

Video Article

Monitoring tumor metastases and osteolytic lesions with bioluminescence and micro CT imaging

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URL: <http://www.jove.com/video/2684>

DOI: [doi:10.3791/2684](https://doi.org/10.3791/2684)

Keywords: osteolytic lesions, micro CT, tumor, mammary, mouse, bioluminescence, in vivo, imaging, IVIS, luciferase

Date Published: 6/15/2015

Citation: Zhang, N. Monitoring tumor metastases and osteolytic lesions with bioluminescence and micro CT imaging. *J. Vis. Exp.* (), e2684, doi:10.3791/2684 (2015).

Abstract

Following intracardiac delivery of MDA-MB-231-luc-D3H2LN cells to Nu/Nu mice, systemic metastases developed in the injected animals. Bioluminescence imaging using IVIS Spectrum was employed to monitor the distribution and development of the tumor cells following the delivery procedure including DLIT reconstruction to measure the tumor signal and its location. Development of metastatic lesions to the bone tissues triggers osteolytic activity and lesions to tibia and femur were evaluated longitudinally using micro CT. Imaging was performed using a Quantum FX micro CT system with fast imaging and low X-ray dose. The low radiation dose allows multiple imaging sessions to be performed with a cumulative X-ray dosage far below LD50. A mouse imaging shuttle device was used to sequentially image the mice with both IVIS Spectrum and Quantum FX achieving accurate animal positioning in both the bioluminescence and CT images. The optical and CT data sets were co-registered in 3-dimensions using the Living Image 4.1 software. This multi-mode approach allows close monitoring of tumor growth and development simultaneously with osteolytic activity.

Disclosures

No conflicts of interest declared.