Tulane researcher receives award to study the threat of diseases from bats

December 20th, 2021

|

Barri Bronston bbronst@tulane.edu

View PDF

Tulane researcher Hannah Frank is part of a team of scientists who want to better understand how bats shed viruses. (Photo by Rusty Costanza)

Hannah Frank, a bat expert in the Tulane University School of Science and Engineering, will share in a $1.25 million award for new research in detecting and mitigating emerging animal-borne infectious diseases.

The award, part of the first Scialog: Mitigating Zoonotic Threats initiative, was given to 10 multidisciplinary teams of early career scientists by the Research Corporation for Science Advancement and the U.S. Department of Agriculture. Team members receive $50,000 each.

Frank, an assistant professor in the Department of Ecology and Evolutionary Biology, will join researchers from the University of Oklahoma, Northern Arizona University and Arizona State University in a project titled “Zoonotic Implications of Host Genetics, Immunity and Virome in Bats.”

“Zoonotic disease, aka diseases from non-humans that can infect humans, are an increasing problem and threat to human health and wellbeing, as the COVID-19 pandemic demonstrates,” Frank said. “Bats are a particularly important group to understand from the perspective of zoonotic disease since they can spread and shed infections that do not cause disease in bats but are highly lethal to humans and other animals — such as SARS-CoV-2 and Marburg fever virus.”

Frank said predicting which bats and viruses will be most problematic and understanding how viruses have evolved with bats will not only inform an understanding of bat and viral ecology and evolution but also improve public health efforts.

> “As the COVID-19 pandemic illustrates, zoonotic disease is an increasing threat requiring multidisciplinary approaches to forecast, prevent and mitigate transmission between and within species.”
> *Hannah Frank, assistant professor in the Tulane School of Science and Engineering*

Her team will focus on bats living in three areas of the American tropics — Ecuador, Belize and Costa Rica. They will use cutting-edge techniques to determine what infections bats are currently shedding, which infections they have previously encountered and which bat lineages have been under the most evolutionary pathogen pressure.

“Our goal is to understand the extent to which past evolutionary pathogen pressure predicts whether hosts are current threats to human health or are insulating humans from infections because their immune systems have evolved to optimally control the infections, meaning less viral shedding,” she said.

Frank’s team includes Daniel Becker of the Department of Biology at the University of Oklahoma, Jason Ladner of the Department of Biology at Northern Arizona University and Efrem Lim of the School of Life Sciences at Arizona State University.

The team is one of 10 Mitigating Zoonotic Threats teams receiving 2021 Scialog Collaborative Innovation Awards. Scialog is short for “science + dialog.” Created in 2010 by RCSA, the Scialog format supports research by stimulating intensive interdisciplinary conversation and community building around a scientific theme of global importance.

“As the COVID-19 pandemic illustrates, zoonotic disease is an increasing threat requiring multidisciplinary approaches to forecast, prevent and mitigate transmission between and within species,” Frank said. “Because hosts are the selective environments in which pathogens evolve, understanding host evolution and immunity may allow us to better predict the source and type of potential zoonotic threats.”