

In vivo imaging of lymph node metastasis with telomerase-specific replication-selective adenovirus

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Currently available methods for detection of tumors *in vivo* such as computed tomography and magnetic resonance imaging are not specific for tumors. Here we describe a new approach for visualizing tumors whose fluorescence can be detected using telomerase-specific replication-competent adenovirus expressing green fluorescent protein (GFP) (OBP-401). OBP-401 contains the replication cassette, in which the human telomerase reverse transcriptase (hTERT) promoter drives expression of *E1* genes, and the *GFP* gene for monitoring viral replication. When OBP-401 was intratumorally injected into HT29 tumors orthotopically implanted into the rectum in BALB/c *nu/nu* mice, para-aortic lymph node metastasis could be visualized at laparotomy under a three-chip color cooled charged-coupled device camera. Our results indicate that OBP-401 causes viral spread into the regional lymphatic area and selectively replicates in neoplastic lesions, resulting in GFP expression in metastatic lymph nodes. This technology is adaptable to detect lymph node metastasis *in vivo* as a preclinical model of surgical navigation.