

Medical· Environment· Reproduction Research Organization  
(MERRO)

International Academy of Innovative Biology, Medicine and Engineering  
( IAIBME )

<http://www.merro.jp/>

MERRO, as a think tank, aims at promoting academic, economic and cultural collaboration in the international community and academic, economic, and cultural development in each country. It also strives to create synergy by collaboration of the experts from various areas and a new system necessary for future generations.

International Academy of Innovative Education and Culture Art  
(IAIECA)

International Academy of Innovative Economy and Society  
(IAIES)

International Harmonization Club (IHC)

Mission Statement, Philosophy/Purposes of Medical·Environment·Reproduction Research Organization  
Medical·Environment·Reproduction Research Organization (MERRO)

MERRO assumes the role of think tanks and intends to achieve the following purposes.

MERRO establishes systematic academia so that the international community could realize a sustainable and stable society. Systematic academia means an academic system of the next generation where natural science, humanities and social science collaborate.

MERRO enhances synergy based on “the natural science design theory”. That is, MERRO promotes academic, economic, political and cultural collaboration between countries in the international community and provides career education for the next generation.

MERRO continues science technology research permanently and makes a contribution to Japan and the world through development of academia, research and development of science technology, promotion of industrialization and creation of new industries by collaboration of people who conduct basic or applied research related to state of the art science technology of the world and constructs a sustainable socioeconomic system of the next generation.

MERRO set up the following internal organizations to realize the above purposes based on the grand design and contributes to cultivating young leaders of the next generation who are globally active in academia, the political and business world, and culture and art:

International Academy of Innovative Biology, Medicine and Engineering (IAIBME)

International Academy of Innovative Education and Culture Art (IAIECA)

International Academy of Innovative Economy and Society (IAIES)

International Harmonization Club (IHC)

MERRO also makes a contribution to realization of the environment where necessary information, technology, capital, materials, culture, art or education are equally available, for the purpose of “realization and industrialization of state of the art technology”, “restoration and conservation of the global environment”, “safe use of science technology”, “global security”, “improvement of QOL”, “provision of benefits of natural science, humanities and social science” and “holistic education” through domestic and international cooperation.

1. Establishing the new generation’s sustainable economic system by innovative technology based on the natural science design theory
2. Organizing academic international/domestic conferences based on the natural science design theory
3. Promoting academia based on the natural science design theory and organizing seminars for the purpose of cultivating human resource and promoting the industry of the field
4. Project on education for the next generation based on the natural science design theory
5. Project on cultivating young leaders who lead the global era
6. Project on security centering on an economy by industrialization of science technology
7. Project to support academic international collaborative projects
8. Project to support industrialization of the research results and the dissemination of innovative science technology
9. Project on development of academia and science technology
10. Project on international cooperation by culture and art
11. Project on global environmental restoration and conservation
12. Project on stable supply of goods, raw materials and energy
13. Project on social contributions
14. Project on improvement of QOL through international cooperation
15. Project to help city planning necessary for establishment of a disaster-preventing, disaster-reduction and recycling-oriented society by science technology based on the natural science design theory
16. Other projects related to the above

President : Atsuko Matsuoka

# Medical· Environment· Reproduction Research Organization ( MERRO )

## 《MERRO, Introducing Organization》

Science/Technology	International Academy of Innovative Biology, Medicine and Engineering (IAIBME)
Career Education	International Academy of Innovative Education and Culture Art (IAIECA)
Economic System	International Academy of Innovative Economy and Society (IAIES)
International Exchange	International Harmonization Club (IHC)
	International Watsu Club (IHC)
	Departments: Academic, Medical, Education, Culture-and-Art, Economic and Social Affairs, Welfare

### Global Offices

International Harmonization Club China	(Beijing · Shanghai)
International Harmonization Club Taiwan	(Taiwan)
International Harmonization Club Europe	(Europe)
International Harmonization Club USA	(USA)
International Harmonization Club Middle East	(Middle East)
International Harmonization Club Africa	(Africa)
International Harmonization Club South America	(South America)

### Executives of MERRO

◆International Academy of Innovative Biology, Medicine and Engineering (IAIBME)  
Chairperson: Yoshinobu Baba (Advisor to the President of Nagoya University, Professor, Nagoya University Graduate School of Engineering)

◆International Academy of Innovative Education and Culture Art (IAIECA)  
Chairperson: Yoshiaki Takemoto (President of Nagoya University of Art)  
Vice Chairperson: Masahiro Sokabe (Professor, Nagoya University Graduate School of Medicine)

◆International Academy of Innovative Economy and Society (IAIES)  
Facilitator: Toshio Fukuda (Professor, Nagoya University Graduate School of Engineering)

◆International Harmonization Club (IHC) International Watsu Club (IHC)

Chairperson: Atsuko Matsuoka

Facilitator: Yoshinobu Baba

Educational and cultural arts groups

「 $\Sigma \nu \mu \pi \alpha \nu$ 」 (Called Universe)

Mammy Fund

"Medical care, education and welfare fund" (in preparation)

Medical· Environment· Reproduction Research Organization, International Academy of Innovative Biology, Medicine and Engineering (IAIBME) Executives of Organizations

◆Medical· Environment· Reproduction Research Organization Executives

Supreme Advisor	Akiyoshi	Wada	Professor Emeritus, Tokyo University
President	Atsuko	Matsuoka	Managing Director, Medical corporation Soukenkai
Managing Director	Yoshinobu	Baba	Professor, Nagoya University Graduate School of Engineering
	Masahiro	Sokabe	Professor, Nagoya University Graduate School of Medicine
	Kuniaki	Nagayama	Professor Emeritus, National Institute for Physiological Sciences
	Fuyuhiko	Tamanoi	Professor, University of California, Los Angeles, USA
	Toshio	Fukuda	Professor, Nagoya University Graduate School of Engineering
Adviser	Yoshiyuki	Sakaki	President, Toyohashi University of Technology
	Akio	Nishimura	Former President, Nagoya Gakuin University
	Masahiro	Hiraoka	Professor, Kyoto University Graduate School of Medicine
Auditor	Mitsuru	Suzuki	President, Miyuki dental clinic

◆International Academy of Innovative Biology, Medicine and Engineering Executives

Supreme Advisor	Akiyoshi	Wada	Professor Emeritus, Tokyo University
Adviser	Yoshiyuki	Sakaki	President, Toyohashi University of Technology
Chairman of Managing Director	Yoshinobu	Baba	Professor, Nagoya University Graduate School of Engineering
Managing Director	Atsuko	Matsuoka	Managing Director, Medical corporation Soukenkai
	Masahiro	Hiraoka	Professor, Kyoto University Graduate School of Medicine
	Masahiro	Sokabe	Professor, Nagoya University Graduate School of Medicine
	Kuniaki	Nagayama	Professor, National Institutes of Natural Sciences Okazaki Institute for Integrative Bioscience
	Fuyuhiko	Tamanoi	Professor, University of California, Los Angeles, USA
	Toshio	Fukuda	Professor, Nagoya University Graduate School of Engineering
	Takeaki	Ozawa	Professor, Tokyo University school of Science

## Details of rationale behind establishment of MERRO

### International Academy of Innovative Biology, Medicine and Engineering (IAIBME)

#### [Purpose of Establishment]

The integration of advanced medicine and medical technology has led to emergence of the ground-breaking technologies which would be needed for the next generation. Their emergence furthered the development of human society. The practical use of such technologies through the integration of medical technology and engineering was promoting industrial vitalization.

The International Academy of Innovative Biology, Medicine and Engineering (IAIBME) was established as a think tank for the purpose of cyclical and lasting development by synergy effects.

The double helix structure of DNA, which James Watson and Francis Crick introduced in 1953, not only had a tremendous impact on genetics and medicine but also served as a trigger to introduce the methods of physics to medicine and biology.

Elementary study of molecular biology, biophysics and biochemistry and the application of engineering research such as nanotechnology and biotechnology to medicine gave birth to a new field of nanomedicine. Top-down and bottom-up types of nanotechnology made it possible to manufacture materials on the nanometer scale and create new functions that had not existed before. A breakthrough in medicine was the appearance of regenerative medicine. Moreover, nanobiotechnology permitted the generation of energy which contributes to a sustainable society.

20<sup>th</sup> century medicine made astounding advances because of medical technology, and overcame numerous diseases. Positron emission tomography (PET), single photon emission computed tomography (SPECT) and magnetic resonance imaging (MRI), with which in vivo life phenomenon can be perceived at a molecular level, enabled the development of new cures and less-invasive diagnosis. Innovative medical science technology created molecular imaging which visualizes and makes a realistic picture allowing for reduction of the time necessary to develop new drugs, by monitoring drug kinetics on a real-time basis and narrowing down candidate compounds at an early stage. Research in opto-science technology (such as the confocal microscope, the multiphoton microscope and laser cell manipulation) is essential to improve QOL (quality of life) in various areas. Technology of visualization of biomolecule by scanning probe microscope is expected to contribute considerably to drug development and clinical research in medicine. Drug delivery system, DDS, which was developed with the aid of nanotechnology is a valuable technology which allows a drug to reach a narrowly targeted point in the body and reduce the physical burden on patients. Nanocapsules with an anticancer drug selectively accumulate on cancer cells and cure the cancer. Discovery of a factor which reprograms a somatic cell making it a pluripotent stem cell enabled the establishment of induced pluripotent stem cells. Transplants without a rejection response can be achieved if induced pluripotent stem cells can undergo differentiation into the organs of the patients by the technology of regenerative medicine.

The collaboration of researchers in basic and applied research and medical professionals enables academic development and research, and development and industrialization of medical technology. It contributes to cultivation of young researchers who will be active globally for the next generation. IAIBME was established in Medical·Environment·Reproduction Research Organization (MERRO) as a think tank with the goal of collaboration of experts in various areas and cyclical and lasting development of the international society through a synergy of effects in the various fields.

Innovative medical science technology needs collaboration with the humanities because ethical consideration is essential to deal with life and the human body. Then, collaboration with social science promotes its practical application. Working with administration enables industrialization and lasting research in science technology.

IAIBME aims to integrate basic and applied empirical research and social systems and develop a systematic science which will improve the quality of global society in the next generation.

#### [Purpose]

IAIBME proposes industrialization of technologies which adopt innovative medical science technology.

#### [Principles (Strategies): Grand design]

IAIBME proposes to build a new environmental city which integrates basic and applied empirical research and social systems. It aspires to the creation of a safe, secure, comfortable and sustainable recycling society by assembling a variety of research technologies.

### [Purpose of Establishment]

Art and culture have continually contributed to and enriched the world's historical / artistic / cultural heritage. They have also greatly enriched the quality of life of human being. Art and culture have made historical contributions and are part of a common heritage of which humanity is proud. International Academy of Innovative Education and Culture Art (IAIECA) aims to prepare systematically education of culture art based on the theory of natural science design and practice the education. IAIECA relies on the concept that key concepts to resolve any problems lie in the laws of natural science.

Studying culture, art and natural science allows you to appreciate those, and make accomplishments in those fields. It also enhances your serendipity, the ability or skill of finding something valuable while not specifically searching for it. It leads to cultivation of leaders at all levels in various areas. The next-generation leaders definitely need to have the ability to create grand designs at a high level. Cooperation among leaders will permit creation of a sustainable and stable international community.

As we move into the 21st Century, cultivation of global human resources which can overcome entrenched problems and realities where existing theories no longer work is an urgent issue. Education in culture art promotes development of tenderness, imagination, creativity, sensibilities, intuitions, ingenuity and sentiments of people and develops human resources which have a sense of balance and harmony and communication skills.

Culture, art and education play a significant role in the drawing up of a grand design of a next-generation society. Looking at the human history's artistic and cultural heritage, you will find mathematical beauty symbolized by the golden ratio and artistic beauty such as counterpoint and harmony.

There is an urgent need to develop effective human resources which can resolve a large number of issues and create a sustainable and lasting social system. It is a need of the times that collaboration between culture, art and science play a crucial role in the development of education programs to train such human resources. Many mathematicians derived aesthetics from mathematics in the past.

$$e^{i\pi} + 1 = 0$$

For example, Euler's identity is a simple relational expression between  $e$  as the base of natural logarithms,  $i$  as the imaginary unit,  $1$  as the multiplicative identity and  $0$  as the additive identity, which at first sight appear to be unrelated. The world of mathematical beauty found some relations between things which are seemingly unrelated.

Science has been developed and technology has been advanced with mathematics, which has led to the creation of a wealthy economic society. Johannes Kepler and Leonardo da Vinci built a bridge between mathematics and art. IAIECA aims at the creation of a grand design of a modern society based on the theory of natural science design in terms of mathematical beauty. It was established by MERRO with a view to the systematic preparation of education in culture art and the putting of that education into practice. It strives to develop scientific and empirical methods in terms of brain neuroscience in collaboration with experts in various areas to influence education in culture, art and science. It will also fulfill the role of developing leaders for the next generation.

### [Purpose]

IAIECA aims at the systematic preparation of education in culture art based on the theory of natural science design and the practice of education in collaboration with experts in culture art, education and natural science.

### [Principles (Strategies): Grand design]

IAIECA strives to develop scientific and empirical methods in terms of brain neuroscience in collaboration with experts in various areas to influence education in culture, art and science. It will also fulfill the role of developing the next generation of leaders.

[Purpose of Establishment]

Highly developed digital technology has brought about tremendous innovation. Such digital technology became a global standard and contributed to economic development as a core business of the world economy.

International Academy of Innovative Economy and Society (IAIES) was established to create a new industry of science technology and to create a realized model of open collaboration which holds capital and markets in other countries within the global strategic concept of united efforts of public and private sectors for research and development, clinical trial, industrialization and practical use as a nation based on the industrialization of science technology.

Now is a time when the present highly developed economic system is leading towards a more advanced economic social system for the next generation through collaboration between natural science, social science and humanities.

Medical Environment Reproduction Research Organization (MERRO) set up International Academy of Innovative Education and Culture Art (IAIES), International Academy of Innovative Biology, Medicine and Engineering (IAIBME) and International Academy of Innovative Education and Culture Art (IAIECA) in order to realize the above concept.

While a new industry that generates a next generation global standard is needed, IAIES allows elevation of the digital technology in cooperation with the other academies of MERRO, works as a think tank in collaboration with local and international experts and contributes to creation of a sustainable and stable international community by building a safe and secure recycling financial economic society by synergy effects.

We need a paradigm shift to a next generation economic social system which enables establishment of a safe and secure recycling financial economic society by addressing the following issues: research and development of an eco-friendly urban system using innovative technology, essential utilities(energy, water), food (agricultural crops and marine products), city planning on the basis of disaster prevention and reduction, establishment of a system which can respond to paralyzed utilities in devastated areas, upgrading of the administrative offices as emergency operation centers in information administration, practical work and risk management, storage of two months' worth of food and medicine to which advanced technology for dealing with emergencies is applied, research on diagnosis and a cure for intractable or pernicious diseases, and establishment of a social environment which can cope with an aging society.

A wide range of systematic analyses of social structures enables design of a next generation economic social system. We found it significant to make an analogy with the fact that wide-ranging systematic analysis of natural phenomena enabled us to discover the laws of natural science.

In the meantime, the basic concept of the theory of natural science design that key concepts lie in the laws of natural science is derived from the laws of natural science.

The basis of the natural science design theory is based on physics serving as a basis for natural science. Quantum mechanics, which is a pillar of modern physics, enabled us to discover the concepts of freedom and regularity. As the theory was applied to an economic society, we arrived at the law of quantum-mechanical economic society. Freedom of economy revitalizes markets and promotes economic development. It is considered that the balance between freedom and regularity ensures sustainability of a stable economic society. It is necessary to clarify the way the market economy should work or how to promote free economic activities for future economic development.

IAIES works as a think tank in collaboration with the other academies of MERRO, creates a next generation global standard and a grand design of social structures necessary for the next generation and contributes to development of a next generation economic social system which focuses on global security as well as the economy

[Purpose of Establishment]

IHC is designed to provide opportunities where experts from various fields discuss the orientation that humans should take from the global point of view and to promote mutual friendship. It also aims to provide places where such experts from various fields transfer their experience and expertise to the next-generation of leaders.

## International Programs

### The First International Conference on Innovative Biology Medicine and Engineering (ICBME)

Date	Saturday, April 21, 2012 9:00am-6:00pm
Location	Toyoda Auditorium (Symposium) 1F, Nagoya University
Organizer	Nagoya University's FIRST Research Center for Innovative Nanobiodevices International Academy of Innovative Biology, Medicine and Engineering
Chairperson of the executive committee	Yoshinobu Baba (Director of Nagoya University's FIRST Research Center for Innovative Nanobiodevices)
Congratulatory speeches by guests of honor	Hideaki Ohmura, Governor of Aichi prefecture Yuji Futamura, Honorary President, Aichi Cancer Center
Special lecturer	Akiyoshi Wada, Professor Emeritus, Tokyo University
Planned by	Medical·Environment·Reproduction Research Organization (MERRO)

### International Watsu Club, Academy of Culture, Art and Education “Σύμπαν”(called Universe)

Date: Thursday, May 24 to Sunday, May 27, 2012

Organized by Dalian city government The 23th Dalian acacia festival, the 40th anniversary event of the normalization of diplomatic relations between Japan and China

Visited Dalian, China, as a Japan-China friendship cultural exchange mission

### Second International Conference on Innovative Biology, Medicine, and Engineering (ICBME 2013)

Date	Saturday, July 27 to Sunday, July 28, 2013
Location	Aichi Cancer Center International Conference Center (1-1 Kanokoden, Chikusa-ku, Nagoya, Aichi)
Organizer	Nagoya University's FIRST Research Center for Innovative Nanobiodevices International Academy of Innovative Biology, Medicine and Engineering
Sponsors	Tokyo Club
Supporters	Aichi Prefectural Government , Japan Association for Bioethics
Chairman of the Executive Committee	Yoshinobu Baba (Director of Nagoya University's FIRST Research Center for Innovative Nanobiodevices)
Planned by	Medical·Environment·Reproduction Research Organization (MERRO)

## Grand Design

### ■ Center of Technology

We are based in Aichi prefecture and bring researchers all over the world together to industrialize the innovative technology. We also contribute to global networking as a think tank and securement of a market in the world.

### ■ Accumulation of excellent researchers, technology, and information

### ■ Educational system which fosters leaders of the next generation

### ■ Concept of accumulation of excellent researchers, technology, and information (environment, healthcare, tourism)

Concept	Outline
Environment (considering disaster prevention and reduction)	<ul style="list-style-type: none"> <li>Propose research and development of a eco-friendly urban system using the innovative technology</li> <li>Essential utilities(energy, water), food (agricultural crops and marine products)</li> <li>City planning on the basis of disaster prevention and reduction</li> <li>Establish a system which can respond to paralyzed utilities in the devastated areas</li> <li>Storage for two months-worth of medicine to which the advanced technology for emergency is applied and food</li> </ul>
Healthcare	<ul style="list-style-type: none"> <li>Research on diagnosis and cure for intractable or pernicious diseases, establish a special area where clinical trials to cure are conducted</li> <li>Establish a social environment which can cope with longevity society</li> </ul>
Tourism	Environmental city, Healthcare city

### ■ Effects of 3K Concept (environment, healthcare, tourism)

Global development of the system

We set up centers abroad and sell technology and products which are accumulated in Japan. We systemize the above industrialization and transfer the technology overseas

### ■ Organizations for industrialization

We cooperate with the related organizations or companies on the industrialization of the projects mentioned above.



## **Medical-Environment-Reproduction Research Organization (MERRO)**

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