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## Center for Wildlife Forensics and Conservation Studies

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Chagas Disease Parasite Linked to Oklahoma Bats

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*Trypanosoma cruzi* is a vector-borne protozoan parasite that infects eight million individuals in Central and South America and is the etiological agent of Chagas disease, a major cause of pediatric heart disease in endemic areas.

Mexican free-tailed bats (*Tadarida brasiliensis*) migrate from Central and South America to North America each spring to give birth and rear their young in maternity roosts. The prevalence of endemic *T. cruzi* in Oklahoma is poorly studied and historically characterized by three isolated canine and raccoon cases, with no clear route of acquisition. We suspect Mexican free-tailed bats (*Tadarida brasiliensis*) contribute to the enzootic emergence of *T. cruzi* in Oklahoma by their annual migration from Central and South America to North American maternity roosts.

Approximately 361 Mexican free-tailed bats were sampled for *T. cruzi* at three maternity roosts in Oklahoma. We collected wing punches from the uroptagium and plagiopatagium and stored them in ATL lysis buffer. DNA was extracted using the DNeasy Blood and Tissue Kit (Qiagen) and *T. cruzi* DNA was amplified using the primer set TCZ1/TCZ2. Samples were

subjected to gel electrophoresis and amplified DNA was observed using the ChemiDoc-It2Imager.



A juvenile Mexican free-tailed bat tested positive for *T. cruzi*, resulting in a prevalence of 0.27% of the 361 sampled bats. The positive sample was sequenced, confirmed, and the unique Chagas disease variant was subsequently uploaded to GenBank (#MG869732).



This is the first confirmed report of a wild bat naturally infected with *T. cruzi* in Oklahoma, and the fourth reported zoonotic isolation in the state. Our findings identify a reservoir host that migrates to endemic and non-endemic areas and is a possible transmission nexus between endemic *T. cruzi* reservoirs. The epidemiologic risk to humans in Oklahoma is unknown, but can be understood through future research on identifying foci of sylvatic and peridomestic transmission, current *T. cruzi* prevalence in wild and domestic Oklahoma mammalian reservoirs, and the impending impact of climate change on the vector, host, and parasite biogeography in Oklahoma.



For further information, additional research details and opportunities for future collaboration, contact:  
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