

Examining genetic diversity of *T. cruzi* from California kissing bugs

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Trypanosoma cruzi is a protozoan parasite that can cause an insidious onset of Chagas disease, a fatal cardiac disease in humans and dogs. The parasite is transmitted via triatomine insects, commonly called kissing bugs. In Latin America *T. cruzi* is recognized as an economically important parasite; however, there is limited research regarding its spread and virulence in the USA. As a result, while the genetic diversity of the *T. cruzi* parasite has been well studied in Latin America less is known about the strains endemic to the USA.

Researchers from the University of California, Davis, and the London School of Hygiene and Tropical Medicine assessed the prevalence of *T. cruzi* from northern and southern California regions. The researchers used a combination of methods to obtain triatomine insects, including active collection via black light traps and the enlistment of private property owners and [public health officials](#) in specimen submission. DNA was extracted from the specimens and screened for *T. cruzi* via molecular techniques. Positive samples were genetically typed into one of six recognized *T. cruzi* subgroups (TcI - TcVI). Finally, the researchers performed genetic analyses to examine the potential virulence of the California *T. cruzi* samples as compared to infective *T. cruzi* strains from Latin America.

Of the 29 specimens from northern California 55% were infected, while *T. cruzi* was detected in 34% of the 53 samples collected from one of the southern California locations. Two separate subtypes were found—with 20 [parasites](#) falling into the TcI subgroup and 2 into TcIV. The TcIV

subgroup was not detected in the northern California region. Genetic analyses did not reveal any particular unique characteristics to distinguish the California samples from several Latin American strains known to infect humans.

This research suggests that the apparent rarity of locally-acquired Chagas disease in the USA is unlikely due to any genetic difference in the infectious capabilities of the parasite. Rather, the fact that local triatomine species (e.g. *Triatoma protracta*) do not frequently colonize human homes, likely translates to decreased *T. cruzi* transmission. Alternatively, locally-acquired Chagas disease may simply be underdiagnosed. At present only four states in the USA list Chagas disease as a reportable illness, and California is not among them. This means that the public, as well as physicians and veterinary practitioners, may have decreased awareness of the dangers posed by this disease. Based on this research, in areas where *Triatoma protracta* populations are evident, Chagas disease should be considered as a potential cause of cardiac illness in humans and dogs.

The study is published in *PLOS Neglected Tropical Diseases*.

More information: *PLOS Neglected Tropical Diseases*,
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