

# 2021 KSMB 학술대회 일정

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## 8월 26일 (목)

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16:00-17:40    General Session A1: Infectious Disease Modeling I

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- ① Mathematical modeling of COVID-19 epidemic in the Republic of Korea considering heterogeneous transmission (Youngsuk Ko)
  - ② Modeling the Impact of Rapid Diagnostic Tests and Tafenoquine on the Plasmodium Vivax Malaria Burden in North Korea (Jiyeon Suh)
  - ③ Mathematical modeling of COVID-19 in the Republic of Korea and scenario-based-study for the estimation of herd immunity achievement (Jongmin Lee)
  - ④ The impact of the Covid-19 on Tuberculosis in South Korea (Boyeon Kim)
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16:00-17:40    General Session A2: Mathematical Modeling of Biological Systems

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- ① Reaction-advection-diffusion competition models under lethal boundary conditions (Kwangjoong Kim)
  - ② First passage time approach reveals sources of noise in the timing of intracellular events (Seokjoo Chae)
  - ③ Optimal Control for Oncolytic Virus Treatment (Taeyong Lee)
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16:00-17:40    General Session A3: Modeling and Data Analysis in Medical Science

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- ① Atorvastatin-mediated rescue of cancer-related cognitive changes in combined anticancer therapies (Junho Lee)
  - ② Mathematical model of STAT signaling pathway in cancer development and optimal control approaches (Donggu Lee)
  - ③ Data analysis of patient-specific lifelogging obtained from wearable devices (Tae-Rin Lee)
  - ④ Computer simulation of blood flow in the cerebrovascular structure of brain (Hyeryoung Cho)
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# 8월 27일 (금)

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**09:00-10:40**      **Special Session B1: Medical Mathematics in Data Science and Applications**      (Organizer: Hyojung Lee)

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- ① Modeling for Mathematical Biology Potential epidemiologic indicators in the infectious disease control and their future use (Changhoon Kim)
  - ② Recent works in Division of Medical Mathematics at NIMS (Hyoung Suk Park)
  - ③ Approach to solve the mathematical problems using medical data (Hyoung Lee)
  - ④ Application of a Virtual Alignment Method to the dental prostheses and diagnosis (Kyoungtaek Jun)
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**09:00-10:40**      **Special Session B2: Mathematical Modeling in Medicine**  
(Organizer: Wanho Lee)

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- ① Computational simulation of guidewire motion in a blood vessel (Wanho Lee)
  - ② Axial Green function Method for viscous fluids and its applications (Junhong Jo)
  - ③ Global Well-Posedness of Nutrient-Taxis Systems Derived by a Food Metric (Minha Yoo)
  - ④ Modelling for Functions of Anatomical Structures (Seunggyu Lee)
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**09:00-10:40**      **Special Session B3: Analysis and Modeling of PDEs in Biological Systems**      (Organizer: Hantaek Bae, Kyudong Choi)

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- ① Chemotaxis system derived by food metric (Sun-Ho Choi)
  - ② A system arises from plasticity and chemotaxis: result in stable regime (Min-Gi Lee)
  - ③ Spatial Segregation in Homogeneous Environment (Ohsang Kwon)
  - ④ Modeling for Mathematical Biology (Myeongju Chae)
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**10:40-10:50**      **Break**

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**10:50-11:00**      **Opening Remarks**  
(KSMB 회장)

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**11:00-11:50**      **Plenary Lecture I: Application of Artificial Intelligence in Medical Field**      (Speaker: Do-Young Kang)

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12:00-13:30 Break

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13:30-15:10 **Special Session C1: Mathematical Analysis and Methods in the Dynamics of Biological System: Cancers and Circadian Clock I**  
(Organizer: Yangjin Kim)

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- ① Mathematical and computational modeling for cancer treatment (Eunjung Kim)
  - ② Oscillatory timeseries data sheds light on molecular mechanisms (Jae Kyoung Kim)
  - ③ Mathematical modeling and computational simulation of a cytokine shield formation of senescent tumor cells (Chaeyoung Lee)
  - ④ Reducing the risk of accumulating mutations via cell competitions in a hierarchical tissue (Hye Jin Park)

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13:30-15:10 **Special Session C2: Population Model**  
(Organizer: Tae-Soo Chon, Young-Seuk Park)

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- ① Recent Trends of Data-Driven Models in Ecology (Young-Seuk Park)
  - ② A spatially explicit model applied to nutria (*Myocastor coypus*) population dispersal in field conditions in Korea (Nam Jung)
  - ③ Predicting dispersal of invasive sika deer (*Cervus nippon*) in a novel group-based model (KyoungEun Lee)
  - ④ Individual-based simulation for wild boar (*Sus scrofa*) dispersal and disease transmission in linking with behaviour states defined by hidden Markov model (Thakur Dhakal)
  - ⑤ Hidden Markov model applied to behavioural states in wild boar (*Sus scrofa*) movements in linking with self-organizing map (Tae-Soo Chon)

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13:30-15:10 **Special Session C3: Pharmacokinetic and Pharmacodynamic Model (PKPD)**  
(Organizer: Il Hyo Jung)

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- ① Development of physiologically based pharmacokinetic model of entrectinib in rats and humans (In-Soo Yoon)
  - ② A transit and fractional order derivative model of lapatinib (Jong Hyuk Byun)
  - ③ Can you tell how effective a COVID-19 prevention strategy is at elementary schools? (Yong-Jung Kim)
  - ④ Accurate Prediction of Drug Clearance in Liver (Yun Min Song)
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15:10-15:20 Break

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15:20-17:00 **Special Session D1: Mathematical Analysis and Methods in the Dynamics of Biological System: Cancers and Circadian Clock II**  
(Organizer: Jae Kyoung Kim)

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- ① PET tracing of biodistribution for orally administered  $^{64}\text{Cu}$ -labeled polystyrene in mice (Jin Su Kim)
  - ② Mathematical Modeling for Pacemaker-neuron-dependent Molecular Rhythm Alteration by *Drosophila* Clock Mutant (Eui Min Jeong)
  - ③ Spatial Heterogeneity Mediated Treatment Response (Masud M A)
  - ④ Inference of stochastic dynamics in biochemical reaction networks by exploiting deterministic dynamics (Hyukpyo Hong)

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15:20-17:00 **Special Session D2: 정수생태계 변화 예측모델**  
(Organizer: Young-Seuk Park)

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- ① 생물 모니터링 자료를 이용한 담수생태계의 먹이망 구축 (이다영)
  - ② 국내 담수 어류의 45종과 멸종위기 어류 20종의 먹이원 분석 (지창우)
  - ③ 한강 수계 내 호소에서 저서성 대형무척추동물 및 수질에 대한 어류 군집 구성 변화 예측 (이대성)
  - ④ 해석가능한 기계학습 기법을 활용한 녹조현상의 예측 (신지훈)
  - ⑤ Delf3D 모델을 활용한 주암호 물순환 및 수질변동 특성 분석 (이정현)

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15:20-17:00 **Special Session D3: 의생명에 활용되는 데이터분석**  
(Organizer: Gangjoon Yoon)

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- ① Computational approach to simulate microswimmers propelled by bacterial flagella (Wanho Lee)
  - ② Machine learning approach using routine immediate postoperative laboratory values for predicting postoperative mortality (Yongkeun Park)
  - ③ Deep learning model for the prediction of EBV status in gastric cancer (Sangjeong Ahn)
  - ④ False promise of ending COVID-19 by vaccination without treatment (YongKuk Kim)
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**17:00-17:10**    **Break**

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**17:10-18:00**            **Plenary Lecture II: Mathematical AI and COVID-19**  
                                  **(Speaker: Hyung Ju Hwang)**

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# 8월 28일 (토)

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10:00-11:40      **Special Session E1: Mathematical Modeling of COVID-19 and Beyond**      (Organizer: Sunmi Lee)

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- ① Collateral health effects of COVID-19 (Hee-Sung Kim)
  - ② The effects of vaccination and Non-Pharmaceutical Interventions I on COVID-19 transmission dynamics in Korea (Jung Eun Kim)
  - ③ Estimating the Basic Reproduction Number of COVID-19 on heterogeneous network (Sungchan Kim)
  - ④ A Model-informed Reopening Strategy based on a Case Study of Ontario, Canada (Kyeongah Nah)
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10:00-11:40      **General Session E2: Infectious Disease Modeling II**

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- ① Impact of COVID-19 variants on the vaccination program in South Korea (Eunha Shim)
  - ② Effects of social distancing on COVID-19 control in Korea based on age-structured modeling (Yongin Choi)
  - ③ Risk assessment of HPAI on poultry farms in relation to migratory birds using a Maxent model (Mugyeom Moon)
  - ④ Exploring the roles of vehicle transmission in inter-farm modelling for Foot-and-Mouth Disease (Slghee Kim)
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10:00-11:40      **General Session E3: Modeling in Ecology and Fisheries**

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- ① 자료가 제한된 상황에서 한국 남동해역 멸치(*Engraulis japonicus*) 자원에 대한 자원평가 방법 개발 (정동원)
  - ② Prey-Induced Dispersal in Predator-Prey Model (Youngseok Chang)
  - ③ The population dynamics of red eared slider in Korea (Yunju Wi)
  - ④ Analysis of the invasive species spread using cellular automata classification and machine learning (Gyujin Oh)
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11:40-              **Closing**

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