



Summary and Achievements of the Program over Ten Years

Prof. Yuji Imamura
RISH, Kyoto Univ. (Coordinator of the Program)

The JSPS-LIPI Core University Program in the Field of Wood Science started in 1996 to conduct international cooperative research to establish science for the sustainable development and utilization of forest resources in the tropics. The Research Institute for Sustainable Humansphere (RISH), Kyoto University, which was established in 2004 at Kyoto University by combining and expanding two previously existing organizations, the Wood Research Institute (WRI) and the Radio Science Center for Space and Atmosphere (RASC), has been serving as the core university in the field of wood science to coordinate the activities of collaborating universities in Japan. RISH is implementing collaborative research with a counterpart core institute, the Research and Development Unit for Biomaterials (RDUB), Indonesian Institute of Sciences (LIPI), which has recently become independent and expanded from the Research Center for Physics, LIPI, collaborating universities in

Indonesia, and Universiti Putra Malaysia (UPM) in Malaysia.

Scientific activities in this program cover all fields of wood science and technology, including material science, physics, chemistry, biology, genetics and environmental science from a macroscopic viewpoint. The program has been focusing on the establishment of sustainable production and utilization systems for forest resources, especially in the tropical regions, which contain plenty of resources and biodiversity. Our research target is also indispensable for the promotion of wood industries Japan and Indonesia, as well as other Southeast Asian countries. By this year, 151 Japanese scientists, 164 Indonesian scientists, 12 scientists from Malaysian universities, and one scientist each from the Philippines, Thailand and Vietnam, respectively, have been engaged in this program to expand the research collaboration.

For convenience we have set up four major research areas for collabora-

tive research: 1) Wood material science, 2) Wood biomass chemistry, 3) Wood bioscience, and 4) Wood and environment science, and since 1996, 25 collaborative research projects have been conducted. We have had academic achievements which have been published in the scientific journals, as well as technological knowledge conducted practically in the commercial process. As a result of the cooperative research projects, original papers have been published in major international and domestic journals (e.g. Proceedings of National Academy of Sciences, USA, Journal of Wood Science, etc.) since 1996. In addition, we have presented many papers at international meetings. Midterm and at the end of the program, we have published research reports entitled "Science for Sustainable Utilization of Forest Resources in Tropics", to summarize the research results of this program. To evaluate the program, the report books were published in 2003 and 2005, and circulated to the related researchers and organizations. The activities of the program have been announced in the "International Newsletter" from 1997 (No.1) to 2006 (No.18), and presented on the website http://www.rish.kyoto-u.ac.jp/JSPS/index_J.html on the home-page of our institute.

Another important academic activity is the organization of the international wood science seminar/symposium (IWSS). The first IWSS was held in Kyoto, Japan, in 1996, and since then, four symposia have been held every two years in Serpong and Kyoto, in turn. In 2005, which is the last fiscal year of the program, the 6th IWSS was held in Bali, Indonesia. The scope of the meeting was focused on summarizing the program and to propose future collaborations. In addition, a special international symposium on the sustainable production and utilization of *Acacia mangium* was held in Kyoto in 2003, and the Japanese cooperative universities jointed the meeting through the Space Collaboration System (SCS).

Under the Core University Program, many Indonesian scientists entered the Graduate School of Agricultural Science, Kyoto University. Also, some Indonesian scientists have been supported by the JSPS Ronpaku system. Since the start of the program, five Indonesian scientists, who are members of the program, have graduated from Kyoto University and received their

PhD degrees either through the PhD course of study or the Ronpaku system. At present, three scientists are studying at Kyoto University as PhD degree candidates.

We have established a satellite office of RISH, Kyoto University, at RDUB by courtesy of LIPI. The opening ceremony was held on February 25, 2005, at RDUB, LIPI, with the attendance of Professor Umar Anggara Jenie, the chairman of LIPI. The office is being used as an information center for the program and as an on-site unit of the collaborating research in laboratories and the field.

It is noteworthy that the Core University Program contributed significantly to the establishment of the Indonesian Wood Research Society in 1996. The number of members as well as research activities published in academic journals, have been expanding, and the society has been registered as a liaison member society of the International Association of Wood Products Society (IAWPS). Also, it should be noted that a research center for biomaterials has been established. When the

program started, the core in Indonesia was the Laboratory of Composite Materials of the R & D Center for Applied Physics. In the reorganization of LIPI in 2001, the establishment of a biomaterial research center was proposed, based on the successful results of the Core University Program, and the laboratory has become independent and expanded to become the Research and Development Unit for Biomaterials (RDUB)

The research of the sustainable utilization of wood biomass is an eternal, critically important task to investigate and establish a sustainable and recycling-based society which depends on renewable resources. As international collaborative research on the sustainable production and utilization of tropical wood biomass is a global issue, we are most anxious to extend the ongoing, bilateral Core University program to research integrating wood and forest science, studies on CO₂ and substance cycling in the atmosphere, forest and soil, and related fields of environmental and social science.

My Memories of Academic Exchanges to Indonesia

Takayoshi Higuchi

Prof. Emeritus, Kyoto Univ.

From April 1984 to March 1990 I was a coordinator for the Academic Exchange Operation Committee to Eastern Asia nominated by the Japan Society for the Promotion of Science (JSPS).

I still remember the dates, February 3-11, 1984. I was the Director of Wood Research Institute, Kyoto University, and I visited Jakarta and Bandung to organize a cooperative wood science program between our Institute and the corresponding organization at the Indonesian Institute of Sciences (LIPI). I met Dr. Kahar, Vice Director of Physical Wood Science Division of LIPI in

Bandung, and discussed the cooperative program. Then, we visited LIPI Headquarters in Jakarta to organize a cooperative science program on wood science and technology.

Our proposal was accepted by JSPS and LIPI. Then, from November 26 to December 26, 1984, Dr Kahar visited us at the Wood Research Institute, Kyoto University, and our project started. Since then, two to three young Indonesian scientists have come to our institute every year to study special projects on wood science and technology, and the projects have been successfully developed until now. During the



*Dr. Myrtha Karina with my family
at my home. November 1984*

program, two research staff from the Wood Research Institute, Kyoto University visited Indonesia every year and discussed the problems related to the project.

I also visited Indonesia several times, and finally I attended the 6th International Wood Science Symposium, LIPI-JSPS Core University Program in the Field of Wood Science August 29-31, 2005 held at Inna Grand Bali Beach Hotel, Sanur, Bali by the invitation of Kyoto University and Dr.



Dr. Wahyu Dwianto and Dr. Faizah Abood with me in front of the Wood Research Institute. April 1988

Bambang Subiyanto, Organizer of the symposium. I appreciated the opportunity very much.

I would say that many capable young wood scientists, such as Dr. Bambang Subiyanto, now Director of the Research and Development Unit for Biomaterials, LIPI and Sub-coordinator of the JSPS-LIPI core University Program, Drs. Karina, Yusuf, Dwianto, and many others visited us and started cooperative research works at the Wood Research Institute, Kyoto University, and they have had successful results in respective areas.

Myrtha Karina started a special project "Degradation Mechanism of Lignin by Steam Treatment" in my Research Division (Division of Lignin Chemistry) as a wood chemistry research program. It is very important to understand the mechanism of separation of wood components, cellulose, hemicel-

luloses, and lignin by simple high pressure steam treatment of wood tips. By steam treatment of wood tips, hemicelluloses were hydrolysed, and cellulose and lignin were easily separated as raw materials for the chemical conversion of both components.

Karina continued tenacious experiments on the degradation mechanism of lignin by high pressure steam treatment, and finally she received a Doctorate for her thesis "Degradation Mechanism of Lignin by Steam Treatment" from Kyoto University in 1993. The steam explosion of wood tips has been extended as a useful method for wood biomass utilization. I am very happy about this result.

As you know, the Cooperative Wood Science Project between Kyoto University and LIPI has been extended to LIPI-JSPS Core University Program, and many universities in Southeast Asia and major universities of Japan are involved. I understand that this year is the final year of the JSPS Core University Program in the field of Wood Science. I believe that the project has contributed to the develop-

ment of wood science and technology in Southeast Asia and Japan.

One thing I greatly regret is that Dr. Nilyardi Kahar, who initiated the original project with me in 1984, passed away from a heart attack in 1996. I pray for the repose of his soul.

I appreciate that Dr. Kahar, and Wiwick Subowo, R & D Centre for Applied Physics, Bandung, kindly sent me the following letters on my retirement from Kyoto University in 1991.

Please convey this telex to Professor Takayoshi Higuchi from Nilyardi Kahar: We hope all the best in your future retirement activities. All miss you and hope able to always communicate with you. With personal best regards from PPPFT-Bandung.

Nilyardi Kahar



Dr. Norimoto, Dr. B. Subiyanto and Dr. Kahar, from left to right. October 1984



The 6th International Wood Science Symposium held at Inna Grand Bali Beach Hotel, August 29-31 2005

February 14, 1991

Dear Prof. Higuchi:

In this opportunity I would like to convey my sincere proud and cheerful to you for your great achievements in lignin research. Congratulation for all awards which you had received. After you worked very hard I do hope that you will enjoy your retire time with your wife and all family.

I thank you very much for your kind cooperation along the past years. Hope that we still have opportunity to get in touch for the years to come with my best regards,
Sincerely yours

Wiwick Subowo

Remembrances of the JSPS-LIPI Core University Program. “*homo ab humo*” -HUMAN WAS BORN FROM SOIL-

Prof. Mikio Shimada

Department of Environment of Biotechnological Frontier Engineering, Fukui Univ. of Technology

It was in 1995 that I made my first visit to Indonesia with Prof. Kuwahara and other colleagues for the survey trip to prepare for this program. It was a really exciting trip for me, because I had never been there before, and I was so curious about this tropical country of various indigenous peoples with differ-

ent cultures. Before going to Indonesia, I learned many things from the late Prof. Kenji Tsuchiya, the outstanding learned professor of socio-political science and cultures of Indonesia at the Institute of Southeast Asian Studies of Kyoto University, who was the author of “Kartini’s Landscape”. I realized that Kartini was an extremely intelli-



From my old album: I think I was most happy to be surrounded by my collaborators domestic and foreign, and Japanese and Indonesian students. 1998

gent girl who earnestly attempted to study abroad in Holland but was not allowed by the Dutch government that feared that her cleverness was possibly against the ruling country in colonial times. However, in Indonesian history, she played a pioneering role in innovating old thoughts and ancient regimes of society, by dedicating herself to establishing schools for children. I also learned that the *Five Principles of National Pancasila Movement* and even art work, including paintings and *Musik Keroncong* played an important role in integrating a number of different indigenous peoples with their own dialects or tribal languages, distributed throughout more than 10,000 islands.

I particularly enjoyed collaborative research work with Dr. Yadi Setiadi at IPB and Sumatran researchers at USU on the biochemical and metabolic analysis of saprophytic and symbiotic fungi in forests. Taking advantage of this JSPS Program, we received an excellent student (Erman Munir) from USU. He was granted an Agricultural

Doctorate from Kyoto University in due course as he contributed his papers to good international scientific journals, including PNAS, which we are very proud of. Consequently, after returning home, he was given an award from LIPI for his outstanding accomplishments in his student life at Kyoto University, which must be very encouraging for other Indonesian students studying hard in Japan.

During the period of the program, I was very happy to meet and talk with a great many Indonesian researchers. It was my privilege to be invited as a keynote speaker, focusing on the harmonization of Economy and Ecology at the Wood Science Symposium at Serpong in 1998. I also enjoyed organizing with my colleagues the 3rd International Wood Science Symposium which was held at Uji Campus in 2000. Now my old memories and pictures are treasures to relive my pleasure during my free time after retirement.

Before closing this letter, I would like to mention the title Latin phrase, “*homo ab humo*”, as I happened to learn just before my retirement that the origin of the word “human” is from “humus” as the old Latin/Greek myth says, “Humans came from humus, “that is, soil or mother earth. Whether or not *Homo sapiens* will be an endangered species depends on the symbiotic and sustainable management of forest resources for all creatures, including *Orang Hutan* in tropical rain forests. Hopefully, the most technologically advanced nations will realize that all renewable resources from agricultural and wood lands are reproduced from “humus” under the sun in our cosmos.

Signing Ceremony of the Memorandum of Understanding between Kyoto University-Indonesia Institute of Sciences

Prof. Toshiaki Umezawa

The Chair of the International Academic Exchange Committee of the RISH, Kyoto Univ.

On March 17, 2006, the President of Kyoto University, Professor Kazuo Oike, and the Chairman of the Indonesian Institute of Sciences (LIPI), Professor Umar Anggara Jenie signed a memorandum of understanding covering both organizations.

We have come a long, but not a wrong, way before signing the MOU. We have had a collaboration with LIPI

for more than 20 years, with the projects of the first decade supported by JSPS general exchange systems, followed by the ongoing Core University Program which has lasted for 10 years. During the course of the Core University Program, in 1990, the Wood Research Institute, Kyoto University signed an MOU with the Research and Development Centre for Applied Physics, LIPI. Then, the MOU was extended in 2000. Another institution of Kyoto University, the Center for Southeast Asian Studies has also carried out academic exchanges with LIPI for many years. Now, these successful past exchanges have led to the signing of the Memorandum of Understanding

at the university level. Kyoto University has so far concluded 69 Memoranda of Understanding with various universities around the world. However, they were all with universities and this is the first time to form one with an advanced research institute.

We have conducted an international collaboration with LIPI with a final goal to establish systems for the sustainable utilization of tropical forest resources, and its continuation is very important. However, we have realized that, in



Signing ceremony



Attendees of the signing ceremony

addition to utilization, establishing systems for the sustainable production of tropical forest resources in harmony with the environment will be the key point. To achieve this new final goal, it is necessary to integrate many research fields, and thanks to the excellent research facilities at both Kyoto University and LIPI, I believe the MOU at the university level will bring about a totally different result in the field of research and human resource development than the exchanges we have previously conducted.

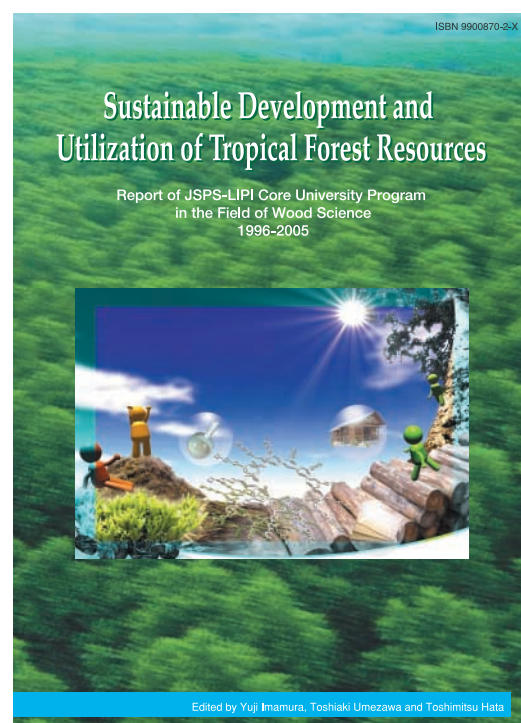
Thank you very much and terima kasih banyak.

Introduction of the JSPS Core University Program Report

Dr. Toshimitsu Hata
RISH, Kyoto Univ.

This book reviews the research activities of JSPS-LIPI Core University Program in the field of wood science, which is financially supported by JSPS. The JSPS-LIPI Core University Program in the Field of Wood Science was founded in 1996 to conduct international cooperative research to establish science for the sustainable development and utilization of forest resources in the tropics. The aim of this book is to review the collaborative research con-

ducted in the program. Since 1996, 25 collaborative research projects have been conducted, and this book documents the academic achievements of the collaborative research projects, particularly those in the last 5 years, and discusses future developments. The cover of the book is shown.



Introduction of the 20th Symposium on Sustainable Humanosphere

Dr. Takefumi Hattori
RISH, Kyoto Univ.

On November 25, 2005, a symposium entitled “Establishment of International Cooperative Research on the Science of Sustainable Humanosphere in South-East Asia-Development of

sustainable production and utilization systems of tropical plantation forest resources and their contribution to the global environment” was organized at the Research Institute for Sustainable

Humanosphere, Kyoto University.

The objective of the symposium was to provide a scientific forum for discussion of the development of sustainable production and utilization systems of tropical plantation forest resources and their contribution to the global environment.

The symposium was started by the opening remarks by Prof. Yuji Imamura, RISH and then the first speaker, Dr. Toshiaki Umezawa, RISH, gave a presentation on “Sustainable production and uti-

lization of tropical artificial forest resources”, followed by Dr. Bambang Subiyanto, LIPI who talked about “State of the Art Wood and Wood-Based Industries in Indonesia”. The third speaker was Masato Shiotani, RISH who presented “Atmospheric variation and its observation in the tropics”. The three presentations gave us important suggestions on the future utilization and cultivation of tropical forests.

A keynote speaker, Dr. Ikuo Takeuchi, Kagoshima University gave a presentation on “Forward management of man-made stands in tropical regions”. The presentation gave various insights into the sustainable utilization and cultivation of tropical forests.

Another keynote special speaker, Dr. Kosuke Mizuno, Kyoto University talked about “Sustainable Development and People’s Organizations in Rural Southeast Asia: People’s participation in Governance”. We also obtained information on how to make good relationships with local people in the forest. More than 70 participants including Indonesian researchers enjoyed the symposium and learned how to manage sustainable tropical forest production and utilization. The symposium was concluded with closing remarks by Dr. Subyakto, LIPI who gave impressive and informative insight into the future prospects of cooperative research between RISH and LIPI.



The International Symposium on Wood Science and Technology

Dr. Dwight A. Eusebio
Forest Products Research and
Development Institute PHILIPPINES

The International Symposium on Wood Science and Technology (ISWST) held at Pacifico Yokohama on 27-30 November 2005 was very successful. It was co-organized by the International Association of Wood Products Societies (IAWPS) and the

Japan Wood Research Society (JWRS), and supported by the International Tropical Timber Organization (ITTO), Commemorative Organization for Japan World Exposition '70 and the Local Government of Yokohama.

The four-day symposium had four

plenary sessions, nine regular parallel sessions and poster presentations covering: wood resources and global environment; cell formation and wood structures; physical properties of wood and modern technologies for their processing; wood-based materials, timber construction and symbiotic housing; living environment and amenity; adhesion and chemical processing of wood; energy, chemicals and charcoal production; wood chemistry, pulping and paper-making chemistry; and biodegradation, preservation of wood, and mushroom production.

Participants, speakers and presen-

ters with various interests once again found opportunities to interact and share ideas relative to the field of wood science and technology. Researchers, scientists, and industrialists (young and not really old) as well as students developed more networks with their worldwide counterparts through interpersonal meetings and consultations.

Plenary sessions 1 and 2 on “Recent Studies on Isolation and Structures of Lignin” and “Mechanisms of Microbial Wood Degradation as Biotechnological Tool for Wood Refinery” presented by Dr. Hou Min Chang and Dr. Kurt Messner, respectively, imparted new research and somewhat sophisticated findings. The presentations by Dr. Okuma and Dr. Sobral during Plenary sessions 3 and 4 were very challenging for all.

Dr. Okuma emphasized that materials to be used in the new millennium should be people friendly and familiar or what is called “symbiotic material”. He further emphasized that materials should be designed for ease of repair, reuse, dismantling and disposal. The evolution of technology over time as explained was interesting but somewhat complicated. Finally, Dr. Okuma mentioned that, “Wood may be a significant material, maintaining human life in the 21st Century”.

Dr. Sobral mentioned that shifting away from natural forests towards plantation resource bases will not save natural tropical forests and may in fact endanger them. He pointed out, however, that wood consumption will continue to rise and high growth rates in plantations will keep timber competitive. He highlighted the high growth rate, uniform product, fast return and less complex silviculture in plantations. The challenge is for wood scientists, forest managers and timber marketers to find high-value uses for the broadest possible range of species from natural tropical forests, thereby making sustainable forestry an economically attractive use of land.

Participants continued to discuss, consult and ask questions relative to their present research activities and future plans even during coffee/lunch breaks while the poster session seemed to be a never-ending activity, people viewing one poster after the other without growing weary.

The next ISWST to be held in Beijing, P.R.China in 2007 was announced by Dr. Jian Li during the closing ceremony.

Finally, I would like to express my sincere thanks to the organizing committee for the opportunity to attend and present a paper to the symposium. It provided additional knowledge on wood science and technology particularly in my field of specialization on



Researcher presenting paper in the conference

wood-based materials, timber construction and symbiotic housing (Session 4). Further, I am deeply indebted to the Japan Society for the Promotion of Science (JSPS) for financial assistance through its JSPS-LIPI Core University Program on Wood Science coordinated by Prof. Yuji Imamura.

Introduction of Spring School in Indonesia -Wood Science School-

Dr. Wahyu Dwianto
RDUB, LIPI

This year is the final year of the LIPI-JSPS Core University Program in the Field of Wood Science. The program has been conducted since 1996. Twenty-six collaboration research projects have been conducted, and six international symposia on wood science and technology were held every two years with large numbers of reports presented. Some novel scientific find-

ings and important technological developments have resulted, and have been published in national and international scientific journals and proceedings. The program has also made a great contribution to the development of manpower in the field of wood science, especially for Indonesian scientists. Since 1996, the following persons have finished their Doctorate program in Japan:

myself (1993-1999), Dr. Dede Hermawan (1997-2001), Dr. Erman Munir (1998-2002), Dr. Musrizal Muin (1999-2003), Dr. Yanni Sudiyani (1998-2002), Dr. Subyakto (1999-2002), Dr. Anita Firmanti (2001-2005), and Dr. Rudianto Amirta (2003-2005). Several Indonesian scientists are now involved in a full-time Doctorate program or Ronpaku program in Japan. One of the fruits of the program is the establishment of a Satellite Office of the Research Institute for Sustainable Humanosphere (RISH), Kyoto University Research and Development Unit for Biomaterials (RDUB), Indonesian Institute of Sciences (LIPI), Cibinong, Indonesia.

The Wood Science School (WSS)



Lecturers of Spring School in front of the entrance decoration

was held in RDUB, LIPI, Cibinong, Indonesia from March 5 to 7, 2006. It was organized by RDUB, LIPI and RISH, Kyoto University with the theme "Recent Trends in Wood Science and Technology". The purpose of the WSS was to share me knowledge and experiences of Japanese professors on the current issues of the topics. It was a chance for young scientists, young lecturers and students to meet Japanese professors as well as to broaden their knowledge and discuss their views.

There were 50 participants. They were Masters or Doctoral students and young lecturers or young scientists from universities, research institutions and related companies from the western to the eastern part of Indonesia, as follows: The University of North Sumatra; Muhammadiyah University-Padang; State University of Jakarta; Bogor Agricultural University; Biotechnology Research Unit for Estate Crops-Bogor;

Forest Product R & D Center-Bogor; Mutu Agung Lestari Company-Bogor; Rensakerta Mukti Company-Bogor; Cibodas Botanical Garden; Winaya Mukti University-Bandung; Gajahmada University-Yogyakarta; Mulawarman University-Samarinda; Tanjungpura University-Pontianak; The State University of Papua; and RDUB, LIPI as the host institution.

The WSS commenced with opening remarks from Prof. Endang Sukara (LIPI) as the Indonesian coordinator of LIPI, JSPS Core University Program, followed by Prof. Yuji Imamura (RISH) as the Japanese coordinator. There were nine interesting lectures during the three-day school, as follows: (1) First day: Forest industries and research needs in Indonesia by Prof. Bambang Subiyanto; Wood and cellulose plastics from the rheological point of view by Dr. Toshiro Morooka; Gene duplication, conversion, and transfer during evolution: Current status with its impact on wood biotechnology by Dr. Hiroyuki Kuroda; (2) Second day: Cell Wall Formation in Woody Plants by Dr. Keiji Takabe; Tree biochemistry in the functional genomics era by Prof. Toshiaki Umezawa; Wood Preservation with Environmental Harmony by Prof. Yuji Imamura; (3) Third

day: Timber Structure by Dr. Takuro Mori; Wood-Based Materials and Wood Adhesives: Recent trends in Japan by Dr. Kenji Umemura; and Recent trends of the chemical processing for controlling the physical and mechanical properties of wood by Prof. Kazuya Minato. The students had very good response to the lectures, many questions were asked and active discussions were realized.

On the second day, a banquet was held where lecturers and students enjoyed a dinner, singing and dancing together. Prof. Toshiaki Umezawa closed the WSS on the last day after the class ended. I believe that this WSS has contributed to (1) give new information on the current issues of the topics; (2) bridge the gap of knowledge and research experiences between Japanese and Indonesian scientists; (3) provide media for Indonesian young scientists/lecturers to broaden their knowledge and discuss their views; and (4) allow Indonesian young scientists/lecturers to meet Japanese professors who intend to continue their study in Japan. I strongly recommend that this kind of activity should be conducted at least once a year to maintain our "already heart-to-heart relationships".



The presentation by Dr. T. Mori

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