

Thoughts on the biomedical sciences in Japan and Australia

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Happy New Year! At the beginning of 2006, allow me to recall and describe some of my experiences during the last year. In August and September 2005, I had the opportunity to visit 3 countries, Australia, South Korea, and the United States, within a 3-week period, and the trips provided me with a chance to think deeply about international collaboration as well as national policies regarding science and technology. Life science research is very attractive in all three countries, despite their different characteristics and cultural backgrounds. I believe that our country, Japan, has much to learn from their national policies regarding life science, in terms of both strong points and weak points. Since I have already published or submitted reports and/or impressions of my visit to South Korea and the United States, in this essay I will describe my personal impressions of the situation regarding biomedical science in Australia and my perspectives on Japan-Australia collaboration and make a brief report on the 7th World Congress on Inflammation that was held in Melbourne.

Melbourne, Australia - *August 21-22, 2005*

On the night of August 20, I left Tokyo Airport for Melbourne Australia by Qantas Airline to attend the 7th World Congress on Inflammation (Congress President: Dr. Peter C Doherty, a Nobel Laureate at the University of Melbourne). I was excited all the way, because it was my first trip to Australia, even though it was only a one night stay in Melbourne. My mission at the Congress was to organize the symposium on Inflammation and Regeneration, which was supported by the Japanese Society of Inflammation Research, in collaboration with Professor Kouji Matsushima of the University of Tokyo. At the symposium we discussed the interface and fusion between inflammation research and regenerative medicine, which is exactly important and long lasting issue of the Japanese Society of Inflammation and Regeneration. We invited the following speakers to discuss this topic (Fig. 1):

1. Kouji Matsushima (University of Tokyo, Japan), who spoke on Inflammation -Associated Regeneration: Fibrotic and Granulomatous Diseases,
2. Claude CA Bernard (LaTrobe University, Australia), who delivered a talk on the Pathogenesis of Autoimmune Encephalomyelitis,
3. Zaal Kokaia (Lund University Hospital, Sweden), who spoke on the Role of Inflammation in Neurogenesis in the Adult Brain, and
4. Hideyuki Okano (Keio University School of Medicine, Japan), who addressed Inflammation and Regeneration of the Injured Spinal Cord: Effects of Stem Cell Transplantation and Blockade of IL-6 Signaling.

Since we really enjoyed the active presentations by the speakers and the interdisciplinary discussions with the audience, I believe the symposium was a great success. I myself was fortunate enough increase collaborative interactions with other speakers.

Biomedical Research in Australia

In addition to our own symposium, I was struck by the strong presentations by Australian Biotechnology Companies. I soon realized that Australia is one of the most active and successful Asian-Pacific countries in the field of biotechnology. Interestingly, Australia does not appear to have mega domestic pharmaceutical compa-

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nies like Pfizer, GSK, Novartis, Roche, or Eli Lilly (of course most of the major pharmaceutical companies have active Australian branches), and instead strong biomedical venture companies were growing by taking advantage of Australia's rich natural resources, expertized techniques, low costs, sophisticated infrastructure, and strong governmental support. I also found that Melbourne, the capital of Victoria, is recognized as a leader in the field of biotechnology in Australia and the entire Asia-Pacific region. Melbourne and Victoria have great advantages in the field of biotechnology because of their high levels of R&D investment, their world-class stem cell center, a definitive environment for clinical trials, Australian Synchrotron, active venture capital, and unique genome research (Kangaroo Genome Project). In the medical sciences, Melbourne and Victoria have considerable strengths in oncology, anti-infectives, and immunology, cardiovascular diseases, neuroscience, regenerative cell therapies, diabetes, and reproductive technology (see the following web site for details: www.biotechnology.vic.gov.au/directry).

Australia has led international development of many areas, building on the early days of biotechnology when Dr. Howard Florey was awarded the Nobel Prize in 1945 for his role in developing penicillin. The biomedical sciences in Australia are well founded on a history of breakthroughs that are internationally recognized, including the development of the bionic ear, the first purification and cloning of three of the major cytokines: GCSF, GM-CSF, and LIF, and the identification of *Helicobacter pylori* (see the following web site for details: <http://www.investaustralia.gov.au/biotech>). Unfortunately, in August 2005, I could not foresee that two Australian scientists, Dr. Barry J. Marshall and Dr. J. Robin Warren, would win the Nobel Prize in Physiology or Medicine that year for their discovery of *Helicobacter pylori* and its role in gastritis and peptic ulcer disease. However, Dr. Barry Marshall is the winner of the Keio Medical Science Prize in 2002 for the "Isolation and cultivation of *Helicobacter pylori*-pioneering work in diagnosis and treatment", and I am very proud of having served as one of the member of the committee that selected of him as the awardee.

Japanese-Australian Collaboration in Biomedicine

There has recently been an increase in interest in bilateral collaboration between Japan and Asian-Pacific countries. In August 22, I became strongly convinced that Australia could come a very important close partner of Japan in the biomedical sciences, fortunately, we were able to continue discussion of such a possibility the following month (September, 2005). It turned out that the Centre for Strategic Economic Studies at Victoria University (Acting Director, Dr. Bruce Rasmussen) was asked by the Australian government to organize a seminar on Japanese-Australian Collaboration in Biomedicine on September 3 as part of its activities at the Japan Expo in Aichi. As chance would have it, I was invited to the seminar and was able to discuss the possibility of bilateral collaboration between the two countries in three major areas: 1) regenerative medicine, 2) neuroscience and mental health, and 3) the molecular basis of disease. Dr. Bruce Rasmussen is currently preparing a report on the seminar and we have started to consider the first, concrete step in initiating the collaboration. Through these efforts, I came to realize the strengths and weaknesses of the biomedical sciences in Japan in terms of their activity, structure, and regulation. I believe that collaboration between the two countries will have a great impact in changing the structure and status of scientific policies in a positive direction.

Finally, I would like to express my sincere gratitude to Professor Kouji Matsushima for giving me the opportunity to make my first trip to Australia, a paradise of biotechnology.



Fig.1 From Left to Right: Zaal Kokaia, Hideyuki Okano, Claude Bernard, and Kouji Matsushima. Melbourne Convention Centre, August 22, 2005.