Institute of Molecular Genetics
of the Czech Academy of Sciences

Regular Wednesday IMG seminar

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Laboratory of Genome Dynamics

"A hidden layer of chromatin regulation in neurological disease"

Genome stability and DNA repair are essential for human health. ADP-ribosylation is a key post-translational modification in the DNA damage response, regulated by PARP enzymes. Our research focuses on ARH3, an enzyme that removes mono-ADP-ribose from proteins, as its deficiency is linked to rare neurological disease. Using patient-derived cells, 3D brain organoids and mouse models, we show that loss of ARH3 leads to accumulation of mono-ADP-ribose on chromatin. Genome-wide analyses (CUT&Tag, spatial transcriptomic and RNA-seq) reveal that these changes alter gene expression and modulate other histone modifications. We further explore how these chromatin alterations affect responses to stress, including viral infections, potentially contributing to neuropathology. Our findings provide new insights into disease mechanisms and highlight ADP-ribosylation as a potential therapeutic target in neurological disorders.

The seminar will be held

on Wednesday 15 April 2026 at 15:00

in the Milan Hašek Auditorium at IMG

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