Mosquitoes reared in cooler temperatures may be more dangerous

Mosquitoes reared in cooler temperatures have weaker immune systems, making them more susceptible to dangerous viruses like West Nile fever and more likely to transmit them to people.

The connection between temperature and the mosquito's immune system, published in PLOS Neglected Tropical Diseases, is significant in light of global climate change, said researchers Kevin Myles and Zach Adelman, associate professors of entomology in the College of Agriculture and Life Sciences, and affiliates of the Fralin Life Science Institute.

Specifically, Adelman and Myles found that the mosquito's RNA interference pathway is impaired when reared at cooler temperatures.

"Our data offers a plausible hypothesis for how changes in weather influence the transmission of these diseases and will likely continue to do so in the future," Myles said.

A variety of weather anomalies may occur with global changes in climate. However, predicting what these weather anomalies will be is difficult due to the enormous complexity involved. Nevertheless, the work of Myles and Adelman suggests that it would be unwise to focus solely on warmer temperatures when considering links between climate change and disease transmission.

"Mosquitoes like to breed and lay their eggs in dark, cool places because that means the water will last longer," Adelman said. "They don't lay their eggs in sunny spots because that will dry the water out in a day or two. Although this has been known for some time, we are just learning about its potential effects on the mosquito immune response. Hopefully, this information can be used to build better models that more correctly predict when we'll have disease transmission."