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Reinventing the Rodent-Borne Pathogen Network: From Past Achievements to Future Directions

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Rodents and other small mammals are key reservoirs for numerous pathogens, including zoonotic agents transmissible to humans, animal pathogens as well as infectious agents specific to small mammals. The transmission dynamics of these pathogens are shaped by complex biotic and abiotic environmental factors and reservoir functions such as genetics, necessitating a holistic, interdisciplinary approach aligned with the One Health framework, which integrates human, animal, and environmental health.

Since 2004, the Rodent-Borne Pathogen Network has established itself as a stable and collaborative platform for the study of rodents and small mammals across Europe focussing mainly on Germany. By fostering international and cross-sectoral partnerships, the network has facilitated the collection and analysis of extensive samples from pet animals and diverse wildlife ecosystems, advancing our understanding of small mammals as reservoirs of both zoonotic and non-zoonotic pathogens. It has also played a critical role in developing new methodological tools for pathogen surveillance and in translating research findings for use in public health, veterinary services, and among other relevant stakeholders.

The network has contributed to key epidemiological insights, such as the ecology of Puumala orthohantavirus and Borna disease virus 1, and has enhanced knowledge of wild rodent community structure and their associated pathogen diversity. Its investigations have also supported the detection of “novel”, so far unknown and (re)emerging pathogens and helped to elucidate evolutionary and ecological patterns in host–pathogen interactions and disease outbreaks.

Recent global developments—including technological advances, environmental change, and increased zoonotic spillover risk highlighted by the COVID-19 pandemic—underscore the need to expand the network’s scope. This presentation introduces core concepts and objectives for its next phase, with a focus on enhancing ecological pathogen surveillance and harnessing emerging analytical tools to better understand and mitigate rodent- and other small mammal-associated disease risks.

Keywords

Rodents, Small mammals, network

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Professional Status of the Speaker

Senior Scientist

Junior Scientist Status

No, I am not a Junior Scientist.

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