Technology from Kyoto University

New Gene Target Discovered for Predicting the Risk of Extramedullary Infiltration in Leukemia for its Prevention and Treatment

We are looking to out-license the technology for its commercialization.

New biomarker discovered for predicting the risk of extramedullary infiltration, which reportedly indicates poor outcome of leukemia

◆Background

Extramedullary infiltration (EMI) refers to leukemic cells found in organs or tissue outside the primary site in the bone marrow to other tissues and organs, significantly worsening the prognosis. Among the various forms of EMI, myeloid sarcoma, which involves tumor formation in subcutaneous tissues or organs, has been challenging to replicate pathogenesis in animal models. Underlying mechanisms of myeloid sarcoma onset remain poorly understood, hindering the development of effective biomarkers and therapeutic strategies.

◆Description

Kyoto University researchers have successfully developed a novel mouse model with a high incidence of myeloid sarcoma using immunodeficient mice implanted with specific acute myeloid leukemia (AML) cells. Additionally, they identified a gene associated with EMI among highly expressed genes in the tumor tissues formed in this animal model and in leukemia cells of EMI patients. Furthermore, the knockout of this gene (Fig. 1) or administration of inhibitors in AML cells (Fig. 2) led to reduced infiltration ability, decreased tumor formation rates in mice, and prolonged overall survival.

- **Identification of the gene involved in human EMI**
- **New strategy for the companion diagnostics and therapeutics for EMI**

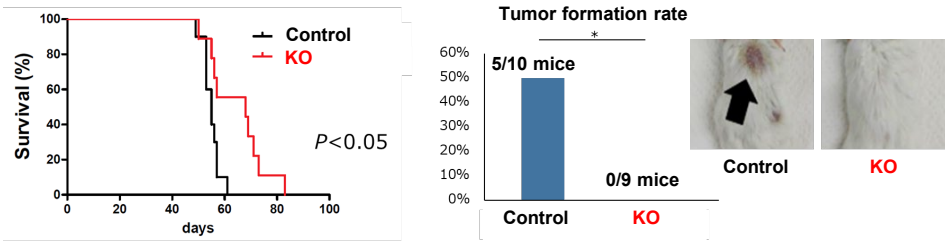

Fig.1 The overall survival rates and tumor formation rates in mice transplanted with the gene-knockout AML cells
Mice transplanted with the target gene-knockout AML cells showed the significantly extended overall survival rates and the decreased tumor formation rates compared with the control group.

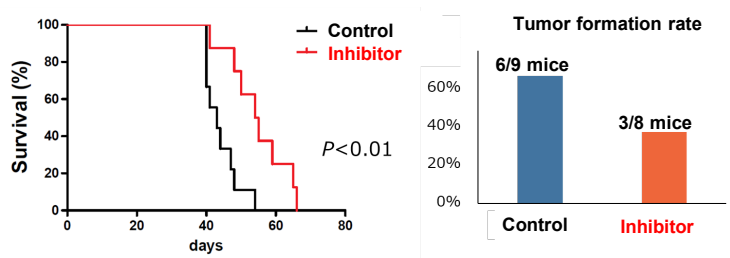

Fig.2 The overall survival rates and tumor formation rates in mice after the administration of the target gene inhibitor
An inhibitor against the target gene was administered to immunodeficient mice transplanted with AML cells, resulting with the extended overall survival rates and the decreased tumor formation rates.

◆Development Status

- Identified a novel gene as a marker for EMI and myeloid sarcoma development.
- Confirmed the tumorigenesis suppression through gene knockout or inhibitor administration in the model mice.
- Ongoing studies on myelodysplastic syndromes and chronic myeloid leukemia

◆Applications

- Clinical diagnostic service for EMI based on the found gene target
- Development of companion diagnostics/ therapeutics for AML patients with EMI

◆Offer

- Patent License
- Option for Patent License

◆Contact

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