

MOLECULAR DETECTION OF *BORRELIA* SPP. IN RED SQUIRREL (*SCIURUS VULGARIS*)

Ugnė Medikaitė¹, Indrė Lipatova¹, Justina Snegiriovaitė¹, Jana Radzijeuskaja¹, Algimantas Paulauskas¹

¹Vytautas Magnus University
ugne.medikaite@vdu.lt

Lyme disease, caused by the spirochete bacteria *Borrelia burgdorferi* s.l., has emerged as a significant global health concern [1]. The incidence of Lyme disease has been increasing over the past few decades due to factors such as climate change, land-use patterns, and increasing migration of bacteria hosts and ticks [2]. The disease is most commonly reported in North America and Europe. High incidence rates have been recorded in Germany, Austria, Slovenia and Lithuania [3-5]. It is important to find out whether *Sciurus vulgaris* could be an important reservoir host of *Borrelia burgdorferi* s.l., as this wild rodent is also commonly found in peri-urban and urban areas and is constantly exposed to ticks as it moves through the ground. This study aimed to detect the presence of *Borrelia* spp. in red squirrels collected from the parks of Kaunas city. A total of 44 samples of red squirrel were tested by real-time PCR with the specific primers for *Borrelia*. Samples positive for *Borrelia* DNA were further analysed using a PCR targeting the *ospA* gene. Positive PCR products were selected for DNA sequencing. *Borrelia* species were detected in 31.8% (14/44) of squirrels. The pathogens were mostly found in the ear and lung tissues. The results of the study provide insight into the influence of squirrels on the spread of Lyme disease causative agents in urbanised areas.

ACKNOWLEDGMENTS. Part of this research was funded by European Social Fund under grant agreement P-ST-23-264 with the Research Council of Lithuania.

-
- [1] Radolf JD, Strle K, Lemieux JE, Strle F. Lyme Disease in Humans. *Curr Issues Mol Biol*. 2021;42:333-384.
- [2] Septfons A, Figoni J, Gautier A, Soullier N, de Valk H, Desenclos JC. Increased awareness and knowledge of Lyme Borreliosis and tick bite prevention among the general population in France: 2016 and 2019 health barometer survey. *BMC Public Health*. 2021;21:1808.
- [3] Marques AR, Strle F, Wormser GP. Comparison of Lyme Disease in the United States and Europe. *Emerg Infect Dis*. 2021;27(8):2017-2024.
- [4] Tilly K, Rosa PA, Stewart PE. Biology of infection with *Borrelia burgdorferi*. *Infect Dis Clin North Am*. 2008;22(2):217-v
- [5] WHO Regional Office for Europe and European Centre for Disease Prevention and Control. Lyme Borreliosis in Europe. WHO Regional Office for Europe in European Centre for Disease Prevention and Control. 2021