

# Tick-borne disease research receives global boost

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Adult female Dermacentor tick. Credit: Dr John McGarry, University of Liverpool

A unique scientific resource for the study of ticks and tick-borne diseases has moved to the University of Liverpool with exciting plans for international expansion.

The Tick Cell Biobank houses the world's largest collection of tick cell lines of medical and veterinary importance and enables scientists to carry out vital research into tick-borne diseases.

The Biobank will be supported for the next five years with more than £940,000 funding from the Biotechnology and Biological Sciences Research Council (BBSRC) through the Global Challenges Research Fund, and will establish outposts in South-East Asia, Africa and South America to make the resource more accessible to researchers in low- and middle-income countries.

Ticks can carry and transmit a wide array of infectious diseases of livestock, companion animals and man, including Crimean-Congo haemorrhagic fever, Lyme disease and babesiosis, and are second only to mosquitoes as vectors of

human pathogens.

Dr Ben Makepeace, principal investigator on the new BBSRC project said: "Tick populations are expanding and tick-borne diseases are likely to be increasingly important in the future. Understanding these diseases and training scientists to undertake research on them is important for both human and animal health."

Tick cell lines are valuable research tools that are increasingly applied in many areas of laboratory-based study of tick biology and the pathogens that ticks harbour.

As well as housing almost all the tick cell lines currently available worldwide, the Biobank provides training in establishment and maintenance of tick cell lines to recipient scientists, and generates new cell lines from additional species of ticks and other arthropod vectors such as sand flies and midges. The new BBSRC project will support studies to characterise the most widely-used tick cell lines in collaboration with the University's Centre for Genomic Research.

The Biobank also plans to widen access to tick cell lines by establishing outposts in Malaysia, Kenya and Brazil. These outposts will be sited at institutes with existing tick and/or tick-borne disease research programmes, in collaboration with local scientists, and will offer a regionally-tailored portfolio of tick cell lines with locally-delivered training in their maintenance.

Dr Lesley Bell-Sakyi, Head of the Tick Cell Biobank at the University's Institute of Infection and Global Health, explained: "Low and middle-income countries in the tropics and sub-tropics carry a disproportionately large share of the global burden of ticks and [tick-borne diseases](#). We've found that scientists in these countries face difficulties in accessing tick cell lines and as a result have been underrepresented amongst our recipients and

unable to fully exploit this valuable resource in their research.

"In the long term, the outposts will build and expand local capacity for tick and tick-borne disease research in both veterinary and medical fields, leading to more and better locally-generated solutions for local and regional problems."

The Tick Cell Biobank was established at the University of Edinburgh in 2009 and was most recently housed at The Pirbright Institute before its move to the University of Liverpool earlier this year.

The collaborating international institutes are the Tropical Infectious Diseases Research & Education Centre, University of Malaya, Kuala Lumpur, Malaysia; the International Livestock Research Institute, Nairobi, Kenya; the Oswaldo Cruz Institute, Rio de Janeiro, Brazil; and the Federal Rural University of Rio de Janeiro, Seropedica, Brazil.

The Global Challenges Research Fund aims to build upon research knowledge in the UK, and strengthen capacity overseas, to help address challenges faced by developing countries.

Provided by University of Liverpool

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