Special Issue

Preface

The Japanese Association for Animal Cell Technology (JAACT) was established by the cooperation of many people who were eager to create new research and industrial fields in 1988, over ten years later than the European Society for Animal Cell Technology (ESACT). The first president of JAACT was the late Prof. Hiroki Murakami who served as a managing editor of Cytotechnology. Now Prof. Shuichi Kamino-gawa is guiding JAACT as the second president of JAACT. The main subject of animal cell technology is to deal with control and modulation of cellular functions. Different from conventional cell biology which regards cells and tissues as constituents of the animal body, animal cell technology recognizes an animal cell as an independent living organism. Animal cell technology aims not only to uncover cellular behavior but also to positively modulate cellular function. Animal cell technology is also very interested in focusing on the construction and functional regulation of engineered cells which are reconstituted so as to express fully their specific biological functions *in vitro*, being unable to exist in any part of animal body, and only able to survive in the artificial environments distinctively different from those of biological fluids in the body. Therefore, animal cell technology is a new scientific discipline closely associated with the further developments of biotechnological industrial fields. Biological functions of engineered cells can be controlled and modulated by various means which are categorized into three: genetic, physiological and physical means.

It is widely said that the core of the 21st-century science will be “life”. The JAACT is an arena for the exchange of academic information by researchers and engineers specializing in science and technology concerning animal cells, which is the basic unit of this “life”. The academic field covered by JAACT centers

around animal cells, ranging from cell cultivation and analysis of cell characteristic to production and control of useful materials, cell therapy and the creation of artificial cells. In other words, it covers all the areas, applied and basic, for making animal cells which can contribute to supporting a healthy, normal life. For the developments of these areas, JAACT is involved in various activities by indicating 1) state-of-the-art and industry-academia cooperation and 2) “international” and “interdisciplinary” as the basic principles behind the management of JAACT. Above all, the annual international meeting is the main feature of our activities. It greatly contributes to the development of animal cell technology, which has been given a considerable hope from the world as the core of life science and technology.

JAACT convenes annually usually in November and the meeting in which all presentations and discussions are performed in English is open to participants from all over the world. The first meeting was held in Tokyo in 1988, followed by in Tsukuba, Kyoto, Fukuoka, Omiya, Nagoya, Veldhoven in the Netherlands, and Iizuka. The 10th meeting is to be held in Nagoya from 5 to 8 November, 1997. The 7th meeting was held as the first ESACT/JAACT joint meeting in the Netherlands and the 11th meeting is to be held in Kyoto as the second JAACT/ESACT joint meeting.

The 9th meeting, JAACT '96, was held in Yokohama, Kanagawa, Japan from 1 to 4 September, 1996, and welcomed 222 scientists including 38 foreign scientists. Two plenary lectures included “Dendritic cells as antigen presenting cells: role in the immunotherapy of cancer” by Prof. Edgard G. Engleman and “Immune-regulation and lymphocyte functioning molecules” by Prof. Ko Okumura. Seven symposia, 37 oral presentations, and 61 poster presentations were performed. The

meeting was a good opportunity for the exchange of the latest results in both the basic and applied aspects of animal cell technology. The new and younger investigators were particularly encouraged to participate in both the oral and poster sessions of the meeting.

This special volume of Cytotechnology, published in association with JAACT, comprises many valuable articles elucidating the control and modulation of *in vitro* cellular functions with genetic, physiological approaches, which will help researchers to envisage the present status and future trends in animal cell technology. The contributed papers in this special volume have been mainly classified by following subjects:

1. Cell culture engineering.
2. Expression of recombinant animal genes in cultured animal cells.
3. Establishment of functional cell lines for production of biologicals.

4. Cell characterization and validation.
5. Application of human monoclonal antibody.
6. Glycoengineering for enhancing *in vivo* activity.
7. Cytokines and signal transduction.
8. Cell culture for assessment of physiologically functional substances in food and natural sources.

All papers selected in this volume were critically reviewed by international reviewers and revised. Although JAACT members have previously contributed to Cytotechnology, it is our pleasure to publish the special volume of JAACT '96 in Cytotechnology.

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Editors:

Kazuo Nagai, Tokyo Institute of Technology
Shuichi Kaminogawa, University of Tokyo
Sanetaka Shirahata, Kyushu University