

Preliminary findings for tick research in Australia

Researchers from Australia's national science agency, the CSIRO, are working on two initiatives to develop a better understanding of tick-related illness called Debilitating Symptom Complexes Attributed to Ticks (DSCATT).

DSCATT is a disease affecting a group of Australian patients suffering from the symptoms of a debilitating illness, which many associate with a tick bite. Many of these people's lives are in turmoil because their illness cannot be easily diagnosed and treated.

Since 2013, the Australian Government has funded several projects and initiatives to help support patients suffering from DSCATT.

The CSIRO research currently underway involve a tick survey to understand bacteria, viruses and other pathogens which are carried by ticks in Australia, and their impact on human health; as well as developing new ways to detect human illness such as DSCATT.

Preliminary findings of the tick survey have discovered a novel *Borrelia* species, which was identified in the common wallaby tick, an Australian native species. The novel *Borrelia* species is a type of bacteria associated with transmission to mammals as hosts. Further investigation is underway to understand the effects of the *Borrelia* species on human health.

Preliminary findings of our biomarker study represent the first characterisation of host responses to tick-bite in the context of DSCATT, with a particular emphasis on host-encoded microRNAs (miRNAs) as disease biomarkers. The study demonstrates that samples derived from patients reporting disease symptoms contain promising biomarker candidates for illness diagnosis and prognosis that warrant further investigation.

Both CSIRO projects are part of ongoing efforts towards targeted research for DSCATT to develop a positive and consistent approach to diagnosis, treatment and ongoing management. The research work is ongoing and when finalised, data and results will be made available through open-access peer-reviewed publications.

This research supports other Government funded initiatives including the development of an evidence-based clinical pathway and multidisciplinary care model for patients suffering from DSCATT; and a range of education and awareness materials to assist health professionals and the public to better understand tick-borne illness in Australia, and learn about tick bite prevention and safe removal of ticks.