Smaller mosquitoes are more likey to be infected with viruses causing human diseases

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An entomologist at the Illinois Natural History Survey, a division of the new UI Institute for Natural Resource Sustainability, says smaller mosquitoes are more likely to be infected with viruses that cause diseases in humans. These findings can be found in the November issue of the *American Journal of Tropical Medicine and Hygiene*.

Barry Alto, Ph.D., Director of the Medical Entomology Program at the Illinois Natural History Survey, along with Assistant Professor Michael Reiskind of Oklahoma State University and Professor L. Philip Lounibos of the University of Florida fed mosquitoes blood with dengue virus and later tested them for infection. The research was conducted at the Florida Medical Entomology Laboratory. The researchers painstakingly took into account the size of each mosquito by measuring the length of their wings. Smaller-sized mosquitoes had higher infection and potential to transmit dengue virus than larger individuals. However, Alto warns there are other components, such as adult longevity, host preference, and feeding frequency, that determine a mosquito's vectoring ability which still need to be taken into account in future studies.

The Asian tiger and yellow fever mosquitoes are the two main transmitters of dengue virus, the mosquito-borne virus of greatest importance to human health. Both of these mosquitoes are found throughout the world including the U.S. The ferocious tiger mosquito invaded Illinois in the 1990s. Now researchers have shown that only slight differences in the body sizes of these mosquitoes drastically alter

their potential to transmit viruses causing human disease.

What's more surprising is that the effects were consistent for the two mosquito species.

Results of this study have important implications for mosquito control strategies and evaluation of disease risk for dengue. Competition among the larvae of container-breeding mosquitoes results in smaller sized adults. However, control strategies (e.g., larvacides) release surviving larvae from competition, resulting in the production of larger adult mosquitoes. Thus, a benefit of control strategies may be the production of larger, less competent adult mosquitoes in terms of infection, potentially mitigating dengue transmission. These results have the potential to provide information on disease risk and aid in control efforts of the diseases that mosquitoes transmit.

Source: University of Illinois at Urbana-Champaign