

# Toppan and Hokkaido University Launch Comprehensive Dementia

## Research Unit

Establishing technology for early detection to advance dementia diagnosis and treatment

Tokyo - April 13, 2023 - Toppan (TYO: 7911), a global leader in communication, security, packaging, décor materials, and electronics solutions, and Hokkaido University have launched the “Comprehensive Dementia Research Unit,” an industry creation section that will collaborate with the Hokkaido University Collaborative Project Center’s Cognitive Science Research Center, which conducts comprehensive research on diagnosis technologies for dementia.

Fusing Toppan’s Digital ICA™ technology for high-sensitivity fluorescence detection with Hokkaido University’s academic expertise, the Comprehensive Dementia Research Unit will contribute to the advancement of dementia diagnosis and treatment by undertaking related research, including developing technologies for early Alzheimer’s disease detection.

Toppan and Hokkaido University will conduct research in collaboration with the latter’s Global Research Center for Food & Medical Innovation (FMI) and other related facilities.

Name	Comprehensive Dementia Research Unit
Research facility	Hokkaido University Global Research Center for Food & Medical Innovation (FMI)
Period	April 1, 2023 to March 31, 2025
Researchers	Ichiro Yabe (Professor, Faculty of Medicine, Hokkaido University) Hiroaki Yaguchi (Associate Professor, Faculty of Medicine, Hokkaido University) Kenji Monde (Professor, Faculty of Advanced Life Science, Hokkaido University)

“Working with Hokkaido University will provide a combination of technologies and specialist knowledge that we hope will unlock the key to earlier diagnosis of dementia,” said Jin Endo, Managing Executive Officer of R&D Strategy and Business Development at Toppan. “We look forward to being able to contribute to better prevention and treatment as well as to shaping a society more accommodating to people with dementia and those who care for them.”

### Background

A rise in the number of people with dementia is a pressing social issue in Japan. According to the Ministry of Health, Labour and Welfare, the number of dementia patients aged 65 and over is forecast to reach approximately 7 million in 2025, equivalent to one in five senior citizens. In response, Hokkaido University established its Cognitive Science Research Center in April 2022

to integrate and consolidate its dementia research and build a regional network.

Toppan, meanwhile, aims to contribute to early diagnosis and preventative healthcare in the areas of cancer and dementia. Initiatives include using microfabrication and digital detection technologies to develop Digital ICA™, a high-sensitivity fluorescence detection technology for identifying biomarkers used for cancer and dementia diagnosis.

Against this background, Toppan and Hokkaido University have established the Comprehensive Dementia Research Unit to function as an industry creation section bringing together their respective technologies and driving comprehensive collaboration centered on the Cognitive Science Research Center.

### **Joint research**

Toppan and Hokkaido University will further advance their current joint efforts, in which they apply Toppan's Digital ICA™ technology to research early Alzheimer's disease diagnosis technology based on exosome detection. The two organizations will also address other broad-ranging research themes, such as enabling early diagnosis of Alzheimer's disease and other forms of dementia through assessment and analysis of cognitive functioning, devising methods for assessing cognitive functioning, and searching for biomarkers for diagnosis.

#### **• Testing with human subjects and developing next-generation detection methods**

Toppan and Hokkaido University will conduct testing using human subjects, including Alzheimer's patients and people with mild cognitive impairment (MCI), and develop next-generation detection methods for early dementia diagnosis. To do this, they will use technologies that can enable early Alzheimer's disease diagnosis by detecting amyloid  $\beta$ -binding exosomes in a small amount of blood.

#### **• Advancing comprehensive initiatives focused on issues related to dementia**

Toppan's metaverse technologies and ICT solutions will be leveraged with Hokkaido University's expertise to comprehensively address the issue of dementia in Japan's ageing society.

### **Roles**

#### **• Toppan**

Through the development and manufacture of diagnostic kits, Toppan has cultivated technologies related to medicine and pharmaceuticals, including molecular diagnostic technologies. Utilizing this knowledge, Toppan will drive efforts related to dementia, including development of exosome detection and measurement using Digital ICA™, with the goal of advancing preventative healthcare and improving quality of life for patients.

#### **• Hokkaido University**

At the Cognitive Science Research Center, Hokkaido University undertakes efforts aimed at shaping a society better attuned to living with dementia. Activities are centered on "development of dementia prevention, diagnosis, and treatment technologies," "creation of communities for co-existence," and "promotion of digitalization and elimination of the digital divide." The

Comprehensive Dementia Research Unit will advance technical development applying knowledge on the neural functions of exosomes to dementia diagnosis.

[https://neurology.med.hokudai.ac.jp/~neuro-w/dementia\\_research\\_center/](https://neurology.med.hokudai.ac.jp/~neuro-w/dementia_research_center/) (in Japanese)

Toppan and Hokkaido University will contribute to solutions for ageing societies by combining their respective technologies, knowledge, and experience to establish methods for early diagnosis of dementia.

1. Digital ICA™ is Toppan's proprietary high-sensitivity fluorescence detection technology for early Alzheimer's disease detection.

See a related press release at: [https://www.toppan.com/en/news/2022/10/newsrelease20221003\\_1.html](https://www.toppan.com/en/news/2022/10/newsrelease20221003_1.html)

### **About Hokkaido University**

Founded in 1876 as Sapporo Agricultural College, Hokkaido University is one of the oldest, largest, and most prestigious universities in Japan. The university attracts prospective students all around the globe with the diverse degree programs offered and the year-round scenic beauty. The campuses are located in the cities of Sapporo and Hakodate of Hokkaido, and 21 facilities are spread throughout Hokkaido and mainland Japan, contributing towards the resolution of global issues.

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### **About Toppan**

Established in Tokyo in 1900, Toppan is a leading and diversified global provider committed to delivering sustainable, integrated solutions in fields including printing, communications, security, packaging, décor materials, electronics, and digital transformation. Toppan's global team of more than 50,000 employees offers optimal solutions enabled by industry-leading expertise and technologies to address the diverse challenges of every business sector and society and contribute to the achievement of shared sustainability goals.

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