

Commensal rodent pathogens

Tuesday, 10 October 2023 14:54 (1 minute)

Rodents are the most speciose mammalian group, encompassing some ~2300 species. This great diversity is associated with a correspondingly significant pathogen diversity, including Seoul virus, lymphocytic choriomeningitis virus (LCMV), rat hepatitis E virus, *Leptospira* spp. and *Streptobacillus moniliformis*. Commensal rodent species such as Norway rats (*Rattus norvegicus*) and house mice (*Mus musculus*) are particularly important pathogen reservoirs because of their close association with humans. Here, we present the results from several rodent pathogen studies from Europe and the Middle East. We describe the prevalence and diversity of rodent-borne pathogens in urban areas, and present case studies from zoos in Germany. In Iran we detected the presence of eight different pathogens, several of which being zoonotic, and multiple coinfections. We were also able to detect several mutations of the *Vkorc1* gene in these rats, which is responsible for resistance to anticoagulant rodenticides. In German zoos we describe the potential spill-over of *Francisella tularensis* and LCMV from wild rodents to captive monkeys. Furthermore, we describe the re-emergence and persistence of LCMV in a mouse population in Germany and the potential for spill-over events in zoos. These studies highlight the need for continued pest rodent management and surveillance, and the potential risk these animals pose for the emergence and re-emergence of zoonotic pathogens.

Keywords

rodents, ecology, LCMV, rat hepatitis E virus, Germany, zoos

Registration-ID code

ZOO23-599

Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

Primary author: MEHL, Calvin (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Greifswald-Insel Riems, Germany. German Centre for Infection Research (DZIF), Partner Site Hamburg-Lübeck-Borstel- Riems, Germany.)

Co-authors: GROSETH, Allison (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Greifswald-Insel Riems, Germany.); ADEYEMI, Olayide Abraham (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Greifswald-Insel Riems.); EISENBERG, Tobias (Hessian State Laboratory, 35392 Giessen, Germany. Institute of Hygiene and Infectious Diseases of Animals, Justus-Liebig-University Giessen, 35392 Giessen, Germany.); GEDVILAITĖ, Alma (Institute of Biotechnology, Life Sciences Center, Vilnius University, Saulėtekio al. 7, LT-10257 Vilnius, Lithuania.); HECKEL, Gerald (University of Bern, Institute of Ecology and Evolution, Bern, Switzerland.); HÖPER, Dirk (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Greifswald-Insel Riems, Germany.); ISMER, Gabriele (Tierpark Gettorf GmbH, Gettorf, Germany.); LINDE, Jörg (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Institute for Bacterial Infections and Zoonoses (IBIZ), Jena, Germany.); OBIEGALA, Anna (University of Leipzig, Institute of Animal Hygiene and Veterinary Public Health, 04103 Leipzig, Germany.); REZA ABAI, Mohammad (Tehran University of Medical Sciences, School of Public Health, Department of Medical Entomology and Vector Control, Tehran, Iran.); SCHARES,

Gereon (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Greifswald-Insel Riems, Germany.); TOMASO, Herbert (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Institute for Bacterial Infections and Zoonoses (IBIZ), Jena, Germany.); ULRICH, Rainer G. (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Greifswald-Insel Riems, Germany. German Centre for Infection Research (DZIF), Partner Site Hamburg-Lübeck-Borstel- Riems, Germany.); VASILJŪNAITĖ, Emilija (Institute of Biotechnology, Life Sciences Center, Vilnius University, Saulėtekio al. 7, LT-10257 Vilnius, Lithuania.); WYLEZICH, Claudia (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Greifswald-Insel Riems, and Justus-Liebig-Universität Gießen, Institut für Angewandte Mikrobiologie, Gießen, Germany.)

Presenter: MEHL, Calvin (Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health, Greifswald-Insel Riems, Germany. German Centre for Infection Research (DZIF), Partner Site Hamburg-Lübeck-Borstel-Riems, Germany.)

Session Classification: Lunch & Poster Viewing (P2)

Track Classification: Zoonoses & Wildlife