

# Fleas collected from Norway rats in downtown LA carry human pathogen

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Most fleas collected from rats trapped in downtown Los Angeles, California carried microbes from the genus, *Bartonella*, many of which are human pathogens, according to a paper in the November *Applied and Environmental Microbiology*.

The research team limited their investigation to [fleas](#) of the species *Xenopsylla cheopis*, because they are known both to infest *Rattus norvegicus*, the Norway rat, which is a major pest in high density urban areas, as well as to bite humans, says first author Sarah Billeter of the [Centers for Disease Control and Prevention](#), Fort Collins, CO.

*Bartonella* species are gram-negative bacteria that infect [red blood cells](#) and [endothelial cells](#) of the host. More than half are thought to cause some clinical disease in humans. *B. rochalimae*, found in 72 percent of the collected fleas, was first isolated from the blood of a patient who became ill after returning to the United States from a vacation in Peru, says Billeter. “She complained of fever, insomnia, nausea, headache, and mild cough. Upon examination at the hospital, she was found to have recurrent fever, splenomegaly, and anemia.” *B. rochalimae* has also been identified as a cause of infectious endocarditis in a dog from San Francisco, says Billeter.

The remaining fleas harbored sequences most closely related to *B. tribocorum*, a bacterium that has been detected in rodents “from various parts of the world,” including France, says Billeter, and was isolated from the blood of a febrile Thai patient. “At this point, it remains

unclear whether *B. tribocorum* is a human pathogen,” says Billeter. “From a public health standpoint, however, it is important to determine whether *R. norvegicus* are reservoirs for zoonotic *Bartonella* spp. due to their close contact with humans and their pets.” The question of whether *X. cheopis* can actually spread such pathogens to humans also warrants further investigation, says Billeter.

**More information:** S. A. Billeter, V. Gundi, M. P. Rood and M.Y. Kosoy, 2011. Molecular Detection and Identification of *Bartonella* Species in *Xenopsylla cheopis* Fleas (Siphonaptera: Pulicidae) Collected from *Rattus norvegicus* Rats in Los Angeles, California. *Appl. Environ. Microbiol.* 77:7850-7852

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