Shizuoka Cancer Conference 2013

Growth Strategies in Healthcare and Medicine

March 8, 2014 (Saturday)

Shizuoka Cancer Center Research Institute
Sponsored by Shizuoka Prefecture and the Shizuoka Cancer Center

Purpose of the Program

The Pharma Valley Project, launched by Shizuoka Prefecture in 2002, is an initiative to promote health of the residents of the Prefecture and support local health and pharmaceutical industries. In December 2011, the project was designated as a comprehensive special zone for local revitalization, "Shizuoka Prefecture Comprehensive Special Zone for State-of-the-Art Medical Care", by the Japanese Government. In 2015 fiscal year, a new base facility for the project will be established at an adjacent area to Shizuoka Cancer Center.
At this conference, representatives of zones for local revitalization will come together for mutual information exchange in order to deepen the relationships between the zones and enable them to bear even greater fruits in the future.

Ken Yamaguchi, MD, PhD
President, Shizuoka Cancer Center

Program

Shizuoka Cancer Conference 2013 | March 8, 2014 (Saturday)
Shiosai Hall, Shizuoka Cancer Center Research Institute

Theme: Growth Strategies in Healthcare and Medicine

10:00	Opening Address	Yoshiro Osuga Lieutenant Governor of Shizuoka Prefecture
10:10	Guest Speakers	Khajidsurengiin Bolormaa First Lady of Mongolia; Representative, "Hope" Cancer-Free Mongolia National Foundation Wei Shumei Vice Director, Department of Pathology, Second Affiliated Hospital of Zhejiang University School of Medicine, Hangzhou
10:20	Introduction of the Conference	Ken Yamaguchi, MD, PhD President, Shizuoka Cancer Center
10:40	Information Session	Efforts Made Under the Comprehensive Special Zone System Hitoshi Iwasaki Assistant Counselor, Office for Promotion of Regional Revitalization, Cabinet Office
10:50	Special Address I	International Trends in Industrial Clusters Thomas Jonsson Manager, Zinagi Inc. (former Medicon Valley Alliance Life Science Ambassador)
11:20	Special Address II	Healthcare Policy and a New Framework for Promoting Medical R&D Shin Okuno Director, Office of Healthcare Policy, Cabinet Secretariat
11:40	Special Address III	Medical Device Industry Policies: Present and Future (Medical Device Industry Policies of the Ministry of Economy, Trade and Industry) Takafumi Kakudo Director, Medical and Assistive Device Industries Office, Commerce and Information Policy Bureau, METI
12:00	Special Address IV	Promoting R&D in the Medical Field Daisuke Baba Deputy Director, Life Science Division, MEXT
12:20	Lunch (60 minutes)	
	Session I: Innovative Drug Development Efforts	Chairs: Coordinator Yasuo Sasaki Pharma Valley Center, Shizuoka Industrial Foundation Coordinator Masashi Awata Pharma Valley Center, Shizuoka Industrial Foundation
13:20	Keynote Lecture	Initiative by the National Institute of Biomedical Innovation to Create an "All-Japanese" Drug Development Support Framework Yoshihiro Yoneda, MD, PhD Director General, National Institute of Biomedical Innovation
13:45	Lecture 1	Nucleic Acid Therapeutics: Present and Future Ichiro Hirao, PhD President & CEO, TagCyx Biotechnologies; Team Leader, Center for Life Science Technologies, RIKEN
14:10	Comprehensive Discussion I	
14:30	Break (10 minutes)	
	Session II: Robot & Device Development Efforts and Relating Support	Chairs: Coordinator Terunori Otake Pharma Valley Center, Shizuoka Industrial Foundation Coordinator Akio Kiuchi Pharma Valley Center, Shizuoka Industrial Foundation
14:40	Lecture 2	Creating Devices to Meet Bedside Needs Katsunori Ueda Director, Pharma Valley Center, Shizuoka Industrial Foundation
15:05	Lecture 3	Development of Medical Devices in the East Kyushu Medical Valley Shingo Takesawa, PhD Professor, Department of Medical Engineering, School of Health Science, Kyushu University of Health and Welfare
15:30	Lecture 4	Product Development Based on Medical Facility Needs: Efforts to Encourage Entry to the Healthcare Industry—The Case of Mie Metal Industry Takaya Kato, PhD Assistant Professor, Mie University Community-University Research Cooperation Center
15:55	Break (10 minutes)	
		Chairs: Coordinator Mamoru Sekiguchi Pharma Valley Center, Shizuoka Industrial Foundation Coordinator Masakazu Kanemoto Pharma Valley Center, Shizuoka Industrial Foundation
16:05	Lecture 5	Efforts to Find Clinical Applications for the Wearable HAL Robotic Suit Masafumi Mizukami, PhD Director, Graduate School of Health Sciences, Ibaraki Prefectural University of Health Sciences
16:30	Lecture 6	Development of Human Support Robots Keijirou Yamamoto, PhD Professor Emeritus, Kanagawa Institute of Technology; Director, Institute for Advanced Technology
16:55	Comprehensive Discussion II	
17:25	Closing Address	

Speaker Profiles / Overview of Lectures

Information Session — Efforts Made Under the Comprehensive Special Zone System

Speaker — Hitoshi Iwasaki
Assistant Counselor, Office for Promotion of Regional Revitalization, Cabinet Office

Curriculum Vitae

1999.4	Entered the Ministry of Construction
2009.4	Assistant Manager, Construction Industry Section, Policy Bureau, Ministry of Land, Infrastructure, and Transport (MLIT)
2011.7	Flood Prevention Planner, Rivers Department, Tohoku Regional Development Bureau, MLIT
2013.4-present	Deputy Director, Office for Promotion of Regional Revitalization, Cabinet Office

This talk will provide an overview of the Comprehensive Special Zone System highlighting the local and national efforts that have been made thus far and the outcomes that have been achieved. I will also explain the expectations for each of the Comprehensive Special Zones in the future, and the future prospects for this system.

Special Address I — International Trends in Industrial Clusters

Speaker — Thomas Jonsson
Manager, Zinagi Inc.

Curriculum Vitae

1987.1	Gothenburg University Business Administration
1991.9	Osaka University of Foreign Languages
1992.4	Research Student, Kobe University
1993.4	Astra Japan KK
1997.1	Excerpta Medica KK
1998.7	Pfizer KK
2000.4	Marketing Director, Pharmacia KK
2001.8	President, Ambu Japan KK
2005.12	Banyu Pharmaceuticals KK
2008.5	Life Science Ambassador, Medicon Valley Alliance
2013.7	Zinagi Inc. established

The definition of a cluster from a European perspective will be introduced in the presentation, and some of the major clusters from all the hundreds of clusters in Europe will be described. Their role in innovation will be discussed and an international comparison of collaborations will be presented. The background for the increasing number of partnerings and international collaborations will be discussed and a proposal for Japanese clusters on how to work with the stakeholders in their regions to add and create value will be suggested.

Special Address II — Healthcare Policy and a New Framework for Promoting Medical R&D

Speaker — Shin Okuno
Director, Office of Healthcare Policy, Cabinet Secretariat

Curriculum Vitae

1994.3	Graduated from Faculty of Political Science and Economics, Waseda University
1994.4	Entered the Science and Technology Agency
2006.1	Director, General Affairs Division, Department of General Affairs, Osaka University
2007.7	Deputy Director, Research and Development Policy Division, Research and Development Bureau, the Ministry of Education, Culture, Sports, Science and Technology
2008.8	Director, Secretariat of Strategic Headquarters for Space Policy, Cabinet Secretariat
2010.4	Deputy Director, Washington DC Office, JAXA
2012.5	Director, Office of Healthcare Innovation Policy, Cabinet Secretariat
2013.2	Director, Office of Healthcare Policy, Cabinet Secretariat

To accelerate the pace of commercialization of innovative medical technologies based on the Japan Revitalization Strategy adopted by the cabinet in June 2013 and the Healthcare Policy adopted through a related cabinet agreement, and to establish coordinating functions for medical R&D, the Japanese government has made efforts to (1) install the Headquarters of Healthcare Policy headed by the prime minister within the cabinet, which can play a key coordinating role, and (2) establish an independent administrative institution for medical R&D which will play a central role in the practical work of research management. I will discuss these government efforts in my talk.

Special Address III

Medical Device Industry Policies: Present and Future

(Medical Device Industry Policies of the Ministry of Economy, Trade and Industry)

Speaker **Takafumi Kakudo** Director, Medical and Assistive Device Industries Office, Commerce and Information Policy Bureau, METI

Curriculum Vitae

1992.3	Graduated from Faculty of Engineering, Graduate School of the University of Tokyo
1992.4	Entered the Ministry of International Trade and Industry (MITI)
1997.7-1999.6	Graduate School, Massachusetts Institute of Technology
2001.1	(MITI restructured into Ministry of Economy, Trade and Industry (METI))
2001.6-2004.6	JETRO Brussels Center (Brussels, Belgium):
2008.7	Director, Iron and Steel Technology Office, Manufacturing Industries Bureau, METI
2012.4	Director, Medical and Assistive Device Industries Office, Commerce and Information Policy Bureau, METI

The Japan Revitalization Strategy compiled by the government in June of last year positions the medical and healthcare industries including the medical device industry, which contribute to extending health and longevity of people, as important strategic industries, and proposes a strategy to actively promote the growth of those industries.
In line with this basic policy strategy of the government, the Ministry of Economy, Trade and Industry is actively promoting the following:

- Development of medical devices through medical-engineering collaborations;
- Development of the world's most advanced medical devices;
- Establishment of a business and regulatory environment to promote development and marketing of medical devices; and
- Capture of growing overseas medical device markets.

Special Address IV

Promoting R&D in the Medical Field

Speaker **Daisuke Baba** Deputy Director, Life Science Division, MEXT

Curriculum Vitae

2004.4	Entered the Ministry of Education, Culture, Sports, Science and Technology Promotion Policy Division, Research Promotion Bureau
2005.4	Private Education Institution Administration Division, Higher Education Bureau
2007.4	Knowledge Infrastructure Policy Division, Science and Technology Policy Bureau
2009.6	Personnel Division, Minister's Secretariat (Graduate School of Public Policy, University of Michigan)
2011.6	Office for Materials Science and Nanotechnology Development, Research Promotion Bureau
2013.6	Life Science Division, Research Promotion Bureau

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) has been promoting R&D centered around universities and research institutions and has implemented initiatives that link R&D efforts to both industrial and clinical applications. Given the recent establishment of the Office of Healthcare Policy, MEXT is planning to further strengthen its ties with relevant government agencies and to accelerate the practical realization of innovative medical technologies. In this talk, I will introduce MEXT's major initiatives, including campaigns to promote pharmaceutical and medical device development by strengthening the systems for clinical research and trials, and the achievement of world-class, state-of-the-art medical treatments through iPS cell research and other technologies.

Session I: Innovative Drug Development Efforts

Keynote Lecture

Initiative by the National Institute of Biomedical Innovation to Create an "All-Japanese" Drug Development Support Framework

Speaker **Yoshihiro Yoneda, MD, PhD** Director General, National Institute of Biomedical Innovation

Curriculum Vitae

1981.3	Graduated from Osaka University Medical School
1985.3	Completed course at the Graduate School of Medicine, Osaka University
1986.1	Assistant Professor, Institute for Molecular and Cellular Biology, Osaka University
1991.9	Associate Professor, Institute for Molecular and Cellular Biology, Osaka University
1993.2	Professor, Osaka University Medical School
1999.4	Professor, Graduate School of Medicine, Osaka University
2002.4	Professor, Graduate School of Frontier Biosciences, Osaka University
2011.4	Dean, Graduate School of Medicine, Osaka University
2013.4	Director General, National Institute of Biomedical Innovation
2009	Medical Award of The Japan Medical Association
2013	Takeda Medical Award, Takeda Science Foundation

A five-year strategy for medical innovation formulated in 2012 specified that an "all-Japanese" drug development support network be built around the National Institute of Biomedical Innovation (NIBIO). In May 2013, the Center for Innovative Drug Discovery and Development was launched within NIBIO to serve as the headquarters for this drug development support network. To ensure that outstanding Japanese research findings from academia and other sectors contribute to the actual commercialization of pharmaceuticals, the drug development support network is a drug discovery and development support framework for the seamless development of drugs from basic research through to pharmaceutical marketing, all within Japan. Positioned at the center of this project, NIBIO is striving to construct this network through partnerships with research institutes including RIKEN and the National Institute of Advanced Industrial Science and Technology.

Speaker Profiles / Overview of Lectures

Lecture 1 Nucleic Acid Therapeutics: Present and Future

Speaker **Ichiro Hirao, PhD** President & CEO, TagCyx Biotechnologies; Team Leader, Center for Life Science Technologies, RIKEN

Curriculum Vitae

1978.3	Graduated with B.Eng. from Shizuoka University
1983.3	Earned Ph.D. from Tokyo Institute of Technology
1984.4	Assistant Professor, University of Tokyo
1992.4	Associate Professor, Tokyo University of Pharmacy and Life Sciences
1995.3	Associate Scientist, Indiana University
1997.2	Group Leader, ERATO, Japan Science and Technology Corporation
2002.4	Professor, Research Center for Advanced Science and Technology, University of Tokyo
2006.4	Team Leader, RIKEN
2007.3	President & CEO, TagCyx Biotechnologies

The Special Zone Yokohama R&D Promotion Project has been advancing the development of new nucleic acid therapeutics to serve as cancer therapies in place of low molecular weight drugs and antibodies. In this talk, I will discuss nucleic acid aptamers, which are nucleic acid fragments that bind with high affinity to their targets (a protein or cancer cell, for example). Nucleic acid aptamers designed for cancer treatment are expected to have a wide range of applications, including use as anticancer drugs and in cancer cell imaging and drug delivery systems.

Session II: Robot & Device Development Efforts and Relating Support

Lecture 2 Creating Devices to Meet Bedside Needs

Speaker **Katsunori Ueda** Director, Pharma Valley Center, Shizuoka Industrial Foundation

Curriculum Vitae

1976.4	Admitted to Shizuoka Prefecture Federation of Small Business Association Engaged in establishing and conducting a cooperative, organized by small and medium enterprise in Shizuoka prefecture
2005.4	Worked (Being on loan) as Vice Director of Pharma Valley Center, Shizuoka Industrial Foundation Served to search out drug-discovery projects, management of Shizuoka clinical trials network and medical-nursing-engineering collaboration of community enterprises willing to enter the medical/health industrial field
2012.4 -present	Inaugurated as Director of Pharma Valley Center

Since the Comprehensive Special Zones were designated in December 2011, I have been working in the Fujinokuni Special Zone for the promotion of advanced medicine, centered around the Shizuoka Cancer Center. This region is distinctive for the partnerships that exist between local companies and the Shizuoka Cancer Center, and efforts have focused on creating a health and medicine industrial cluster that engages in the development of innovative cancer diagnostic drugs and medical devices. In this talk, I will discuss the current status of the situation, wherein the deregulation and support measures offered in this Comprehensive Special Zone are being used to actively promote the development of medical devices and other activities, and will introduce the framework that exists for collaboration with local companies to meet the needs of clinical environments.

Lecture 3 Development of Medical Devices in the East Kyushu Medical Valley

Speaker **Shingo Takesawa, PhD** Professor, Department of Medical Engineering, School of Health Science, Kyushu University of Health and Welfare

Curriculum Vitae

1985.3	Earned Ph.D. in Chemical Engineering from Waseda University
1985.4	Assistant Professor, Waseda University
1986.4	Manager, Research Division, Yokohama Dai-ichi Hospital
1999.4	Associate Professor, Department of Medical Engineering, Suzuka University of Medical Science
2002.4	Professor, Department of Medical Engineering, Suzuka University of Medical Science
2007.4	Professor, Department of Medical Engineering, Kyushu University of Health and Welfare
1986.9	Young Investigator's Award, 24th Annual Meeting of the Japan Society for Artificial Organs

The East Kyushu Medical Valley Framework was formulated for Oita and Miyazaki Prefectures in October 2010. This framework aims to expand the market by significantly developing the medical industry primarily in treatments related to blood and blood vessels, which are the specialty fields of companies in Oita and Miyazaki prefectures, as well as by improving the local economy and raising standards of healthcare in Asia. The framework was approved as a Comprehensive Special Zone project in December 2011. This region is home to a number of universities with medical programs and cooperating hospitals, such as the Faculty of Medicine at Oita University, the Faculty of Medicine at the University of Miyazaki, and the Kyushu University of Health and Welfare. This environment enables local companies to move quickly when it comes to the development of medical devices and the cultivation of necessary personnel. Of particular importance is the fact that this project is focused not just on the development of medical devices, but simultaneously on the cultivation of physicians, nurses, and technicians who can use those devices. Steps are being taken to address both hardware-related and process-related issues to ensure that new medical devices can be seamlessly introduced. Today, progress is being made on medical device development and on the cultivation of personnel from Thailand and other ASEAN countries. Significant results are anticipated.

Lecture 4 Product Development Based on Medical Facility Needs

Speaker Takaya Kato, PhD

Assistant Professor, Mie University
Community-University Research Cooperation Center

Curriculum Vitae

2002.4	Entered Ph.D. program in Materials Science at the Graduate School of Engineering, Mie University
2005.3	Earned Ph.D. in Materials Science at the Graduate School of Engineering, Mie University
2005.7	Fellow, New Energy and Industrial Technology Development Organization (NEDO)
2007-present	Assistant Professor, Mie University Community-University Research Cooperation Center Research activities: - Research on spinal biomechanics by linking medicine and engineering, development of implants - Community support and technology transfer activities through government-academia-industry partnerships at universities

One of the projects of the Mie Life Innovation Comprehensive Special Zone is an effort to study the on-site needs of medical facilities and to support local companies in the creation of new businesses, products, and services that can meet those needs. In this talk, I will introduce the case of a company entering the healthcare industry from a different industry (the development and commercialization of the Kachatto-kun IV Stand).

Lecture 5 Efforts to Find Clinical Applications for the Wearable HAL Robotic Suit

Speaker Masafumi Mizukami, PhD

Director, Graduate School of Health Sciences,
Ibaraki Prefectural University of Health Sciences

Curriculum Vitae

1982.4	Physical Therapist, National Rehabilitation Center for the Disabled
1997.4	Lecturer, Ibaraki Prefectural University of Health Sciences
1998.3	Graduated from Master's Program in Education, University of Tsukuba
1999.11	Earned Ph.D. from University of Tsukuba
2004.4	Professor, Ibaraki Prefectural University of Health Sciences
2007.10	Engaged in R&D on HAL Robotic Suits
2013.4	Director, Graduate School of Health Sciences, Ibaraki Prefectural University of Health Sciences

HAL is a wearable robot that assists with such movement functions as standing and walking. It was first shipped for welfare use in 2010. Today, 400 of the devices are currently in action. It has become evident that rehabilitation efforts made while wearing HAL enable wearers to achieve improved mobility in walking and other functions. It shows good prospects as a new rehabilitation device, having earned the CE mark in Europe and been approved for coverage under worker's compensation insurance in Germany. In Japan as well, clinical trials aimed at achieving approval under the Pharmaceutical Affairs Act are being conducted in cases where patients have rare, intractable diseases. We have conducted joint research in the course of the HAL development process, and clinical trials aimed at providing therapy to people suffering from stroke-induced hemiplegia are now underway. This talk will focus on the progress that has been made in this area.

Lecture 6 Development of Human Support Robots

Speaker Keijirou Yamamoto, PhD

Professor Emeritus, Kanagawa Institute of Technology;
Director, Institute for Advanced Technology

Curriculum Vitae

1968	Graduated from School of Science and Engineering, Chuo University
1968-1970	Research Associate, Tokyo Institute of Technology
1971-1977	Research Associate, Osaka University
1977-1990	Research Associate, Tokyo Agricultural and Technological University
1990-2013	Associate Professor and Professor, Kanagawa Institute of Technology
2013-present	Professor Emeritus, Kanagawa Institute of Technology; Director, Institute for Advanced Technology
1968-1990	Development of fluidics, fluid measurement and control
1990-present	Development of power assisted suits, "kansei" engineering, and 3D laser modeling devices
1976	Technology Award, Japan Hydraulics and Pneumatics Society
2001	Asian Innovation Awards, Far Eastern Economic Review

A "human support robot" is a robot that assists elderly and handicapped individuals who have physical vulnerabilities or inadequate access to information, and supports their long-term care and ability to live independent, productive lives.

Human support robots include communication robots, excretion support robots, myoelectric-controlled prosthetic hands, robotic arms that provide meal assistance, robotic arms for wheelchairs, robots that assist with housework and caregiving, nursing beds, lower limb rehabilitation robots, walk assistance robots, and robotic suits.

We have developed support robots that use air pressure in the form of airbags and bellows as their actuators. These include bellows-driven power-assisted hands and legs, and an airbag-driven power-assisted suit.

Because human support robots are made for humans, their feasibility is limited and a mountain of development challenges remain. The Kawasaki Standard, which expresses guidelines for the development of assistive devices, must therefore be kept in mind in the development not only of human support robots, but also of other types of equipment for assistive purposes.