

PERSISTENT AND LATENT VIRAL INFECTIONS: MECHANISMS CONTROLLING VIRAL REPLICATION AND LONG-LASTING DAMAGES

This project is focused on Human Herpesviruses able to establish latent/persistent infections. They have the ability to cause long-lasting chronic degenerative damages, primarily related to their interactions with cell and immune factors. Among viruses, those causing latent or persistent infections are able to establish with their host a complex interaction network which regulates, at multiple levels, viral replication, survival of infected cells, host immune/inflammatory responses. Viral structures (proteins and nucleic acids) and their ability to interact with host cell constituents [pattern recognition receptors (PRR), restriction factors (RFs), signaling proteins] play a key role in governing viral reactivation and replication, as well as the infection outcome/s: from the well characterized main symptoms to the "hidden effects" accumulating over time and producing long-term damages. Numerous experimental evidences, for example, hypothesize the Herpes simplex virus type 1 as a cofactor, both in the onset and in the progression of Alzheimer's disease. The reasons why this virus appears to be involved in the disease lie in the large percentage of the infected population and its life cycle. The virus, known above all for its effects at the labial level, has a specific neurotropism and the ability to establish a latency in the neurons of both the SNP and the CNS that remain throughout life. The virus reaches the brain in old age and establishes its latency precisely in the areas most affected by the disease: hippocampus, temporal lobes and neocortex. Following stimuli of various kinds, it is able to reactivate periodically by activating a series of mechanisms that lead to damage to the neurons

GOALS

- To explore the mechanisms and/or host determinants governing viral latency, persistence/replication and their role in inducing immune activation and chronic inflammation.
- To identify the cellular or immune-mediated mechanisms leading to virus reactivation and degenerative damages in Central Nervous System (CNS).

INSTRUMENTS AND METHODS

Virology, molecular / cell biology and basic immunology techniques. The instrumentation used is the standard for molecular biology and cell cultures.

SUBJECTS

Microbiology, molecular biology, immunology, biochemistry and neuroscience.

WORKING GROUP

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COLLABORATIONS

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