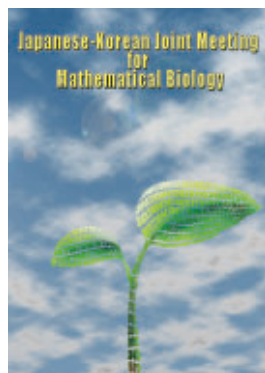


Japanese-Korean Joint Meeting for Mathematical Biology

September 16-18, Kyushu University, Fukuoka, Japan

## Program



# Time Table

Time	Room A	Room B	Room C	Room P
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September 16, Saturday

9:00–10:00	Opening Ceremony Plenary Session 1			
10:00–12:30		S1 Aspects of Epidemiology	S2 Patterns in Biology: From Molecules to Cells and Organs	Poster Ses- sion 1P
12:30–14:30	JSMB Executive Committee Meeting*	Lunch		Poster Core Time
14:30–19:00		Oral Session 1B	Oral Session 1C	Poster Ses- sion 1P

\* (till 13:30)

September 17, Sunday

9:10–10:00	Plenary Session 2			
10:00–12:30		S3 Ecology and Behavior of Social Insects <sup>†</sup>	S4 Ecological and Genetical Perspective of Speciation	
12:30–14:00	Lunch			
14:00–16:30		S5 General Community Structure	S6 Mathematical Modelling for Intra- and Intercellu- lar Signal Transduction Sys- tems	
16:30–17:30	JSMB General As- sembly Meeting			
17:30–18:30	JSMB Young Scholar Award Lecture			
18:30–21:00	Banquet			

† (till 13:00)

September 18, Monday

9:20–10:00	Special Lecture			
10:00–12:30		S7 Sustainable Harvesting of Natural Resources: New Insights from Evolutionary Ecology and Community Dynamics	S8 Differential Equations in Mathematical Biology	Poster Ses- sion 3P
12:30–14:30	Lunch			Poster Core Time
14:30–17:00		Oral Session 3B	Oral Session 3C	Poster Ses- sion 3P
17:00–17:10	Closing Ceremony			

## Plenary Sessions, Special Lecture, Award Lecture

September 16

9:10-10:00

Room A

### Plenary Session 1: Bioinformatics

Hiroyuki Toh (Kyushu U, JP)

Prediction of Protein-protein Interaction by Using Co-evolutionary Information

September 17

9:10-10:00

Room A

### Plenary Session 2: Medical Mathematics

Brian Worley (Oak Ridge National Laboratory, US)

Knowledge Discovery in Biomedical Sciences

September 17

17:45-18:30

Room A

### JSMB Young Scholar Award Lecture

September 18

9:20-10:00

Room A

### Special Lecture: Physiological Modelling

Eun-Ok Jung (Konkuk U, KR)

Introduction of the immersed boundary method and its application in valveless pumping

# Symposium

September 16, 10:00-12:30, Room B

## Symposium 1. Aspects of Epidemiology

**Organizers:** Ben Adams (Kyushu U), Axel G. Rossberg (Yokohama Natl U),  
Sayaki Suzuki (Kyushu U)

**Introduction:** Understanding how infectious diseases spread and evolve is a fundamental issue in human society, agriculture and ecology. With empirical experiment often ethically impossible, mathematical modeling is an essential tool. The speakers in this symposium will present current research into models, methods and concepts relating to a range of host-parasite interactions.

**S1-1** Joel E. Cohen (Rockefeller U, US) *Infections, Evolution, and Food Webs*

**S1-2** Alan McKane (U Manchester, UK) *Stochastic Amplification in Epidemics and in Other Models in Biology*

**S1-3** Hisashi Inaba (U Tokyo, JP) *Age-structured Population Dynamics in Epidemic Models*

**S1-4** Masashi Kamo (AIST-CRM, JP) *Evolution of Multi-year Epidemic Period in Diseases*

**S1-5** Ben Adams (Kyushu U, JP) *Phase Structure of Resonance Solutions in Two-strain Seasonal SIR Models*

**S1-6** Sayaki Suzuki (Kyushu U, JP) *Planting Patterns and Crop Disease*

September 16, 10:00-12:30, Room C

## Symposium 2. Patterns in Biology: From Molecules to Cells and Organs

**Organizers:** Shuji Ishihara (Natl Inst Basic Biol),  
Atsushi Mochizuki (Natl Inst Basic Biol)

**Introduction:** Patterns in various levels of biological systems, from single cells to organs, are often involved in functions of information processing for their living systems. In this symposium, we discuss such pattern formations and emergence of functions from molecular level by introducing some experimental and theoretical studies.

**S2-1** Tatsuo Shibata (Hiroshima U, JP) *Stochasticity and Cooperativity of Molecular Processes in the Cell*

**S2-2** Kaoru Sugimura, Tadashi Uemura (Kyoto U, JP), Atsushi Mochizuki (Natl Inst Basic Biol, JP) *Mathematical Modeling for Pattern Formation of Dendrite*

**S2-3** Takashi Miura (Kyoto U, JP) *Mechanism of Skull Suture Interdigitation*

**S2-4** Kazuki Horikawa, Kana Ishimatsu (U Tokyo, JP), Eiichi Yoshimoto, Shigeru Kondo (Nagoya U), Hiroyuki Takeda (U Tokyo) *Noise-Resistant and Synchronized Oscillation of the Segmentation Clock*

**S2-5** Koichi Fujimoto (U Tokyo, JP) *Simulating Evolution and Development in Animal Body Plan*

September 17, 10:00-13:00, Room B

### Symposium 3. Ecology and Behavior of Social Insects

**Organizers:** Norio Yamamura (Kyoto U), Nan-Yao Su (U Florida)

**Introduction:** Theoretical problems on ecology and evolution of social insects have extensively been studied specially on Hymenoptera. However, mathematical methods for analyzing termite behavior and spatial dynamics have recently been developed. In this symposium, we will discuss such methods and compare them with theories of spatial dynamics of ants.

- S3-1** Nan-Yao Su (U Florida, US) *Population Estimate of Subterranean Termite Colonies by Using Diffusion Models*
- S3-2** Sang Hee Lee (U Florida, US; Pusan Natl U, KR) *Simulating the Spatial and Temporal Dynamics of Termite Colonies with Temperature Variation in a Heterogeneous Landscape*
- S3-3** Paul Bardunias (U Florida, US) *A Termite Tunnel Excavation Model Integrating Stigmergic Cues with Intrinsic Motivations*
- S3-4** Atsushi Yamauchi (Kyoto U, JP) *Persistence Conditions of Symmetric Social Hybridogenesis in Haplo-Diploid Hymenoptera*
- S3-5** Nobuyuki Tsuji (Hokkaido U, JP) *A Density Dependent/Independent Selection Model in Ants*
- S3-6** Mayuko Nakamaru (Tokyo Inst Tech, JP) *The Evolution of the Dispersal Strategy in the Colony-Based Model*

September 17, 10:00-12:30, Room C

### Symposium 4. Ecological and Genetical Perspective of Speciation

**Organizer:** Akira Sasaki (Kyushu U)

**Introduction:** Sympatric speciation requires combined action of two processes: ecological character displacement in niche space and reproductive isolation by sexual selection. Here we introduce recent attempts to combine ecological, game-theoretical, and population genetical approaches of sympatric speciation. Also discussed are reproductive isolation by genitalia mismatch observed in carabids and millipedes, and observed behaviors of individual-based simulations for sympatric speciation.

- S4-1** Ulf Dieckmann (IIASA, AT), Michael Doebeli (U British Columbia, CA) *Adaptive Speciation: Linking Pattern and Process*
- S4-2** Akira Sasaki (Kyushu U, JP; IIASA, AT), Ulf Dieckmann (IIASA, AT) *Quantitative Genetics for Speciation: Oligomorphic Dynamics*
- S4-3** Teiji Sota (Kyoto U, JP) *Divergent Evolution of Genital Morphologies and Speciation in Arthropods: Perspectives from Empirical Studies*
- S4-4** Masakado Kawata, Ayako Shoji (Tohoku U, JP), Shoji Kawamura (U Tokyo, JP) and Ole Seehausen (U Bern, CH) *A Genetically Explicit Model of Speciation by Sensory Drive within A Continuous Population*

September 17, 14:00-16:30, Room B

## Symposium 5. General Community Structure

**Organizer:** Kei Tokita (Osaka U)

**Chair:** Young-Seuk Park (Kyung Hee U)

**Introduction:** In many complex systems such as a metabolic system, an immune system, an ecosystem, a human social system, even a linguistic system etc, common “general community structures” have been observed. A mechanism to generate such patterns, e.g. abundance distributions of components, is not only a main topic in each discipline but also have aroused controversy independently. In this session, we aim to explore a uniform view and methodology for the patterns by theoretically approaching to complex systems essentially containing diverse components, e.g. genes in a cell, species in a ecosystem, words in a book etc.

**S5-1** Louis-Félix Bersier (U Fribourg, CH) *What Proportional Abundances of Species Pairs can Teach Us about Models of Biodiversity?*

**S5-2** Kunihiko Kaneko (U Tokyo, JP) *Universal Statistical Laws in Reproducing Cells and Relevance of Phenotypic Fluctuation to Genetic Evolution*

**S5-3** Axel Rossberg (Yokohama Natl U, JP) *Trophic Link Density, the Diet Partitioning Function, and the Search for Universality in Ecological Communities*

**S5-4** Kei Tokita (Osaka U, JP) *Species Abundance Distributions, the Species-Area Relationships and the Zipf's Law*

September 17, 14:00-16:30, Room C

## Symposium 6. Mathematical Modelling for Intra- and Intercellular Signal Transduction Systems

**Organizers:** Yoshihiro Morishita (Kyushu U), Jun Nakabayashi (Kyushu U),  
Seung Kee Han (Chungbuk U)

**Introduction:** Mathematical modeling is an essential tool for understanding inter/ intracellular phenomena at system level. In this symposium, the speakers discuss various regulatory systems with different modeling methods. Some speakers also introduce their experimental works.

**S6-1** Yoshihiro Morishita (Kyushu U, JP) *Specifying the Spatio-Temporal Patterns of Active Cell Proliferation Determines Organ Morphology: Growth-Based Morphogenesis, Illustrated by Vertebrate Limb Bud Formation*

**S6-2** Jun Nakabayashi (Kyushu U, JP) *A mathematical model for the temporal ordered gene expression pattern in Herpes Simplex Virus (HSV) reproduction*

**S6-3** Gen Kurosawa (ERATO ACMP, JP) *A Model for Circadian Rhythm of Cyanobacteria, which Maintains Oscillations without Gene Expression*

**S6-4** Tetsuya Kobayashi (RIKEN CDB, JP) *Characterization of Intracellular Systems in the Single-Cell-Level*

**S6-5** Yu-ichi Ozaki (U Tokyo, JP) *Prediction and Validation of Distinct Temporal Dynamics of Transient and Sustained ERK Activation*

**S6-6** Seung Kee Han (Chungbuk Natl U, KR) *Dynamic Analysis of Modules in Cell Cycle Regulation Network*

September 18, 10:00-12:30, Room B

## Symposium 7. Sustainable Harvesting of Natural Resources: New Insights from Evolutionary Ecology and Community Dynamics

**Organizers:** Hiroyuki Matsuda (Yokohama Natl U), Ulf Dieckmann (IIASA)

**Introduction:** Modern fisheries are characterized by the persistent danger of overfishing. In heavily exploited stocks, adaptive changes in life history and behavior seem to occur within just a few generations. Also, the ecological interactions within communities exposed to harvesting are often so complex, that the ultimate effects of fishing pressures are difficult to predict. Even though similar considerations arise in wildlife management, they are not yet well included in the theory and practice of contemporary resource management. This session addresses implications of adaptive changes and community dynamics for the sustainable management of living resources.

- S7-1 Ulf Dieckmann (IIASA, AT) *The Overlooked Evolutionary Dimension of Modern Fisheries*
- S7-2 Yuu Katsukawa (Natl Res Inst Fisheries Sci, JP) *Why Not to Catch Immature Fish with Indeterminate Growth?*
- S7-3 Ake Brannstrom (IIASA, AT) *Evolutionary Implications of Harvesting in Size-Structured Food Webs*
- S7-4 Mi-Young Song (Natl Fisheries Res Dev Inst; Pusan Natl U, KR) *Spatio-temporal dynamics of fisheries data in the Yellow Sea*
- S7-5 Mitsuyo Mori (Inst Cetacean Res, JP), Doug Butterworth (U Cape Town, ZA) *A First Step Towards Modelling the Predator-Prey Interactions of Krill, Baleen Whales and Seals in the Antarctic Ecosystem*
- S7-6 Hiroyuki Matsuda (Yokohama Natl U, JP) *Effects of Predator-Prey Interactions and Adaptive Change on Sustainable Yield*

September 18, 10:00-12:30, Room C

## Symposium 8. Differential Equations in Mathematical Biology

**Organizers:** Ryusuke Kon (Kyushu U), In-Kyung Ahn (Korea U)

**Introduction:** A variety of differential equations have been employed to solve many biological problems. Mathematical studies of such equations can support or disprove numerical results, and establish a firm basis for further studies. The aim of this session is to introduce such mathematical studies and report recent achievements.

- S8-1 Yasuhiro Takeuchi (Shizuoka U, JP) *Permanence and Global Stability of SIR Epidemic Models with Time Delays*
- S8-2 Xianming Liu (Southwest U, CN) *Recent Applications of Impulsive Differential Equations*
- S8-3 Kousuke Kuto (Fukuoka Inst Tech, JP) *Coexistence Steady-States of a Lotka-Volterra Cross-Diffusion System in Spatially Heterogeneous Environment*
- S8-4 Kimun Ryu (Korea U, KR) *On the Ratio-Dependent Predator-Prey Interaction Systems : A PDE Approach*
- S8-5 Seong-A Shim (Sungshin Women's U, KR) *Reaction-Diffusion Models in Population Dynamics*
- S8-6 Shinji Nakaoka (Shizuoka U, JP) *Modeling for Size Structured Populations via Differential Equations*

## Oral Sessions

September 16, 14:30-19:00

Time	Room B	Room C
14:30	<b>1B-1</b> Kazuki Kawachi (U Tokyo) <i>An Age-structured Rumor Transmission Model.</i>	<b>1C-1</b> Toshio Sekimura (Chubu U) <i>Parr mark formation in the early development of Amago trout.</i>
14:45	<b>1B-2</b> Takahiro Irie, Yoh Iwasa (Kyushu U) <i>Why do smaller cowries occur in shallower habitats? Two alternative hypotheses based on life-history models.</i>	<b>1C-2</b> Tetsuya Nakamura (Osaka U) <i>Generation of robust left-right asymmetry in the mouse embryo requires a self-enhancement and lateral-inhibition system.</i>
15:00	<b>1B-3</b> Shigehide Iwata, Yauhiro Takeuchi (Shizuoka U), Ryusuke Kon (Kyushu U) <i>The analysis of the revised lottery model: The effect of limited availability of nutrient on the species coexistence.</i>	<b>1C-3</b> Tsuyoshi Hirashima, Yoh Iwasa, Yoshihiro Morishita (Kyushu U) <i>Feedback loop between the AER and ZPA activities stabilizes their spatial position in the limb bud formation.</i>
15:15	<b>1B-4</b> Pan-Jun Kim (KAIST), Tae-Wook Ko (Korea U), Hawoong Jeong (KAIST), Kyoung J. Lee (Korea U), Seung Kee Han (Chungbuk Natl U) <i>Emergence of chaotic itinerancy in simple ecological system.</i>	<b>1C-4</b> Shuji Ishihara (NIBB), Mikiya Otsuji (U Tokyo), Atsushi Mochizuki (NIBB) <i>Unique cell polarity formation by mass conserved reaction-diffusion systems.</i>
15:30	<b>1B-5</b> Kohkichi Kawasaki, Nanako Shigesada (Doshisha U) <i>An integrodifference model for biological invasions in a periodically fragmented environment.</i>	<b>1C-5</b> Koichiro Uriu, Yoh Iwasa (Kyushu U) <i>Turing pattern formation with two kinds of cells and a diffusive chemical.</i>
15:45	<b>1B-6</b> Kazunori Sato (Shizuoka U) <i>Mean extinction time for spatial-structured population.</i>	<b>1C-6</b> Hyung Ju Hwang (Postech) <i>Hyperbolic Models for Chemosensitive Movement in Interacting Cell Systems.</i>
16:00	<b>1B-7</b> Mifuyu Nakajima (NIES), Peter A. Abrams (U Toronto), Michio Hori (Kyoto U) <i>Invasion of laterally asymmetric predator and prey into symmetric species' community.</i>	<b>1C-7</b> Morihiro Notohara (Nagoya City U) <i>Genealogy of a Unique Event Polymorphism.</i>
16:15	<b>1B-8</b> Hiromi Seno (Hiroshima U) <i>A discrete prey-predator system dynamically consistent with structurally unstable Lotka-Volterra ODE model.</i>	<b>1C-8</b> Yung Chul Park (Ewha Womans U), Chang-Sik Jeong (Pusan Natl U), Jae Chun Choe (Ewha Womans U), Tae-Soo Chon (Pusan Natl U) <i>Understanding the evolution of Cytochrome Oxidase II in Dictyopteran (termites, cockroaches and mantis) lineage via Mathematical Modeling.</i>



Time	Room B	Room C
16:30	<b>1B-9</b> Ryusuke Kon (Kyushu U) <i>Almost sure permanence of discrete-time Kolmogorov systems for two species.</i>	<b>1C-9</b> Kazuhisa Fujita, Yoshiki Kashimori (U Electro-Commun) <i>Extraction of Behaviorally Relevant Features of Stimuli by Short-term Synaptic Plasticity.</i>
16:45	<b>1B-10</b> Chih-hao Hsieh (Kyoto U), Christian S. Reiss, John R. Hunter, John R. Beddington, Robert M. May, George Sugihara <i>Fishing elevates variability in the abundance of exploited species.</i>	<b>1C-10</b> H. Yoshida (U Tokyo), H. Anai (Fujitsu Lab; CREST, JST.), K. Horimoto (CBRC, AIST) <i>Parameter determination for diagnosis of dysfunction in brain by combining 3 compartmental models over Laplace domain.</i>
17:00	<b>1B-11</b> Norio Yamamura (Kyoto U) <i>Conditions for plants to help herbivores and thereby benefit from predators through apparent competition: Fixed-number refuge model.</i>	<b>1C-11</b> Toru Sasaki, Tsuyoshi Kajiwara (Okayama U) <i>Global behavior of a B model incorporating autoimmunity.</i>
17:15	<b>1B-12</b> G. Ledder (U Nebraska-Lincoln), Young Lee (Manchester Coll), Tae Do (Kwandong U) <i>The cannibalism lifeboat effect in a simple food web.</i>	<b>1C-12</b> Sunmi Lee (NIMS, Korea), Eunok Jung (Konkuk U) <i>Two dimensional numerical simulations for two chambers.</i>
17:30	<b>1B-13</b> Young-Seuk Park (Kyung Hee U) <i>Distributoin patterns of communities.</i>	<b>1C-13</b> Naoki Masuda (RIKEN), Norio Konno (Yokohama Natl U) <i>Cyclic competitive dynamics on networks.</i>
17:45	<b>1B-14</b> Mayumi Seto, Tasuku Akagi (Kyushu U) <i>Stabilization of environmental conditions introduced by environmental-altering traits of competing species.</i>	<b>1C-14</b> Hwang-Yong Kim (NIAST, Korea), Seunghwan Lee (Seoul Natl U), Tae-Soo Chon (Pusan Natl U), Eungchun Cho (Kentucky State U) <i>Application of trigonometric approximation to the mathematical description of typological shape of insects.</i>
18:00	<b>1B-15</b> Toshiyuki Namba (Osaka Pref U), Ikumi Niwa (Osaka Women's U), Norio Yamamura (Kyoto U) <i>Diversity-productivity relationships in a model community of an herbivore and many plant species.</i>	<b>1C-15</b> Isao Kawaguchi, Masahiro Doi, Shizuko Kakinuma, Tatsuhiko Imaoka, Yoshiya Shimada (NIRS) <i>Synergy and additivity on the combined exposure of X-ray and ENU on lymphomagenesis.</i>
18:15	<b>1B-16</b> Takeshi Miki, Taichi Yokokawa, Toshi Nagata, Norio Yamamura (Kyoto U) <i>Bacterial metacommunity controls the biological pump in the ocean.</i>	<b>1C-16</b> Hiroshi Haeno, Yoh Iwasa (Kyushu U) <i>Probability of resistance evolution for exponentially growing virus in the host.</i>
18:30		<b>1C-17</b> Yasushi Ohkusa (NIID), Hiroshi Maeda (U Tokyo), Kazuyuki Aihara (U Tokyo; ERATO, JST) <i>Evaluation of Pandemic Plan using individual based model.</i>

September 18, 14:30-17:00

Time	Room B	Room C
14:30	<b>3B-1</b> Tomonori Sato, Kazuhisa Fujita, Yoshiki Kashimori (U Electro-Commun) <i>Cooperative behavior of fish individuals in efficient predator evasion of fish schools.</i>	
14:45	<b>3B-2</b> Genki Ichinose, Takaya Arita (Nagoya U) <i>Effects of Migration as Environmental Response on the Evolution of Cooperation.</i>	<b>3C-1</b> Mike Boots (U Sheffield) <i>Ecological determinants of the evolution of defence against parasites.</i>
15:00	<b>3B-3</b> Joe Yuichiro Wakano (U Tokyo), Christoph Hauert (Harvard U) <i>Chaotic coexistence of cooperators and defectors in spatial public goods games.</i>	<b>3C-3</b> Hiroshi Nishiura (Nagasaki U; U Tübingen) <i>Modeling force of infection of dengue based on age-specific incidence of dengue hemorrhagic fever.</i>
15:15	<b>3B-4</b> Mari Nakamura (AIST) <i>Functional differentiation of ants and task-allocation in ant colonies.</i>	<b>3C-4</b> Ben Adams, Akira Sasaki (Kyushu U) <i>The influence of cross-immunity on the coexistence, invasion and evolution of pathogen strains.</i>
15:30	<b>3B-5</b> Yoshinari Tanaka (NIES) <i>Community Trait Dynamics under Resource Competition.</i>	<b>3C-5</b> Shingo Iwami (Osaka Pref U), Yasuhiro Taleuchi (Shizuoka U), Xianning Liu <i>Avian-Human influenza epidemic model.</i>
15:45	<b>3B-6</b> Takefumi Nakazawa, Norio Yamamura (Kyoto U) <i>Altruistic behavior in a Nicaraguan cichlid fish is maintained in a cyclic dominance structure.</i>	<b>3C-6</b> Andrei Korobeinikov (Hokkaido U) <i>Lyapunov functions and global stability for epidemiological models and virus dynamics models with nonlinear incidence rate.</i>
16:00	<b>3B-7</b> Yoh Iwasa, Yukari Suzuki (Kyushu U), Tomoe Uchida, Hiroyuki Yokomizo (Yokohama Natl U) <i>Nonlinear behavior of the socio-economic dynamics for lake eutrophication control.</i>	<b>3C-7</b> Inkyung Ahn (Korea U) <i>Mathematical analysis on spatial interaction model among HIV and immune systems.</i>
16:15	<b>3B-8</b> Yukari Suzuki, Yoh Iwasa (Kyushu U) <i>Coupling two hysteresis mechanisms: ecological and social dynamics in lake water pollution.</i>	<b>3C-8</b> Steven Webb (U Sheffield) <i>The role of immune individuals in the evolution of parasites in spatially structured host populations.</i>
16:30	<b>3B-9</b> Chuleui Jung, Heesung Yoon (Andong Natl U) <i>Trap catch model of oriental tobacco budworm in Korean pepper field.</i>	<b>3C-9</b> Yasuhiko Takeda (Kyushu U) <i>Mathematical biology and Prevention.</i>
16:45	<b>3B-10</b> S.-H. Lee, T.-S. Chon (Pusan Natl U) <i>Predator's Attack-Induced Phase-like Transition in Prey Flock.</i>	

## Poster Sessions

September 16, 10:00-18:30, Room P (Core Time: 12:30-14:30)

- 1P-1** Kazumi Omata, Takuro Shimbo, Kenji Yamamoto (Int Med Ctr Japan) *Vaccination and Singularity.*
- 1P-2** Naoto Kato, Hiroyuki Matsuda (Yokohama Natl U) *Effects of vermifuge on the prevalence of Echinococcus multilocularis.*
- 1P-3** Midori Tuda, Akira Sasaki (Kyushu U) *Host-parasitoid arms race with host competition for refuge.*
- 1P-4** Tsutomu Matsuoka, Hiromi Seno (Hiroshima U) *Density effect may increase a pest population undergoing harvesting.*
- 1P-5** Masashi Kamo (CRM, AIST) *A population level ecological risk assessment: farewell to NOEC.*
- 1P-6** Nobuhiro Ogura, Shigehide Iwata, Kei-ichi Tainaka, Jin Yoshimura (Shizuoka U) *Spatial patterns of coexistence under two types of disturbance.*
- 1P-7** Jaeeun Yoon, ByulNim Kim, Yongkuk Kim (Kyungpook Natl U) *Stability analysis of tsutsugamushi fever.*
- 1P-8** Masanori Sugiura, Kei Tokita (Osaka U) *Dynamics of HIV antigenic diversity and asymptomatic interval.*
- 1P-9** Yasuhisa Saito, Makoto Hatakeyama (Shizuoka U) *A simple model for transport-related infection.*
- 1P-10** Hiroki Matsuno (U Tokyo) *Interplay between body shape and internal dynamics in a reaction-diffusion system.*
- 1P-11** Hyun Ji Ko, Hyun-min Kim (Pusan Natl U) *Algorithms for computation of bilby population.*
- 1P-12** Masaru Iizuka (Kyushu Dent Coll), Motoshi Ichinose (Chikushi Jogakuen Jr Coll), Tomoyuki Kado (Forestry Forest Prod Res Inst), Masasuke Takefu (Saga U) *Compensatory Fitness Interaction in Molecular Evolution.*
- 1P-13** Kazuhiro Takemoto (Kyoto U), Chikoo Oosawa (Kyushu Inst Tech), Tatsuya Akutsu (Kyoto U) *Global structure of combined cliques in hierarchical networks.*
- 1P-14** Hiroaki Takagi, Masayuki J. Sato, Toshio Yanagida, Masahiro Ueda (Osaka U) *Dynamics of spontaneous cell motion in the developmental process of Dictyostelium cells.*
- 1P-15** C. W. Ji (Pusan Natl U), Y. Cui, H. Z. Wang (Chinese Acad Sci), K.-H. Son, and T.-S. Chon (Pusan Natl U) *Pattern recognition of line movement in response behaviors of Limnodrilus variegatus treated with toxic chemicals at low concentrations.*
- 1P-16** Nobuaki Nishiyama (Kanazawa U) *Phase-locked loop on circular distributed oscillators as a frequency decoder.*
- 1P-17** Yoshimi Yoshino, Kei Tokita (Osaka U) *Stochastic Dynamics of Dale-type Asymmetric Neural Networks.*
- 1P-18** Tetsuya Yamamoto (Tokyo Metropolitan Coll Ind Tech) *Detection of phase difference in coupled oscillators system with Hebbian learning.*
- 1P-19** Hirohito Takei, Kazuhisa Fujita, Yoshiki Kashimori (U Electro-Commun) *Population coding of tactile information in whisker primary afferents of rat.*
- 1P-20** Keisuke Suzuki, Takashi Ikegami (U Tokyo) *Shapes and Movements of ProtoCell Systems.*

- 1P-21** Wanho Lee, Eunok Jung (Konkuk U) *Mathematical simulations of flows in a tank containing an open elastic cylinder.*
- 1P-22** Ryo Oizumi (Tokai U) *A model for competition among molecules of KaiA, KaiB, and KaiC in vitro.*
- 1P-23** Kazumi Ebisu, Isamu Ohnishi (Hiroshima U) *Analysis of a Simple Model of Circadian Rhythm of Arabidopsis Thaliana.*
- 1P-24** Atsushi Mochizuki, Hisako Takigawa-Imamura (NIBB) *Predicting regulation of the phosphorylation cycle of KaiC clock protein using mathematical models.*
- 1P-25** Yoshimi Naruo, Kaoru Mogushi, Hiroshi Tanaka (Tokyo Medical Dent U), Jun Nakabayashi, Yoh Iwasa (Kyushu U) *Mathematical modeling of gene expression associated with Wnt signaling pathway in colorectal carcinoma.*
- 1P-26** Tetsuya Shimokawa (Osaka U) *Energetic properties of the stochastic ratchet model: a comparison between the single and the cooperative motor molecule.*
- 1P-27** Shogo Matsumoto, Chikoo Oosawa (Kyushu Inst Tech) *Dynamics of motif structures.*
- 1P-28** Hyu-Chang Choi (Inha U), Young-Seuk Park (Kyung Hee U), Joong-Ki Choi (Inha U) *Characterization of Phytoplankton Distribution Patterns on the Kyeonggi Bay, Korea, using a Self-Organizing Map (SOM).*
- 1P-29** Sang Dong Lee (Korea Inst Sci Tech Info), So Hyun Park (Pusan Natl U), Young-Seuk Park (Kyung Hee U), So Young Kim (Korea Inst Sci Tech Info), Young-Jin Chung (Forestry Res Inst), Tae-Soo Chon (Pusan Natl U) *Bi-phase dispersal pattern in multi-species interactions: Details in a forest pest insect invasion and simulation of range expansion.*
- 1P-30** Jung Yong Oh, Inkyung Ahn (Korea U) *Macrophage-Tumor Interaction Model with Spatial Non-homogeneity on Region.*

**September 18, 10:00-17:00, Room P (Core Time: 12:30-14:30)**

- 3P-1** Tomoyuki Miyaji, Isamu Ohnishi (Hiroshima U) *Mathematical Analysis to an adaptive network of the Plasmodium system.*
- 3P-2** Satoru Morita (Shizuoka U) *The effect of spatial structure on evolutionary game.*
- 3P-3** Yo-hey Otake (U Tokyo) *Comparison of voting systems: game theoretical approach.*
- 3P-4** Takashi Uehara, Yoh Iwasa, Hisashi Ohtsuki (Kyushu U) *What determines the length of display?.*
- 3P-5** Sachi Yamaguchi, Yuki Ozaki, Yoichi Yusa, Satoshi Takahashi (Nara Women's U) *Mating group size and optimal sexual pattern in simultaneous hermaphroditic animals attached by tiny males.*
- 3P-6** Koh Tsutamura, Hiromi Seno (Hiroshima U) *A mathematical model for a group wave emergence with waving behavior of Ocypodid Crab Ilyoplax Pusillus.*
- 3P-7** Naoyuki Iseki, Akira Sasaki (Kyushu U) *Mathematical analysis of Host-Parasitoid trait coevolution and comparison with observation data.*
- 3P-8** Naoto Horibe, Masakazu Shimada (U Tokyo) *Analysys of foraging path using real time tracking system.*
- 3P-9** So Kitsunezaki (Nara Women's U) *Bioconvection experiments of Paramecium tetraurelia.*
- 3P-10** Hyungkyu Nam (Kyung Hee U) *Patterning waterbirds occurrence at western costal area of Korean peninsula in Winter.*

- 3P-11** Changsik Jeoung (Pusan Natl U, Kyungpook Natl U), Youngkuk Kim (Kyungpook Natl U), Tae-Soo Chon (Pusan Natl U), Sang Hee Lee (Pusan Natl U, Korea Forestry Res Inst, Sung Tae Kim (Pusan Natl U), Young-Seuk Park (Kyung Hee U), Joon-Bum Kim, Sang Gil Lee, Yeong-Jin Chung (Korea Forestry Res Inst) *Dispersal of the sawyer beetle population of the pine wilt disease using Individual Based Modeling.*
- 3P-12** Tomoki Abe, Masakazu Shimada (U Tokyo) *The allee effect in metapopulation structure.*
- 3P-13** Hee-Myung Jeong, Hyung-Su Kim, June-Ho Park, Tae-Soo Chon, Jong-Yul Kim (Pusan Natl U) *Function Optimization Problems based on Swarm Intelligence.*
- 3P-14** Satoru Inoue, Ryosuke Murata, Daisuke Maruyama (Saitama Inst Tech) *The method of file encryption using the property of cyclic attractors in the Game of Life.*
- 3P-15** Akita Tetsuya, Kenshi Sakai, Yuko Iwabuchi, Yoshinobu Hoshino, Xujun Ye (Tokyo U Agr Tech) *Estimating the spatial distribution of acorn yield based on airborne multi-spectral imaging.*
- 3P-16** Shoko Ishikawa, Kei-ichi Tainaka, Jin Yoshimura (Shizuoka U) *Lattice dynamics of infectious disease.*
- 3P-17** Satoshi Kubota, Hiromi Seno (Hiroshima U) *Theoretical consideration on the existence of keystone species in a competition system: analysis for a mathematical model.*
- 3P-18** Natsuko Sumiya, Toshiyuki Namba (Osaka Pref U) *Diversity-stability relationships in a model community of two herbivore and many plant species.*
- 3P-19** Aiko Ohno, Toshiyuki Namba (Osaka Pref U) *Effects of palatable and unpalatable plant species on deer population dynamics.*
- 3P-20** Shin Fukui, Masakazu Shimada (U Tokyo) *Evolution of Endosymbiosis: On the basis of metabolical interaction.*
- 3P-21** Kenta Suzuki, Takashi Ikegami (U Tokyo) *The timescale of replication and impact of species deletion in food-webs.*
- 3P-22** H. J. Hwang, M.-Y. Song, C. W. Ji (Pusan Natl U), Y. R. Chung (Gyeongsang Natl U), H. Y. Lee (Chonnam Natl U), T.-S. Chon (Pusan Natl U) *Comparative analysis of multi-taxa communities in streams in response to anthropogenic disturbances.*
- 3P-23** Toshihiko Kimura, Hiromi Seno (Hiroshima U) *How many preys could a predator coexist with?: Theoretical consideration with a mathematical model.*
- 3P-24** Takahiko Shimizu (Shizuoka U), Kiyoshi Kudou (Fukui U), Yasuhiro Takeuchi (Shizuoka U) *Chaotic dynamics of predator-prey Lotka-Volterra discrete time models.*
- 3P-25** Syogo Torigoe (Hiroshima U), Kazuhiro Yoshida (Osaka Pref U), Hiraku Nishimori (Hiroshima U) *Stochastic Resonance under Inhomogeneous Noise.*
- 3P-26** Teruhiko Marutani (Kwansei Gakuin U) *Deriving a solution of Hamilton-Jacobi-Bellman equation when the underlying process is geometric Brownian motion.*
- 3P-27** Jong Hyun Seo, Hyun-Min Kim (Pusan Natl U) *On matrix polynomials.*
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