

March 22, 2024

Perseus Proteomics Inc.

Institute of Immunology Co., Ltd.

The Jikei University School of Medicine

To all stakeholders,

Announcement of Selection for Research as Practical Research for Innovative Cancer Control
Program by Japan Agency for Medical Research and Development (AMED)

The research project led by Dr. Kohji Yamada, Associate Professor of Department of Biotechnology, The Jikei University School of Medicine as a principal investigator and participated in by Perseus Proteomics Inc (“Perseus Proteomics”) and Institute of Immunology, Co., Ltd. (“Institute of Immunology”), has been selected for the Practical Research for Innovative Cancer Control program by AMED.

1. Research title

“Development of a novel in vitro diagnostic system for early-stage liver cancer based on a hepatocarcinogenesis mechanism”

2. Principal investigator

Dr. Kohji Yamada, Associate Professor, Department of Biochemistry, The Jikei University School of Medicine

3. Outline and purpose of the research

The purpose of this research is to develop in vitro diagnostics to detect liver cancer at an early stage, focusing on protein kinase C delta (PKC δ) existing in the blood. Conventionally, PKC δ has been thought of as an intracellular protein, however, Dr. Yamada found that PKC δ is secreted to the extracellular space from liver cancer cells. This newly found secretion mechanism is the base of this world-first biomarker development. So far, it has been found that PKC δ in the blood is detected in liver cancer patients at a higher level than in healthy persons or patients suffering from chronic hepatitis and cirrhosis (Yamada et al., Cancer Research, 2021, 81:414-425). It is expected that utilizing PKC δ as a novel biomarker can lead to early detection of liver cancer and improvement of diagnosis rate of early-stage liver cancer as well as prognosis of patients.

Liver cancer is a refractory cancer with extremely high recurrence: it is the second leading cause of cancer death in the world and 5th in Japan in 2019. The low sensitivity of tumor markers currently available has led to failure to detect cancer presence, making early detection difficult. Also, there has been a problem that liver cancer, which is associated with lifestyle-related diseases and is expected to see a further increase in the number of patients in the future, tends to show negative results in current tumor marker examinations.

To solve this problem, the Jikei University School of Medicine, which has cutting-edge expertise in



biomarkers research including PKC δ and clinical knowledge in liver diseases, Perseus Proteomics, which has a technology in generation of antibodies for diagnostic and treatment purposes, and Institute of Immunology, which has a proven track record of development, manufacture, and sales of diagnostic reagents, have been conducting a joint research to establish the most appropriate diagnosis method to detect PKC δ in the blood specifically and to develop high-sensitivity examination kits at a practical level. The research team will aim to verify clinical meanings of measurement of PKC δ in the blood and to facilitate the practical use of this biomarker.

[AMED website related to the adoption](#) (Japanese only)

[Contact for joint research]

Perseus Proteomics Inc.

Research and Development Dept.

email: info@ppmx.com

Institute of Immunology, Co., Ltd.

Research and Development Dept.

email: akira.shiota@tokumen.co.jp

Dr. Kohji Yamada

Associate Professor, Dept. of Biochemistry, The Jikei University School of Medicine

TEL: +81-3-3433-1111

email: kyamada@jikei.ac.jp

[Contact for this news release]

Perseus Proteomics Inc.

Administrative Dept.

email: ir@ppmx.com

Institute of Immunology, Co., Ltd.

FP&A (publicist)

email: ohoriguchi@tokumen.co.jp

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