

Licensing Opportunity



Bioluminescence imaging of tumor growth

- Bioluminescence is a powerful imaging tool for high-throughput non-invasive in vivo measurements of tumor growth
- Cells transduced with Fluc reporter can be complemented with the recently established Gluc assay, providing a reliable indicator for visualising orthotopic tumors, and providing easily accessible sampling from whole blood
- We have established this method in primary pancreatic tumor cell lines, which are the best candidates for modelling the disease
- In therapeutic studies, these cells provide a much lower cost method for measuring tumor volume, and allow for longitudinal monitoring in models to predict drug activity

In vivo tumor imaging | orthotopic model | luminescence | primary cell line | tumor model

2011

Background

A major stumbling block in the development of more effective drugs and drug combinations against pancreatic cancer is that most agents in clinical trials were selected on the basis of their activity in preclinical models, which is not generally predictive of clinical outcome. Traditional preclinical models include cell lines cultivated in monolayers or xenografts derived from them.

However, cells cultured in plastic may undergo substantial changes that deviate from their originator tumors, while the dependence of genetically engineered mouse models on a few critical genetic lesions might not reflect the genetic diversity that exemplifies human pancreatic cancers (Jones et al., Science 2008).

Because monitoring of tumor volume in orthotopic tumors requires more complex throughput imaging methods compared to the use of calipers for the subcutaneous xenografts, and because imaging methods based upon radiolabelled compounds are costly and difficult to perform, another crucial step for the development of successful pancreatic cancer models requires development of novel method of incorporating luminescence reporting into primary pancreatic cancer cells.

These cells have been successfully implanted orthotopically in mice, and provide a unique platform for in vivo screening of the effectiveness and toxicity of new drugs, as well as for further delineating the biology of pancreatic cancer and possible new biomarker discovery.

The Technology

Transduction of primary pancreatic tumor cell lines with genes conferring luminescence provides an innovative method to document the growth of these tumors in vivo, as well as providing an imaging mechanism to visually measure effectiveness of novel therapies.

The ease of use, low cost, and longitudinal monitoring capability of this method makes it a preferred alternative to radiolabelling for animal studies.

Intellectual Property

Primary cell lines transduced with fluorescent probes are the property of VU University, Amsterdam, The Netherlands.

Inventors

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Key publications

1. Wurdinger T, et al. A secreted luciferase for ex vivo monitoring of in vivo processes. Nat Methods. 2008 Feb;5(2):171-3.
2. Jones S, et al. Core signaling pathways in human pancreatic cancers revealed by global genomic analyses. Science. 2008 Sep 26;321(5897):1801-6.