

Development of the new anti-cancer medicine targeting GREB1, a novel Wnt signal-related molecule

Principal Investigator

1. Center for Infectious Disease Education and Research, Osaka University
 2. Department of Molecular Biology & Biochemistry, Graduate School of Medicine, Osaka University
 Specially Appointed Professor Akira KIKUCHI¹,
 Associate Professor Shinji MATSUMOTO²

Project Outline

GREB1 (growth regulation by estrogen in breast cancer 1) is a co-factor of the estrogen receptor and highly expressed in hormone sensitive tumors, such as breast and prostate cancers. Our study revealed that GREB1 is highly expressed in hepatoblastoma, the hepatic neoplasm in infants, and represents a molecular target. There are three points as important scientific achievements in our study: 1) identification of the new functions of GREB1 (Fig. 1), 2) clarification of the underlying mechanism that genetic alterations in infant tumors are much less than those in adult tumors (Fig. 2), and 3) proofs for the involvement of GREB1 in hormone insensitive tumors. In fact, we recently found that GREB1 is overexpressed in some hormone insensitive tumors other than hepatoblastoma. Further, we synthesized the modified anti-sense oligonucleotide (ASO) against GREB1 as the anti-tumor medicine. The GREB1 ASO is designed to be stabilized in the blood and efficiently reached to target organs. We showed that subcutaneous injection with the GREB1 ASO without any drug delivery system suppressed tumor growth of hepatoblastoma cells transplanted orthotopically into the liver. In this project we aim to develop the GREB1 ASO as the new anti-tumor medicine for hormone insensitive tumors.

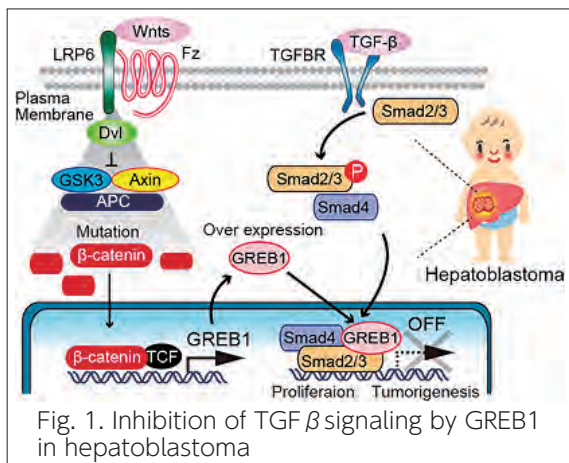


Fig. 1. Inhibition of TGF β signaling by GREB1 in hepatoblastoma

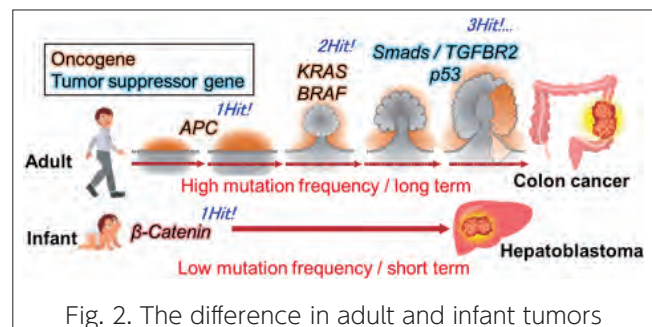


Fig. 2. The difference in adult and infant tumors

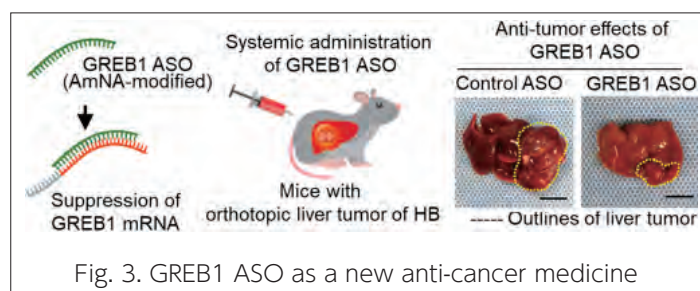


Fig. 3. GREB1 ASO as a new anti-cancer medicine

Target Diseases : Hormone insensitive tumors (Details will be available when you contact with me)

Patent Information : PCT pending

Technical Features & Marketability : The new GREB1 ASO targeting tumors covering from rare infant tumors to common adult tumors. Since RNA vaccines were very effective on COVID-19, nucleic acid medicines for cancer therapy could be expected to put to practical use more rapidly.

Issues in Development : High costs for synthesis of ASO

Possible Cooperate Collaboration : Joint development of GREB1 ASO and licensing business