

Regulation in Innate Immunity
from Recognition Molecules to Antimicrobial Peptides

October 28 and 29, 2008

Shionogi Innovation Center for Drug Discovery
Hokkaido University
N21W11, Kita-ku, Sapporo, Hokkaido 001-0021, Japan

Organizing Committee
Tokiyoshi Ayabe
Keiichi Kawano
Norio Matsushima

Contact: Keiichi Kawano, kawano@sci.hokudai.ac.jp

PROGRAM

October 28 (Tue), 2008

- 9:30-9:35 **Opening Remarks: Tokiyoshi Ayabe**, Hokkaido University, Japan
- Symposium I: Structure and Function of Toll-like Receptors**
Discussion Leader, **Norio Matsushima**, Sapporo Medical University, Japan
- 9:35-10:05 1. **Norio Matsushima**, Sapporo Medical University, Japan
“Structure and ligand-protein interactions of leucine-rich repeats (LRRs)”
- 10:05-10:35 2. **Ken-ichiro Shibata**, Hokkaido University, Japan
“Anti- and pro-tumor activities of the mycoplasmal lipopeptide FSL-1 as a TLR2 ligand”
- 10:35-11:05 3. **Shin-ichi Yokota**, Sapporo Medical University, Japan
“Modulation of Toll-like receptor signal transduction by bacteria, virus and self”
- 11:05-11:25 **Poster viewing/Coffee break**
- 11:25-11:55 4. **Tsukasa Seya**, Hokkaido University, Japan
“Functional evolution of the TRIF/TICAM-1 pathway for extrinsic RNA sensing”
- 11:55-12:40 5. **Jie-Oh Lee**, Korea Advanced Institute of Science and Technology, Korea
“Ligand recognition by the TLR complexes”
- 12:40-13:40 Lunch

Symposium II: Mechanisms of Host Effecters

Discussion Leader, **Keiichi Kawano**, Hokkaido University, Japan

13:40-14:10 6. **Shun-ichiro Kawabata**, Kyushu University, Japan
“A structural perspective on the interaction between lipopolysaccharide and horseshoe crab factor C”

14:10-14:40 7. **Masanori Kasahara**, Hokkaido University, Japan
“The NKG2D ligand family of the mouse: A “danger signal” alerting the immune system”

14:40-15:10 8. **Kazuya Iwabuchi**, Hokkaido University, Japan
“Natural Killer T cells, an innate subset of T cells, at a crossroad of immunity and metabolism”

15:10-15:40 9. **Yoshio Kuroki**, Sapporo Medical University, Japan
“Pulmonary collectins in innate immunity of the lung”

15:40-16:20 **Poster Session**

Symposium III: Antimicrobial Peptides in Innate Immunity

Discussion Leader, **Tokiyoshi Ayabe**, Hokkaido University, Japan

16:20-17:05 10. **Andre J. Ouellette**, University of California, Irvine, USA
“Paneth Cell Biology in Barrier Function”

17:05-17:35 11. **Hitoshi Komatsuzawa**, Kagoshima University, Japan
“Interaction of human skin keratinocytes with Staphylococcus aureus –focus on antimicrobial peptides–”

17:35-18:05 12. **Yoshihiro Abiko**, Health Sciences University of Hokkaido, Japan
“Role of defensins in oral epithelial diseases”

18:15-19:30 **Reception**

October 29 (Wed), 2008

Symposium IV: New Concepts in Host Defense

Discussion Leader: **Tomoyasu Aizawa**, Hokkaido University, Japan

- 10:00-10:30 13. **Tomoyasu Aizawa**, Hokkaido University, Japan
“A Novel expression system for recombinant antimicrobial peptide as inclusion body”
- 10:30-10:50 14. **Naoki Sakai**, Hokkaido University, Japan
“Regulated roles of Paneth cell α -defensin in mouse small intestine and its molecular mechanism of bactericidal activity”
- 10:50-11:10 15. **Toyoyuki Ose**, Hokkaido University, Japan
“Mechanistic analysis of the 21st amino acid incorporation”
- 11:10-11:30 16. **Masakatsu Kamiya**, Hokkaido University, Japan
“A novel insect chemokine isolated from integument”
- 11:30-11:50 17. **Akira Hasebe**, Hokkaido University, Japan
“The uptake manner of the diacylated lipopeptide FSL-1 by macrophages”
- 11:50-11:55 **Closing Remarks: Keiichi Kawano**, Hokkaido University, Japan

Poster Session

1. **Tatsuro Kamijima**¹, Ayaka Ohmura¹, Masakatsu Kamiya^{1,2}, Takashi Kikukawa^{1,2}, Tomoyasu Aizawa^{1,2}, Keiichi Kawano^{1,2} and Makoto Demura^{1,2}
¹Graduate School of Life Science, ²Graduate School of Science, Hokkaido University

“Formation of alpha-lactalbumin-fatty acid complex as an apoptosis induction factor”

2. **Yasuhiro Nonaka**¹, Masakatsu Kamiya^{1,2}, Tomoyasu Aizawa^{1,2}, Makoto Demura^{1,2} and Keiichi Kawano^{1,2}.
¹Graduate School of Science, ²Graduate School of Life Science, Hokkaido University

“Characterization of non-enzymatic asparaginyl deamidation in lysozyme under mild conditions”

3. **Keitaro Sugita**¹, Masakatsu Kamiya^{1,2}, Tomoyuki Ohkubo¹, Tatsuro Kamijima², Satoshi Shimamoto¹, Fumie Tatami², Tomoyasu Aizawa^{1,2}, Mineyuki Mizuguchi³, Shun-ichiro Kawabata⁴, Makoto Demura², and Keiichi Kawano¹
¹Graduate School of Science, ²Graduate School of Life Science, Hokkaido University, ³Faculty of Pharmaceutical Sciences, University of Toyama

“Structural analysis of tachyplesin I with dodecylphosphocholine micelles”

4. **Yoshitaka Umetsu**¹, Tomoyasu Aizawa^{1,2}, Kaori Muto³, Hiroko Yamamoto¹, Masakatsu Kamiya^{1,2}, Yasuhiro Kumaki^{1,2}, Mineyuki Mizuguchi³, Makoto Demura^{1,2}, Yoichi Hayakawa⁴, and Keiichi Kawano^{1,2}
¹Graduate School of Science, Hokkaido University, ²Graduate School of Life Science, Hokkaido University, ³Faculty of Pharmaceutical Sciences, Toyama University, ⁴Faculty of Agriculture, Saga University

“Effect of C-terminal elongation on the structure and larval growth inhibitory activity of growth blocking peptide (GBP)”

5. **Yoshikazu Tanaka**¹⁻³, Sou Sakamoto², Makoto Kuroda⁴, Shuichiro Goda⁵, Yong-Gui Gao³, Kouhei Tsumoto², Yuzuru Hiragi⁶, Min Yao³, Nobuhisa Watanabe^{3,7}, Toshiko Ohta⁸, and Isao Tanaka³
¹Creative Research Initiative “Sousei”, Hokkaido University, Japan, ²Graduate School of Frontier Sciences, The University of Tokyo, ³Faculty of Advanced Life Sciences, Hokkaido University, ⁴Center for Pathgen Genomics, National Institute of Infectious Diseases, ⁵Faculty of Engineering, Nagasaki University, ⁶Kansai Medical University, ⁷Graduate School of Engineering, Nagoya University, and ⁸Graduate School of Comprehensive Human Sciences, University of Tsukuba

“Structural analysis of Ehb, a giant cell surface protein from Staphylococcus aureus”

6. **Eriko Matsuoka**¹, Min Yao¹, Yoshikazu Tanaka^{1,2}, Makoto Kuroda³, Toshiko Ohta⁴, and Isao Tanaka¹
¹Faculty of Advanced Life Sciences, Hokkaido University, ²Creative Research Initiative “Sousei”, Hokkaido University, ³Center for Pathgen Genomics, National Institute of Infectious Diseases, and ⁴Graduate School of Comprehensive Human Sciences, University of Tsukuba

“Crystal structure of an adhesin UafA from Staphylococcus saprophyticus”

7. **Masato Watanabe**¹, Yoshikazu Tanaka^{1,2}, Ayuko Suenaga¹, Makoto Kuroda³, Min Yao⁴, Nobuhisa Watanabe⁵, Toshiko Ohta⁶, Isao Tanaka⁴, and Kouhei Tsumoto¹

¹Graduate School of Frontier Sciences, The University of Tokyo, ²Creative Research Initiative “Sousei”, Hokkaido University, ³Center for Pathogen Genomics, National Institute of Infectious Diseases, ⁴Faculty of Advanced Life Sciences, Hokkaido University, ⁵Graduate School of Engineering, Nagoya University, and ⁶Graduate School of Comprehensive Human Sciences, University of Tsukuba

“Structural analysis and heme binding property of the third NEAT domain of IsdH from Staphylococcus aureus”

8. **Tomoko Mikami**^{1,2}, Takanori Tanaka³, Keiko Yamada¹, Yoshio Kuroki¹, and Norio Matsushima¹

¹Sapporo Medical University, ²Sapporo City University, ³Hitotsubashi University Institute Economic Research

“Island domains intervening between leucine rich repeats (LRRs) in proteins”

9. **Shigeru Arika**¹, Kaku Sawada¹, Shinsei Gasa², Nobuhiro Fujii³, Masami Yamazoe¹, Takeyuki Shimizu¹, Chiaki Nishitani¹, Motoko Takahashi¹, and Yoshio Kuroki¹

¹Department of Biochemistry, ²Department of Chemistry, ³Department of Microbiology, Sapporo Medical University, School of Medicine

“Pulmonary collectins bind and aggregate Mycobacterium avium”

10. **Tamaki Okabayashi**¹, Shin-ichi Yokota¹, Noriko Yokosawa¹, Hiroyuki Tsutsumi², and Nobuhiro Fujii¹

¹Department of Microbiology, ²Department of Pediatrics, Sapporo Medical University School of Medicine

“Type I IFN production depended melanoma differentiation-associated gene 5 in airway epithelial cells infected with respiratory syncytial virus”

11. **Tamaki Okabayashi**¹, Shin-ichi Yokota¹, Noriko Yokosawa¹, Hiroyuki Tsutsumi², and Nobuhiro Fujii¹

¹Department of Microbiology, ²Department of Pediatrics, Sapporo Medical University School of Medicine,

“Modulation of cytokine induction by Fosfomycin in airway epithelial cells infected with respiratory syncytial virus”

12. **Kaku Sawada**^{1,2}, Shigeru Arika¹, Masami Yamazoe^{1,2}, Chiaki Nishitani^{1,2}, Takeyuki Shimizu¹, Motoko Takahashi¹, Shin-ichi Yokota³, Nobuhiro Fujii³, Hiroki Takahashi², and Yoshio Kuroki¹

¹ Dept. of Biochem., ² Dept. of 3rd Int. Med., ³ Dept. of Microbiol., Sapporo Medical Univ.

“Lung collectins inhibit the growth of Legionella pneumophila”

13. **Chiaki Nishitani**¹, Motoko Takahashi¹, Hiroaki Mitsuzawa¹, Takeyuki Shimizu¹, Shigeru Arika¹, Norio Matsushima², and Yoshio Kuroki¹

¹Dept. of Biochem., ²Sch. of Health Sci., Sapporo Med. Univ.

“A critical role of MD-2 in cell surface expression of TLR4^{C88A}”

14. **Hiroyuki Akashi**, Naoki Sakai, and Tokiyoshi Ayabe

Graduate School of Life Science, and Innate Immunity Laboratory, Department of Cellular Life Science, Faculty of Advanced Life Science, Hokkaido University

“The expression of candidate genes related to degranulation in mouse Paneth cells”