SFU Press Releases Collection

These archival copies have been generated from web press releases maintained and originally written by SFU Communications and Marketing. Where possible, an effort has been made to preserve the public comments left on the website as well as any included photos or other images. All textual content should be faithful to the original press releases; contact numbers have been removed but they have not otherwise been altered in any way. However, this collection of documents spans multiple generations of web authoring software and not all formatting will be exact.

MEDIA RELEASE

Scientists take aim at disease-carrying "kissing bug"

May 01, 2019

Contact:
Carl Lowenberger, SFU biological sciences professor, 778.782.3985, clowenbe@sfu.ca
Diane Mar-Nicolle, Faculty of Science communications, 778.782.9586, dianem@sfu.ca
Allen Tung, University Communications, 778.782.3210, allent@sfu.ca

Photo: http://at.sfu.ca/ZVNyyB

An international research team, including scientists from Simon Fraser University, hopes its study of the vector *Rhodnius prolixus*—also known as the "kissing bug" and a major contributor to Chagas disease —will further the development of innovative insect control methods to curb its impact on humans.

Their report, published in PNAS, provides new information about the kissing bug's evolution and molecular biology. Researchers describe large and unique expansions of different gene families that are related to chemoreception (how they detect chemicals), feeding and digestion. Each of these expansions may have facilitated the insect's adaptation to a blood-feeding lifestyle.

"These are nocturnal, blood-sucking insects that feed on animals and people's faces at night, while we're sleeping," says SFU biology professor Carl Lowenberger, one of the paper's authors.

The feces of infected bugs contains the Chagas-causing parasite, *Trypanosoma cruzi*. Once feces are deposited, the parasites enter the body cavity through the puncture wounds in the skin. Chagas disease can also be transmitted through blood transfusion, ingesting infected insects or crushing them in fruit juice. Ingestion by wild animals is likely a major route by which the hundreds of reservoir species become infected.

The researchers identified unexpected modifications of important immune pathways and an absence of several components of the IMD pathway. "It seems that *R. prolixus* has a significantly modified immune system, that may have evolved to prevent the elimination of obligate microbial symbionts on which the insect depends on for its survival," says Lowenberger.

The parasite that causes Chagas disease is transmitted through fecal contamination rather than through the more efficient salivary gland transmission that occurs for other diseases, such as malaria and dengue, which are transmitted by mosquitoes.

An understanding of how the immune factors of *R. prolixus* potentially retain or eliminate parasites in the insect's body cavity may lead to novel approaches to control or eliminate the disease.

Lowenberger adds understanding the genome may allow researchers to identify kissing bug-specific genes or processes that can serve as targets for new transmission reducing drugs or insecticides.

The research was funded by government agencies from each author's country, including the Natural Sciences and Engineering Research Council of Canada (NSERC). The sequencing was funded by the National Institutes of Health, which approved the research proposal.

FAST FACTS:

More than 100 species of kissing bugs can transmit Chagas disease. *Rhodnius prolixus* was selected for sequencing because it is a major cause of morbidity and mortality in the Western Hemisphere, and has served as an important model for the study of insect physiology.

The consortium of researchers includes scientists from Canada, USA, Mexico, Guatemala, Colombia, Brazil and Argentina. Researchers hope that the data generated could help alleviate the burden of Chagas disease that traditionally affects the most impoverished people of Latin America.

Chagas disease affects approximately 7-10 million people worldwide. The CDC estimates that 300,000 people are infected with the illness in the United States alone. In Canada, estimates range from 5,000-10,000 infected people, most of whom are immigrants from Mexico, Central America and South America.

Initial symptoms disappear within a few months. However, in approximately 30 per cent of infected people, the parasite causes damage to the heart muscles, resulting in heart attacks in relatively young and otherwise healthy adults.

Chagas disease is a major cause of mortality in Latin America and the leading cause of cardiac disease in South and Central America.

ABOUT SIMON FRASER UNIVERSITY:

As Canada's engaged university, SFU is defined by its dynamic integration of innovative education, cutting-edge research and far-reaching community engagement. SFU was founded 50 years ago with a mission to be a different kind of university—to bring an interdisciplinary approach to learning, embrace bold initiatives, and engage with communities near and far. Today, SFU is Canada's leading comprehensive research university and is ranked one of the top universities in the world. With campuses in British Columbia's three largest cities – Vancouver, Burnaby and Surrey – SFU has eight faculties, delivers almost 150 programs to over 35,000 students, and boasts more than 135,000 alumni in 130 countries around the world.

-30-

Simon Fraser University: Engaging Students. Engaging Research. Engaging Communities.

- For the Media
- For Faculty and Staff
- About SFU
- SFU News