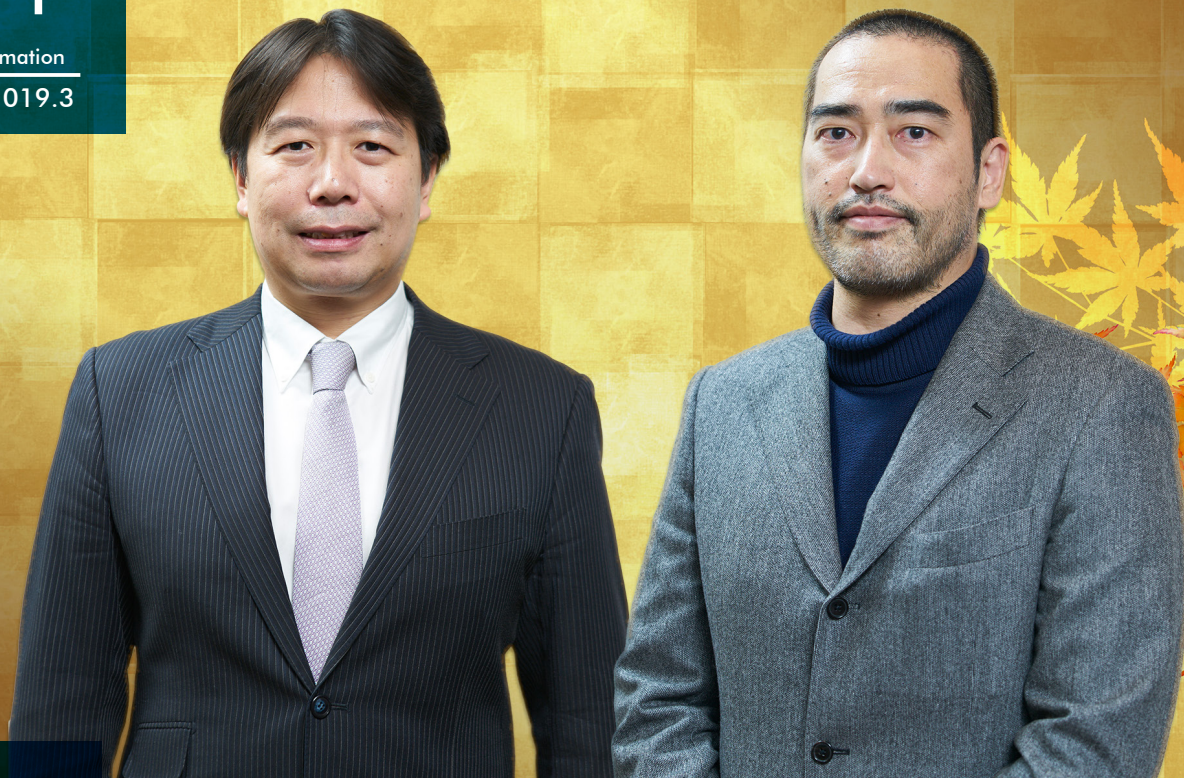


# Research Hall of Fame

2018 Shigeyoshi Matsumae Award awarding/conferring ceremony with the presence of President Tatsuro Matsumae



## INDEX

01

Daisuke Sakai,  
Associate Professor,  
Surgical Science  
Course,  
Faculty of Medicine,  
School of Medicine

02

Shogo Tanaka,  
Professor,  
Center for Liberal Arts

03

Shigeyoshi Matsumae  
Award  
Academic Divisions  
Past Winners

Tokai University held the awarding/conferring ceremony for the 2018 Shigeyoshi Matsumae Award winners on January 16, 2019. The Shigeyoshi Matsumae Award is named after the founder of the university and recognizes achievements by students from kindergarten to university, alumni, and professors, who have distinguished themselves exceptionally in the fields of culture, sports, and academic research in keeping with the spirit in which the university was founded. This year (as of January 16, 2019), a total of 586 groups and individuals have been recognized. The awarding/conferring ceremony was held at the Tokai University Club in Kasumigaseki, Tokyo, and it was attended by President Tatsuro Matsumae, the various educational bodies within the university, and numerous academic deans.

The academic department was recognized in the 1st award ceremony for the academic year 1991. Since the 20th ceremony, held for the academic year 2010, both the Shigeyoshi Matsumae Academic Award and the Shigeyoshi Matsumae Academic Promotion Award have been conferred upon its members. There have been a total of 75 recipients so far, including two individuals recognized at the 28th ceremony for the academic year 2018.



## 2018 Shigeyoshi Matsumae Academic Award

Daisuke Sakai,  
Associate Professor, Surgical Science Course,  
Faculty of Medicine, School of Medicine

“Understanding the pathology of spinal disease and realizing regenerative medicine”

Shogo Tanaka,  
Professor,  
Center for Liberal Arts

“Conceptualization and Development of Embodied Human Science”



2018 Shigeyoshi Matsumae Award awarding/conferring ceremony, held on January 16, 2019.





## Daisuke Sakai

Associate Professor,  
Surgical Science Course,  
Faculty of Medicine,  
School of Medicine

“Understanding the pathology of  
spinal disease and realizing  
regenerative medicine”



Sakai is committed to understand the pathology of spinal disease and search for new and novel treatment methods. He has produced numerous results, including a report on the efficacy of stem cell transplantation therapy for intervertebral disc degeneration and a clarification of the primary reasons for aging and degeneration of intervertebral discs. He is also passionate about translating research findings to the clinics and has played a central role in realizing Japan's first regenerative medicine for intervertebral discs.

## Comments upon award conferral

Intervertebral disc degeneration is the primary cause of various spinal disease, such as scoliosis and disc hernia. However, there are currently no methods to prevent it, except for symptomatic treatments such as surgery. For over 20 years, I have shed light on the pathology of intervertebral disc degeneration and on developing regenerative treatment options.

A hurdle in the study of intervertebral disc degeneration is the lack of understanding of the reasons for tissue aging, which is a cause of the disease. In the past, the nucleus pulposus that is at the center of intervertebral discs was the main subject of study, but in an attempt to conduct broader, deeper studies, I expanded my research subjects to include the annulus fibrosus cells, encircling the nucleus pulposus as well as pathologies such as scoliosis and spinal canal stenosis that are caused by intervertebral disc degeneration. As I had already acquired research know-how, I was able to achieve results relatively quickly by applying it to other cells and pathologies.

I am grateful to Tokai University for its understanding of the importance of cooperation between industry and academia and of research cooperation across fields of study and between institutions. For my current research in clarifying the causes of scoliosis, I am performing clinical research jointly with the Department of Physical Education and the Sports Medical

Science Research Institute at the University. It is difficult for promising research to be implemented practically through academia alone, but I am conducting research to develop new pharmaceuticals with support from the Japan Agency for Medical Research and Development (AMED) in cooperation with the Advanced Life Science Institute and Institute of Medical Sciences at Tokai University, as well as with pharmaceutical companies. One of the strengths of researchers in academia is that they have a good understanding of the needs of medical practice. Therefore, close cooperation with the pharmaceutical companies that are the professionals for development has the future goal of organizing a system that can provide low-cost drugs through creativity and innovation using different methods from the past, when investment of tremendous research funds would eventually lead to new drug discovery and commercialization.

In addition, as alongside research, I am also engaged in clinical treatments as a spinal surgeon in the department of orthopedic surgery. My specialty lies in scoliosis, which often occurs in adolescents, but its initial diagnosis is difficult, and it is a condition that strongly impacts patients as a result of interventions like surgery. It is highly likely that there are multiple causes of scoliosis, and although these have not been completely ascertained, I would like to shed light on these causes by studying intervertebral discs and connect these to the early diagnosis and early treatment of the condition.

## Career Summary

- March 2005: Doctorate degree, completed PhD at the Tokai University Graduate School of Medicine
- April 2005: Lecturer at the Surgical Science Course, Faculty of Medicine, School of Medicine, Tokai University
- April 2007: Assistant Professor at the Surgical Science Course, Faculty of Medicine, School of Medicine, Tokai University
- April 2012: Associate Professor at the Surgical Science Course, Faculty of Medicine, School of Medicine, Tokai University
- April 2013: Research Fellow at the Department of Orthopaedic Surgery, University of California San Diego and Rady Children's Hospital
- April 2014: Returned as Associate Professor at the Surgical Science Course, Faculty of Medicine, School of Medicine, Tokai University (to date)





## Comments upon award conferral

Many people may not immediately understand the term Embodied Human Science. In traditional psychology, the body was ignored and only the mind was considered based on a philosophy known as mind-body dualism. However, the mind does not in fact function separately from the body. Embodied Human Science aims to understand the totality of the mind and the body without ignoring the latter.

In my own research, I go through a philosophical debate regarding how the conventional view of psychology should be changed and then conduct experiments and surveys based on new perspectives. In scientific research, it is impactful to discover new empirical facts and laws behind them, and in engineering research, it is productive to contribute to the development of new technologies. However, in my own case, new achievements are only attained through developing fields of research based on entirely new paradigms, and so over the short-term, there is a difficult period during which no visible results are produced. However, once the paradigm is settled, the research can be long-lived, as it can continue over the span of 50 years.

One of my experiments indicating the relationship between the mind and the body is as follows. I performed an experiment on non-verbal communication, in which two subjects drew a picture without speaking. The first subject drew a portion of the drawing and handed it to the other subject, who proceeded to draw a little more. As the paper was handed back and forth, the two subjects

alternately added to the drawing. The timing of when to stop drawing and hand the paper over was communicated by some type of non-verbal harmonization, so I collected video recordings of the actions of both subjects from various angles to investigate the nature of this non-verbal harmonization. As a result, groups that had a smooth drawing process synchronized their movements of nodding and leaning forward. In addition, after the study, the subjects individually and subjectively evaluated the degree to which communication had been established, and we found that the cases with a high rate of synchronization self-evaluated as having a higher degree of communication. In conventional psychology, coming to a mutual understanding was understood as indirect inferring the mind of the other person hidden behind the body. However, this experiment suggested that the degree of synchronization with the physical body of a partner could reflect mutual understanding.

I myself have been researching at the boundary between the humanities and the natural sciences, while Tokai University has upheld the fusion of the two as its foundational principle. A total understanding of mind and body should also directly connect to improving quality of life (QOL), which is a focus of Tokai University. I am currently conducting joint research with a variety of professors at the school within my own personal network, but I would like to create an institute for human research that is more organized and takes a broader, more multidisciplinary perspective. I would like to create such a team and organization and secure greater outside funding.

## Career Summary

- September 2003: Doctorate degree, completed PhD at the Department of Value and Decision Science, Graduate School of Decision Science and Technology, Tokyo Institute of Technology
- April 2004: Part-time Lecturer at the Tokyo University of Science
- April 2005: Lecturer at the Liberal Arts Education Center, Tokai University; additionally General Education Program Center, Numazu Campus, School of High-Technology for Human Welfare, Tokai University
- April 2011: Associate Professor at the Liberal Arts Education Center, Tokai University
- October 2013: Visiting researcher at the Centre for Psychosocial Medicine, University of Heidelberg (visit through the Tokai University Domestic/Overseas Research Visit Program, Long Term)
- April 2015: Professor at the Liberal Arts Education Center, Tokai University
- April 2016: Professor at the Center for Liberal Arts, Tokai University (to date)

(August 2016 to August 2017: Visiting researcher at the Centre for Psychosocial Medicine, University of Heidelberg as a visit through a Grant-in-Aid for Scientific Research and the Fund for the Promotion of Joint International Research)

## Shogo Tanaka

Professor,  
Center for Liberal Arts

“Conceptualization and  
Development of Embodied  
Human Science”



Tanaka conceived of Embodied Human Science, a new field of research that emphasizes the embodied dimension in mind sciences, resulting in a form of “human science” that considers the entire person in both mind and body. His main research theme is phenomena relating to the fundamentals of human understanding, including self-consciousness and social cognition. He is also held in high regard on an international level as one of Japan’s leading scholars promoting the paradigm of “the embodied mind.”



## Shigeyoshi Matsumae Award Academic Divisions Past Winners

### Academic Year 2017

#### **[Shigeyoshi Matsumae Academic Promotion Award]**

Hiroshi Kimura,  
Associate Professor, Department of Mechanical  
Engineering, School of Engineering

Hirofumi Komaba,  
Junior Associate Professor, Medical Science  
Course, Faculty of Medicine, School of Medicine

### Academic Year 2016

#### **[Shigeyoshi Matsumae Academic Award]**

Akihiro Misagawa,  
Professor, Occidental History Course, Department  
of History, School of Letters

Yutaka Inagaki,  
Professor, Basic Clinical Science and Public Health  
Course, Faculty of Medicine, School of Medicine

#### **[Shigeyoshi Matsumae Academic Promotion Award]**

Shin Yasuda,  
Associate Professor, Department of Bioscience,  
School of Agriculture

Takamasa Ishii,  
Junior Associate Professor, Basic Medical Science  
and Molecular Medicine Course, Faculty of  
Medicine, School of Medicine

### Academic Year 2015

#### **[Shigeyoshi Matsumae Academic Award]**

Taiji Matsusaka,  
Associate Professor, Basic Medical Science and  
Molecular Medicine Course, Faculty of Medicine,  
School of Medicine

#### **[Shigeyoshi Matsumae Academic Promotion Award]**

Shinya Hasegawa,  
Junior Associate Professor, Department of Prime  
Mover Engineering, School of Engineering

Masato Ohtsuka,  
Associate Professor, Basic Medical Science and  
Molecular Medicine Course, Faculty of Medicine,  
School of Medicine

### Academic Year 2014

#### **[Shigeyoshi Matsumae Academic Award]**

Shinji Hadano,  
Professor, Basic Medical Science and Molecular  
Medicine Course, Faculty of Medicine, School of  
Medicine

Tomoko Ishino (Kaneko),  
Professor, Department of Nursing, School of  
Health Sciences

#### **[Shigeyoshi Matsumae Academic Promotion Award]**

Tomotaka Mabuchi,  
Associate Professor, Specialized Clinical Science  
Course, Faculty of Medicine, School of Medicine

### Academic Year 2013

#### **[Shigeyoshi Matsumae Academic Award]**

Toshie Iwata,  
Professor, Department of Architecture and  
Building Engineering, School of Engineering

Joji Mochida,  
Professor, Surgical Science Course, Faculty of  
Medicine, School of Medicine

#### **[Shigeyoshi Matsumae Academic Promotion Award]**

Koji Tomita,  
Junior Associate Professor, Department of  
Chemistry, School of Science

Minoru Matsunami,  
Associate Professor, Department of Sport &  
Leisure Management, School of Physical Education

Takashi Yahata,  
Associate Professor, Basic Clinical Science and  
Public Health Course, Faculty of Medicine, School  
of Medicine

### Academic Year 2012

#### **[Shigeyoshi Matsumae Academic Promotion Award]**

Yoshikazu Hoshi,  
Associate Professor, Department of Plant Science,  
School of Agriculture

Yoshihiro Nakagawa,  
Assistant professor, Specialized Clinical Science  
Course, Faculty of Medicine, School of Medicine

### Academic Year 2011

#### **[Shigeyoshi Matsumae Academic Award]**

Hidetoshi Inoko,  
Professor, Basic Medical Science and Molecular  
Medicine Course, Faculty of Medicine, School of  
Medicine

#### **[Shigeyoshi Matsumae Academic Promotion Award]**

Koichiro Abe,  
Junior Associate Professor, Basic Medical Science  
and Molecular Medicine Course, Faculty of  
Medicine, School of Medicine

Naoki Niikura,  
Assistant professor, Surgical Science Course,  
Faculty of Medicine, School of Medicine

### Academic Year 2010

#### **[Shigeyoshi Matsumae Academic Promotion Award]**

Takashi Nakajima,  
Associate Professor, Department of Network and  
Computer Engineering, School of Information and  
Design Engineering

#### **and 50 others.**

(The affiliations and qualifications are those at the time of  
the awards ceremony)