

AC21 Special Project Fund Activity Report on

Project title: International Workshop on Biomedical Engineering Education: Designing Practical Program and Promoting Industry Involvement

International BME Conference and Seminar at Nagoya and Yokohama

Executive Summary:

International Bio-Medical Engineering (BME) Conference and BME Seminar, together with other related events, were held in Nagoya and Yokohama on October 11th and 14th respectively. During the week, four AC 21 leading universities, University of Minnesota, NC State University, University of Strasbourg, and Nagoya University, had intensively shared and discussed about good practices in collaborations with industries in BME research and development and in BME education.

International BME conference, held at Nagoya University on Oct 11th, drew more than 160 participants, including distinguished industry speakers such as former Chairman of Terumo Corporation and General Manager of Partner Robot Division of Toyota Motor Corporation. The distinguished panelists also engaged in the panel discussion to discuss and share their view on BME industry, BME education, and BME ecosystem in Japan.

BME Seminar, held at BIO Japan 2016 on Oct. 14th, were filled with more than 60 industry representatives interested in the frontline of BME innovations. Targeting industry representatives from BIO companies, the seminar titled as “The Global Frontline of Biomedical Engineering Innovation and Design” was held as a part of BIO Japan 2016 event.

In this way, all the events are huge success, by not only achieving the original goals to contribute in AC 21 by enhancing educational exchange and international collaboration among AC21 members, but also by bringing more Japan’s attention to BME R&D and education via the collaboration with industry and academia.

University of Strasbourg showed an interest to host the next event on BME in 2017. Not being satisfied with one-time success, the four AC 21 leading



(1) Part One: Industry- Academia collaboration on BME research and development

As the first speaker, Mr. Peterson introduced a quick overview of Minnesota as the world largest BME cluster and then shared MDC functions and roles in such a cluster. He also presented the detail of UM's famous Fellows Program, including success cases and its unique features that differentiate MDC from other BME fellowship program. Following Mr. Peterson, Dr. Mathelin gave a snapshot of current BME Industry-Academia collaboration taking place in France. Then he shared his experience how I Cube successfully conducts its BME R&D under the close collaboration with University of Strasbourg Hospital. Wrapping up Part One, Dr. Saito at Fujita Health University and Mr. Suga at Toyota Motor Corporation jointly introduced a successful case of the collaboration, R&D of assistive healthcare partner robot, between industry and academia in the central Japan region.



(2) Part Two: Industry- Academia collaboration on BME education

First, Dr. DiMeo explained about overview of BME research and education at Joint Program, especially about its unique large-scale shadowing by which undergraduate students immerse themselves in clinical settings to find unmet BME needs. He also shared the outcome of his program, including the number of startups, patents granted, patents filing. Then, on behalf of Nagoya University, Professor Hiroaki shared quick overview of the global trend of BME education and Nagoya University's new BME program at the planning stage. Lastly, Mr. Ikeda presented his technology, endovascular simulator, as one of the successful startup examples from Nagoya University.





(3) Part Three: Panel Discussion

Moderated by Dr. Uchida, the distinguished panelists discussed

and shared their view on BME industry, BME education, and BME ecosystem in Japan. Major discussion includes the followings:

- Due to rapidly aging society, Japanese BME industry is expected to growth 3-5% annually. BME industry is not just a medical device industry. It is better to be recognized as more like information platform/system industry. Connecting healthcare consumers and healthcare providers is one the most promising areas in BME.
- Stanford's Biodesign Program might not be applied directly to the Japanese BME industry and education. However, the important thing is taking the first step toward developing Japanese style BME program.
- In Japanese BME environment with fewer ventures, rather than focusing starting up, encouraging to collaborate with existing companies might be one of the realistic approaches.
- BME cluster will happen not by establishing organization but continuing evolution. It also need not only BME industry but also supporting businesses.
- By taking an advantage of great concentration in automotive related industries in central Japan region, it might be a good idea to collect technical needs in BME from these industries.
- As the first step toward BME cluster in Central Japan, it might be an interesting idea to establish BME innovation centers in cooperation with small excellent enterprises and Aichi Prefecture, which address actual BME needs in innovative ways.



2. International BME Seminar

Date & Time: 15:00-17:00 on Friday, October 14th.

Venue: BIO Japan 2016 at Pacifico Yokohama

Targeting industry representatives from BIO companies, the seminar titled as “The Global Frontline of Biomedical Engineering Innovation and Design” was held with more than 60 participants, as a part of BIO Japan 2016 event.

Mr. Peterson, Dr. Gioux, and Dr. DiMeo reiterated their presentations, but more focused on seed technologies and research topics. Dr. Kanie and Dr. Masuda from Nagoya University also presented their technologies.

Though not all participants are from BME industry, they seemed interested in BME as relatively new promising area. Especially Dr. Masuda’s presentation collected much attentions and many questions.



3. Other related activities

(1) Internal BME seminar at Nagoya University

Five faculties from Nagoya University whose research topic is in BME field presented their promising technology seeds to BME professionals from other AC 21 universities. Participants exchanged the view and information actively to identify the potential areas of BME research collaboration.



(2) ITbM visit

BME professionals from other AC 21 universities visited ITbM, Nagoya University’s premiere research institute, and learned its capability, research topics, and innovative

management style. The visitors are especially interested in live imaging/monitoring of cells.



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(3) Visit Keihin waterfront Life Innovation International Strategic Comprehensive Special Zone

Date & Time: 14:30-17:30 on Thursday, October 13th.
Visiting Venue: Life Innovation Center (LIC)
Central Institute for Experimental Animals (CIEA)
Innovation Center of NanoMedicine (iCONM)

The delegation from Nagoya University visited three institutes located in Keihin waterfront Life Innovation International Strategic Comprehensive Special Zone, where is within one kilometer of Haneda airport. LIC is focusing on commercialization of the regenerative medicine and cell therapy, by collaborating with industry and Kanagawa prefecture. At CIEA, Dr. Nomura Ryuta gave a brief presentation about CIEA, followed by a quick tour in the CIEA. CIEA collaborates with WHO and FDA to evaluate oral Polio vaccine and has developed a transgenic Marmoset model to understand human neurological disorder. Third visit was iCONM, where is the hub for smart health with nanotechnology. iCONM focuses on intractable cancer and Alzheimer's disease treatment and is equipped with excellent facilities for a synthesis of new nanomaterial and its evaluation. At iCONM, all the research is being conducted with Industry-Academia-Government collaboration under one roof.



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