

# Technology Development Group

# Available Technologies

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## B-raf/loxp-flanked Mutant Mouse

Tech ID: 20279 / UC Case 2006-215-0

#### BACKGROUND

B-raf is a member of the Raf family of intracellular signaling proteins, which also include Raf-1 and A-raf. Members of this family are involved in the all-important cellular signaling mechanism known as the Ras/Raf/MEK/ERK/MAPK signaling pathway. This ubiquitous pathway relays signals from outside the cell into the cells nucleus, regulating activities such as gene expression, differentiation, cell division, cell survival and cell death. B-raf regulates vital functions in the brain, testes, skin and bone marrow, and mutations in B-raf are found in malignant melanoma, certain types of thyroid and ovarian cancers, and sporadic types of colon cancers. Up to 6% of all human malignancies may harbor this mutation. Most recently, Sorafenib (Nexavar), which inhibits raf as well as a whole host of other signaling proteins, has been approved by the FDA for the treatment of advanced cancer of the kidney (clear-cell renal cell carcinoma).

#### **INNOVATION**

UCLA researchers have made a B-raf/loxP-flanked transgenic mouse. Flanking the B-raf gene with the loxP sequence allows targeted excision of the B-raf gene only when the cell expresses the protein Cre. This allows selective deletion of B-raf in a cell or tissue-specific manner and in a time or developmentally-specific manner as well.

#### **APPLICATIONS**

- Cancer research involving the Ras/Raf/MEK/ERK/MAPK signaling pathways
- Research into learning and memory, and hematopoiesis and myelopoiesis

#### **ADVANTAGES**

- ▶ Uses proven Cre/LoxP DNA recombination technology for targeted gene excision
- Unlike knockout mutants with global B-raf deficiency, B-raf/loxP sequence allows deletion of the B-raf gene in a cell or tissue-specific manner
- Unlike knockout mutants, B-raf/loxP sequence allows deletion of the B-raf gene in a time or developmentally-specific manner, such as after tumorigenesis or transformation
- > Allows functional testing in specific cell types without the confounding effects of deleting B-raf in unknown or unrelated cells and tissues

### **RELATED MATERIALS**

Forebrain-specific knockout of B-raf kinase leads to deficits in hippocampal long-term potentiation, learning, and memory. J Neurosci Res. 2006

#### ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Inducible Dominant Negative Disc1 Transgenic Mice as a Model for Schizophrenia
- Phospho-specific Antibody for Cam Kinase II
- Statins as Treatment for Cognitive Dysfunction Associated with RASopathies

### CONTACT

UCLA Technology Development Group ncd@tdg.ucla.edu tel: 310.794.0558.



#### **INVENTORS**

Silva, Alcino J.

### **OTHER INFORMATION**

#### **KEYWORDS**

research tools therapeutics, mouse

model, mice, ERK, cancer,

conditional, hematopoiesis,

myelopoiesis, learning and memory

#### **CATEGORIZED AS**

Research Tools
Animal Models

**RELATED CASES** 2006-215-0 UCLA Technology Development Group

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Tel: 310.794.0558 | Fax: 310.794.0638 | ncd@tdg.ucla.edu

10889 Wilshire Blvd., Suite 920,Los Angeles,CA 90095

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