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| <br>Katuhito Hashizume President | Human Metabolome Technologies (6090)   |
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## Company Information

|            |   |
|------------|---|
| Market     | Mothers of Tokyo Stock Exchange   |
| Industry   | Service Industry  |
| President  | Katuhito Hashizume  |
| HQ Address | 246-2 Mizukami, Kakuganji, Tsuruoka-city, Yamagata                            |
| Year-end   | End of June   |
| Homepage   | <a href="https://en.humanmetabolome.com/">https://en.humanmetabolome.com/</a> |

## Stock Information

| Share Price | Shares Outstanding (End of term) | Total market cap | ROE Act. | Trading Unit |           |
|-------------|----------------------------------|------------------|----------|--------------|-----------|
| ¥930        | 5,895,800shares                  | ¥5,483million    | -4.3%    | 100shares    |           |
| DPS Est.    | Dividend yield Est.              | EPS Est.         | PER Est. | BPS Act.     | PBR ( x ) |
| ¥0.00       | -                                | ¥1.69            | 550.3 x  | ¥189.48      | 4.9 x     |

\*The share price is the closing price on the end of April 1. The number of shares issued, DPS, EPS are taken from brief financial report for 2Q of FY 6/21. ROE and BPS are the values as of the end of the previous term.

## Earnings Trend

| Fiscal Year     | Sales | Operating Income | Ordinary Income | Net Income | EPS     | DPS  |
|-----------------|-------|------------------|-----------------|------------|---------|------|
| March 2017 Act. | 914   | -43              | -40             | -61        | -10.86  | 0.00 |
| March 2018 Act. | 938   | -140             | -149            | -156       | -26.92  | 0.00 |
| June 2019 Act.  | 989   | -526             | -515            | -596       | -101.92 | 0.00 |
| June 2020 Act.  | 1,118 | -17              | -16             | -47        | -8.15   | 0.00 |
| June 2021 Est.  | 1,200 | 20               | 35              | 10         | 1.69    | 0.00 |

\*Unit: million yen. Forecasts are those of the Company. Due to the change in the fiscal year end, the fiscal year ended June 2019 is 15 months. Net income is net income attributable to owners of the parent. The same applies hereinafter.

This Bridge Report provides overview of the second quarter of the fiscal year ending June 2021 earnings results, etc. of Human Metabolome Technologies Inc.

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## Key Points

- **The sales for the first half of the FY ending June 2021 were 537 million yen, up 83 million yen year on year. In the metabolome business, the company strengthened its marketing systems inside and outside Japan, so sales were healthy. As the company made efforts to improve productivity and curtail expenses for company-wide management, operating income was 2 million yen, being in the black for the first time in the cumulative second quarter.**
- **There is no change in the FY ending June 2021 earnings forecasts. Sales are expected to increase 82 million yen year on year to 1,200 million yen, and operating income is estimated to return to profitability at 20 million yen. With efforts being made to expand the new analysis menu, strengthen the global sales system, and more, continued sales growth is expected. Although the impact of the novel coronavirus has given rise to negative factors such as delays in the arrival of measurement samples, positive factors such as increased activity in research are also considered, so the effects are considered to be minor as of now, so we'll keep an eye on it. In both businesses, research and technological development will continue without slackening, and they aim to move into the black through an increasing analysis operation rate, improving productivity, and appropriate cost controlling.**
- **Following the remarkable results for the FY ended June 2020, in which sales hit a record high and loss shrank considerably, operating income in the first half of the FY ending June 2021 was in the black for the first time for the first half. We are a little concerned about the year-on-year decline in the amount of orders received, but we are looking forward to see whether the company will be able to earn a positive annual operating income for the first time, by utilizing its advantage in the metabolomics analysis market, where demand is growing.**

## 1.Company Overview

Human Metabolome Technologies Inc. is a venture company originated from Keio University that provides contract metabolomic analysis service and biomarker development for research institutes and pharmaceutical companies. Its metabolome analysis technology is highly recognized throughout the world as a basic methodology. Its business model is to steadily generate profit through the commissioned metabolomics business while investing in and working on research and development of biomarkers which estimates future prospects. The company is pursuing continuous growth with a stable revenue base under this strategy.

### 1-1 Corporate History

In 2001, Professor Tomoyoshi Soga of Keio University, Institute for Advanced Biosciences, developed a system to measure broad species of small-molecule metabolites (metabolome), which is called the CE-MS system. The new innovative system realized to capture a wide range of metabolites at once, while none of the conventional approaches do not, which means it used to be necessary to involve multiple experimental conditions, each of which has a small coverage.

Human Metabolome Technologies Inc. was founded in July 2003 by Professor Soga and Professor Masaru Tomita of the same university, Keio University, etc. for the purpose of commercializing an analysis service using this technology. It was the first venture company originated from Keio University, with a financial support from Keio University's entrepreneurship fund.

The Company promoted research and development of its core technologies and began organizing and establishing more specific

commercialization process and business models in order to accelerate its growth speed through enhancing its visibility and raising funds for research and development. The Company got listed on the Mothers Section of the Tokyo Stock Exchange in December 2013, ten years after its establishment. Under President Hashizume, who took office in September 2019, the company will strongly acknowledge the importance of how their output will be accepted by the world in the form of sales, and aim to expand its revenue by utilizing the technology and research they have cultivated so far as their foundation.

## 1-2 Corporate Philosophy

The Company defines the meaning of its existence as follows.

**“To contribute to people’s health and joyful lives through research and development using the up-to-date metabolome analysis technologies for children in the future.”**

The Company also sets the following 5 “Common Values”

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| <p><b>1. We walk together with our customers.</b><br/>In order to respond to the current and future needs of our customers, we understand the workflow of our customers’ research and development and develop solutions that meet our customers’ satisfaction. We communicate with our customers with passion wholeheartedly.</p> |
| <p><b>2. We value the latest technology development and high quality.</b><br/>We never forget the venture spirit and will continuously make efforts and investments in order to always develop the world’s leading analysis and diagnostic technologies.</p>  |
| <p><b>3. We value teamwork.</b><br/>We will try to have open communication, trust our colleagues and respect for various opinions in order to maximize the power of teamwork. We will also work on self-development and elevate individual capacity in order to enhance the overall capacity of the team.</p>                     |
| <p><b>4. We act fairly and honestly.</b><br/>As good citizens, we will comply with laws and ordinance and continue taking honest, ethical and responsible acts, in order to acquire trust from our customers, shareholders, and local communities and families.</p>   |
| <p><b>5. We contribute to the future of children.</b><br/>We will achieve appropriate life and work balance in order to pursue children’s happiness in families.</p>  |

## 1-3 Points to Understand the Company

The Company’s business overview is described later in this report together with the explanation of key words, “metabolomics” and “biomarker”; however, many technical terms show up in the section, and that may prevent the readers from understanding. Here are three points briefly provided before jumping to the section to glancing at the Company’s business scope.

### ① Significance of Social Presence

Biomarkers are *in vivo* compounds that are used as indicators to assess the current state of specific diseases. “Blood sugar” for diabetes, “ $\gamma$ -GPT” for liver function disorder, and “uric acid” for gout are the representative examples of well-known and widely used biomarkers. The company is working on the development of evaluation indicators for mental condition, in the mental health field centered on depression, which is currently a major social problem.

It is estimated that there are about 5 million people suffering from depression (a mood disorder) in Japan and about 320 million people worldwide as of 2015, so better treatment and prevention methods are strongly desired.

For that reason, development of objective indicators and examination technology based on scientific data are indispensable, and the mental condition evaluation indicators the company is developing will play a major role in that.

Besides mental health, the company is developing biomarkers for MCI (mild cognitive impairment) and diabetic nephropathy, and aiming for exploring biomarkers related to various other diseases.

In Japan, the increase in medical expenses has become a major issue, and the importance of preventive medicine and individualized medicine is increasing. In this situation, the company aims to reduce social loss and contribute to the medical system through the

development of biomarkers, which has high social significance.

### ② Excellent Technological Capacities

Metabolome analysis is a comprehensive investigation of the behavior of metabolites in the body, which is also used in the search for biomarkers and the like. The company is highly valued for this technology.

The biomarker for depression that the company is developing is only just one example, and they are working on research and development of multiple biomarkers. It is expected that various new biomarkers will be discovered and developed in the future by metabolome analysis technology.

### ③ Stable Business Model

The Company's current core business is the "commissioned metabolomics business", supporting research and development activities of research institutions and pharmaceutical companies that occupy the greater part of its sales. Sales of FY June 2020 were 1,114 million and operating income was 457 million, showing steady income. On the other hand, the "biomarker business", which is expected to achieve significant growth in the mid- to long-term, is still operated in a small scale and experiencing losses. However, the Company has already established a balanced business model, in which the profit generated from the commissioned metabolomics business is invested into the biomarker business for its growth. This model is notable among many bio-venture companies that are suffering from gaining profit.

## 1-4 Metabolomics and Biomarker

In order to understand the outline of the Company's business activities, it is necessary to have a certain understanding of two key words, "metabolomics" and "biomarker".

### <What is metabolomics?>

Living organisms including human beings consist of some parts with various functions such as muscles, internal organs, and bones. "Metabolites" such as amino acids, fatty acids, and nucleic acids are common and major components of these organs. Metabolites play crucial roles for entire life activities.

Metabolites are provided by food and are consumed in the process of daily actions such as exercise. They move in a body and cells in accordance with their functions and are converted into new compounds through various chemical reactions, which are called "metabolism". Adjusting body temperature, breathing, moving heart, digesting and absorbing food, transforming old cells into new ones are all operated by metabolism. The "compound conversion" to a new compound is based on a certain flow called metabolic pathway.

One of well-known approaches to understand the mechanisms of a human body is "genomics", analyzing genes. Now, automated sequencing and computer analysis of genetic information (DNA base sequences) is available, and nearly all the information in the human genome has already been deciphered. However, much about the relationship between the roles of genes and diseases remains unknown. Recently, more researchers lean towards investigating metabolic profiles, in addition to genetic information coming out of genome analysis, in order to understand the relationships between a human body and diseases. Consequently, research and use of "metabolomics (metabolome analysis)" targeting all metabolites is becoming increasingly popular.

The metabolome analysis is mainly used in the following fields:

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| Research on pathological mechanisms at research institutions such as universities.            |
| Exploration and pharmacological and toxicological studies by pharmaceutical companies.        |
| Improvement of productivity by companies that manufactures products using fermentation.       |
| Component analysis as well as exploration and confirmation of functionality at food companies |

### <What are biomarkers?>

A human body puts various vital functions under high-sophisticated manipulation to minimize internal and external influences, and subsequently keeps the body condition stable. That mechanism is called "**homeostasis**". For example, body temperature and heartbeat may change temporarily, but return to regular ranges.

Diseases lead abnormal homeostasis and metabolic compound, which are different from those in healthy conditions. This metabolite

compound is called a biomarker. By measuring a biomarker, the current status of a specific disease can be objectively assessed. Blood sugar as a pancreas function indicator,  $\gamma$ -GTP as a liver function indicator, biomarker PSA for prostatic cancer and biomarker CA19-9 for pancreatic cancer are examples of well-known biomarkers.

Biomarkers have been studied for a long time in order to monitor the status of diseases. These days, with new methods to analyze multiple compounds with higher sensitivity all at once, study results of various new biomarkers have been publishing one after another. Among the biomarkers that are explored through metabolomics technologies are the followings:

|  |
|--|
| Biomarkers to diagnose the presence of diseases                  |
| Biomarkers to assess effects of treatments                       |
| Biomarkers to predict side effects caused by drug administration |
| Biomarkers to predict effects of drug administration             |

### 1-5 Business Contents and Business Model

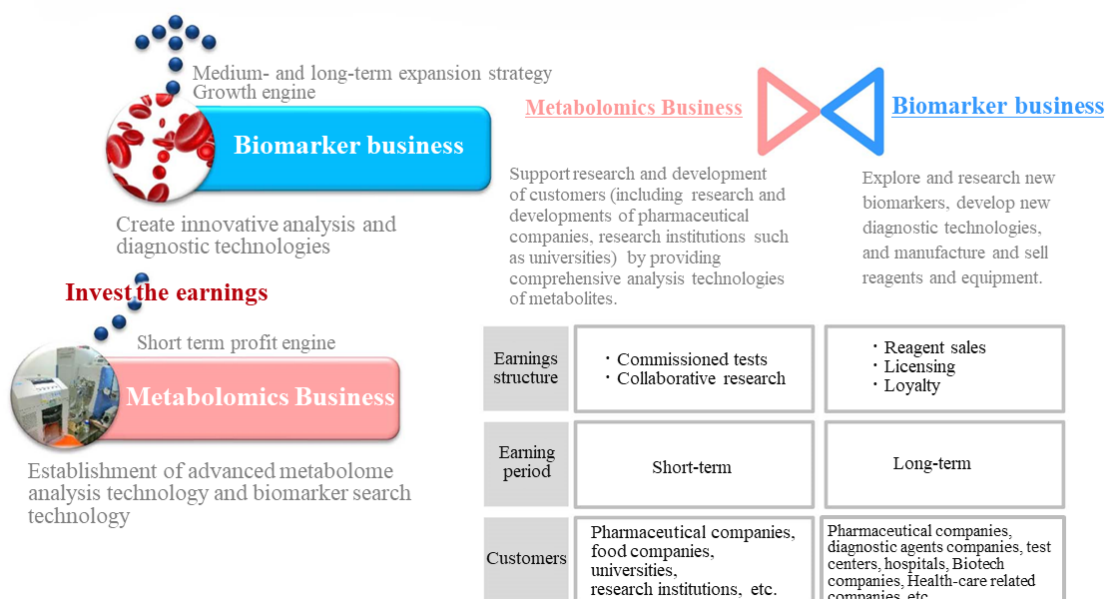
The main businesses pillars of the Company are the “**metabolomics business**” and “**biomarker business**”.

In the “**metabolomics business**”, while spreading the cutting-edge foundational technology of the CE-MS method to research institutes, pharmaceutical and food companies, etc., they expanded the market from research support to industrial support, operated the metabolomics business both domestically and internationally, and secured a revenue base.

On the other hand, “**biomarker business**” is a growth engine for medium to long-term expansion strategies. At the moment, the scale is small and they are recording a loss, but they are investing the profits generated in the metabolomics business to biomarker business, and with biomarker search technology established through metabolomics analysis, they aim to create innovative examination technologies and the like.

Through the growth of both businesses, they aim to contribute to preventive medicine and individualized medicine, which will become increasingly important in the future.

Contribute to **preventive medicine** and **individualized medicine**



(Source: the company)

## ① Metabolomics Business

**“Sales were 1,114 million yen and operating income was 457 million yen for FY June 2020”**

The Company receives orders from various customers, *e.g.*, private companies such as pharmaceutical companies and food companies as well as universities and public research institutes.

The scheme of the service is as follows. A customer sends samples to the Company, and then metabolites are extracted from the samples. The extracted metabolites are measured by the CE-MS system, and the acquired data is analyzed. After all, the report is delivered to the customer. The data obtained from the service are used for various purposes; basic biological study, assessment of drug effectiveness and toxicity assessment by pharmaceutical companies, universities, and research institutions, analysis of fermentation process and functional evaluation of functional foods by food companies. The data is contributing to the progress of research and development activities of customers. In recent years, not only medical care, food, but also interest towards healthcare companies are emerging rapidly. The Company has not only accumulated a wealth of achievements with about 5,540 tests since the foundation up to the fiscal year June 2018, but also receives a high reputation from customers for their quality.

## ◎Deployment in the Overseas Market

In order to distribute the commissioned metabolome analysis service in Asia, the Company concluded an exclusive sales authority agreement with Young In Frontier Co., Ltd (The present: A Frontier Co., Ltd.) in South Korea in June 2011. Moreover, the Company hired a sales representative in charge of Asia-Pacific area to develop Asian market including Singapore and Hong Kong, outside of South Korea. Furthermore, in order to expand its business in the North American market, it also established its sales subsidiary, Human Metabolome Technologies America, Inc., in October 2012 at Cambridge, Massachusetts, USA, home to many medical research institutions.

In order to further accelerate overseas development, in May 2017, the company established a subsidiary (sub-subsidiary) "Human Metabolome Technologies Europe B.V." in Europe (Netherlands) through HMT-A.

## ② Biomarker Business

**“Sales were 4 million JPY and operating loss was 161 million JPY for FY June 2020”**

The Company considers the business related to biomarkers, which play an important role in occasions such as early diagnosis or monitoring treatment effects, as a driver for future growth, and is proceeding with biomarker discovery and development of clinical test drugs through collaborative research and development with universities, testing companies.

Furthermore, in order to make the business profitable early, the company is developing a new business portfolio in the mental health (mentality evaluation) and the Exosome-related sectors.

## ◎Example of Biomarker Business: Depression Biomarker

The Company especially focuses its research and development on a) the mental disorder such as depression (*e.g.* mood disorder and mental disorder) for which there are few objective diagnosis methods b) diseases that have become social problems such as metabolic syndrome, including hepatitis and diabetes, and their related diseases. Its current focus is the biomarker for depression.

Diagnosis of the major depressive disorder is conducted using the diagnostic standards provided by the American Psychiatric Association or the standards of the World Health Organization (WHO). However, both of them largely reflect the subjective view of the doctor or patient, and unlike other diseases, no diagnostic method has been established on the basis of objective indicators.

The Company conducted collaborative research with the National Center of Neurology and Psychiatry and discovered a blood biomarker of the major depressive disorder.

Blood samples were collected from approximately 30 patients and 30 healthy people, and the blood components were compared through metabolome analysis using the CE-MS system. As a result, the patients with major depressive disorder showed lower concentration of PEA in their serum.

Subsequent analysis has shown that PEA is a biomarker specific to major depressive disorder among psychiatric disorders, and that when major depressive disorder is cured, it returns to the standard health value. In 2018, these findings were published in a paper in the academic journal of the Japanese Society of Psychiatry and Neurology.



As of June 2017, basic patents regarding methods for measuring biomarkers for psychiatric disorders including depression have been registered in Japan, the United States, and China. The patent already filed in Europe is under patent evaluation. Patents on the method for measuring ethanolamine phosphate (PEA) have been registered in all four agencies, Japan, the United States, China, and Europe.

### ◎Identification of Disease Biomarkers

The Company uses the following three connections and systems for identifying biomarkers in order to expand biomarker development pipelines.

#### <Connection with the Customers for Commissioned Analysis or Collaborative Development>

The Company accepts requests from universities and companies for the tests for finding biomarkers. The Company also receives proposals for collaborative development before or after the tests. Currently, a collaborative development project for diabetic nephropathy biomarkers is ongoing.

#### <Direct Proposal to Researchers and Physicians>

The Company's researchers directly propose research plans for the development of disease biomarkers to researchers or physicians and establish collaborative study agreement with the institution based on approvals from the collaborative researchers or physicians. The target diseases are chosen according to the number of patients, compatibility to the analysis technologies of the Company, degree of social contribution, and necessity of biomarkers.

#### <HMT Research Grant for Young Leaders in Metabolomics>

The Company offers a grant (HMT Research Grant for Young Leaders in Metabolomics) to disseminate the usefulness of metabolomics in the society and nurture young researchers since 2009. From the research themes submitted from researchers across the world, the Company chooses excellent proposals, and supports their research by awarding metabolome analysis service without a fee. Some of these study results actually led to the identification of biomarkers and evolved to collaborative study with the Company, for example, infectious disease-related encephalopathy biomarker.

## 2. The Second Quarter of Fiscal Year ending June 2021 Earnings Results

### (1) Consolidated Business Results

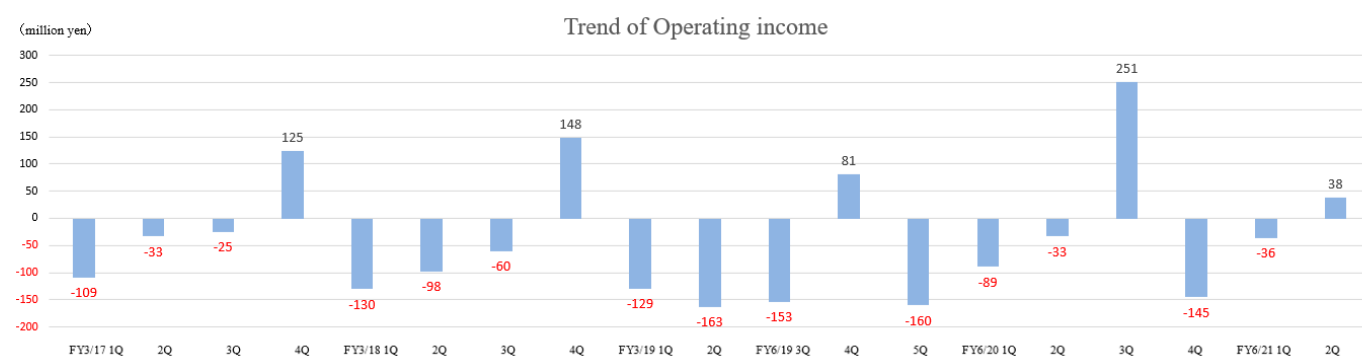
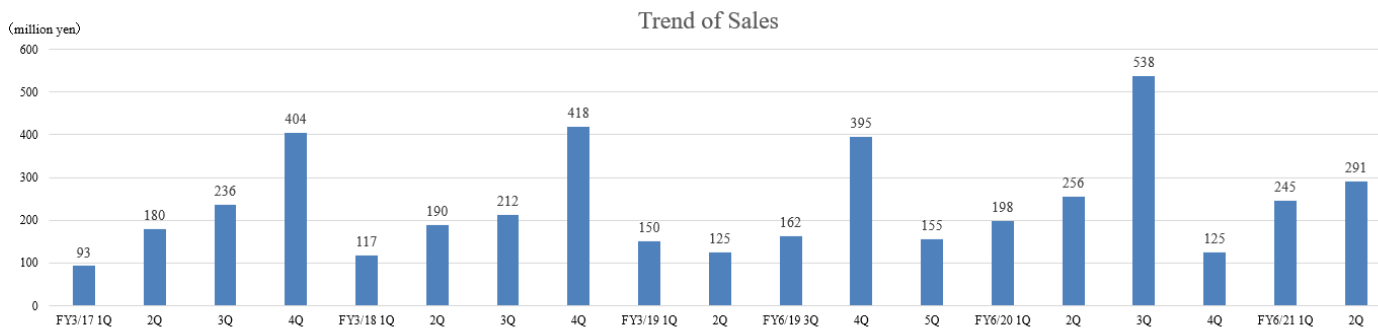
|                  | 2Q of FY 6/20 | 2Q of FY 6/21 | Change |
|------------------|---------------|---------------|--------|
| Sales            | 454           | 537           | +83    |
| Operating Income | -123          | 2             | +125   |
| Ordinary Income  | -119          | -2            | +117   |
| Net Income       | -118          | -7            | +111   |

\*Unit: million yen.

### Sales increased due to strong performance of the metabolomics business. Operation income was in the black for the first time in the cumulative second quarter.

The sales for the first half of the FY ending June 2021 were 537 million yen, up 83 million yen year on year. In the metabolome business, the company strengthened its marketing systems inside and outside Japan, so sales were healthy. As the company made efforts to improve productivity and curtail expenses for company-wide management, operating income was 2 million yen, being in the black for the first time in the cumulative second quarter.

## BRIDGE REPORT

**(2) Highlights by Major Segment****◎Metabolomics business**

|                  | 2Q of FY 6/20 | 2Q of FY 6/21 | Change |
|------------------|---------------|---------------|--------|
| Sales            | 453           | 535           | +82    |
| Operating Income | 127           | 181           | +54    |

\*Unit: million yen.

The company conducted marketing activities based on the internet, and continued measures for increasing the number of orders received. In Japan, sales grew in the academic field, and outside Japan, sales increased in the pharmaceutical field in the U.S. Profit rose, thanks to the sales growth and productivity improvement.

**◎Biomarker business**

|                  | 2Q of FY 6/20 | 2Q of FY 6/21 | Change |
|------------------|---------------|---------------|--------|
| Sales            | 1             | 2             | +1     |
| Operating Income | -79           | -43           | +36    |

\*Unit: million yen.

The company undertook more projects for testing PEA (a biomarker for depression) and continued the development of measurement methods, etc. The company also engaged in the development, research, etc. of new pipelines and businesses related to biomarkers.

**(3) Financial standing and cash flows****◎Main BS**

|                       | End of June 2020 | End of December 2020 |                               | End of June 2020 | End of December 2020 |
|-----------------------|------------------|----------------------|-------------------------------|------------------|----------------------|
| <b>Current Assets</b> | 1,411            | 1,223                | <b>Current liabilities</b>    | 300              | 125                  |
| <b>Cash</b>           | 1,119            | 867                  | <b>Lease obligations</b>      | 9                | 29                   |
| <b>Receivables</b>    | 66               | 179                  | <b>Noncurrent liabilities</b> | 22               | 55                   |



## BRIDGE REPORT



|                    |       |       |                                  |       |       |
|--------------------|-------|-------|----------------------------------|-------|-------|
| Securities         | 100   | 100   | Lease obligations                | 9     | 43    |
| Noncurrent Assets  | 126   | 170   | Total Liabilities                | 322   | 181   |
| Tangible Assets    | 108   | 152   | Net Assets                       | 1,215 | 1,212 |
| Intangible Assets  | 6     | 6     | Shareholders' Equity             | 1,099 | 1,092 |
| Investment, Others | 11    | 11    | Total liabilities and net assets | 1,538 | 1,393 |
| Total assets       | 1,538 | 1,393 |                                  |       |       |

\*Unit: million yen

Total assets were 1,393 million yen, down 144 million yen from the end of the previous term, due to the decline in cash, etc. Total liabilities were 181 million yen, down 141 million yen from the end of the previous term, due to the decrease in accounts payable, etc. Net assets were nearly unchanged.

As a result, capital-to-asset ratio rose 7.4 points from 72.6% at the end of the previous term to 80.0%.

### 3. Fiscal Year ending June 2021 Earnings Forecasts

#### (1) Earnings Forecasts

|                  | FY 6/20 | FY 6/21 Est. | Change |
|------------------|---------|--------------|--------|
| Sales            | 1,118   | 1,200        | +82    |
| Operating Income | -17     | 20           | +37    |
| Ordinary Income  | -16     | 35           | +51    |
| Net Income       | -47     | 10           | +57    |

\*Unit: million yen. The forecasted values were provided by the company.

#### **There is no change in the earnings forecasts. The company will work on the sustainable growth of sales, and operating income's returning of profitability**

There is no change in the earnings forecasts. For the FY ending June 2021, sales are expected to increase 82 million yen year on year to 1,200 million yen, and operating income is estimated to return to profitability at 20 million yen. With efforts being made to expand the new analysis menu, strengthen the global sales system, and more, continued sales growth is expected. Although the impact of the novel coronavirus has given rise to negative factors such as delays in the arrival of measurement samples, positive factors such as increased activity in research are also considered, so the effects are considered to be minor as of now, so we'll keep an eye on it. In both businesses, research and technological development will continue without slackening, and they aim to move into the black through an increasing analysis operation rate, improving productivity, and appropriate cost controlling.

### 4. Progress and efforts of the two businesses

#### (1) Metabolomics business

##### ① External environment

Metabolomics has evolved from initially being a technology for academia, such as universities and laboratories, into a technology for the industrial field.

Under these circumstances, the health-related markets of healthy foods, including functional foods, and the health-conscious markets with such keywords as sports, food products, sleep, and stress are expanding. An increasing number of enterprises are interested in the usefulness of metabolomics for grasping human health conditions and aim to develop new businesses related to healthcare. Hence, a new market is emerging, and the chances to acquire new clients are increasing.

The spread of the novel coronavirus is one of the factors in stimulating public interest in healthcare.

In the field of pharmaceutical R&D, there are growing needs for various things, including the research into intestinal bacteria, the early detection, diagnosis, and treatment methods for neuropsychiatric disorders, such as dementia and Alzheimer's disease, the practical application of medical technologies, including pharmaceuticals for refractory diseases, and the search for biomarkers for anticancer

companion diagnostic agents, and the use of metabolomics is increasingly considered effective.

As for overseas situations, the scale of the U.S. market is about 5 times larger than that of the Japanese market, this business can be expected to grow significantly inside and outside Japan.

## ② Initiatives in the FY Ending June 2021, and Progress in the First Half

### ◎ Major Initiatives

The company will enhance its marketing capability, promote the sales of new services, and improve its analysis capacity.

\*To enhance its marketing capability

Partially due to the novel coronavirus, the company will enhance marketing activities based on the internet. It renewed part of its website, and is concentrating on holding webinars for finding needs for researchers.

\*To promote the sales of new analysis services

The company will strive to promote comprehensive high-sensitivity services and enrich lipid analysis services.

\*To improve analysis capacity

The company will try to shorten measurement time.

### ◎ Situation of Sales and Order Receipt

Sales grew mainly in the academic field and the U.S. pharmaceutical field, and the company promoted the sales of new analysis services. The amount of orders received declined 17% year on year from 734 million yen to 603 million yen. In the second half, the company will concentrate on receiving orders for new projects and delayed ones.

## (2) Biomarker Business

### ① Areas of Development

With the aim of contributing to preventive medicine and individualized medicine, which will become even more important in the future, they are proceeding with research and development in the following two areas:

| Area  | Specific efforts  |
|---|---|
| ① Development of preventative/pre-symptomatic mental and physical health indicators | <ul style="list-style-type: none"> <li>* Mental health</li> <li>* Risk prediction of diseases</li> </ul>  |
| ② Support for research on biomarker exploration                                     | <ul style="list-style-type: none"> <li>* Undertaking measurement for PEA research</li> <li>* Sale of the contract service of exosome purification kits, and undertaking purification tasks</li> </ul> |

## ② Initiatives and Progress

### ◎ Development of Preventative/Pre-symptomatic Mental and Physical Health Indicators

The company focuses on the development of health indicators, to contribute to improve the quality of life (QOL) of people.

#### \* Mental health

In addition to accelerating efforts for multi-marker (multiple factors) for developing mental state evaluation indicators, development focusing on prevention and monitoring is ongoing.

The company continuously engages in collaborative research with several universities, and started discussing commercialization.

#### \* Mild cognitive impairment (MCI) biomarker to prevent dementia

About 4.6 million people, 15% of the total Japanese population over 65 years of age, have dementia, and about 4 million people, 13% of the total, are patients with mild cognitive impairment (MCI). Mild cognitive impairment (MCI) is an intermediate state between normal state and dementia, with forgetfulness but no hindrance to daily life. However, 10-30% of MCI patients annually progress to dementia. On the other hand, some patients recover to normal levels, with 38.5% reported to have normalized after five years.

The number of dementia patients is expected to reach 8 million in Japan and 130 million worldwide in 2050, and controlling it is a global challenge.

HMT participates in the Hirosaki University's Hirosaki Center of Healthy Aging Innovation (COI), and in one of the projects they participate, Iwaki Health Promotion Project, an MCI marker candidate was discovered through research, COI Young Researcher Collaboration Fund (multi-layer big data analysis for prevention and early detection of dementia) at Hirosaki University and Tohoku University that uses multi-item big data. A contract was executed with both universities for a joint patent application.

It engages in R&D at the collaborative research course, Metabolomics Innovation, which was established in Graduate School of Medicine, Hirosaki University. In this course, they analyze the big data on numerous items obtained from biological specimens in Iwaki Health Promotion Project, etc. and data on omics, mainly metabolome, and aim to establish a health condition prediction model with a multi-marker based on machine learning and a disease risk prediction model. They are continuing the development for practical use.

The company is examining markers with many specimens, with the aim of developing methods for effective prevention of dementia from the early stage and for super early diagnosis of dementia.

#### \* Biomarker for early diagnosis of diabetic nephropathy

In collaboration with Japanese universities, the company is seeking biomarkers for early diagnosis of diabetic nephropathy, and for this, they are examining their biomarker for diabetic nephropathy, and thinking of writing a paper on academic results.

#### ◎ Research support for biomarker search

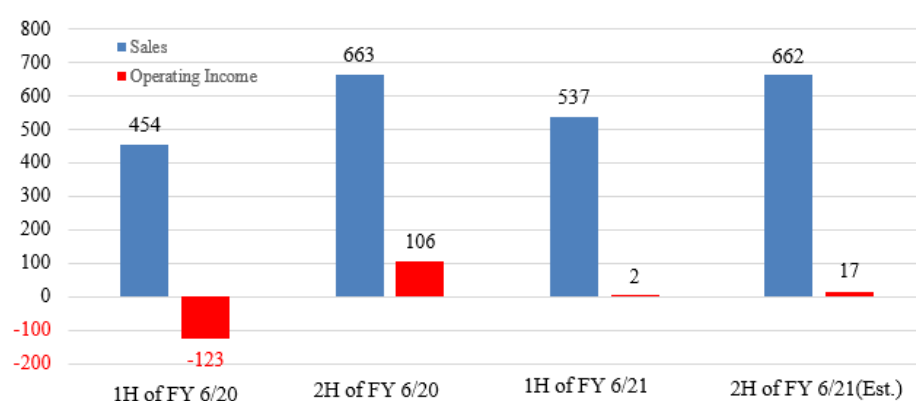
In the service of undertaking measurement tasks for PEA research, they will implement efforts to reduce measurement costs and aim for further diffusion of the research tests.

In addition, in order to support R&D in the exosome-related field, which attracts attention as a great source of biomarkers, the company started a service of undertaking the purification of exosome by using the contract service of exosome purification reagent kit, ExoIntact™ (developed by Siliconbio Inc.), which has been solely distributed by the company since 2019, and engages in the improvement of the PEA measurement technology and the contract service of exosome purification kit.

## 5. Conclusions

Following the remarkable results for the FY ended June 2020, in which sales hit a record high and loss shrank considerably, operating income in the first half of the FY ending June 2021 was in the black for the first time for the first half. We are a little concerned about the year-on-year decline in the amount of orders received, but we are looking forward to see whether the company will be able to earn a positive annual operating income for the first time, by utilizing its advantage in the metabolomics analysis market, where demand is growing.

Half-yearly trend of sales and operating income



\* \* 2H of FY 6/21 earnings forecast is calculated as : "FY 6/21 earnings forecast" minus "1H of FY 6/21 earnings results (unit : thousand yen)", expressed in millions of yen. (round down under millions of yen)

## <Reference: Regarding Corporate Governance>

### ◎Organization type

|                   |  |
|-------------------|--|
| Organization type | Company with audit and supervisory committee |
| Directors         | 5 directors, including 3 outside ones        |

### ◎Corporate Governance Report

Updated on September 30, 2020

#### <Basic policy>

The group's corporate philosophy is to contribute to the healthy and affluent living of people by conducting research and development based on cutting-edge metabolome analysis technology for the sake of future children. To realize this corporate philosophy and enhance corporate value, the company is working on improving the soundness, transparency, and efficiency of management. The company is working on doing so by strengthening the supervision function of overall management, checking and managing the effectiveness, efficiency, and legal compliance of business execution through the internal control system. Moreover, the company promotes harmonious behavior with all the stakeholders by ensuring the executives' and employees' awareness of the company's "shared values" and thorough legal compliance from a long-term perspective.

#### <Reasons for Non-Compliance with the Principles of the Corporate Governance Code (Excerpts)>

It is mentioned that "Our company follows all of the basic principles of the Corporate Governance Code."

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