

Università degli Studi di Padova

KAPTION - Mechanisms of Kaposi's sarcoma herpesvirus replication and maintenance during latency

Oncogenic viruses are the third most common cause of cancer in humans. Kaposi's sarcoma herpesvirus (KSHV) is an oncogenic virus that establishes life-long infection (latency) and can drive tumour development. Current strategies against KSHV and associated malignancies aim at identifying cures for these cancers. However, a possible complementary approach would be to target the virus itself, by blocking its propagation in infected cells. This strategy would rely on a detailed understanding of the mechanisms of replication of the virus during latency, which are currently only marginally understood for KSHV.

With this research project, I aim at exploiting the fact that replication of KSHV during latency almost entirely depends on proteins from the infected cells, to implement a novel use of the model system coming from protein extracts of the eggs of the frog Xenopus leavis, in parallel to work in KSHV-infected cells, with the goal to mechanistically dissect the replication and maintenance strategies of KSHV during latency. My vision is to exploit this knowledge to develop rational approaches to prevent the cancers caused by KSHV, by uncovering a way to eliminate the virus from infected cells, before it can elicit its oncogenic potential.

Excitingly, this novel approach will be exploitable well beyond KSHV. The novel use of Xenopus egg extracts can be further addressed to solve puzzling aspects of the biology of other oncogenic viruses such as Epstein- Barr virus or human Papillomavirus (HPV), and have applications in the prevention or treatment of their most severe diseases, such as Burkitt lymphoma and cervical cancer.

ERC Grantee: Irene Gallina Department: Molecular Medicine Coordinator: Università degli Studi di Padova Total EU Contribution: Euro 1.494.774,00 Call ID: ERC-2023-StG Project Duration in months: 60

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