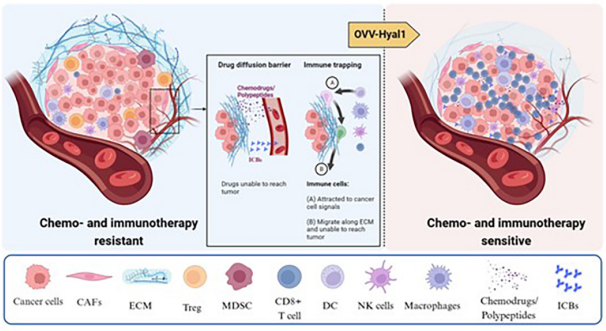
An oncolytic vaccinia virus encoding hyaluronidase reshapes the extracellular matrix to enhance cancer chemo- and immunotherapy

Graphical Abstract



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In Brief

The redundant ECM within solid TME often limits intratumoral diffusion of antitumor drugs, or hinders infiltration of immune cells, which results in poor antitumor efficacy of chemo- and immunotherapy. Wang et al. engineered a novel recombinant oncolytic vaccinia virus encoding the hyaluronidase (OVV-Hyal1) to reshape the ECM by degrading hyaluronic acid, a major component of ECM of many solid tumors, therefore, circumvented some major hurdles in current cancer therapy.

Highlights

- OVV-Hyal1 reshapes the ECM of solid tumors via HA degradation.
- OVV-Hyal1 facilitates virus spread, chemodrug dissemination, and immune cells infiltration within TME.
- OVV-Hyal1 significantly improves the antitumor outcomes of doxorubicin, gemcitabine, polypeptide GLP1, CAR-T cells and ICBs such as PD-1 and CD47 antibodies in a serial of solid tumors.