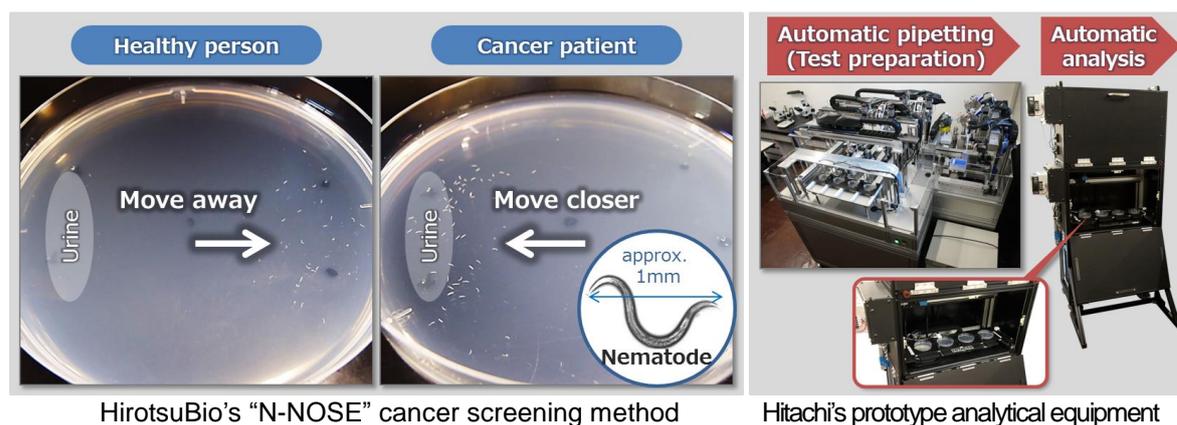


FOR IMMEDIATE RELEASE

## Hitachi and Hirotsu Bio Science to Collaborate in Research for the Practical Application of Cancer Screening Using Nematodes

*For the early detection of cancer by through automation of large-scale screening*



**Tokyo, April 18, 2017** --- Hitachi, Ltd. (TSE: 6501, Hitachi) and Hirotsu Bio Science Inc. (HirotsuBio) today announced that they have entered an agreement to collaborate on research for the practical application of cancer screening using nematodes. The two companies will conduct collaborative research to realize the practical application of HirotsuBio's "N-NOSE" cancer screening method using nematodes by automating the test process employing the new technology developed by Hitachi to automate the analysis of cancer tests using nematodes. This research will enable the large-scale testing required for future clinical assessment and thus, contribute to the early detection of cancer.

Currently, cancer-related expenses including indirect costs have reached approximately 10 trillion yen per year in Japan, and become a significant burden on society. Thus, there is a need to not only improve the precision of conventional cancer detection and diagnosis technology, but also for a simple but highly precise new screening method for early detection.

HirotsuBio, a venture company from Kyushu University, is aiming to develop a practical application of their newly developed cancer screening method, N-NOSE, based on chemotaxis<sup>(1)</sup> exhibited by nematodes. Nematodes were found to migrate towards the urine of cancer patients and move away from that of healthy people. N-NOSE has the advantage of being a testing method which can detect various types

of cancer early and accurately<sup>(2)</sup> as well as uses urine, an inexpensive and easily sampled specimen. A large-scale clinical assessment is under plan in collaboration with medical institutions for the practical use of N-NOSE.

Hitachi on the other hand, has collaborated with Hitachi Health Insurance Society (Hitachi-Kenpo) to develop automated analysis technology using nematodes in cancer screening. This technology automatically performs a series processes for chemotaxis assays; from collecting and cleansing the nematodes, placing the nematodes and urine sample on a chemotaxis plate, to observing the chemotactic migration of the nematodes. During the observation process, images of the plate are captured to derive the number of nematodes from the brightness of the image. This method realized the quantitative analysis of nematode reaction and the automatic evaluation of chemotaxis assay results without conducting conventional visual counting. Further, continuous imaging allows the degree of migration to be measured. As the results of cancer screening using nematodes may be affected by factors such as the state of the nematodes, by using the degree of migration as a quality control standard, it is possible to quantitatively assess the quality of all test samples. Hitachi applied this technology to develop an automated analysis equipment prototype for cancer screening using nematodes. When urine samples provided by women who participated in Hitachi-Kenpo medical check-ups, and those purchased from overseas biobanks were tested using the prototype, an equivalent level of accuracy in identifying cancer patients was found compared to tests conducted manually by medical technicians.

This agreement for collaborative research will allow Hitachi and HirotsuBio to combine their respective strengths to establish automation technology for large-scale cancer screening using nematodes and contribute to the early detection of cancer.

(1) Chemotaxis: movement towards or away from a chemical stimulus by cells or microorganisms

(2) The latest clinical result from HirotsuBio: Specificity in detecting cancer in patients is 93.8%.

**About Hitachi, Ltd.**

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges. The company's consolidated revenues for fiscal 2015 (ended March 31, 2016) totaled 10,034.3 billion yen (\$88.8 billion). The Hitachi Group is a global leader in the Social Innovation Business, and it has approximately 335,000 employees worldwide. Through collaborative creation, Hitachi is providing solutions to customers in a broad range of sectors, including Power / Energy, Industry / Distribution / Water, Urban Development, and Finance / Government & Public / Healthcare. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

**About Hirotsu Bio Science Inc.**

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| Company Name      | Hirotsu Bio Science Inc.   |
| Head Office       | Tokyo, Japan   |
| President & CEO   | Takaaki Hirotsu  |
| Business Overview | Biological Diagnostics Research:<br>Research, development, manufacturing, and sale of cancer diagnostic testing equipment utilizing c. elegans and c. elegans olfactory sensors. |
| Company's Website | <a href="http://hbio.jp/en/">http://hbio.jp/en/</a>  |

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