Therapeutic Heat Shock Protein Inhibitors for Anticancer Therapy

Tech ID: 25058 / UC Case 2015-043-0

INVENTION NOVELTY

Small molecule inhibitors of Heat Shock Protein-70 (HSP70) that target an allosteric site as anticancer agents

VALUE PROPOSITION

Cancer remains a daunting and urgent therapeutic challenge. Cancer cells from many types of tumors, including triple negative breast cancer (TNBC) and colon cancer, require the molecular chaperone HSP70. About 12% of women in the U.S. will develop invasive breast cancer in her lifetime and the lifetime risk of developing colorectal cancer is about 5%. For these cancers and others, HSP70 is a potential new target.

Previous HSP70 inhibitors have encountered difficulty in the clinic due to renal toxicity, low potency or lack of selectivity. There exists a major clinical need for safe and potent HSP70 inhibitors.

The current invention provides the following advantages:

- High selectivity and potency against proliferation of cancer cells
- Novel, allosteric mechanism-of-action
- Well validated target
- New chemical matter with clear structure-activity relationships

TECHNOLOGY DESCRIPTION

Researchers at the University of California San Francisco have completed a structure-guided hit-to-lead medicinal chemistry campaign, yielding ~150 allosteric HSP70 inhibitors. The most potent of these molecules has been tested for animal safety and efficacy in TNBC models. Unlike previously reported HSP70 inhibitors that target different sites on the protein, the current series has reduced toxicity in animals and normal fibroblasts. Initial biomarker discovery efforts have identified Hsp70 “client” proteins that are linked to cell death.

APPLICATION

Anticancer agent

LOOKING FOR PARTNERS

To develop and commercialize this technology for the treatment of cancer

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OTHER INFORMATION

KEYWORDS

HSP70 inhibitors, Small molecule, Cancer

CATEGORIZED AS

- Medical
  - Disease: Cancer

RELATED CASES

2015-043-0, 2015-043-2

STAGE OF DEVELOPMENT

Preclinical

RELATED MATERIALS

- Li X, et al, Mol. Cancer. Ther. (2015)

DATA AVAILABILITY

Under CDA/NDA

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,221,171	03/05/2019	2015-043

RELATED TECHNOLOGIES

- Small Molecule Targeting HSP70 for Antiviral Therapy

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