Regular Wednesday IMG seminar

Marharyta Klianitskaya, M.Sc.

Laboratory of Genomics and Bioinformatics

"Human Endogenous Retroviruses: Role in Negative Selection of T cells in the Thymus and Pathogenesis of Psoriasis"

Our research elucidates the role of human endogenous retroviruses (HERVs) in biological processes related to T cell immunity, autoimmunity, and the pathogenesis of psoriasis. HERVs are ancient viral elements integrated into the human genome. While most of these elements are rendered non-functional due to mutations and epigenetic silencing, some retain the ability to express themselves. Despite their foreign origin, the expression of these endogenous retroviruses does not typically trigger autoimmune disease. The study employed single-cell RNA sequencing data from thymic tissues, revealing that a wide range of HERVs is expressed in thymic cells responsible for presenting autoantigens to T cells and for their subsequent negative selection. This suggests that some HERVs may be perceived by the immune system as autoantigens, and disruptions in the negative selection process could potentially lead to autoimmune diseases. Psoriasis is a T cell-mediated chronic inflammatory skin disease that occurs in predisposed individuals carrying specific HLA-C alleles, which are crucial for presenting small peptides to T cells that survey for non-self peptides. RNA-seq data from psoriasis-affected tissues highlighted a significant correlation between elevated HERV expression and the development of the disease. These findings emphasize the potential role of HERVs in T cell-mediated conditions and offer new insights into the molecular mechanisms underlying psoriasis.

The seminar will be held

on Wednesday 2nd October 2024 at 15:00

in the Milan Hašek Auditorium at IMG

(Institute of Molecular Genetics of the Czech Academy of Sciences, Vídeňská 1083, Prague 4)