Highly Specific Antibody to Human MT-SP1 (Matriptase)

Tech ID: 19047 / UC Case 2008-088-0

BRIEF DESCRIPTION

Membrane type serine protease 1 (MT-SP1), or matriptase, is a serine protease that is over-expressed on the surface of epithelial cells involved in a variety of cancers, including breast, colon and prostate. UCSF inventors have developed a novel antibody inhibitor of MT-SP1 (A11) which gains potency and specificity through interactions with the protease surface loops and binds in the active site in a catalytically non-competent manner. The A11 antibody has applications as a therapeutic, diagnostic, and research tool.

FULL DESCRIPTION

Background

Membrane type serine protease 1 (MT-SP1), or matriptase, is a serine protease that is over-expressed on the surface of epithelial cells involved in a variety of cancers, including breast, colon and prostate. MT-SP1 activates hepatocytes growth factor (HGF) and urokinase-type plasminogen activator (uPA) through which it directs extracellular matrix remodeling, angiogenesis and invasive growth of tumors. Due to its central role in the oncogenic and metastatic process, it is believed that inhibition of MT-SP1 will have therapeutic effects in patients with a variety of cancers.

MT-SP1 is a member of a family of proteases whose active sites are often highly homogenous. Previous attempts to develop protease inhibitors have suffered due to lack of specificity. There is a need for new protease inhibitors that can more specifically inhibit single members of highly similar protease families.

Description

UCSF inventors have developed a novel antibody inhibitor of MT-SP1 (A11) which gains potency and specificity through interactions with the protease surface loops, and binds in the active site in a catalytically non-competent manner. Animal model testing has revealed no side effects in adult control mice. Efficacy studies in cancer models are currently under way.

CONTACT

Kristin A. Agopian
kristin.agopian@ucsf.edu
tel: 415-340-2619.



OTHER INFORMATION

KEYWORDS

antibody therapeutic

CATEGORIZED AS

- Biotechnology
  - Health
- Medical
  - Diagnostics
  - Disease: Cancer
  - Imaging
  - Research Tools
  - Therapeutics

RELATED CASES

2008-088-0

The UCSF antibody, A11, is also a research and diagnostic tool. Recent work has demonstrated its effectiveness in in vivo imaging, phage display, and immunohistochemistry. MT-SP1 expression has been correlated with cancer stage and/or subtype. A non-invasive method for assessing the activity of the malignant tissue may aid in tumor classification and therapeutic design. It could also be used to assess the tumor margin or monitor tumor response.

APPLICATIONS

- Biologic therapy for cancer
- Detection and imaging of cancers overexpressing MT-SP1
- Research tool

OTHER INFORMATION

A patent application has been filed. Worldwide rights are available.

REFERENCES

Darragh, et al. 2010. Tumor detection and imaging by proteolytic activity. Cancer Research 70(4): 1505-1512.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,309,325	04/12/2016	2008-088

ADDRESS

UCSF

Innovation Ventures

600 16th St, Genentech Hall, S-272,

San Francisco,CA 94158

CONTACT

Tel:

innovation@ucsf.edu

https://innovation.ucsf.edu

Fax:

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