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Joint Research Agreement Signed with National Cancer Center

Quest to Develop Commercially Viable Blood Diagnostics Based on Proteome Analysis

In April 2007, Hitachi High-Technologies Corporation (President: Hidehito Obayashi) signed a joint research agreement with the National Cancer Center in Tokyo, Japan (President: Setsuo Hirohashi) and has begun joint research into developing a commercially viable method of blood diagnosis based on proteome analysis.

The proteome refers to all the proteins in the cells, tissues, blood, and elsewhere in the body. Due to recent progress in mass spectrometry, the proteome is now attracting interest as a key to the development of biomarkers (*1). While the National Cancer Center Research Institute has been conducting large-scale clinical research and achieving results, such as the discovery of early diagnostic markers for difficult-to-diagnose pancreatic cancers, this joint research is expected to accelerate the discovery of new biomarkers and their practical application to clinical testing.

In April 2005, Hitachi High-Technologies jointly developed, with Hitachi, Ltd. (President: Kazuo Furukawa), a liquid chromatograph mass spectrometer for analyzing proteins. This liquid chromatograph mass spectrometer, the NanoFrontier LD, uses an original linear ion trap - TOF method to achieve high-sensitivity screening several times higher than possible with existing equipment. The NanoFrontier LD delivers the high-sensitivity and high-accuracy mass spectrometry essential to the analysis of proteins.

This joint research will involve Hitachi High-Technologies in such areas as the development of blood specimen preprocessing technologies and the development of a general-purpose mass spectrometer for clinical testing and measurement automation.

Using proteome analysis systems centered on Hitachi High-Technologies' NanoFrontier LD, the National Cancer Center is searching for cancer biomarkers using actual specimens of various diseases. For future early cancer screening (*2), it is essential to increase the types of detectable cancers, and this joint research aims to establish elemental technologies for this. The parameters of this research include the early detection, not only of cancers, but of lifestyle-related diseases as well, and its utility in practical treatment is expected to increase.

Because of the difficulty of collecting specific disease (cancer) specimens, Hitachi High-Technologies was not able to actively develop clinical applications alone. The signing of the joint research agreement gives Hitachi High-Technologies a powerful partner and boosts the development of preprocessing technologies for blood diagnosis based on proteome analysis and the development of analysis equipment.

(*1) Biomarkers are biologically derived chemical substances found in the urine and blood. They are indicators (markers) that characterize the presence of a disorder, changes in the state of a disorder, and the extent of any healing. Typical biomarkers are serum GPT and GOT, which are indicators of blood sugar levels, cholesterol levels, and liver function.

(*2) Screening is performed to check for the possibility of a disorder at the stage where symptoms are not yet manifested. Screening allows the early detection of all kinds of disorders.

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