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# A TRANSGENIC MOUSE FOR RAPID AND SENSITIVE IN VIVO TUMOR DETECTION AND EVALUATION

Tech ID: 19085 / UC Case 2003-069-0

## BRIEF DESCRIPTON

The number of murine models for human cancer has grown rapidly in recent years and there now exist mouse models for almost all tumor types. Evaluating the effect of specific molecular alterations or therapeutic interventions in these animal models requires the ability to temporally and spatially assess the tumor burden. In many cases, however, this entails sacrificing the animal thereby limiting ability to perform follow up analysis, and necessitating the use of many more experimental animals. To address these problems, UCSF investigators have generated a general tumor reporter transgenic mouse strain designed to selectively expresses firefly luciferase in malignant tissue.

## FULL DESCRIPTON

The number of murine models for human cancer has grown rapidly in recent years and there now exist mouse models for almost all tumor types. Evaluating the effect of specific molecular alterations or therapeutic interventions in these animal models requires the ability to temporally and spatially assess the tumor burden. In many cases, however, this entails sacrificing the animal thereby limiting ability to perform follow up analysis, and necessitating the use of many more experimental animals.To address these problems, UCSF investigators have generated a general tumor reporter transgenic mouse strain designed to selectively expresses firefly luciferase in malignant tissue. The luciferase gene is engineered behind a region of the E2F-1 promoter, that is tumor cell specific. Detecting the resulting light emissions enables sensitive and quantitative detection of both primary and secondary tumors. These mice are designed to be crossed with tumor prone mice in order to allow an investigator to follow changes in tumor volume, for example in screening and evaluating tumor response to therapeutic interventions. This technology may accelerate and streamline the use of oncogene-driven tumor models for drug discovery and phenotyping novel target transgenics.In preliminary experiments, our investigators have successfully crossed EF2-luciferase mice to visualize tumors in a number of experimental models including spontaneous mouse metastatic prostate cancer model (TRAMP) and a chemical carcinogen derived skin tumor model.

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### OTHER INFORMATION

#### KEYWORDS

transgeic mouse model,  
  
luciferase, cancer

#### CATEGORIZED AS

- ▶ Medical
- ▶ Disease: Cancer
- ▶ Research Tools

#### RELATED CASES

2003-069-0

FEATURES/BENEFITS

- ▶ Allows quantitative temporal and spatial assessment/monitoring of tumor progression.
- ▶ Allows examination of primary tumors in an immune competent animal.
- ▶ Allow potential detection of metastatic disease and its response to treatment.
- ▶ Can be used to evaluate/validate anti-cancer agents in vivo.
- ▶ Cost effective: animals do not need to be sacrificed.

OTHER INFORMATION

- ▶ Hann, B. and Balmain, A. Building validated mouse models of human cancer. Curr. Op. Cell Biol. (2001) 13(6):778.

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