TANAKA MIRAI Lab.

PRESS RELEASE

TANAKA MIRAI Lab., JAF MEDIA WORKS, and Della Begin Joint Research to Visualize Drivers' Conditions through Analysis of Sweat Components

Aiming to visualize driver fatigue, stress levels, and other conditions through multivariate analysis of sweat components and other methods

Tokyo, Japan, October 29, 2026 - TANAKA MIRAI Lab. of TANAKA PRECIOUS METAL GROUP Co., Ltd. (head office: Chuo-ku, Tokyo; Group CEO: Koichiro Tanaka) has begun joint research with JAF MEDIA WORKS Co., Ltd. (head office: Minato-ku, Tokyo; President and Representative Director: Keiichiro Watanabe) and Della Inc. (head office: Setagaya-ku, Tokyo; Representative Director: Hideo Utsugi) to visualize drivers' conditions through the analysis of sweat components and other data.

This study will combine sweat and saliva samples and questionnaire data collected before and after driving and before and after listening to healing music. Changes in organic and inorganic components will be analyzed using multivariate analysis and other methods to explore associations with driving fatigue, stress levels, and other conditions.

Background and Objectives of the Study

In recent years, factors such as growing demand for logistics have increased the importance of managing drivers' conditions. Although regulatory frameworks are steadily being developed, including mandatory alcohol checks, current health assessments in transportation operations primarily consist of annual health checkups and daily roll calls. Further technological advances are expected to enable an objective and quantitative understanding of conditions that change from day to day, such as fatigue, stress, and drowsiness.

Particularly in the transportation and vehicle service industries, driver shortages and an aging driver workforce have become serious challenges. This has increased the importance of driver safety and health management, including addressing long hours of driving and preventing accidents believed

to be caused by drivers' health conditions.

Against this background, this study focuses on drivers' sweat. Sweat contains a wide range of biological information, including organic and inorganic components, and may reflect changes in a person's condition. Rather than the conventional approach of measuring only a single component, the study aims to establish a new approach to capturing changes in a person's condition through "multivariate analysis," which analyzes changes in numerous components together. In addition, the study will use healing music provided by Della to evaluate its relaxation and stress relieving effects and examine the effects of music on participants' conditions.

Overview of the Study

In this study, sweat and saliva samples were collected from drivers engaged in JAF MEDIA WORKS' transport (vehicle towing) operations before and after driving and after listening to healing music. Questionnaire surveys to assess stress and perceived fatigue were also conducted at the same time.

Sweat samples collected using a noninvasive extraction method that places minimal strain on the body will undergo inorganic component analysis using inductively coupled plasma (ICP) analysis and organic component analysis using nuclear magnetic resonance (NMR) spectroscopy, led primarily by TANAKA MIRAI Lab. Exploratory analysis will also be conducted to examine correlations between changes in multiple components and the condition of the study participants.

* This study is being conducted with approval from the Research Ethics Committee for Research Involving Human Subjects, Public Health Research Foundation. An anonymized data management system has been established in which personal information is kept separate from analysis data.

Features and Significance of the Study

Within biosensing research, this study is positioned as an approach to exploring biological signals. Biosensing research involves developing technologies that use sensors to monitor humans, animals, plants, and other living organisms, and to quantify and visualize biological information that otherwise cannot be seen. This study examines new possibilities for biosensing by exploring associations between changes in sweat components and a person's condition. Conventional biosensing research has generally used increases and decreases in specific components as indicators. This study, however, aims to capture biological conditions through patterns of change in components and other data by analyzing changes in numerous organic and inorganic components together. We believe this approach may make it possible to visualize complex changes in a person's condition that cannot be fully captured by a single indicator.

We are also exploring the possibility of developing an approach to detecting biological signals using precious metal materials, sensing technologies, and other resources, and will continue to

examine potential applications for sensors and other devices.

Roles of Each Company

TANAKA MIRAI Lab.	Establishing the research framework, analyzing components in each sample, and advancing various initiatives toward future applications in sensors and other devices.
JAF MEDIA WORKS	Collecting sweat and saliva samples from drivers in actual driving environments for transport (vehicle towing) operations and conducting questionnaire surveys.
Della	Providing healing music incorporating research data and findings from psychological and medical perspectives.

Comments from Representatives of Each Company

TANAKA PRECIOUS METAL GROUP Co., Ltd.

Masahiro Ito, Chief Researcher, TANAKA MIRAI Lab.

We believe that human sensations and emotions will become increasingly important in the future. This will require technologies capable of exploring and expressing them. In this study, three companies from very different industries are joining forces to take on the challenge of representing the human condition. We hope this study will yield findings that allow us to capture at least some aspect of the human experience.

JAF MEDIA WORKS Co., Ltd.

Toshihiro Toritsuka, Director

For drivers, accurately assessing their own fatigue and stress is fundamental to safe driving. At present, however, they have little choice but to assess subjective symptoms such as perceived fatigue and drowsiness largely through their own judgment. This can lead to situations in which they push themselves too hard because they believe they can cope or feel a sense of obligation to their work. If a technology that allows fatigue and stress to be assessed easily using a tiny amount of sweat becomes available, we expect that objective assessments could help discourage driving beyond one's limits and reduce the risk of traffic accidents.

Della Inc.

Kunihito Ikeda, Chief Director, Sound Wellness Lab

We have conducted repeated evaluations of various effects related to sleep and stress, primarily using sound. Meanwhile, we feel that sweat analysis and stress associated with mobility represent

new fields that have emerged through collaboration among the three companies. Having this opportunity to contribute to a new field through the science of sound is a major step forward for us. Ultimately, it is the human mind and body that control our actions. We hope this study will provide clues for understanding the underlying mechanisms.

Company Information

About TANAKA MIRAI Lab.

TANAKA has been advancing a transformation of its overall business toward the year 2085, the 200th anniversary of its founding, with the aim of “creating a future that no one has ever seen before.” As part of this initiative, TANAKA launched TANAKA MIRAI Lab., an organization to advance this transformation and create the future.

TANAKA MIRAI Lab.’s mission is to envision an unseen future and realize various possibilities by conducting research derived from “kisho (precious and rare) value.”

Official Website

https://mirailab.tanaka.co.jp/

About JAF MEDIA WORKS Co., Ltd.

JAF MEDIA WORKS is a multimedia company that connects people, mobility, and society and is part of the Japan Automobile Federation (JAF). Its wide-ranging media businesses for automobile users include producing and managing JAF Mate, which has a circulation of over 13.5 million copies, and the online magazine JAF Mate Online; providing the traffic safety e-learning service JAF Traffic Safety Training; various advertising services; website development; publishing; and operating the news site KURU KURA.

JAF MEDIA WORKS Corporate Website

https://www.jafmw.co.jp/

About Della Inc.

Della Inc., a healing music label offering music that is gentle to the body and mind, aims to create sound suited to people's lifestyles, environments, and mental and physical conditions. In recent years, it has repeatedly evaluated sound developed on the basis of physiological data, and has worked to contribute to preventive medicine, including mental health, and to promote music therapy.

Official Website

https://www.della.co.jp/

■ **About TANAKA**

Since its foundation in 1885, TANAKA has built a portfolio of products to support a diversified range of business uses focused on precious metals. TANAKA is a leader in Japan regarding the volume of precious metals it handles. Over many years, TANAKA has manufactured and sold precious metal products for industry and provided precious metals in such forms as jewelry and assets. As precious metals specialists, all Group companies in Japan and worldwide collaborate on manufacturing, sales, and technology development to offer a full range of products and services.

With 5,778 employees, the group’s consolidated net sales for the fiscal year ended December 2025 were 1,097,813 million yen.

■ TANAKA Industrial Precious Metal Materials Portal

https://tanaka-preciousmetals.com

■ Product inquiries

TANAKA PRECIOUS METAL TECHNOLOGIES Co., Ltd.

https://tanaka-preciousmetals.com/en/inquiries-on-industrial-products/

■ Press inquiries

TANAKA PRECIOUS METAL GROUP Co., Ltd.

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