We would like to invite you to the lecture

Etienne Decroly

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Laboratory AFMB – Architecture and Function of Biological Macromolecules
Research group: Viral Replicases: Structure, function and drug-design

"How do 2'-O-methylations present on the genome of the Human Immunodeficiency Virus (HIV-1) regulate viral replication?"

"The genomic RNA of HIV-1 is modified by epitranscriptomic modifications, including 2′-O-methylations, which are found on 17 internal positions. These methylations are added by the cellular methyltransferase FTSJ3, and have pro-viral effects, since they shield the viral genome from the detection by the innate immune sensor MDA5. In turn, the production of interferons by infected cells is altered, limiting the expression of interferon-stimulated genes (ISGs) with antiviral activities. Moreover, 2′-O-methylations protect the HIV-1 genome from the degradation mediated by ISG20, an interferon-induced exonuclease. Conversely, these methylations also exhibit antiviral effects, as they impede reverse-transcription in vitro or in quiescent cells, which are known to contain low nucleotide concentrations. Altogether, these observations suggest a balance between the proviral effects of 2'-O-methylations, related to the protection of the viral genome from detection by MDA5 and degradation by ISG20, and the antiviral effects, associated with the negative impact of 2'-O-methylations on the viral replication. These findings pave the way for further optimization of therapeutic RNA technologies, by selective methylation of specific nucleotides."

When: Thursday 9th May 2024 at 14:00

Where: IMG, Lecture room 0.195 (Institute of Molecular Genetics of the Czech Academy of Sciences, Vídeňská 1083, Prague 4)

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