

## **Abstract**

Soft-tissue sarcoma (STS) is a heterogeneous group of rare tumors originating predominantly from the embryonic mesoderm. Despite the development of combined modalities including radiotherapy, STSs are often refractory to antitumor modalities, and novel strategies that improve the prognosis of STS patients are needed. We previously demonstrated the therapeutic potential of two telomerase-specific replication-competent oncolytic adenoviruses, OBP-301 and tumor suppressor p53-armed OBP-702, in human STS cells. Here, we demonstrate *in vitro* and *in vivo* antitumor effects of OBP-702 in combination with ionizing radiation against human STS cells (HT1080, NMS-2, SYO-1). OBP-702 synergistically promoted the antitumor effect of ionizing radiation in the STS cells by suppressing the expression of B-cell lymphoma-X large (BCL-xL) and enhancing ionizing radiation-induced apoptosis. The *in vivo* experiments demonstrated that this combination therapy significantly suppressed STS tumors' growth. Our results suggest that OBP-702 is a promising antitumor reagent for promoting the radiosensitivity of STS tumors.