Organ Biology—New Development

On behalf of the Japan Society for Organ Preservation and Medical Biology (JSOPMB), I express my sincere appreciation to Professor Paul R. Sanberg (Department of Neurosurgery and Brain Repair, Morsani College of Medicine, University of South Florida, FL, USA), Executive Editor of *Cell Medicine*, for providing us such an excellent opportunity to publish the data that were presented at the annual meeting of the JSOPMB. I also thank Dr. David Eve, Associate Editor of *Cell Medicine*, for the editing of our articles in detail. I am very sure that the relationship between *Cell Medicine* and JSOPMB has enhanced the motivation of JSOPMB members as well as board members and will continue to do so in the future, while also encouraging young Japanese researchers to join this organization.

One of the extremely important missions of the annual meeting of the JSOPMB is to exchange new research outcomes and create new therapeutic concepts. JSOPMB always encourages and motivates young investigators. JSOPMB was started in 1974 for the study of organ preservation and developed widely in the 1990s with the participation of researchers in various fields of medicine, pharmacology, engineering, veterinary medicine, and basic science. Currently, JSOPMB has more than 400 members and is run under the direction of Dr. Takehide Asano, the president of the JSOPMB.

Excellent presentations conducted at the 39th annual meeting of the JSOPMB held November 16–17, 2012, in Fukushima, Japan, under the supervision of Dr. Mitsukazu Gotoh (Professor, Department of Regenerative Surgery, Fukushima Medical University, Fukushima, Japan), were selected and given an opportunity to be published in this special issue of *Cell Medicine*. Twelve of these presentations are herein published in this special JSOPMB issue.

There were five articles regarding pancreatic islet transplantation. Katayama et al. compared University of Wisconsin (UW) solution (gold standard preservation solution) with new preservation solution, HN-1, in pancreas preservation for islet isolation. Islet yield and islet graft function were significantly higher in the HN-1 group than the UW group. Kawai et al. evaluated the impact of UW and HN-1 solutions for preincubation before purification. The efficacy of the preincubation solutions and the quality of the isolated islets were similar. Kubota et al. studied the viability of Rho-associated protein kinase (ROCK) inhibitor Y-27632 in a culture system in vitro on isolated islets. Y-27632 inhibited cell apoptosis in a graft and was also indicated as effective in insulin secretion.

Seita et al. created type 1 diabetes canine models that were suitable for the assessment of cell therapies, such as islet transplantation and bioartificial pancreas, with low-dose streptozotocin (STZ) injection and partial pancreatectomy. Yamashita et al. explored the potential of internationally transporting human islets from Alberta, Canada to Tokyo, Japan and obtaining viable dispersed islet cells.

There were two articles regarding immunosuppression for transplantation. Sasahara et al. developed a new assay for examining the immunosuppressive drug sensitivity with a CellTiter-Glo assay, which measures the amount of cellular ATP to help increase the assay's sensitivity. The amount of blood required for the lymphocyte immunosuppressant sensitivity test (LIST) with the CellTiter-Glo assay was reduced to 25% of the amount required for the previously established LIST with the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assay procedure. Sugiyama et al. evaluated mycophenolic acid (MPA) pharmacological efficacy by LIST both prior to and after renal transplantation and compared the efficacy to the clinical outcome of these recipients. Although the MPA pharmacological efficacy evaluated at both before and after transplantation had no relationship with the incidence of rejection episodes, the rate of cytomegalovirus (CMV) infection episodes in the low MPA pharmacological efficacy group categorized at 2 weeks after renal transplantation was significantly higher than the rate in the high MPA sensitivity group.

There were two articles regarding liver/hepatocytes. Hsu et al. developed a rat nonalcoholic steatohepatitis (NASH) model induced by neonatal STZ injection and a high-fat diet, which mimics almost every feature of human NASH. Enosawa et al. examined the efficacy of antioxidative electron treatment on type 2 diabetes-induced NASH in a rat model. Antioxidative electron treatment at very low energy attenuated the pathogenically elevated liver inflammation and oxidative stress, together with presumably impaired glucose metabolism in the NASH rat model.

Stem cell research was a major topic of interest. There were three articles regarding stem cells. Murakami et al. showed that Sandos inbred mouse (SIM)-derived 6-thioguanine- and ouabain-resistant (STO) cells, which have been frequently used for establishing embryonic stem/induced pluripotent stem (ES/iPS) cells and maintaining them in an undifferentiated state, could phagocytose *Streptococcus mutans* (the bacteria causing tooth decay). These bacteria always contaminate cultures of primarily isolated human deciduous dental pulp cells and

so are an important consideration in the use of these cells. Yukawa et al. showed that quantum dots (QDs), which have distinct fluorescence abilities in comparison to traditional probes, can be utilized for the fluorescence labeling of iPS cells. Miyazaki et al. developed cadmium-free QDs for imaging of adipose tissue-derived stem cells.

The theme of this JSOPMB issue is “Organ Biology—New Development.” The board members and I are looking forward to seeing further progress in JSOPMB in conjunction with *Cell Medicine*.

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