



March 9, 2016

JVCKENWOOD Corporation  
Sysmex Corporation

## **JVCKENWOOD and Sysmex to Commence Joint Development of Diagnostic Instruments for Measurement of Exosomes**

JVCKENWOOD Corporation (JVCKENWOOD) and Sysmex Corporation (Sysmex) have agreed to jointly develop diagnostic instruments for the measurement of exosomes that can be used in testing for diseases such as cancer.

### **1. Purpose of the Joint Development**

Exosomes are granular vesicles measuring around 50-100nm that are secreted by many types of cells and exist in blood, saliva, urine and other bodily fluids. Exosomes contain many substances, including proteins, mRNA<sup>1</sup> and microRNA<sup>2</sup>. In recent years, attention has focused on using exosomes as biomarkers for various diseases, including cancer.

JVCKENWOOD and Sysmex have agreed to engage in the joint development of novel and high-performance diagnostic instruments by combining their advanced technological capabilities and the experience both companies have gained. Through this joint development, they will work toward the creation of groundbreaking testing and diagnostic technologies that could play a role in the early detection of cancer, that is currently problematic and the realization of personalized medicine optimized for individual patients.

### **2. Effort of JVCKENWOOD and Sysmex**

JVCKENWOOD has evolved from its conventional structure of product manufacturing and sales into a company that creates customer value, moving to a business model of providing solutions to resolve the issues its customers face. The Company is making a full-fledged effort to expand its healthcare business, which includes diagnostic imaging and surgical support (comprising various types of support for the operating room). As one aspect of these activities, the Company has been developing the optical disk technologies using nanobeads<sup>3</sup> for detecting and counting exosomes by applying technologies cultivated in DVD/Blu-ray development. The development was supported by the Program of Development of Advanced Measurement and Analysis Systems promoted by the Japan Science and Technology Agency (JST). JVCKENWOOD aims to achieve further growth by penetrating into a completely new business field for the Company through this joint development.

Sysmex is an integrated manufacturer of in vitro diagnostic instruments, reagents and software whose operations span research and development, manufacturing, sales and after-sales services. The Company is pursuing research and technological development toward the creation of highly valuable testing and diagnostic technologies that can be used in a host of disease areas, including cancer and chronic diseases.

To that end, Sysmex is working to expand its in vitro diagnostic technology platform to realize liquid biopsy<sup>4</sup>, using blood-based testing.

### 3. Content of the Joint Development

In this joint development, JVCKENWOOD will make use of optical disk technologies using nanobeads to develop measuring instruments to capture and count exosomes existing in the blood. Sysmex will also develop instruments for the measurement of substances contained in these exosomes by using its ultrahigh sensitive measurement technologies for gene and protein analysis.

In the future, after clinical research, we aim to employ these jointly developed products to support the realization through blood sampling of the early detection of such diseases as cancer, which places little burden on the patient.

JVCKENWOOD and Sysmex will maximize the synergies between their respective technologies and pursue closer joint developments with the aim of realizing the highly valuable tests needed to provide healthcare optimized for individual patients.

- <sup>1</sup> mRNA: Messenger RNA (mRNA) is a family of RNA molecules that conveys genetic information on protein synthesis from DNA sequence information.
- <sup>2</sup> microRNA: MicroRNA (miRNA) is a single-stranded RNA molecule of around 20 nucleotides in length involved in controlling the expression of numerous genes and proteins, thereby making fine adjustments in vital phenomena. In recent years, attention has focused on the miRNA present in exosomes for diagnosing disease, as they are stable, preventing them from being broken down by enzymes in the blood, and their quantities and types vary substantially depending on various disease pathologies and degree of progression.
- <sup>3</sup> Nanobeads: The size of these beads is measured in nanometers (millionths of a millimeter). The nanobeads used in this technology have a diameter of around 200nm. Antibodies that bond with exosome substances on a bead's surface are solid-phased, allowing the specific detection of the target exosome.
- <sup>4</sup> Liquid biopsy: Detection of cancer or other diseases by testing bodily fluids such as blood. This type of testing is less invasive than conventional physical biopsies.

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