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Novel role of human cytomegalovirus deubiquitinase in oncogenesis

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Introduction: Human cytomegalovirus (HCMV) is found to be associated with many cancer types, since last two decades. However, a role of HCMV in cancer remains unknown. Here, we have investigated the role of HCMV in oncogenesis via inhibiting innate-immunity.

Method: Deubiquitinase (DUB) sufficient- and deficient-HCMV were used to infect mammalian cell-line to analyze induction of oncogenic properties and inhibition of type I IFNs synthesis. Results were further confirmed by overexpression of WT-and Mutant-DUB domain of HCMV-DUB gene in mammalian cell-lines.

Result: HCMV-DUB enhanced cellular metabolic activity through modulating the expression of several anti- and pro-apoptotic genes, deregulated cell-cycle, enhanced invasion & migration, upon HCMV infection or DUB overexpression in mammalian cell-lines, which was strongly correlated with inhibition of type I IFNs by HCMV-DUB.

Conclusion: HCMV-deubiquitinase induces carcinogenic-properties through inhibiting Pattern-Recognition-Receptor-mediated type I IFNs via deubiquitination of important signaling molecules. Taken together, our results suggest that HCMV infection may promote oncogenesis by inhibiting host innate-immunity.

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