



The 21th Annual Meeting of JSIT 2014 (Japanese Society of Immunotoxicology)

September 11 – 12, 2014

Tokushima Bunri University, International Conference Hall, 180 Yamashiro-cho, Tokushima, Japan.

<http://p.bunri-u.ac.jp/jsit2014/>

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Deadline for abstract submission: July 10, 2014

The theme for this Meeting: “A Step forward in Immunotoxicological Studies”

Program (Tentative Schedule)

■ September 11, 2014 (Thursday)

- Educational lecture:
Dr. Yoshiyuki Minegishi (The university of Tokushima, Institute for Genome Research)
- Symposium:
Next-generation Approach in Immunotoxicology
Dr. Atsushi Mochizuki
Dr. Naoki Kanoh
Dr. Koro Goto
Dr. Ken Ishi
- Award lecture:
Dr. Motoyasu Ohsawa (Hatano Research Institute, Food and Drug Safety Center)
- Oral / Poster presentation
- Social gathering:
Hotel Grand Palace Tokushima

■ September 12, 2014 (Friday)

- Special lecture 1:
Dr. Marc Pallardy (Université Paris-Sud)
- Special lecture 2:
Dr. Tatsuyoshi Kawamura (University of Yamanashi, Faculty of Medicine)
- Workshop:
Immunotoxicology Methods
Dr. Tomoaki Inoue
Dr. Motoko Fukui
Dr. Reiko Adachi
Dr. Risako Nishino
- Oral / Poster presentation
- Awards ceremony

JSIT prize for encouragement

Nano-safety science for sustainable nanotechnology

Yasuo Yoshioka

Laboratory of Toxicology and Safety Science, Graduate School of Pharmaceutical Sciences, Osaka University

My name is Yasuo Yoshioka from the Graduate School of Pharmaceutical Sciences, Osaka University. It is my great pleasure and honor to be awarded the JSIT prize for encouragement. I would like to sincerely thank all of the members of the awarding committee.

With the recent development of nanotechnology, nanomaterials are beginning to be used on a global scale. However, the increasing use of nanomaterials has raised public concerns about the potential risks to human health. Because nanomaterials have the potential to improve the quality of human life, it is essential to ensure their safety and obtain the information for designing safe nanomaterials. In this regards, I have attempted to explore the field of Nano-Safety Science for the sustainable nanotechnology. Especially, I have examined the relationships between physicochemical properties, bio-distribution, intracellular localization and biological responses (safety) of nanomaterials.

I recently revealed that consecutive epicutaneous

application of the mixture of amorphous silica nanoparticles and mite antigen reduce the production of IgG (it is known that allergen-specific IgG suppress the IgE-mediated allergic response) and induce IgE-mediated hypersensitivity in mice. My results suggested allergy-inducing nanomaterials did not simply work allergen carrier when exposed through epicutaneous route. I believe that this information may prove critical in aiding progression of the nanotechnology industry, allowing it to realize the great benefits it promises.

Finally, I would like to give an appreciation to Dr. Yasuo Tsutsumi at Osaka University, and all my collaborators for their help.

Sincerely,
Yasuo Yoshioka

Young power for immunotoxicological research

Reproductive immunology and Immunotoxicology

○Hayato Terayama, Kou Sakabe

Department of anatomy, Division of basic medicine, Tokai
university school of medicine

Please allow me to introduce myself. I received the Ph.D. degree in medical science from Tokyo Medical University. Present, I am an anatomist working at the Department of anatomy, Tokai University School of Medicine. My areas of expertise include anatomy, reproductive immunology, and andrology.

Because spermatogenesis begins during puberty, when immune tolerance already has been established, there are various autoimmunogenic materials in the testes that the body's immune system recognizes as foreign. To protect autoimmunogenic spermatozoa from attack by the immune system, the testes exhibit a distinctive form of immune privilege. The blood–testis barrier (BTB), formed by tight junctions of Sertoli cells, partitions the interstitial blood compartment of the testis from the adluminal compartment of seminiferous tubules. Previous studies demonstrated aspects of the immune privilege in the testes by using a local transplantation system. The testicular interstitium is resistant

to polymorphonuclear cell infiltration, spermatic granuloma, vasculitis, and lymphangitis. Therefore, the testicular tissue outside the BTB, where many resident macrophages are normally present, is also protected from attack by the body's immune system. To maintain the testicular immune privilege, the testicular cells express and secrete numerous immunoregulatory molecules, including androgens, macrophage migration inhibitory factor, activin, Fas ligand, protein S, and immunosuppressive cytokines such as interleukin (IL)-10, IL-35 and transforming growth factor (TGF)- β , which play critical roles in regulating immune responses in the testes. If the BTB is severely damaged, then the autoimmunogenic spermatozoa leak out beyond the BTB, causing a continuous supply of autoantigens and resultant testicular inflammation.

High dose exposure to Di-(2-ethylhexyl) phthalate (DEHP), widely used as a plastic plasticizer for synthetic polymers, causes testicular atrophy with spermatogenesis disturbance in mice and rats. Some studies have shown that DEHP is rapidly metabolized into mono-2-ethylhexyl phthalate and induces spermatogenic disturbance by oxidative stress. Others have reported that small vacuoles in the cytoplasm of Sertoli cells begin to appear and morphological changes in the blood–testis barrier (BTB) can occur. And, cadmium, one of various environmental toxicants, is known to suppress systemic immunity and to injure the testicular capillary endothelia with resultant necrosis of testicular tissues in mice and rats treated with high doses. Recently, it also became evident that DEHP and cadmium can affect the integrity of the BTB, testicular immunity and testicular interstitium, even on treatment with a low dose that does not induce spermatogenic disturbance. Small vacuoles in the cytoplasm of Sertoli cells were observed in the testes of DEHP low-dose treated mice. Also, the numbers of macrophages and MHC Class II positive cells were significantly increased with the elevated mRNA expressions of both IL-10 and IFN- γ in the testes of DEHP low-dose treated mice. And, murine intra-testicular mRNA expression of IL-6, TNF- α and IL-1 β was significantly increased by the CdCl₂ low-dose treatment. These study demonstrated that DEHP and CdCl₂ of the low dose that does not affect the spermatogenesis can change the testicular

immune-microenvironment. Therefore, exposure to a low dose of DEHP and CdCl₂ induces no significant disturbance of spermatogenesis, however, it does change the immunological microcircumstances in the testis.

Words from the new executive board members

Research and society activities in toxicology

Seishiro Hirano

National Institute for Environmental Studies

I would like to look back when I first joined The Japanese Society of Immunotoxicology instead of just saying “I will do my best for the society.” It was kind of state-of-art to investigate changes in cytokine concentrations in toxicology in mid 1980s. I remember that I measured murine serum TNF α concentrations by bioassay using L-N cells, because the ELISA kits were expensive then. At that time I felt that senior scientists, who were responsible for scientific societies and communities, were very active in their own research, publishing papers, and education of junior scientists, and so still I feel. Now I am afraid that toxicological research activities in this country are not good enough compared to twenty years ago. One of the best ways to promote toxicological research activities is to encourage younger scientists who belong to the society as many senior scientists may consider. The achievement awards for young scientists are provided in many scientific societies, but still those societies may not look attractive enough for them. I feel somehow whether each senior scientist these days is really a role model for younger scientists as I felt twenty years ago. It was time to re-activate senior scientists along with promoting young scientists’ research interest in immunotoxicology.

Words from the new board member

Yasuo Morimoto

Dept. of Occupational Pneumology, Institute of Industrial Ecological Sciences
University of Occupational and Environmental Health, Japan.

I am very honored that I take a charge of councilor in The Japanese Society of Immunotoxicology. At first I worked as a respiratory physician in University of Occupational and Environmental Health, Japan for 7 years and have engaged in researches of prevention of occupational respiratory disease and risk/hazard assessment of respiratory materials. From 10 years ago, I started to perform the researches of effect of nanomaterials on the human body. I have performed in vivo studies using dispersed nanomaterials through the collaboration of special agencies such as measurement and exposure of nanomaterials. It is very important to perform the reliable *in vivo* and *in vitro* studies which sufficiently reflect the effect on human, and I think that I intend to push on for studies and education of preventive medicine through establishment of these in vivo and in vitro studies.

I will make lots of effort in order to advance the conference.

Words from a new board member

Yoshiro Saito

Div. Medicinal Safety Science, National Institute of Health Sciences

This is my great pleasure to introduce myself as a new board member of the Japanese Society of Immunotoxicology. As a successor of the current President Prof. Takahiko Yoshida, I have been in charge of accounting from Oct. 2013. Through this responsibility, I would like to contribute to run the Society’s activities smoothly.

In my laboratory, we are mainly studying on identification of biomarkers for drug-induced severe adverse reactions (SARs) and on their onset mechanisms. Because of their seriousness, sometimes leading to

death, SARs are one of the important issues in drug development and its proper use in the post-marketing phase. Immune reactions have been suggested to be involved in the pathogenesis of some SARs such as Stevens-Johnson syndrome and toxic epidermal necrolysis. Drug-specific HLA genotypes are associated with these severe cutaneous reactions, reported from several groups including us, and recently, non-covalent and direct drug binding with the HLA molecules is revealed to be recognized as non-self by CD8⁺ T cells, resulting in severe reactions. We will continue to analyze the immune-related SARs in order to reduce their incidence rates in Japan.

Because of the wide coverage of target materials, the Society have been an exciting place for immunotoxicologists. I would like to contribute to the Society through promoting this kind of active interactions, which will lead to raise the levels of Japanese immunotoxicological studies.

Words from a new councilor

Greeting to becoming a new councilor member

Kumiko Ogawa

Pathology, National Institute of Health Sciences

First of all, I would like to express my sincere gratitude to the doctors and the seniors who recommended and accepted me as a councilor member of the Japanese Society of Immunotoxicology.

Since I graduated from Nagoya City University in 1988, I had engaged in the histopathological and molecular pathological researches on carcinogenesis mostly using rodents, as well as surgical pathology under the guidance of Drs. Nobuyuki Ito and Tomoyuki Shirai of the first department of Pathology, Nagoya City University. After I moved to the Pathology division of Biological Safety Research Center in National Institute of Health Sciences, I have participated in the studies and experiments regarding toxicity and safety of substances.

My first contact of immunological disease was happened when I was a university student who did not know anything. I met the high school girl, who had

been hospitalized for SLE. All I knew was this disease is an autoimmune disease that may cause “butterfly erythema” and “glomerulonephrosis”. She, energetic young girl said to me how hard and tedious it was to stay just home or hospital to avoid sunlight and fatigue, with a little oppositional attitude. I realized the difference between knowing the symptom from a book and facing to the real human case.

Since I moved to the present institute, I could have an experience of working with Drs. Reiko Teshima, Reiko Adachi and Tomoko Mogami in the field of immunotoxicity, which is very impressive with fascination and complexity.

As we all know, many people are suffering from immune diseases related to the immunotoxicity, at least in part. Thus, the assessment of suspected substance, the elucidation of mechanisms and the method of prevention of these diseases have been desired to be revealed.

I know my experience is very limited, however, I would like to do my best to contribute for this society and its aim. I will greatly appreciate your further guidance and encouragement.