# Network "Rat-borne pathogens": Searching for pathogen co-infections

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The Norway rat Rattus norvegicus is an important reservoir of zoonotic pathogens, such as orthopox virus (OPV) and Leptospira, but also for agents of no or unknown zoonotic potential. In addition, in Norway rats human pathogens have been detected, but rats are most likely not involved in their transmission, but may serve as a sentinel.
In a recent survey, Norway rats originating from five European countries were investigated for Leptospira spp., Rickettsia spp., OPV, and rat polyomavirus (ratPyV). Leptospira DNA was detected in 60 of 420 rats and Rickettsia DNA was found in three of 369 rats. PCR-based typing resulted in the identification of L. interrogans and Rickettsia helvetica, respectively. RatPyV DNA was detected in 103 of 421 rats. OPV DNA was detected in none of the rats, but OPV-specific antibodies in three of 388 rats. The frequency of single Leptospira and ratPyV infections and co-infections was, independent of sex, greater for adults compared to juveniles/subadults and greater at rural sites compared to urban areas.
Study results indicate a broad geographical distribution of Leptospira DNA in rats within Europe underlining the need to further investigate potential mechanisms leading to increased prevalence in rural habitats. In contrast, rickettsia and OPV infections rarely occurred in wild rat populations. The potential influence of ratPyV on the susceptibility to infections with other pathogens should be investigated in future studies. Recently, pilot studies were initiated within the network for Staphylococcus aureus, Streptobacillus moniliformis and further pathogens.

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