Basic and Clinical Science for Organ Biology

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, 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 JSOPMB. I also thank Dr. David Eve, Associate Editor of *Cell Medicine*, for editing of our papers 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 newly join this organization.

To answer the current problem of the severe human donor organ shortage for cell therapies is a big challenge. Research on adult and embryonic stem cells and artificial cell development, in addition to the recent and rapidly evolving invention of induced pluripotent stem cells, encourages us to address the problems confronting cell transplantation. Therefore, JSOPMB has now importantly focused on regenerative medicine in collaboration with cell biologists.

One of the extremely important missions of the annual meeting of 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 700 members and is run under the direction of Dr. Takehide Asano, the President of JSOPMB.

Excellent presentations conducted at the 40th annual meeting of JSOPMB held November 9–10, 2013, in Tokyo, Japan, under the supervision of Dr. Motohide Shimazu (Professor, Department of Gastroenterological Surgery and Transplant Surgery, Tokyo Medical University, Tokyo, Japan) were selected and given an opportunity to be published in this special issue of *Cell Medicine*. Five of these presentations are herein published in this special JSOPMB issue.

Takeuchi et al. reported on the synergistic effects of calcineurin inhibitors [tacrolimus (TAC), cyclosporine (CYA)] and steroids on steroid sensitivity of peripheral blood mononuclear cells in humans. Steroid sensitivity was observed to increase with both TAC and CYA.

Sufiandi et al. showed the effect of shear stress on rat hepatocyte viability under horizontal and vertical syringe orientation. The vertical syringe orientation resulted in lower viability loss than the horizontal orientation, suggesting that removing a sedimentation effect is important to improving cell viability by preventing high shear stress.

Miyamoto et al. showed three-dimensional in vitro hepatic constructs formed using a combinatorial tapered stencil for cluster culture (TASCL) device. Using plastic dishes as the bottom part of the combinatorial TASCL device, 3D hepatocyte constructs of uniform sizes were produced by increasing the seeding cell density of primary mouse hepatocytes.

Yukawa et al. showed the influence of autofluorescence derived from the living body on in vivo fluorescence imaging using quantum dots. The dorsal and ventral autofluorescence derived from a mouse with its hair removed were detected with all kinds of excitation/fluorescence filters (blue, green, yellow, red, deep red, and NIR) using the Maestro™ in vivo imaging system. However, the transplanted adipose tissue-derived stem cells labeled with QDs on the back of a mouse could be detected in the red filter condition, suggesting that fluorescence imaging using QDs can be useful for labeling and detecting of transplanted cells.

Tsugata et al. investigated the key factors for the differentiation of pluripotent stem cells into insulin-producing cells using microarray data and induced pluripotent stem cells (iPSCs) derived from human islets or fibroblasts. Their data suggest that the expression of guanine–adenine–thymine–adenine-binding protein 6 (*GATA6*) and gremlin 1 (*GREM1*) and the inhibition of early growth response 1 (*EGR1*) may be important factors for the differentiation of PSCs into insulin-producing cells.

The theme of this JSOPMB issue is “Basic and Clinical Science for Organ Biology.” The Board members and I are looking forward to seeing further progress in JSOPMB in conjunction with *Cell Medicine*.

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