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Novel Mouse Lines for Study of Cancer, Wound Healing and Stem Cell Biology

Tech ID: 22400 / UC Case 2012-120-0

BACKGROUND

Our research indicates that the Sestd1 protein may play an important role in oncogenesis, metastasis, wound healing and stem cell biology. Molecular signaling pathways involving Sestd1 potentially include the Wnt/ β -catenin pathway, the Wnt/PCP non- β -catenin-dependent pathway, regulation of small GTPase of the Rho family, and other pathways involving the Dishevelled signal transduction molecule, such as p120-catenin signaling. Sestd1 may also be involved in the regulation of the TGF- β pathway. In vitro and in vivo knockdown models would be very useful for studying Sestd1 function in disease but have not been reported to date.

TECHNOLOGY DESCRIPTION

UCSF investigators have generated Sestd1 conditional, constitutive and partial knockout mouse lines by making a targeted mutation in the genetic locus corresponding to Sestd1. This mutation was designed such that the essential fourth and fifth exons of the gene are flanked by loxP sites, which allows for their excision by the Cre recombinase protein to render the allele non-functional. ES cells carrying this mutation were made by homologous recombination, and a mouse line derived from the correctly targeted ES cells was created using embryo manipulation techniques. Subsequently, through genetic crosses to a few transgenic lines of mice, several different mouse lines have been created and characterized, including a neo- version of the conditional allele, both neo+ and neo- versions of a constitutive knock-out allele, and a potentially hypomorphic (partial knockout) allele. This invention is a valuable model that enables study of Sestd1 gene's roles during development as well as postnatally by making use of Cre and Flipase to partially or fully eliminate the gene in primary tissue culture cell lines, immortalized cell lines or in mouse organs and tissues at specific developmental times by crossing to Cre and/or Flipase-expressing transgenic animals.

APPLICATIONS

- Study Sestd1's role in cancer etiology, pathogenesis, metastasis and invasiveness
- Study Sestd1's role in planar cell polarity pathways involved in wound healing and stem cell biology

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OTHER INFORMATION

KEYWORDS

Sestd1

CATEGORIZED AS

- [Medical](#)
- [Disease: Cancer](#)
- [Research Tools](#)

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