dark honey bee, even though southern European strains have been imported for many years

The researchers from the University's Roslin Institute say this is good news as native bees were thought to be endangered in the UK. They suggest this could mean that native bees survive better in cooler climates than their relatives from southern Europe.

The team also analysed the genetic makeup of bacteria and other organisms that live inside bees – the so-called metagenome.

The findings uncovered organisms that had not been seen before in honey bees and that may cause disease. Hives that are infected with these organisms may also be more susceptible to other infections.

The research is published in *Nature Communications*. Experts from the University's School of Biological Sciences and Edinburgh Genomics also contributed to the study.

The Roslin Institute receives strategic funding from the Biotechnology and Biological Sciences Research Council.

Dr Tim Regan, a Postdoctoral Research Fellow at the University of Edinburgh's Roslin Institute, said: "We have created a platform that could revolutionise how we monitor threats

to honey bees and maintain their health. The decreasing cost of DNA sequencing could potentially allow this type of analysis to become routine."

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