

Quicker and simpler test to detect infectious disease in dogs

September 24 2018



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A team of researchers have proposed a new test that rapidly examines dogs for exposure to a parasite transmitted by sand flies. The test could be used in monitoring the effectiveness of sand fly control efforts.

The World Health Organization considers [leishmaniasis](#) a major neglected infectious disease. It's also a major public health and veterinary problem that afflicts both developing countries and Europe. Neglected infectious disease reduction is one of the EU's key development policy goals. Existing technological and epidemiological advances reinforce the need to develop training programmes aimed at developing new tools and strategies to [control](#) leishmaniasis.

To address this issue, the EU-funded EUROLEISH-NET project is implementing a European training programme at Ph.D. level that focuses on the development and application of methodologies for leishmaniasis control. Several academic and non-academic institutions in Europe and abroad are hosting 15 doctoral students to offer expertise and training, ranging from parasitology to molecular science, genetics, epidemiology and strategic interventions. The research undertaken involves drug discovery, drug resistance, diagnostics and vaccine development, population genetics, vector control and integrated control programmes.

Dogs infected with *Leishmania infantum*, a parasite transmitted by the [sand fly](#) *Phlebotomus perniciosus* (*P. perniciosus*), are at risk of spreading leishmaniasis infections to humans. It's estimated that over 2.5 million [dogs](#) are infected in southern Europe, and the infection is difficult to treat. Control efforts frequently focus on targeting sand fly populations. Current enzyme-linked immunosorbent assay (ELISA) tests for the presence of a *P. perniciosus* sand fly saliva protein are particularly useful in the laboratory. However, this isn't the case in the field.

Effective tool quickly screens dogs for exposure to sand fly bites

According to a recent press release, the researchers have prepared an

immunochromatographic test (ICT) to rapidly screen dogs for the presence of *P. perniciosus*. "The ICT detects the same antibodies against the fly's salivary protein—SP03B—as an existing ELISA test. To optimize the test, the team used 53 laboratory-bred Beagles that had either been exposed or unexposed to 200 *P. perniciosus* sand flies."

They compared the ICT to two existing ELISA tests. Results showed a "nearly 100 % agreement and the ICT was found to have a sensitivity of 100 % and a specificity of 86.79 %. Raising the detection limit of the test would lead to a specificity of 96.23 % without changing the sensitivity."

"This test is easily operated with no requirements for skilled personnel or specialized equipment," the researchers said. "In order to confirm the field detection accuracy and applicability of the test, further evaluation of canine populations exposed to various frequencies of [sand](#) fly bites and validation of the test with whole canine blood is required."

Quoted in the journal *PLOS Neglected Tropical Diseases*, the research team added: "We developed a simple and rapid ICT based on the *P. perniciosus* rSP03B salivary protein, able to replace the standard ELISA used in previous studies." They summarised the significance of the findings: "Our rSP03B sero-strip showed to be highly sensitive and specific in the detection of antibodies (IgG) against *P. perniciosus* saliva. In the future, this [test](#) can be employed during large-scale epidemiological studies of CanL [canine leishmaniasis] in the Mediterranean area to evaluate the efficacy of vector control programs."

The ongoing EUROLEISH-NET (Control of leishmaniasis, from bench to bedside and community) will train the next generation of leading research scientists in leishmaniasis, endowing them with skills that are broadly and internationally transposable.

More information: Project website: www.euroleish.net/

Laura Willen et al. Evaluation of the rSP03B sero-strip, a newly proposed rapid test for canine exposure to *Phlebotomus perniciosus*, vector of *Leishmania infantum*, *PLOS Neglected Tropical Diseases* (2018). [DOI: 10.1371/journal.pntd.0006607](https://doi.org/10.1371/journal.pntd.0006607)

Provided by CORDIS

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