LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

International Summer School Practice

Exploring the Genetic Basis of Addiction-Related Behaviours

Internet use has become an integral part of everyday life, providing opportunities for communication, education, work, and entertainment. However, excessive engagement in online activities may lead to problematic internet use and, in some cases, Internet Gaming Disorder (IGD), a behavioural addiction characterized by impaired control over gaming and continued use despite negative consequences. The prevalence of IGD appears to be particularly high among adolescents and young adults and may continue to increase as digital technologies become more integrated into daily life.

Diagnosing IGD remains challenging because it largely relies on self-reported questionnaires and clinical interviews. These assessments can be influenced by response bias, limited self-awareness, and subjective interpretation of symptoms. As a result, there is a growing interest in identifying objective biological markers that could complement existing diagnostic approaches.

Genetic factors may contribute to individual differences in vulnerability to addictive behaviours. In recent years, numerous studies have investigated single nucleotide polymorphisms (SNPs) as potential genetic markers associated with various psychiatric and neurological conditions. Several SNPs have been linked to altered neurotransmitter signalling, reward processing, impulse control, and other biological mechanisms relevant to addiction. Therefore, investigating the association between selected SNPs and susceptibility to Internet Gaming Disorder may contribute to a better understanding of the biological factors underlying this condition and could support the development of more objective risk assessment strategies in the future.

The aim of this project is to investigate the potential association between genetic variation and susceptibility to Internet Gaming Disorder (IGD) and problematic internet use.

Methods and practical training

Genomic DNA will be extracted from saliva samples, and its concentration and purity will be assessed. Students will learn to optimize multiplex polymerase chain reaction (PCR) conditions for the amplification of 20 target gene fragments, analyze PCR products using agarose gel electrophoresis, excise DNA fragments of interest, and purify the recovered DNA. Next-generation sequencing (NGS) will be performed by an external service provider. Students will subsequently analyze the sequencing data and identify genetic variants.

Expected outcomes

The study is expected to identify genetic variants that may be associated with increased or decreased susceptibility to Internet Gaming Disorder and problematic internet use. The findings may contribute to a better understanding of the biological factors involved in behavioral addictions and provide candidate genetic markers for future research. Students will gain hands-on experience in molecular genetics techniques, PCR optimization, DNA purification, sequencing workflows, and introductory bioinformatics, while developing an understanding of genetic association studies and the interpretation of research data.