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| ID No. | K1005 |
| Project Title | Development of innovative culture method for hematopoietic stem cell expansion |
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Report

In the present study, we are trying to develop an innovative culture system for expansion of high-grade human hematopoietic stem cells (HSCs). To this end. we are engaged in the following projects.

1. Screening of target genes for expansion of human HSCs by CRISPR/Cas9 screening (Larsson group and Iwama group): The screening is now in progress.

2. Evaluation of the new approaches for the maintenance and expansion of human HSCs ex vivo: PVA-based media developed by Yamazaki group is now extensively applied to human HSC culture and bone marrow cell cultures from patients with chronic myeloid leukemia and myelodysplastic syndrome. The efficacy of stress attenuators such as bile acids identified by Miharada's group is also under investigation (Miharada, Takubo, Umemoto, Iwama groups).

3. Manipulation of developmental signals in BM niche cells by small molecule compounds in syngeneic mice and development of mice models to manipulate developmental signals (Larsson group and Iwama group).

In 2020, we continued these projects and also tried several chemical compounds or peptides targeting the candidate molecules listed by the group members to improve HSC culture system.