KDDF
Korea Drug Development Fund

Asset #25
FDA Technology Transfer

Chimeric Immunotoxins Targeting IL-13Rα2 Positive Human Cancers

Therapeutic Area	Oncology	**Indications**	Pancreatic Ductal Adenocarcinoma (PDAC)
Modality	Monoclonal Antibody	**Development Stage**	Target Identification/Validation

Overview

Background

- IL-13Rα2 is a high affinity receptor binding protein, which is overexpressed in a variety of human solid cancers including glioma, pancreatic cancer, head and neck cancer, Lung cancer, ovarian cancer and many other types of cancers, but weakly expressed or absent in normal tissues,
- IL-13Rα2 overexpression on tumor cell surface can serve as a better target for receptor directed anti-cancer therapy

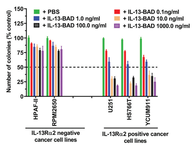
Technology Advantages

- IL-13BAD, IL-13FADD and IL-13-PE immunotoxins kill IL-13Rα2 positive human solid cancer with high specificity at nanomolar concentrations.
- Immunotoxin treatment resulted in better therapeutic response in vivo in IL-13Rα2 positive cancers.
- May destroy certain tumor microenvironment (TME) key constituents in vitro and in vivo such as tumor associated macrophages, MDSC and Tregs

Key Data

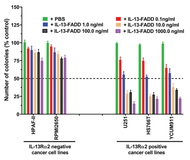
IL-13Rα2 receptor directed Immunotoxin potently inhibits colony forming ability of IL-13Rα2 positive glioma, pancreatic cancer and SCCHN tumor cells

IL-13-BAD immunotoxin blocks colony forming ability of IL-13Rα2 positive human tumor cells *in vitro*



Colony forming ability of IL-13Rα2 positive tumor cells (U251 glioma, HS766T pancreatic cancer and YCUM911 SCCHN cancer cell lines) and negative human tumor cells (HPAF-II pancreatic and RPMI2650 SCCHN cancer cell lines) were evaluated in the presence of different concentrations of IL-13-BAD after incubating for a period of 8 days in a CO2 incubator and number of colonies were counted (a colony formed with at least 50 or more tumor cells). A concentration dependent decline in number of colonies was observed in colonies formed by IL-13Rα positive tumor cells

IL-13-FADD immunotoxin blocks colony forming ability of IL-13Rα2 positive human tumor cells *in vitro*



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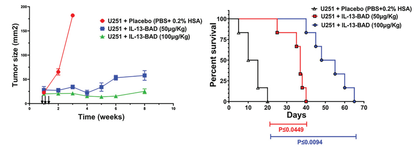
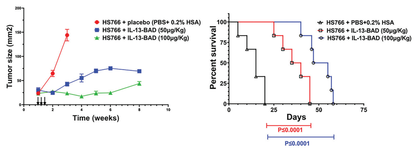
Efficacy of IL-13Rα2 directed Immunotoxin IL-13-BAD and IL-13-FADD in vivo and enhanced survival significantly without any general toxicities

IL-13-BAD effectively regressed IL-13Rα2 positive glioma xenografts and enhanced survival of treated mice



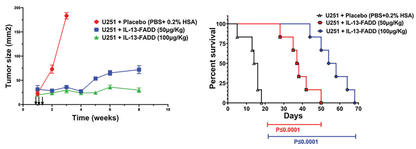
IL-13-BAD regressed IL-13Rα2 positive U251 derived glioma xenografts in a dose dependent manner (A) treated mice survived longer significantly (B) without any general vital organ toxicity

IL-13-BAD effectively regressed IL-13Rα2 positive pancreatic cancer xenografts and enhanced survival of treated mice



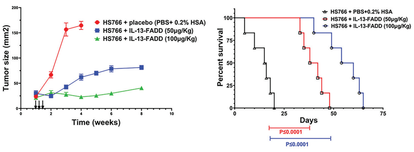
IL-13-BAD regressed IL-13Rα2 positive HS766 pancreatic cancer derived xenografts in a dose dependent manner (A) treated mice survived longer significantly (B) without any general vital organ toxicity

IL-13-FADD effectively regressed IL-13Rα2 positive glioma xenografts and enhanced survival of treated mice



IL-13-FADD regressed IL-13Rα2 positive U251 derived xenografts in a dose dependent manner (A) and treated mice survived longer significantly (B) without any general vital organ toxicity

IL-13-FADD effectively regressed IL-13Rα2 positive pancreatic cancer xenografts and enhanced survival of treated mice



IL-13-FADD regressed IL-13Rα2 positive HS766 derived pancreatic cancer xenografts in a dose dependent manner (A) and treated mice survived longer significantly (B) without any general vital organ toxicity

IP Status & Publication(s)

Intellectual Property

Patent Number
PCT-US2022-030011 (2022.05.19)

Patent Family
PCT

Publication(s)

- Manuscript in preparation for IL-13-BAD and IL-13-FADD inventions
- Fujisawa at al. (2020) A Novel Role of Interleukin 13 Receptor alpha2 in Perineural Invasion and its Association with Poor Prognosis of Patients with Pancreatic Ductal Adenocarcinoma. Cancers
- Ferreira at al. (2013) IL-13 immunotoxin accelerates resolution of lung pathological changes triggered by silica particles in mice. Journal of Immunology