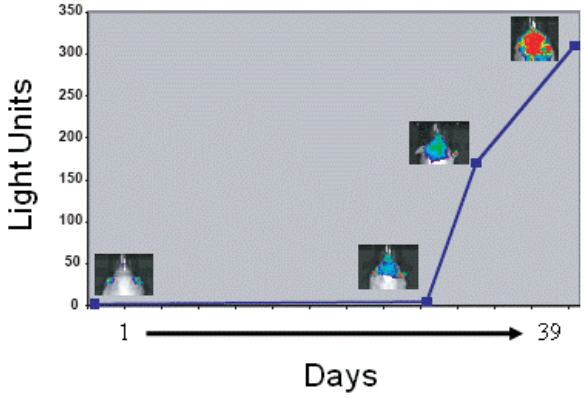
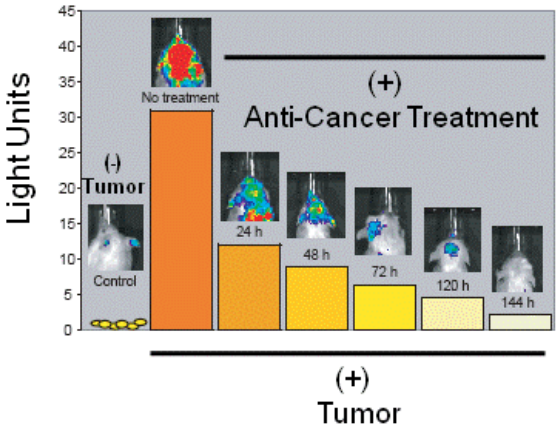
monitored over time using a single Ef-Luc Mouse.

The target market for the Ef-Luc mouse is preclinical CROs, biotech and pharma research and development operations, and academic researchers.

Brain tumor formation can be monitored over time using a single Ef-Luc mouse. The same Ef-Luc mouse was imaged every 3 days for 39 days. Light output correlates with brain tumor size as measured by histologic analysis (data not shown). Adapted from *Nature Medicine (2004) 10:1257-1260*



Efficacy of anti-cancer treatment can be measured over time in a single Ef-luc mouse. A single tumor bearing Ef-Luc mouse was treated with an anti-cancer agent or left untreated and monitored for reduction in brain tumor proliferation for 6 days. Light output correlates with cessation of tumor cell proliferation measured by immunohistochemical staining (data not shown). Adapted from *Nature Medicine (2004) 10:1257-1260*



Background

E2F1 is a transcription factor whose activity is repressed by the retinoblastoma protein (Rb), a master regulator of cell-cycle progression through the G_1 to S transition. A common feature in many distinct types of human malignancies is the loss of Rb function, resulting in upregulation of E2F1 transcriptional activity and dysregulation of cell-cycle control. Therefore, the Ef-Luc mouse can be considered a general reporter animal useful for the detection and imaging of multiple different tumor types.

The Ef-Luc mouse is an ideal tool for monitoring cell-cycle activity during tumor development in a living animal using bioluminescence imaging. Areas of abnormally high cell proliferation in the Ef-Luc mouse, namely cancerous cells, drive expression of luciferase. The resulting luciferase can be detected by injection of the Ef-Luc mouse with the luciferase substrate luciferin; luciferase oxidization of luciferin produces light that is then detected through the body of the mouse and is proportional to tumor cell burden.

Advantages

- High sensitivity allows detection of small subcutaneous tumors (<1,000 cancer cells) and deeper lesions (1-3 cm deep), which can be undetectable by standard measurement methods.

- Universal tumor detection increases the applicability of the Ef-Luc mouse model to multiple tumor types.
- Quantitative measurement of tumor burden reveals subtle changes in tumor growth.
- Rapid real-time imaging allows spatial and temporal resolution of tumor growth.
- This noninvasive method with minimal toxicity allows repeated imaging of a single animal.
- Fewer mice are needed per study, which reduces the cost of animal studies.

Areas of Application

- Efficacy evaluation of anticancer treatments and therapies
- Assessment of carcinogenic potential of compounds and environmental insults
- Development of novel bioluminescent models of known cancer mouse models by cross-breeding
- Evaluation of metastatic potential of primary tumors
- Investigation of molecular mechanisms critical for tumor maintenance

References

Uhrbom L, et al. (2004) Nature Medicine. Nov; 10(11):1257-1260.

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Patent Information

U.S. patent issued: 7, 041, 869

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Stage of Development

Ready to use

Indications

Indications › Cancer

Types

Research Tools › Mouse Models