A novel antibody-drug conjugate (ADC) targeting cancers expressing neurotensin receptor 1 (NTSR1)

INDICATIONS:

- ✓ Solid tumors overexpressing NTSR1
- ✓ Tumors relapsed or resistant to chemotherapy, molecular targeted agents

PATENTS:

TWI781647 (granted),
WO2021252578A1(pending)
PCT/US2022/082472(pending)

DEVELOPMENT STATUS:

Pre-clinical development

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INVENTION DESCRIPTION

NTSR1 plays crucial roles in the progression of cancer, specifically in promoting cell proliferation and invasion, by interacting with its ligand, neurotensin (NTS). High levels of NTSR1 expression have been observed in various solid tumors, whereas its expression is low in normal human tissues. Consequently, the development of an anti-NTSR1-ADC (antibody-drug conjugate) could effectively inhibit tumor growth and overcome resistance to targeted therapies. Through our exclusive phage display platform, we have discovered a novel monoclonal antibody, 7C3, that exhibits sub-nanomolar affinity for NTSR1 and demonstrates efficient internalization activity. By utilizing our patented site-specific trimannosyl conjugation platform for ADCs, anti-NTSR1-ADC alone has displayed potent anti-tumor efficacy in both in vitro and in vivo studies using various preclinical tumor xenograft models. Additionally, another novel anti-NTSR1 monoclonal antibody has been identified to facilitate immunohistochemistry (IHC) evaluation of clinical cancer patients' samples. This IHC assay will be employed to develop a companion diagnostic test for identifying cancer patients who would benefit from anti-NTSR1-ADC treatment.

COMPETITIVE ADVANTAGES OF anti-NTSR1-ADC

- ➤ Anti-NTSR1-ADC have advantages over several FDA approved ADC with much lower broad spectrum expression in human normal tissue, which is believed to have less side effect
- ➤ Efficacious as a single agent in various preclinical tumor models, especially in the trans-differentiated neuroendocrine tumor model.

MARKET POSITIONING/OPPORTUNITY

- ➤ Anti-NTSR1 with anti-tumor would expect to drive global ADC markets, targeted some unmet cancer therapy market.
- ➤ Drug and companion diagnostics (CDx) co-development would identify patients who are likely to benefit from anti-NTSR1-ADC, alone or in combination with other agents, including chemotherapeutic agents, target agents or immune checkpoint inhibitors.

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