

SPONTANEOUSLY TRANSFORMED MOUSE EPITHELIAL CANCER CELL LINES SERVING AS MOUSE MODELS: A NEW MODEL FOR CANCER RESEARCH

SUMMARY

The National Cancer Institute Cancer Genetics Branch is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize mouse epithelial cancer cell lines.

REFERENCE NUMBER

E-089-2010

PRODUCT TYPE

- Research Materials

KEYWORDS

- Research Tools
- Mouse Epithelial Cancer Cell Lines

COLLABORATION OPPORTUNITY

This invention is available for licensing.

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DESCRIPTION OF TECHNOLOGY

The National Cancer Institute Cancer Genetics Branch is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize mouse epithelial cancer cell lines.

Investigators at the NIH have created a collection of 45 mouse epithelial cancer cell lines derived from six organs: bladder, cervix, colon, lung, kidney, and mammary glands. These cell lines were obtained from spontaneously transformed primary cell cultures without genetic, viral or chemical manipulation so they can serve as mouse models for studying the natural process of oncogenesis.

The cell lines were characterized cytogenetically during their transformation from normal to spontaneously immortalized and were found to recapitulate many of the changes observed in human cancer cells such as the deregulation of oncogenes (Myc, Mdm2) and tumor suppressor genes

(Cdkn4a/Ink4a/p16, Rb).

Carcinomas that arise from the epithelial cells lining organs lead to the most common cancers in humans. However, research on cellular transformation has largely relied on fibroblast cells which are not of epithelial origin and therefore, may not reflect the changes that lead to epithelial oncogenesis. The availability of these mouse epithelial cancer cell lines should allow for a more accurate analysis of this process.

POTENTIAL COMMERCIAL APPLICATIONS

These cell lines serve as "ideal" murine tumor models as they show evidence of progression, permitting analysis of the genetic and biological changes observed in the equivalent human carcinomas and associated with tumor progression. Their tumor histology is comparable to human cancers.

The cell lines have unique properties that make them suitable for study of the following:

- Unlimited replicative potential
- Exhibit tumorigenic potential and EMT (Epithelial Mesenchymal Transition)
- Exhibit high degree of chromosome instability (chromosome rearrangements, amplifications) in regions orthologous to those altered in human cancers
- Use in mapping mouse genes homologous to human cancer genes and for the study of the effects of deregulation of cancer associated genes, through silencing or overexpression.
- For use in gene expression studies of tumor progression, comparing profiles to human cancers involving the same tissue types
- Use as experimental controls in the analysis of oncogene signaling pathways
- Use in the studying telomerase pathway regulation (200-fold expression difference between cell lines)
- Use of mouse as model of epithelial carcinomas and specifically cancers of the bladder, cervix, colon, lung, mammarys and kidney cancers
- These mouse models serve as vehicles to test the efficacy of new therapies, targeting specific targets associated with the transformation of six different mouse epithelial tissues.
- Use for discovering drugs that alter the tumorigenic potential, invasiveness, and the Epithelial-Mesenchymal Transition state

COMPETITIVE ADVANTAGES

- Cytogenetically defined epithelial cell lines from mouse that model human carcinomas
- Spontaneously transformed primary cell cultures were generated from isogenic mouse strain that has a low propensity for epithelial tumors in vivo therefore, not involving other mouse strains potentially influencing the genetic background.
- These cell lines were generated without viral, chemical or genetic manipulation and thus can serve as mouse models for studying the natural process of oncogenesis and as mouse models of human cancers.
- Genomically defined colon, bladder, and kidney cell lines showing oncogene deregulation (i.e. Mdm2 and Myc overexpression)

INVENTOR(S)

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DEVELOPMENT STAGE

- Pre-clinical (in vivo)

PATENT STATUS

- **Not Patented:** Research Material. Patent protection is not being pursued for this technology.