

# Identification of oncolysis effect in colorectal cancer cells by Orf virus strain NA1/11 in vitro and in vivo

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## Abstract

Oncolytic viral therapies against cancers, using variously attenuated or recombinant viruses, have appeared as a promising method in cancer treatment in recent years. Orf virus (ORFV) strain NZ2 has been shown to have antitumor effects in animal models mediated by immunoregulation profile, however, little is known about the molecular cellular mechanism of orf virus's anti-cancer effect. Here we report ORFV strain NA1/11, isolated from a sheep in Jilin province of China, inhibited the growth of colorectal cancer (CRC) cells lines including Caco-2, HCT116, LoVo, RKO, SW480, SW1116 cells. ORFV strain NA1/11 also significantly inhibited the growth and the pulmonary metastasis of CRC cells *in vivo*. The inhibitory mechanism of ORFV strain NA1/11 involved apoptosis and autophagy induction. Besides, we utilized a cytokine antibody array to develop a more comprehensive description of the cytokines by ORFV, which indicated that ORFV likely plays roles in the regulation of key factors relevant to apoptosis, autoimmunity/inflammation, angiogenesis and the cell cycle for further molecular mechanism studies. These results suggested that ORFV could be an oncolytic virus for CRC therapy.

## Recent Publications

1. Ruixue Wang, Yong Wang, Fang Liu, Shuhong Luo (2018). Orf virus: a promising new therapeutic

agent. *Revin Med Virol.* 1(9): e2013.

2. Ruixue Wang and Shuhong Luo (2018) Orf virus: a new class of immunotherapy drugs. *System Biology.*
3. Mingjian Long, Yuanyuan Wang, Daxiang Chen, Yong Wang, Ruixue Wang, Daoyuan Gong, Haijian He, Daniel L Rock, Wenbo Hao, Shuhong Luo (2018) Identification of host cellular proteins LAGE3 and IGFBP6 that interact with orf viral protein ORFV024; *Gene* 661, 2018, 60-67.
4. Wei Li, Huiqin Chen, Hao Deng, Zhenzhan Kuang, Mingjian Long, Daxiang Chen, Xiaoqing Liao, Ming Li, Daniel L.Rock, Shuhong Luo, Wenbo Hao (2018) Orf virus encoded protein ORFV119 induces cell apoptosis through the extrinsic and intrinsic pathways. *Front Microbiol* 9: 1056.
5. Sushil Khatiwada, Gustavo Delhon, Ponnuraj Nagendraprabhu, Sabal Chaulagain, Shuhong Luo, Diego G Diel, Eduardo F Flores, Daniel L Rock L (2017) A parapoxviral virion protein inhibits NF-κB signaling early in infection. *PLoS Pathog* 13(8): e1006561.

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## Biography

Shuhong Luo is a Professor of Microbiology at the Department of Laboratory Medicine,

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