

## **Serological diagnostics and molecular identification of tick-borne infections in individuals with human immunodeficiency virus type 1 (HIV-1) infection**

**Renata Welc-Falęciak<sup>1</sup>, Małgorzata Bednarska<sup>1</sup>, Marek Radkowski<sup>2</sup>,  
Justyna Kowalska<sup>3</sup>, Agnieszka Pawełczyk<sup>2</sup>**

<sup>1</sup>Department of Parasitology Faculty of Biology University of Warsaw, Miecznikowa 1, 02-096 Warsaw, Poland

<sup>2</sup>Department of Immunopathology of Infectious and Parasitic Diseases, Medical University of Warsaw, Pawińskiego 3c, 02-106 Warsaw, Poland

<sup>3</sup>Department for Adult's Infectious Diseases, Medical University of Warsaw, Wolska 37; 01-201 Warsaw, Poland

Corresponding Author: Renata Welc-Falęciak; e-mail: [rwelc@biol.uw.edu.pl](mailto:rwelc@biol.uw.edu.pl)

Tick-borne diseases (TBD) currently represent an important public health issue. If not treated, they are the cause of dangerous health complications which can even lead to death. An observed increase in tick count, their high activity in the natural environment and urban areas increases the risk of tick-borne infections in humans, especially in immunodeficient individuals (including those infected with HIV). Chronic innate and acquired immunological response disorders also increase the risk of coinfection with different groups of pathogens (viruses, bacteria, parasites). Patients with lowered immunity are more likely to develop seronegative infections which significantly impede serological diagnostics, which in many cases is the base of screening tests. In addition, the detection of tick-borne infections (especially Lyme disease) with serological methods, mainly in HIV-infected patients, is complicated by the lowered positive predictive value of tests.

The aim of this study is to assess the seroprevalence of the tick-borne pathogens (*Borrelia burgdorferi*, *Babesia*, *Anaplasma phagocytophilum*, *Ehrlichia* and *Rickettsia*) in HIV-infected humans, and characterize them using molecular techniques.

The study was funded by the Ministry of Science and Higher Education (MNISW) Iuventus Plus grant nr IP2014050373.