CONFERENCE ABSTRACT

2019 5th International Conference on Environment and Bio-Engineering (ICEBE 2019)

January 7-9, 2019

Shaw Foundation Alumni House, National University of Singapore, Singapore

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http://www.icebe.org/

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Introduction

Welcome to 2019 5th International Conference on Environment and Bio-Engineering (ICEBE 2019) which is sponsored by Hong Kong Chemical, Biological & Environmental Engineering Society (CBEES), and Biology and Bioinformatics (BBS). The objective of 2019 5th International Conference on Environment and Bio-Engineering (ICEBE 2019) is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Environment and Bio-Engineering.

Papers will be published in one of the following journals:

Journal of Environmental Science and Development (IJESD, ISSN:2010-0264), and all registered papers will be indexed by Chemical Abstracts Services (CAS), CABI, Ulrich Periodicals Directory, Electronic Journals Library, Crossref, and ProQuest.

International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638), and will be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest.

Conference website and email: http://www.icebe.org/; icebe@cbees.net

Presentation Instruction

Instruction for Oral Presentation

Devices Provided by the Conference Organizer:

Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)
Digital Projectors and Screen
Laser Stick

Materials Provided by the Presenters:

PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):

Keynote Speech: about **35** Minutes of Presentation and **5** Minutes of Question and Answer
Invited Speech: about **15** Minutes of Presentation and **5** Minute of Question and Answer
Regular Oral Presentation: about **12** Minutes of Presentation and **3** Minutes of Question and Answer

Instruction for Poster Presentation

Materials Provided by the Conference Organizer:

The place to put poster

Materials Provided by the Presenters:

Home-made Posters
Maximum poster size is A1
Load Capacity: Holds up to 0.5 kg
The duration of each poster is **5** minutes of brief introduction.

Best Presentation Award

One Best Oral or Poster Presentation will be selected from each presentation session, and the Certificate for Best Oral or Poster Presentation will be awarded at the end of each session on January 7 and 8, 2019.

Dress Code

Please wear formal clothes or national representative of clothing.

Keynote Speaker Introduction

Keynote Speaker I

Prof. Hans-Uwe Dahms
Kaohsiung Medical University, Taiwan

Dr. Hans-Uwe Dahms is a professor at Kaohsiung Medical University. He is interested in stress responses in general and within aquatic systems in particular. He, his colleagues and students integratively study pollution and the toxicology of stressors from physical, chemical, and biological sources. He is equally interested in climate change, the spread of diseases, antibiotic-resistance, food and drink safety from water sources, and integra-tive approaches in environmental and public health monitoring, risk assessment and management. He advised more than 25 Ph.D. students in their research and published more than 275 papers in scientific journals. He served as a reviewer for more than 70 SCI journals, as editorial board member of 12 reputed scientific journals, academic editor of PLosONE, and as editor in chief of FRONTIERS in Marine Pollution.

Topic: "*Precious Bioresource Information from Hydrothermal Vents (HVs)*"

Abstract—Marine hydrothermal vents (HVs) are unique extreme environments that share several similarities with projected global and climate change scenarios in marine systems (e.g., low pH due to high carbon dioxide and sulfite compounds, high temperature and turbidity, high loads of toxic chemicals such as H2S and trace metals). Particularly shallow HVs are easy to access for short and long-term experiments. Research on organisms from shallow HVs may provide insights in the molecular, ecological, and evolutionary adaptations to extreme oceanic environments by comparing them with evolutionary related but less adapted biota. A shallow water HV system at the northeast Taiwan coast has been intensively studied by several international research teams. These studies revealed astounding highlights at the level of ecosystem (being fueled by photosynthesis and chemosynthesis), community (striking biodiversity changes due to mass mortality), population (retarded growth characteristics), individual (habitat attractive behavior), molecule (adaptations to elevated concentrations of heavy metals, low pH, and elevated temperature). Subsurface marine HVs may provide a particular advantage to better understand evolutionary conditions of the early earth and future

climate predictions for marine life. The potential of shallow HVs both in their use as a template for global change scenarios and as a source for diverse bioresource information for applied technologies are highlighted here. Particularly the rare shallow water HVs are valuable assets and sights for both research and education and deserve particular protection for their substantial bioresource information potential as rare and extreme environments and as natural heritage sites at national and international level.

Keynote Speaker II

Prof. Sung Wing Kin, Ken
National University of Singapore, Singapore

Prof. Dr. Wing-Kin Sung received both the B.Sc. and the Ph.D. degree in the Department of Computer Science from the University of Hong Kong in 1993, 1998, respectively. He is a professor in the Department of Computer Science, School of Computing, NUS. Also, he is a senior group leader in Genome Institute of Singapore. He has over 20 years experience in Algorithm and Bioinformatics research. He also teaches courses on bioinformatics for both undergraduate and postgraduate. He was conferred the 2003 FIT paper award (Japan), the 2006 National Science Award (Singapore), and the 2008 Young Researcher Award (NUS) for his research contribution in algorithm and bioinformatics.

Topic: "*Finding Transpositions in Repeat Regions Using High-Throughput Sequencing Data*"

Abstract—Structural variations (SVs) are important since they can cause diseases. They can be discovered using second generation sequencing. The performance of existing software is good enough to call them if they are in non-repeat regions. However, when the SVs are in repeat regions. The performance is bad. For example, for insertion events, existing software can call less than 10% of the enchmark insertion events. In this talk, we will check if we can improve the performance of SV calling. In particular, we focused on transpositions. When compare with existing SV callers (without database), we shows at least 3 folds improvements in sensitivity for calling transpositions in repeat regions.

Keynote Speaker III

Distinguished Prof. Cuie Wen
RMIT University, Australia

Prof. Cuie joined RMIT University as Professor of Biomaterials Engineering in 2014 and she has been appointed Distinguished Professor in 2015. She was Professor of Surface Engineering at Swinburne University of Technology from 2010 to 2014. She worked at Deakin University from 2003 to 2010 as Research Fellow, Senior Researcher and Associate Professor. Cuie has won a number of industrial and national competitive grants. Cuie has published more than 360 peer reviewed articles with an H index 44 and citations over 7704 (Google Scholar). Cuie has supervised 10 postdoctoral research projects, 25 post graduate students to completion. She is an editorial board member for the journals of Acta Biomaterialia, and Bioactive Materials. Her research interests include new biocompatible titanium, magnesium, iron, zinc and their alloys and scaffolds for biomedical applications, surface modification, nanostructured metals, alloys and composites, metal foams and nanolaminates.

Topic: "*Titanium-Based Nickel-Free Shape Memory Alloy Scaffolds for Biomedical Applications*"

Abstract—Titanium and some of its alloys are widely used as load-bearing dental and orthopaedic implant materials due to their excellent biocompatibility, relatively good mechanical properties and high corrosion resistance in the physiological environment. In particular, titanium-based nickel-free shape memory alloys (SMAs) are fascinating biomaterials for implant applications as their unique shape memory property and superelasticity provide the possibility of preparing self-expanding, self-compressing and other functional implants. Our research in developing new titanium-based biomaterials include the assessment of the cytotoxicity of metal alloying elements and identify the ideal biocompatible alloying elements; as well as 3D printing the new titanium alloys into a porous structure with bone-mimicking architecture. The porous structure not only allows new bone tissue ingrowth and vascularisation, but also provides low elastic modulus matching that of natural bone. Furthermore, the new porous alloys offer advantages of shape memory and superelastic effects, which benefit the bone healing process.

Keynote Speaker IV

Prof. Tatsuya Akutsu
Kyoto University, Japan

Prof. Tatsuya Akutsu received the B.E. and M.E. degrees in aeronautics and the D.E. degree in information engineering from the University of Tokyo, Japan, in 1984, 1986, and 1989, respectively. From 1989 to 1994, he was with Mechanical Engineering Laboratory, Japan. From 1994 to 1996, he was an Associate Professor in the Department of Computer Science at Gunma University, Japan. From 1996 to 2001, he was an Associate Professor in Human Genome Center, Institute of Medical Science, University of Tokyo, Japan. Since 2001, he has been a Professor in Bioinformatics Center, Institute for Chemical Research, Kyoto University. His research interests include bioinformatics, discrete algorithms, and complex networks. He is an associate editor of BMC Bioinformatics and IEEE/ACM Transactions on Computational Biology and Bioinformatics.

Topic: "*Integration and Analysis of Heterogeneous Biological Data via Convolutional Neural Networks and Matrix Factorization*"

Abstract—Integrating heterogeneous data is becoming an important topic in bioinformatics. Here we present three of our approaches to heterogeneous data analysis. The first one is based on convolutional neural networks. In this method, protein interaction network data were integrated with transcriptome data by embedding the network structure into image data via spectral clustering. The developed spectral-convolutional neural network based method was applied to classification of lung cancer. The second one is also based on convolutional neural networks. In this case, gene correlation and distance data were integrated with transcriptome data by embedding the distance data into image data via multidimensional scaling, and the resulting method was applied to classification of cancer subtypes. The third one is an application of an existing matrix tri-factorization technique. In this work, relations between proteases, protein targets, genes, pathways and domains were integrated via matrix tri-factorization for prediction of protease-target relations.

Keynote Speaker V

Prof. Kuo-Sheng Cheng
National Cheng Kung University, Taiwan

Prof. Kuo-Sheng Cheng received his B.Sc, M.Sc, and Ph.D degrees from Department of Electrical Engineering, National Cheng Kung University, Tainan, TAIWAN. He also received his M.Sc degree from Department of Biomedical Engineering, Rensselaer Polytechnic Institute, USA. Currently, he is a professor with the Department of Biomedical Engineering, National Cheng Kung University. He also is the Director of Department of Maintenance and Engineering, National Cheng Kung University Hospital and the Director of Engineering and Technology Promotion Center, which is financial supported by Ministry of Science and Technology, TAIWAN. He was the past President of the Biomedical Engineering Society of TAIWAN. His research interests includes medical image processing, electrical impedance imaging and biomedical instrumentation.

Topic: "*Medical Applications and Future Trends of Bioimpedance Technology*"

Abstract—Bioimpedance technology is one of the simple and easy methods to characterize property of the biological materials and physiological functions. It is a technique that applies the electrical voltage or current and measures the resulting current or voltage using single or multiple frequencies through electrodes. Based on these electrical application and measurement, the bioimpedance may then be obtained for tissues characterization such as body composition estimation, cancel differentiation, etc, as well as physiological functions analysis such as impedance cardiography, bioimpedance myography, etc. In addition, it may be further applied as electrical impedance tomography for producing the imaging to reveal the electrical properties of different tissues within body. Basing on these physiological functions or tissue properties, the diagnosis and prognosis may be directly or indirectly made. From the aspects of medical applications, the applications of electrical impedance tomography for pulmonary function analysis, bioimpedance myography for skeletal muscle characterization, bioimpedance spectroscopy for cancer cell differentiation may be possible future directions.

Keynote Speaker VI

Assoc. Prof. Hiroyuki Kudo
Meiji University, Japan

Prof. Dr. Hiroyuki Kudo received both the M.E. and Ph.D. degrees in the Department of Electronics and Communications from Waseda University in 1999 and 2004, respectively. He was a research officer of MEMS laboratory, Tokyo Metropolitan Industrial Technology Research Institute from 2003 to 2007. He worked at Tokyo Medical and Dental University as an assistant professor from 2005, a junior associate professor from 2007 to 2011 and an associate professor from 2011 to 2013. Currently, he has been an associate professor of Department of Electronics at Meiji University. Currently, his research interests include biomicrosystems based on enzymatic biosensors and immunosensors and for life science applications.

Topic: "*Non-Invasive Bioinstrumentation for Next Generation Medicine and Healthcare*"

Abstract—Recent advances in information technologies have been expected to bring a paradigm shift in medicine and personal healthcare fields. Some biometric- or physiological information (e.g. body weight, body temperature, body fat, etc.) has already been utilized in personal health services. In contrast, it is still difficult to use biochemical information such as blood component in those services because conventional techniques for determination of biochemical information usually requires blood sampling. Therefore, non-invasive method for blood content assessment is strongly requested for next generation medicine and healthcare. Non-invasive biomonitoring usually measures contents of body fluids (saliva, sweat, tear, urine and so on), that reflects blood contents. It is necessary to simplify whole procedure from 'sampling' to 'measurement' to be anyone can easily do within a short time and reasonable cos for this purposes We have been developed new biosensors and biomicorsystems capable of personal use. In this talk, our recent status of sensing system development and possible applications will be presented.

Invited Speaker
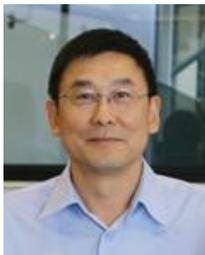
Assoc. Prof. Yuncang Li
RMIT University, Australia

Asso. Prof. Yuncang Li obtained his PhD in Materials Science Engineering from Deakin University in 2004 and then took up a research position in Biomaterials Engineering at Deakin University until the end of 2014. He joined RMIT University in 2015. He was awarded an Australian Research Council (ARC) Future Fellowship in 2016. Dr Li has won a number of national competitive grants including ARC and National Health and Medical Research Council (NHMRC) projects. His research focuses on developing metallic biomaterials for medical applications. He published over 150 journal papers and 7 book chapters and filed 5 patents. He has expertise in microstructure-mechanical property relationships, corrosion, and biocompatibility, surface modification, nanostructured metals and alloys, and metal foams.

Topic: "*Development of Biocompatible Magnesium-Zirconium-Strontium Alloys for Biodegradable Implant Materials*"

Abstract—Magnesium (Mg) based alloys have been extensively considered for their use as biodegradable implant materials. However, controlling their corrosion rate in the physiological environment of the human body is still a significant challenge. One of the most effective approaches to address this challenge is to strategically design new Mg alloys with enhanced corrosion resistance, biocompatibility, and mechanical properties. Our research has developed new series of Mg-zirconium (Zr)-strontium (Sr)-rare earth element (REE) alloys for biodegradable implant applications. Research results indicate that Sr and Zr additions can refine the grain size and enhance the corrosion and biological behaviors of the Mg alloys. Furthermore, the addition of holmium (Ho) and dysprosium (Dy) to Mg-Zr-Sr alloys resulted in enhanced mechanical strength and decreased degradation rate. In addition, less than 5 wt.% Ho and Dy additions to Mg-Zr-Sr alloys led to enhancement of cell adhesion and proliferation of osteoblast cells on the Mg-Zr-Sr-Ho/Dy alloys.

Brief Schedule for Conference

Day 1	**January 7, 2019 (Monday)** **Meeting Room: Clove (Level 2)** Arrival Registration 10:00-17:00
	Afternoon Conference
	Venue: Clove (Level 2) 13:30-13:40 **Opening Remarks** (Prof. Sung Wing Kin, Ken) 13:40-14:20 **Keynote Speech I** (Prof. Hans-Uwe Dahms) 14:20-15:00 **Keynote Speech II** (Prof. Sung Wing Kin, Ken) 15:00-15:30 Coffee Break & Group Photo
	Session 1: 15:30-17:15 **Venue: Clove (Level 2)** Topic: "Biomaterials and Functional Materials"--7 presentations

Day 2	**January 8, 2019 (Tuesday) 09:00-17:30**
	Morning Conference (Clove & Lemongrass Level 2)
	09:00-09:40 **Keynote Speech III** (Distinguished Prof. Cuie Wen) 09:40-10:20 **Keynote Speech IV** (Prof. Tatsuya Akutsu) 10:20-10:50 Coffee Break & Group Photo 10:50-11:30 **Keynote Speech V** (Prof. Kuo-Sheng Cheng) 11:30-12:10 **Keynote Speech VI** (Assoc. Prof. Hiroyuki Kudo) 12:10-12:30 **Invited Speech** (Assoc. Prof. Yuncang Li)
	Lunch: 12:30-13:30 **(Lobby of Clove)**
	Afternoon Conference

Session 2: 13:30-15:15 Venue: Clove (Level 2) Topic: "Biochemistry and Medical Electronics" 7 presentations	**Session 3:** 13:30-15:15 Venue: Thyme (Level 2) Topic: "Environmental Monitoring and Protection" 7 presentations	**Session 4:** 13:30-15:15 Venue: Lemongrass (Level 2) Topic: "Biological Image and Signal Processing" 7 presentations
Coffee Break: 15:15-15:35		

	Session 5: 15:35-17:05 Venue: Clove (Level 2) Topic: "Genetic Analysis and Engineering" 6 presentations	**Session 6**: 15:35-16:50 Venue: Lemongrass (Level 2) Topic: "Bioinformatics and Computing" 5 presentations
	Poster Session: 15:35-17:30 Venue: Thyme (Level 2)	
	17:30-19:30 Dinner (Lobby of Clove)	
Day 3	**9:00-17:00 Academic Visit & Tour**	

Tips: Please arrive at the Conference Room 10 minutes before the session begins to upload PPT into the laptop.

Detailed Schedule for Conference

January 7, 2019 (Monday)

Venue: Clove (Level 2)

10:00-17:00	**Arrival and Registration**

Venue: Clove (Level 2)

13:30-13:40		**Opening Remarks** Prof. Sung Wing Kin, Ken National University of Singapore, Singapore
13:40-14:20		**Keynote Speech I** Prof. Hans-Uwe Dahms Kaohsiung Medical University, Taiwan Topic: "*Precious Bioresource Information from Hydrothermal Vents (HVs)*"
14:20-15:00		**Keynote Speech II** Prof. Sung Wing Kin, Ken National University of Singapore, Singapore Topic: "*Finding Transpositions in Repeat Regions Using High-Throughput Sequencing Data*"
15:00-15:30		**Coffee Break & Group Photo**
15:30-17:15		**Session 1, Clove** Topic: "Biomaterials and Functional Materials"

January 8, 2019 (Tuesday)

Morning Conference **Venue: Clove & Lemongrass**	
09:00-09:40		**Keynote Speech III** Distinguished Prof. Cuie Wen RMIT University, Australia Topic: "*Titanium-Based Nickel-Free Shape Memory Alloy Scaffolds for Biomedical Applications*"
09:40-10:20		**Keynote Speech IV** Prof. Tatsuya Akutsu Kyoto University, Japan Topic: "*Integration and Analysis of Heterogeneous Biological Data via Convolutional Neural Networks and Matrix Factorization*"
10:20-10:50		**Coffee Break & Group Photo**
10:50-11:30		**Keynote Speech V** Prof. Kuo-Sheng Cheng National Cheng Kung University, Taiwan Topic: "*Medical Applications and Future Trends of Bioimpedance Technology*"
11:30-12:10		**Keynote Speech VI** Assoc. Prof. Hiroyuki Kudo Meiji University, Japan Topic: "*Non-Invasive Bioinstrumentation for Next Generation Medicine and Healthcare*"
12:10-12:30		**Invited Speech** Assoc. Prof. Yuncang Li RMIT University, Australia Topic: "*Development of Biocompatible Magnesium-Zirconium-Strontium Alloys for Biodegradable Implant Materials*"
12:30-13:30		**Lunch (Lobby of Clove)**
Afternoon Conference	
13:30-15:15	**Session 2:** 13:30-15:15 **Venue: Clove** Topic: "Biochemistry and Medical Electronics" 7 presentations	**Session 3:** 13:30-15:15 **Venue: Thyme** Topic: "Environmental Monitoring and Protection" 7 presentations	**Session 4:** 13:30-15:15 **Venue: Lemongrass** Topic: "Biological Image and Signal Processing" 7 presentations
15:15-15:35		**Coffee Break**
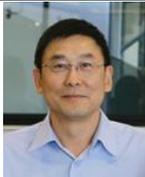
15:35-17:05	**Session 5:** 15:35-17:05 **Venue: Clove** Topic: "Genetic Analysis and Engineering" 6 presentations	**Session 6**: 15:35-16:50 **Venue: Lemongrass** Topic: "Bioinformatics and Computing" 5 presentations
15:35-17:30	**Poster Session (Thyme)**	
17:30-19:30	**Dinner (Lobby of Clove)**	

Note: (1) The registration can also be done at any time during the conference.

(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.

(3) One Best Oral or Poster Presentation will be selected from each oral presentation session, and the Certificate for Presentation will be awarded at the end of each session on January 7 and 8, 2019.

Let's move to the session!

Session 1

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, January 7, 2019 (Monday)
Time: 15:30-17:15
Venue: Clove (Level 2)
Session 1: Topic: "Biomaterials and Functional Materials"
Session Chair: Assoc. Prof. H. S. El-Sheshtawy

S0073 Session 1 Presentation 1 (15:30-15:45)	Novel Regulatory T Cell(Treg Cell) Marker Discovery Based on mRNA Expression **Jeesang Yoon** and Sang-Kyou Lee Yonsei University, Republic of Korea *Abstract*—Treg cells are subsets of T cells which express FOXP3 and suppress immune responses in both tumor and autoimmune diseases, thereby a potential target for therapeutics to treat these diseases. However, the scarceness of the Treg specific surface markers and lack of specificity of discovered markers makes the application of the therapy difficult. Our research team have used microarray, RNA sequencing technology to identify several candidates. Initially, we have performed RNA sequencing from RNA extracted from Treg cells of RFP-Foxp3-KI mice. Gene expression of Th17 cells isolated from GFP-IL-17-KI mice were compared as control. Interestingly, genes which are already known to be expressed highly in Treg cells including Foxp3 were included, showing the validity of the method. Flow cytometry analysis have proven 6 of these candidates are expressed highly in Treg cells, and only one, Treg5(confidential) is shown to be exclusively expressed on the surface of Treg cells. Various in vitro researches are being held to identify the functions of this newly defined surface marker.
S0057 Session 1 Presentation 2 (15:45-16:00)	Size-Dependent Antibacterial Activity of ZnO Nanoparticles and its Mechanism **Rishabh Deo Singh**, Partha Kumbhakar, Siddhartha Pal, Sufia Kazy Khannam and Pathik Kumbhakar National Institute of Technology Durgapur, India *Abstract*—In this work, zinc oxide nanoparticles (ZNPs) have been studied for their antibacterial property and the mechanism behind the cell death. Although various studies have demonstrated the antibacterial property of ZnO nanoparticles, the mechanism of cell death is not very clear. To understand the mechanism of cell death, we have done a

	quantitative analysis of various oxidative stress genes. The antibacterial property of ZNPs against *E.*coli have been determined using nanoparticles of different sizes and the minimum inhibitory concentrations have been determined. It has been observed that the antibacterial property of ZNPs is inversely proportional to the particle size. Transcriptional analysis of oxidative stress related genes has indicated a ZNPs concentration dependent expression of various oxidative stress genes. Difference in the expression levels of such genes suggests the presence of oxidative stress generated due to reactive oxygen species (ROS) released from ZNPs. These ROS released are said to cause lipid peroxidation and DNA defunctionalization and eventually to cell death. Thus, through this study we have successfully demonstrated the size dependent antibacterial property of ZNPs and have linked the oxidative stress created by the nanoparticles to the bacterial cell death, unmasking the mechanism behind the antibacterial property of ZNPs.
S0067 Session 1 Presentation 3 (16:00-16:15)	Effect of PLGA Nanoparticles Loaded with Sensing Molecule on Detection of Hypoxia and Induction of Angiogenesis **Soumya S. J.**, A. Gangaprasad, G. Mohanadasan Nair and A. Jayakumaran Nair University of Kerala, India *Abstract*—Ischemia is characterized by tissue hypoxia due to insufficient neovascularization. Detection of hypoxic regions seems to be a powerful tool for the diagnosis and treatment of ischemic disorders. The objective of the study is to develop a nanomaterial for detecting hypoxia and inducing neovascularization in hypoxic tissues. Poly (lactic-co-glycolic acid) (PLGA) nanoparticles were employed for the study. For detecting hypoxia, PLGA nanopartcles were loaded with hypoxia sensing molecule and *in vitro* analysis showed that these detected hypoxia in cells. As lactate, degradation product of PLGA, is reported to stimulate angiogenesis, the effect of PLGA nanoparticles loaded with hypoxia sensing molecule on angiogenesis was examined. Results showed that PLGA nanoparticles loaded with hypoxia sensing molecule stimulated angiogenesis and the pro-angiogenic effect was more in hypoxic cells when compared to normoxic cells. These nanoparticles induced angiogenesis by modulating angiogenic growth factors such as Vascular endothelial growth factor (VEGF), Fibroblast growth factor (FGF) and matrix metalloproteinases. Thus hypoxia sensing property of the molecule might lead to the accumulation of PLGA nanoparticles in hypoxic cells which may further leads to enhanced angiogenesis in hypoxic cells compared to normoxic cells. PLGA nanoparticles loaded with hypoxia sensing molecule can be employed for inducing angiogenesis in hypoxic tissues.
S2010	Fabrication of Hierarchical N-Doped Carbon Adsorbents for

Session 1 Presentation 4 (16:15-16:30)	Desulfurization **Ding-Ming Xue**, Peng Tan, Shi-Chao Qi, Xiao-Qin Liu and Lin-Bing Sun Nanjing Tech University, China *Abstract*—Sulfur-containing compounds, generally present in crude oil at considerable levels, are responsible for the air pollution and equipment corrosion, which have drawn worldwide concern. Traditionally, hydrodesulfurization (HDS) processes are the effective and important methods for nitrogen and sulfur removal in a large number of industrial chemical processes. However, the removal of 4,6-dimethyldibenzothiophene is quite challenging in petroleum refining process. Adsorptive desulfurization is an efficient technique but the capacities and/or poor stability of current adsorbents need to be improved. Here we report the fabrication of hierarchical N-doped carbons (NCs) derived from carbonizing the copolymer. The results show that the NCs have developed micropores and mesopores, and their surfaces have abundant pyrrole-like/graphitic N and topological defects and vacancies, and high cycle stability (6 cycles). The typical adsorbent NC-700 shows a record-high capacity of 2.91 mmol g–1 for 4,6-dimethyldibenzothiophene under ambient conditions. In conclusion, the obtained materials exhibit excellent performance for deep desulfurization, and this work may open up new avenues for the development of efficient adsorbents.
S2012 Session 1 Presentation 5 (16:30-16:45)	Antibacterial Effect of Mesoporous Silica Nanoparticles (MCM-41) Supported by Silver Nanoparticles Po-Wen Chen, **Zhe-Wei Li** and Zhen-Shu Liu Ming Chi University of Technology, Taiwan *Abstract*—This study investigated the antibacterial effect of MCM-41-supported Ag metal. Silver nanoparticles encapsulated in MCM-41were prepared by using ultrasonic assisted impregnation on AgNO3 and glucose solutions. The antibacterial effect of the Ag/MCM41 was investigated against the pathogenic bacterial strains. Initially, Staphylococcus aureus were exposed to the 3%, 5% and 8% Ag-supported MCM41 solutions for 0, 4, 8, 12 and 24 hours, and the antibacterial effect of the solution was tested using the conventional plate count method. All the various Ag/MCM41 displayed effectively antibacterial activity against the growth of S. aureus, and the reductions of about 1 to 10 log10 CFU/ml of S. aureus bacteria were observed after 4 to 24h of treatment with various Ag/MCM41. Moreover, the antibacterial activities of various Ag/MCM41 were found to be related to the ratio of supported Ag and time of treatment on bacteria. Finally, the 5% Ag-supported MCM41 was selected and investigated against the growth of more pathogenic bacterial strains. Reductions of 3 log10

	CFU/ml of E. coli bacteria were observed after 4h of treatment with Ag/MCM41 solution, and reductions of more than 5 log10 CFU/ml of bacteria were found after 8, 12, and 24h of treatment with the compound. In conclusion, our data indicate that the generated Ag/MCM41 can display effectively antibacterial activities against three pathogenic bacterial in a time-dependent manner.
S3013 Session 1 Presentation 6 (16:45-17:00)	N-Doped Porous Carbon Materials for High CO2 Capture **An-Zhong Peng**, Shi-Chao Qi, Xiao-Qin Liu and Lin-Bing Sun Nanjing Tech University, China *Abstract*—The aim of this paper to develop a new method for separating auditory event-related potentials (ERP) signal from artefacts or noise. In experimental conditions, ERPs can be approximated by weighted sums of Principal Component Analysis (PCA) basis signals calculated from clean data. Projection of measured signals onto the PCA subspace significantly decreases noise. Furthermore, Kalman filtering has been used to optimize the combining of the PCA filtered signal with an a priori expected ERP. The main strength of the proposed algorithm arises from manipulating a priori cross-channel information in the form of a PCA weight covariance matrix. Here, the implementation of the method has been quantified using synthetic multi-channel ERP signals to which known amounts of synthetic noise is added to all the channels. The use of synthetic data means and signal and noise are known and so signal-to-noise enhancement may be quantified. For a wide range of initial SNRs, PCA filtering increases SNR by 10 dB and Kalman filtering yields an additional 10 dB improvement.
S2002 Session 1 Presentation 7 (17:00-17:15)	Application of Silicon from Gasifier-Derived Rice Husk Ash (GRHA) as Anode in Lithium-Ion Batteries **Myung Won Seo**, Hae In Lee, Won Chul Cho, Sung Jin Park, Ho Won Ra, Sang Joon Yoon, Tae-Young Mun, Ji Hong Moon, Jae Ho Kim, Yong Ku Kim, Jae Goo Lee, Hye Jin Kim and Jang Wook Choi Korea Institute of Energy Research (KIER), South Korea *Abstract*—Rice husk (RH) is one of the abundant and cheapest agricultural biomass resource and potential source material for amorphous silica since rice husk ash (RHA) contains 90% of silica. When RHA is converted into porous Silicon via magnesiothermic reduction in a self-propagating high temperature synthesis (SHS) approach, it can be used as anode material in lithium-ion batteries. In this study, porous silicon from Gasifier-derived Rice husk Ash (GRHA) from 20 ton/day scale gasifier depending on operating temperature of 600 to 800oC and ER (Equivalence ratio) of 0.15 to 0.3 are analyzed and tested for the application as anode in Lithium-ion batteries. The products are acid leached with hydrochloric acid and

hydrofluoric acid. XRD analysis of products showed the formation of silicon. The meso- and micro-structured silion was observed in SEM/EDX analysis and the battery test shows performance of 1322 mAh/g was retained after 100 cyclic tests.

Session 2

Afternoon, January 8, 2019 (Tuesday)
Time: 13:30-15:15
Venue: Clove (Level 2)
Session 2: Topic: "Biochemistry and Medical Electronics"
Session Chair: To be Added

S0001 Session 2 Presentation 1 (13:30-13:45)	Determination of Rhizobial Population of Soils from Different Geographical Location in North Western Nigeria for Biological Nitrogen Fixation on Soybeans [*Glycine Max* (L.) Merrill] **Aminu S. M.**, Dianda M. and Shamsuddeen U. Hussaini Adamu Federal Polytechnic Kazaure, Nigeria *Abstract*—A study was conducted to estimate the rhizobial population of soils for biological nitrogen fixation on soybeans (Glycine max) by the Most Probable Number (MPN) technique. Soils were collected from seven locations namely; Albasu, Bichi, Garko, Gaya (Sudan savanna), Giwa, Soba and Z/kataf (northern guinea savanna). The result showed that Garko has the least MPN rhizobia/g (0.61×10^1) and Z/kataf has the highest MPN rhizobia/g (7.65×10^3). The soils collected from northern guinea savanna have the highest MPN rhizobia/g compared to the soil collected from Sudan savanna.
S0059 Session 2 Presentation 2 (13:45-14:00)	Analysis of Rescued Learning with Different Drugs in Down Syndrome **Handan Kulan** and Tamer Dağ Kadir Has University, Istanbul, Turkey *Abstract*—Down syndrome (DS) affects approximately one in 700 live births and it is considered as the most prevalent cause of intellectual disability (ID). DS is caused by the presence of an extra copy of the human chromosome21 (Hsa21) and has been investigated on protein levels by using the Ts65Dn mouse model. For the treatment of DS, many efforts have been made for developing drugs to rescue learning performance. In this paper, we apply forward feature selection method to identify the important proteins in which memantine and GABAA alpha5 receptor inverse agonist- RO4938581 drugs affect. Identifying these gene products will help researchers to determine the molecular pathways which play key roles for rescuing performance in DS. Analyzing these pathways helps us to not only understand the learning process but also to contribute the new drug design for the treatment of DS.

S0084 Session 2 Presentation 3 (14:00-14:15)	Antimicrobial Activity of Lichens-Associated Actinomycetes Strain LC-23 **Agustina E. Susanti**, Shanti Ratnakomala, W. Mangunwardoyo and PuspitaLisdiyanti Universitas Indonesia, Indonesia *Abstract*—Actinomycetes known as the largest antibiotic producer that has a broad range habitat. Research has been done to find a new antibiotic from the various habitats of actinomycetes. Lichens was the symbiotic structure of alga and fungi known as the ecological niche of various kinds of microbes including actinomycetes. The aim of this study in deep of isolate strain LC-23 for production of antimicrobial, characterize the metabolite profile of the ethyl acetate extract and identification based on 16S rRNA gene sequence analysis. The result revealed actinomycetes from lichen, strain LC-23 showed potency against Gram positive bacteria. Ethyl acetate extract of the strain showed positive inhibition against *Staphylococcus aureus* BTCC B-611 and *Micrococcus luteus* BTCC B-552. Minimum Inhibitory Concentration (MIC) of extract LC-23 was less than 2.106 ppm. The ethyl acetate extract was subjected to fractionation and tested against the pathogenic microbes and showed inhibition activity in column 9 and 10, and specifically in column 7E to 7G for *Staphylcoccus aureus* BTCC B-611 and 7E-7H for *Micrococcus luteus* BTCC B-552. The identification based on 16S rRNA gene sequence showed strain LC-23 was 98.51% similarity to *Streptomyces palmae* type strain. Neighbor-joining phylogenetic tree confirmed the relationships of this strain to other members of *Streptomyces* genera.
S3011 Session 2 Presentation 4 (14:15-14:30)	Assessment of Workplace Organization Environment by Wearable Biometric Sensor **Junichiro Hayano**, Minoru Mitsui, Nao Ozaki, Mihoko Wakui, Katsunori Kawano and Emi Yuda Nagoya City University, Japan *Abstract*—Usefulness of biometric information obtained from biosensor worn by employees for assessing organization environment in workplace was investigated. In 85 employees, heart rate variability (HRV) indices calculated from the time series of R-R intervals of electrocardiogram during work hours were compared with the responses to a questionnaire concerning job stress, communication, and physical and mental conditions and HRV indices were also compared between before and after intervention for improving workplace organization. The higher the arbitrariness in work, the smaller the SD of R-R interval and the very low frequency (VLF) and low frequency (LF) amplitude of HRV, the higher the mental frustration and fatigue, the worse the communication with the boss and colleagues, the greater the LF amplitude and SD of LF

	amplitude (LFsd). By factor analysis of the responses to questionnaire, three factors reflecting stress, depressiveness, and fatigue were extracted. Among the factors extracted, the LF amplitude and LFsd correlated with the degree of fatigue. The intervention activities decreased LF amplitude and LFsd among subjects who reported to have deeply participated in the activities, while these indices increased among those reported to have not participated much.
S3007 Session 2 Presentation 5 (14:30-14:45)	Formate Cycle: The Third Way in Green Energy M. Gotovsky, A. Gotovsky, V. Mikhailov, **V. Lychakov**, Yu Sukhorukov and E. Sukhorukova Polzunov Institute, Russia *Abstract*—The prospects of the formate cycle are considered: the fixation of CO_2 from the atmosphere in the form of formic acid in low-temperature electrochemical reduction, and further use of formic acid (formates). A brief review of effective catalysts (in particular - without the use of platinoids) for the direct oxidation of formates in a fuel cell and for the decomposition of formates with hydrogen evolution is given in the aspect of "green energy". Perspectives of formates, as a hydrogen accumulator, and as a carbon monoxide (CO) accumulator are shown. Particular attention is paid to the dual use of formate, as a combined raw material for the Fischer-Tropsch process, which allows a simple, technological and cost-effective production of synthetic liquid fuel (ergic-gasoline) suitable for classic automotive engines. It was suggested that formic acid should be used as an energy carrier produced in solar or wind power plants as a buffer reserve or a commercial product.
S3010 Session 2 Presentation 6 (14:45-15:00)	Spiky Burst of High Frequency Heart Rate Variability: A Prodromal Sign of Syncope Accompanying Heatstroke **Emi Yuda**, Rui Iino, Yutaka Yoshida and Junichiro Hayano Nagoya City University, Japan *Abstract*—Heart rate variability in Holter electrocardiogram (ECG) that incidentally recorded the onset process of heatstroke during golf play was analyzed in comparison to control ECGs in the same subject and in a healthy control group. During playing golf normally, the amplitude of high-frequency (HF) component, known as an index of cardiac parasympathetic function, was suppressed (4.3 $\pm$ 2.2 ms). Whereas, 135 min before the onset of syncope, spiky HF bursts (amplitude ~10 ms and width <60 s) appeared repeatedly at an interval of 10-15 min and the burst amplitude increased to 20-30 ms from 51 min before to the onset of syncope. No such phenomenon was observed in control ECGs even during walking exercise. Although spiky HF burst was observed 30% of subjects in control group, none of them showed repetitive burst during

	short period <15 min. Repetitive spiky HF burst may be a prodromal sign for predicting heatstroke from heartbeat information.
S2011 Session 2 Presentation 7 (15:00-15:15)	Mutagenicity Evaluation of Two Brands of Brown Sugar in Taiwan **Min-Chi Hsieh**, Zhen-Shu Liu and Po-Wen Chen Ming Chi University of Technology, Taiwan *Abstract*—Brown sugar is sucrose that is not highly refined and decolorized. It contains trace elements such as iron, chromium and magnesium and other minerals and vitamins, and is generally considered to be a natural and healthy health food in Asia. However, heat-induced food contaminants have attracted the attention of the public communities recently. For instance, acrylamide forms when sugars are produced during high temperature during the refining procedure, and this chemical has been classified as a probably carcinogenic to humans (Group 2a) by the World Health Organization and the International Agency for Research. Therefore, in current study, we tried to evaluate the mutagenicity of two popular brands of brown sugar in Taiwan by using the mammalian microsome reversion assay (Ames test) with five tester bacterial strains, TA98, TA100, TA102, TA1535, and TA1537. The sugar samples exhibited a weak dose-dependent mutagenic response only in strain TA102 without metabolic activation. However, this mutagenic effect was weak because a borderline of the spontaneous mutation rate had been observed. Furthermore, these mutagenic responses could be further diminished partially by mammalian metabolic activation system. In conclusion, our data have supported to evaluate the mutagenicity on more sugar samples by using Ames and the other approaches.

Session 3

Afternoon, January 8, 2019 (Tuesday)
Time: 13:30-15:15
Venue: Thyme (Level 2)
Session 3: Topic: "Environmental Monitoring and Protection"
Session Chair: Prof. Daniel Gang

S3012 Session 3 Presentation 1 (13:30-13:45)	An Overview of Industrial Symbiosis and By-Product/Utilities Flows in Singapore **Chun-Yang Yin** Newcastle University in Singapore, Singapore *Abstract*—The Waste and Resources Action Programme in the UK defines Industrial Symbiosis (IS) as "an association between two or more industrial facilities or companies in which the wastes or by-products of one become the raw materials for another". In this presentation, an overview of IS and by-products/utilities exchanges in Singapore is provided. Specific examples of by-products/utilities exchanges in Singapore, which are reflective of both conventional and atypical IS practices are described.
S2005 Session 3 Presentation 2 (13:45-14:00)	The Near-Zero Liquid Discharge and Resource Recovery of Coal Gasification Brine by Nanofiltration **Kun Li**, Wencheng Ma, Hongjun Han, Chunyan Xua and Weiwei Ma Harbin Institute of Technology, China & South China Agriculture University, China *Abstract*—The rapidly development of coal gasification industrial has been caused the serious environmental problems and raised human extremely concern. The coal gasification brine (CGB), including the kinds of typical refractory compounds (TRCs), considerably high concentration of salinity and few toxic inorganic pollutions, is the chief obstacle in the near-zero liquid discharge of coal gasification wastewater. The separation performances of CGB by three nanofiltration membranes were investigated to clearly understand the influence of the interaction of TRCs, multivalent ions and monovalent ions on rejection mechanism. The experimental results show that rejection of sulfate and COD were higher than 92.12% and 78.84% at appropriate operation condition. Noteworthy, the negative rejection of chloride was observed in the separation process which was expounded by Donnan equilibrium

	mechanism and standard fixed charge model. Moreover, it can be concluded that the decreasing rejection of organic compounds was due to swelling of the membrane pore in high-concentration solutions. Meanwhile, the TRCs weakened the negative charge of membrane active layer, consequently decreasing the ion rejection. Eventually, more than 85% of the sodium chloride could be recovered, indicating that nanofiltration membrane is promising technology for resource recovery from CGB and near-zero liquid discharge of coal gasification industry.
S3004 Session 3 Presentation 3 (14:00-14:15)	Improvement of Petroleum Hydrocarbon Biodegradation by Using Nano-Composite Immobilized Cells **H.S. El-Sheshtawy**, D. Aman and H.N. Nassar Egyptian Petroleum Research Institute, Egypt *Abstract*—Seventeen crude oil-degrading bacteria were isolated from an oil-polluted area. Two bacterial species showed the highest growth rate on crude oil. The goethite chitosan composite (nano-composite) was prepared. The antibacterial activity of nano-composite on the two selected bacterial strains was examined. The immobilized biodegrading bacterial strains onto the surface of nano-composite were prepared. The strains adsorbed onto nano-composite were studied using scanning electron microscopy. The bioremediation process was studied by pure and bacterial consortium with/without nano-composite. The percentage degradation of total paraffins and polyaromatics hydrocarbons was detected. From the results, the nano-composite there is no toxic effect on the selected bacterial strains. Gas chromatographic analysis of crude oil after 3 days showed that the optimum biodegradation of petroleum hydrocarbons was demonstrated at 93.32% in medium containing nano-composite and two bacterial strains together. The complete degradation of some different members of polyaromatics and the percentage biodegradation of high molecular weight polyaromatics increased in different microcosms. The best % degradation of 6-member polyaromatics was observed in microcosm containing nano-composite and two strains after 3 days using high performance liquid chromatography (HPLC). Conclusion, these bacterial strains may be useful for the bioremediation of crude oil contaminate soil in Suez Oil Processing Company, Egypt.
S2006 Session 3 Presentation 4 (14:15-14:30)	Enhanced Treatment of Coal Gasification Wastewater by Micro-Electrolysis Integrated Biological Process **Weiwei Ma**, Hongjun Han, Hao Zhu and Kun Li Harbin Institute of Technology, China *Abstract*—Coal gasification wastewater (CGW) contained a variety of toxic and refractory compounds, seriously threatening both environmental safety and public health. The aim of this work was to

	study an integrated micro-electrolysis with biological reactor (MEBR) for strengthening organic compounds removal from CGW. The results indicated that MEBR achieved high removal efficiencies of COD and phenolic compounds as well as improvement of biodegradability and reduction of biotoxicity. The integrated MEBR process was more favorable to improvement of the structural stability of activated sludge and biodiversity of functional microbial communities. Especially, electrochemical active bacteria were enriched to accelerate the extracellular electron transfer, finally facilitating the degradation of organic compounds. Moreover, MEBR process effectively relieved passivation of Fe-C filler surface and prolonged lifespan of Fe-C filler. The synergetic effect between iron-carbon micro-electrolysis (ICME) and biological action played a significant role on the performance of integrated MEBR process for enhancing CGW treatment. Accordingly, the results proved the integrated MEBR process was a promising technology applied for CGW treatment.
S3014 Session 3 Presentation 5 (14:30-14:45)	Synthesis and Characterization of Neodymium Doped Ordered Mesoporous Carbon (OMC) for Sunset Yellow Adsorption: Artificial Neural Network (ANN) Modeling Zaki Uddin Ahmad, Mark E. Zappi and **Daniel Dianchen Gang** University of Louisiana at Lafayette, USA *Abstract*—In this study, ordered mesoporous carbon (OMC), a relatively new member of the carbonaceous family, was doped with neodymium(III) chloride for enhanced adsorption of sunset yellow. The Nd-doped OMC was characterized using nitrogen adsorption-desorption isotherm, scanning electron microscope (SEM), transmission electron microscope (TEM), fourier transform infrared (FT-IR) spectra, and X-ray photoelectron spectroscopy (XPS). A three layer artificial neural network was used to predict sunset yellow removal from aqueous solution by Nd-doped OMC. The network was trained using experimental data with different amount of Nd-doped OMC (0.01-0.02 g) and different initial dye concentrations (50-125 mg/L) over different contact periods of 5-240 min. The ANN model was applied for prediction of the removal percentage with Levenberg-Marquardt algorithm (LMA), a linear transfer function (purelin) at output layer and a tangent sigmoid transfer function (tansig) in the hidden layer with 6 neurons. The minimum mean squared error (MSE) of 0.0012 and coefficient of determination (R^2) of 0.9532 were found for prediction and modeling of sunset yellow removal using testing data set. A good agreement between experimental data and predicted data using ANN model was obtained.
S2007	A Model for Sibilant Distortion Detection in Children **Ivo Anjos**, Margarida Grilo, Mariana Ascensão, Isabel Guimarães, João Magalhães, Sofia Cavaco

Session 3 Presentation 6 (14:45-15:00)	Universidade NOVA de Lisboa, Portugal *Abstract*—The distortion of sibilant sounds is a common type of speech sound disorder in European Portuguese speaking children. Speech and language pathologists (SLP) use different types of speech production tasks to assess these distortions. One of these tasks consists of the sustained production of isolated sibilants. Using these sound productions, SLPs usually rely on auditory perceptual evaluation to assess the sibilant distortions. Here we propose to use an isolated sibilant machine learning model to help SLPs assessing these distortions. Our model uses Mel frequency cepstral coefficients of the isolated sibilant phones and it was trained with data from 145 children. The analysis of the false negatives detected by the model can give insight into whether the child has a sibilant production distortion. We were able to confirm that there exist some relation between the model classification results and the distortion assessment of professional SLPs. Approximately 66% of the distortion cases identified by the model are confirmed by an SLP as having some sort of distortion or are perceived as being the production of a different sound.
S3015 Session 3 Presentation 7 (15:00-15:15)	Application of Various Water Estimation Indices for Groundwater Quality Assessment Using GIS Techniques in Bokaro District, Jharkhand, India **Prasoon Kumar Singh**, Poornima Verma and Parveen Purty Indian Institute of Technology (ISM) Dhanbad, India *Abstract*—The objectives of this study to examines the quality of groundwater in the Bokaro district of Jharkhand, India. Fifty-one groundwater sample were analyzed for various physicochemical parameters and heavy metals in this study during the pre-monsoon season. Ground water quality index revealed that about 50.98% of the groundwater sample were belonging to the poor-quality water for drinking purposes. The heavy metal pollution index, degree of contamination showed that most of the groundwater sample belong to the high level of pollution. The spatial distributions map of GWQI, HPI and Cd are determined by GIS technique and showed that high values of GWQI, HPI and Cd in the northwestern part of Bokaro district to the center and especially in the northeastern part of the study area. It is expectable that this study is helpful to know the groundwater quality position for effective management and utilization of the groundwater resource for decision makers taking proper measures in the Bokaro district.

Session 4

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, January 8, 2019 (Tuesday)
Time: 13:30-15:15
Venue: Lemongrass (Level 2)
Session 4: Topic: "Biological Image and Signal Processing"
Session Chair: Prof. Jose Nacher

S0063 Session 4 Presentation 1 (13:30-13:45)	An Unsupervised Learning with Feature Approach for Brain Tumor Segmentation Using Magnetic Resonance Imaging **Khurram Ejaz**, Usama Ijaz Bajwa, Mohd Shafy Mohd Rahim, Nadim Rana and Amjad Rehman UTM Faculty of computing, Malaysia *Abstract*—Segmentation methods are so much efficient to segment complex tumor from challenging datasets. MACCAI BRATS 2013-2017 brain tumor dataset (FLAIR, T2) had been taken for high grade glioma (HGG). This data set is challenging to segment tumor due to homogenous intensity and difficult to separate tumor boundary from other normal tissues, so our goal is to segment tumor from mixed intensities. It can be accomplished step by step. Therefore image maximum and minimum intensities has been adjusted because need to highlight the tumor portion then thresholding perform to localize the tumor region, has applied statistical features(kurtosis, skewness, mean and variance) so tumor portion become more visualize but cann't separate tumor from boundary and then apply unsupervised clusters like kmean but it gives hard crisp membership and many tumor membership missed so texture features(Correlation, energy, homogeneity and contrast) with combination of Gabor filter has been applied but dimension of data increase and intensities became disturb due high dimension operation over MRI. Tumor boundary become more visualize if combine FLAIR over T2 sequence image then we apply FCM and result is: tumor boundaries become more visualized then applied one statistical feature (Kurtosis) and one texture feature(Energy) so tumor portion separate from other tissue and better segmentation accuracy have been checked with comparison parameters like dice overlap and Jaccard index.
	Image Processing, Textural Feature Extraction and Transfer Learning Based Detection of Diabetic Retinopathy **Anjana Umapathy**, **Anusha Sreenivasan**, **Divya S. Nairy,** S Natarajan

S0033 Session 4 Presentation 2 (13:45-14:00)	and B Narasinga Rao PES University, India *Abstract*—Diabetic Retinopathy (DR) is one of the most common causes of blindness in adults. The need for automating the detection of DR arises from the deficiency of ophthalmologists in certain regions where screening is done, and this paper is aimed at mitigating this bottleneck. Images from publicly available datasets STARE, HRF, and MESSIDOR along with a novel dataset of images obtained from the Retina Institute of Karnataka are used for training the models. This paper proposes two methods to automate the detection. The first approach involves extracting features using retinal image processing and textural feature extraction, and uses a Decision Tree classifier to predict the presence of DR. The second approach applies transfer learning to detect DR in fundus images. The accuracies obtained by the two approaches are 94.4% and 88.8% respectively, which are competent to current automation methods. A comparison between these models is made. On consultation with Retina Institute of Karnataka, a web application which predicts the presence of DR that can be integrated into screening centres is made.
S0034 Session 4 Presentation 3 (14:00-14:15)	Calcium Signaling and Finite Element Technique Devanshi D. Dave and **Brajesh Kumar Jha** Pandit Deendayal Petroleum University, India *Abstract*—In this paper, we describe the calcium signaling phenomena using finite element method in a typical neuron cell. Neuron being the fundamental cell of the brain has many important roles to perform. The approximated geometry of the neuron is considered to approximate the calcium flow in it. Calcium is considered to be the important second messenger which helps in maintaining plethora of functions like synaptogenesis, proliferation, cell differentiation, etc. The level of the cell calcium is maintained by several important physiological parameters of the calcium toolkit like buffers, endoplasmic reticulum, mitochondria, voltage gated calcium channel, etc. Here, we have considered the cytoplasmic calcium binding buffers in knowing its effect on cytosolic calcium concentration. Exogenous buffers EGTA and BAPTA are considered here. Mathematical model involving two dimensional partial differential equation is used to delineate the calcium diffusion in presence of calcium binding buffers. Appropriate boundary conditions matching with the physiology of the brain are incorporated. To obtain the desired results finite element technique is used. Discretization and further refinement of the mesh is done to obtain more better approximation of the calcium flow. The results obtained here clearly show the significant impact of buffers on calcium diffusion.
	Extraction of Respiration from PPG Signals Using Hilbert Vibration

S0012 Session 4 Presentation 4 (14:15-14:30)	Decomposition **Hemant Sharma** National Institute of Technology Rourkela, India *Abstract*—A new approach using the Hilbert vibration decomposition (HVD) for extracting the respiration from the photoplethysmographic (PPG) signal is proposed. It is suggested that the largest energy component of the PPG signal acquired using the HVD is analogous to the respiratory signal. The proposed PPG-derived respiration (PDR) technique is examined over the Capnobase and MIMIC datasets by evaluating the correlation and respiratory rate errors calculated between the derived and reference respiratory rates (RRs). Upon comparing the performance of the proposed approach with the existing techniques, the proposed approach is seen to be yielding better correlation and smaller errors in the RRs computed from the PDR and recorded respiration signals on both the datasets. The experimental analysis suggests that the proposed technique can be employed for efficacious computation of the respiration from the PPG signal. Efficient and reliable extraction of the respiratory signal from PPG will help in the improvement of low-cost and less discomfort mobile-based healthcare systems.
S0035 Session 4 Presentation 5 (14:30-14:45)	A Fractional Mathematical Model to Study the Effect of Buffer on Calcium Distribution in Parkinson's Disease **Hardik Joshi** and Brajesh Kumar Jha Pandit Deendayal Petroleum University, India *Abstract*—Calcium (Ca^{2+}) is a vital and very important cation for proper functioning of the nerve cells. There are abundant amount of Ca^{2+} in human nerve cells among them very few amount is lies in the cytosol in the form of free Ca^{2+}. These free amounts of Ca^{2+} react with calbindin-D_{28k} which is work as a buffer species and significantly lower down the intracellular Ca^{2+} concentration. Parkinson's disease is a brain disorder of the human nerve cells associated with alteration in Ca^{2+} signalling process. In present study an attempt has been made by considering fractional advection diffusion equation to study the effect of buffer on Ca^{2+} diffusion in Parkinsonic nerve cells. An appropriate initial and boundary condition is taken according to the physiology of the problem. Analytical solution is obtained corresponding to time fractional advection diffusion equation and space fractional advection diffusion equation. The obtained results are simulated in MATLAB and interpreted with the Ca^{2+} distribution in nerve cells.
S0036	Computational Modelling of Calcium Buffering in a Star Shaped Astrocyte **Amrita Jha** and Brajesh Kumar Jha

Session 4 Presentation 6 (14:45-15:00)	Indus University, Ahmedabad, Gujarat, India *Abstract*—Before last two decades, astrocytes treated as supporting cell of neuron. Now it have regarded as important and strong participant in central nervous system. Astrocytes are also play important role in many neuronal disorder like Alzheimer's, Parkinson's etc. Astrocytes release gliotransmeters like glutamate. Astrocytes take part in synapse in calcium dependent manner. However it is not clear the effect of astrocytes geometry on calcium distribution. In this study we present a geometry based mathematical model of an astrocytes. Mathematical model is developed in the form of reaction diffusion equation by considering the effect of endogenous and exogenous buffers on cytosolic calcium concentration. In present study it is concluded that the effect of geometry also visible and found significant cytosolic calcium distribution in astrocytes.
S0037 Session 4 Presentation 7 (15:00-15:15)	Bessel-Gauss Beam Light Sheet Assisted Fluorescence Imaging of Trabecular Meshwork in the Iridocorneal Region Using Long Working Distance Objectives C. S. Suchand Sandeep, Sarangapani Sreelatha, Mani Baskaran, Xun Jie Jeesmond Hong, Tin Aung and **Murukeshan Vadakke Matham** Nanyang Technological University, Singapore *Abstract*—Glaucoma is one of the leading cause of blindness characterized by increased intra ocular pressure (IOP), visual field defects and irreversible loss of vision. Remedial intervention of glaucoma primarily aims at the reduction of IOP and subsequent examination concerning the related anomalies in the aqueous outflow system (AOS) especially with newer angle procedures. Thus, high resolution imaging of the iridocorneal angle (ICA) region comprising trabecular meshwork (TM) is extremely valuable to clinicians and vision analysts in comprehending the disease state for the efficacious analysis and treatment of glaucoma. Imaging of the AOS inside the eye using the digitally scanned Bessel-Gauss beam light sheet microscopy has been used in this study to obtain high resolution optical sections with minimal photo toxicity and photo bleaching. This paper investigates the effect of long working distance objectives in obtaining high resolution TM images while offering non-contact and non-invasive approach in imaging. A series of experiments were conducted to optimize various imaging parameters using porcine eyes as test samples. Investigations carried out by illuminating both the anterior segment region and limbal region resulted in promising results. A delineated network of collagen fibers in a meshwork fashion can be clearly seen in the obtained images of the TM. The optical sectioning capability of this technique is demonstrated and the structural features match well with previous literature reports.

Session 5

Afternoon, January 8, 2019 (Tuesday)
Time: 15:35-17:05
Venue: Clove (Level 2)
Session 5: Topic: "Genetic Analysis and Engineering"
Session Chair: Prof. Jianlin Cheng

S0028 Session 5 Presentation 1 (15:35-15:50)	An Interactive Gameplay to Crowdsource Multiple Sequence Alignment of Genome Sequences: Genenigma D. A. Meedeniya, **Senadheerage A. P. A. Rukshan** and A. Welivita University of Moratuwa, Sri Lanka *Abstract*—Comparative genomics is a field of research that compares genomes of different organisms to identify common patterns. It is a powerful method used to identify the genetic diseases that cause mutations. Multiple Sequence Alignment (MSA) is an intermediate step in comparative genomics analysis that aligns three or more biological sequences of similar length. MSA is an NP-hard problem for which no efficient algorithm exists to perform this in a reasonable amount of time. However, humans across evolution have developed special intuition to identify visual patterns in short periods of time. Hence, a citizen science approach can be devised to solve the MSA problem by transforming it into a human computing game on creating visually similar patterns. In this paper, we introduce the mobile game "Genenigma", which harnesses the human computing capability to align multiple sequences of genomes and use the results to help geneticists to understand the genetic code. The usability and performance scores of "Genenigma" predicts a larger user base than existing mobile games built for this purpose.
S0031 Session 5 Presentation 2 (15:50-16:05)	Establishment of an Integrated Computational Workflow for Single Cell RNA-Seq Dataset **Miaomiao Jiang**, Qichao Yu, Jianming Xie and Shiping Liu Southeast University, China *Abstract*—Single cell RNA-sequencing (scRNA-Seq) has emerged as a popular transcriptomic profiling approach to address long-standing questions on developmental biology and cancer biology. With the advent of increasing single-cell computational methods, it is not easy to determine which profiler to use. Here, we provide an integrated pipeline for both gene expression and genomic architecture analysis in single

cells. Our pipeline reveals the global expression profile of the populations, and also identifies the changes in transcriptome/genome including alternative splicing (AS), single-nucleotide polymorphisms (SNPs), RNA editing and gene fusion.

S0071 Session 5 Presentation 3 (16:05-16:20)	Role of *Starmarker* (*stm*) Gene for Fertilization in Zebrafish **Taketo Fukuyo**, Wanlada Klangnurak, Rezanujjaman M. D., Toshinobu Tokumoto Shizuoka University, Japan *Abstract*—Mechanism of oocyte maturation induction have been elucidated, however, the oocyte maturation and ovulation still could not be distinguished. *In vivo* assay, which were invented by our laboratory, can separate oocyte maturation and ovulation. Thus, it became possible to select only ovulation-inducing gene. Microarray and RNA sequencing were performed to select the ovulation-inducing candidate genes. *Starmaker* (*stm*) gene, one of the candidate genes, expresses in zebrafish ear plaques, responsible for otolith formation and shape but expression and function in the ovary has not been confirmed. Homozygous mutant fishes of *stm* gene were established by microinjection of CRISPR/Cas9 system into one cell stage embryos. The effect of gene knock-out on ovulation process was observed. *Starmaker* (*stm*) gene mutant fish showed a decrease in fertilization rate, however, ovulation and fertilization still occurred. The expression of the *stm* gene in the mutant was confirmed by qPCR showing that the amount of transcripts were decreased drastically. The results suggested that positive feedback by the STM protein on the *stm* gene was present. In order to clarify the roles of stm gene in fertilization the localization of *stm* protein in the ovary is investigating.
S0093 Session 5 Presentation 4 (16:20-16:35)	Atrial Fibrillation Detection Using a Smart Scale Keonsoo Lee and **Yunyoung Nam** Soonchunhyang University, South Korea *Abstract*— Convergence is one of the major concepts for contemporary technology. By combining variable functions into one device, human being can have more convenience with easy. In this paper, we implemented a smart scale that have variable functions, which measures the weight and other bio signals from which monitoring heart rates and detecting atrial fibrillation (AF). For weight measurement, four load cell sensors are used. For measuring heart rates and detecting AF, PSL-iECG2 is used. Load cell sensors and PSL-iECG2 are connected to Arduino Uno. As Arduino Uno has not enough computing power to analyze ECG signals and determine AF, Arduino Uno is connected to smartphone in Bluetooth. In order to evaluate the implemented smart scale, we collected data from 56 patients in the Cardiology Center of

	Soonchunhyang Bucheon Hospital (SBH). Fifty-one of these patients were clinically diagnosed as having NSR and 5 patients were clinically diagnosed with AF. We asked the patients to use the implemented smart scale for 15 seconds, then stored the resulting ECG signals along with the clinical diagnosis. From 56 records, 19 records are discarded due to noises of the records. From the ECG signals, R peaks are extracted and using the R-R intervals, heart rates are calculated. AF is detected using RMSSD and Shannon entropy extracted from R-R intervals. We evaluate three classifiers that are kNN, DT, and NNs. The accuracies of each classifier for detecting AF are 83.7%, 91.1%, and 91.1%, respectively.
S0072 Session 5 Presentation 5 (16:35-16:50)	Establishment of Gene Knock–out Strain of *pax2a* Selected as an Ovulation-Inducing Gene by *in vivo* Assay by Genome Editing in Zebrafish **Pachoensuk Theeranukul**, Taketo Fukuyo, Wanlada Klangnurak, Toshinobu Tokumoto Shizuoka University, Japan *Abstract*—Ovulation is an essential step to produce the next generation and maintain species, however, the mechanism of ovulation in any organisms have been not well understood. Mechanisms of ovulation are investigating using zebrafish, model fish for biology. Oocyte maturation-inducing genes and ovulation-inducing genes are actually overlapping and hardly distinguish from each other in fish. *In vivo* assay is a new system for discovering genes that essential just only for ovulation using ethanol, diethylstilbestrol, testosterone, and 17,20 β-DHP. *Pax2a*, one of highly possible 11 ovulation-inducing gene candidates, was selected by RNA sequencing analysis. Normally, function of *pax2a* were known as transcription factor that is necessary for formation of optics and kidney. However, the function in eggs was not report. To identify role of *pax2a* gene during the ovulation-inducing process, *pax2a* gene was knocked out using CRISPR/*Cas9*. *Pax2a* homozygous mutant zebrafish were established and phenotype of the ovulation-inducing process were observed. *Pax2a* homozygous mutant fish showed the ovulation ability, however, their eggs and embryos were abnormal. More phenotypic analysis is necessary to address the role of *Pax2a*. The understanding of ovulation-inducing genes will be helpful for understanding molecular pathways of ovulation and can apply, for example, to solve sterile problem in human.
S0074 Session 5 Presentation 6	A Hybrid Approach to Optimize the Number of Recombination in Ancestral Recombination Graphs **Nguyen Thi Phuong Thao** and Le Sy Vinh Vietnam Academy of Science and Technology, Vietnam

(16:50-17:05)	*Abstract*—Building ancestral recombination graphs (ARG) with minimum number of recombination events for large datasets is a challenging problem. We have proposed ARG4WG and REARG heuristic algorithm for constructing ARGs with thousands of whole genome sequences. However, these algorithms do not result in ARGs with minimal number of recombination events. In this work, we propose GAMARG algorithm, an improvement of ARG4WG, to optimize the number of recombination events in ARG building process. Experiment with different datasets showed that GAMARG algorithm outperforms other heuristic algorithms in building ARGs for large datasets. It also is much better than other heuristic algorithms and comparable to exhaustive search methods for small datasets.

Session 6

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, January 8, 2019 (Tuesday)
Time: 15:35-16:50
Venue: Lemongrass (Level 2)
Session 6: Topic: "Bioinformatics and Computing"
Session Chair: To be Added

S0007 Session 6 Presentation 1 (15:35-15:50)	Cold Atmospheric-Pressure Nitrogen Plasma Induces Apoptotic Cell Death in HEK293T Cells **Katsuya Iuchi**, Yukina Morisada, Yuri Yoshino, Takahiro Himuro, Yoji Saito, Tomoyuki Murakami and Hisashi Hisatomi Seikei University, Japan *Abstract*—Cold atmospheric-pressure plasma (CAP) has been used in various applications such as food hygiene, dentistry, and medical research. Reactive oxygen and reactive nitrogen species produced by CAP are considered to be key molecules responsible for its biological activities. However, the details of CAP-induced reactive species, and their effects on biological processes, are not fully understood. Normally, helium or argon are used as carrier gas to produce CAP. In this study, we used a CAP device with nitrogen gas (referred to as N_2CAP) and investigated the effect of the N_2CAP on the viability of cultured cells. We found that N_2CAP inhibited cell proliferation of human embryonic kidney (HEK293T), pancreatic cancer (SUIT-2), hepatocellular carcinoma (HepG2), and acute monocytic leukemia (THP-1) cell lines. We also found that the N_2CAP caused a loss of the mitochondrial membrane potential and activated caspases-3/7. Moreover, N_2CAP increased intracellular calcium levels. BAPTA-AM, a cell-permeable calcium chelator, inhibited N_2CAP-induced cell death and loss of mitochondrial membrane potential. These results suggest that the increase in intracellular calcium is involved in N_2CAP-induced cell death through mitochondrial perturbation. N_2CAP might be useful for cancer therapy and the development of devices for controlling cell proliferation in vitro.
S0023 Session 6 Presentation 2	Stability Improvement of Algal-Alginate Beads by Zeolite 13X: A Preliminary Research **Seyed Amirebrahim Emami Moghaddam**, Razif Harun, Mohd Noriznan Mokhtar and Rabitah Zakaria Universiti Putra Malaysia, Malaysia

(15:50-16:05)	*Abstract*—One of the main issues when using alginate beads as suitable carriers for cell immobilization is related to their low stability. The present research aims to improve the stability of algal-alginate beads by zeolite molecular sieves 13X (an aluminosilicate mineral with sodium ions). The immobilization was done via entrapment of green microalgal suspension (*Chlorella vulgaris*) within alginate/powdered zeolite 13X hydrogels. Cross-linking process was carried out using 0.1 M $CaCl_2$ solution. The beads were incubated in a growth medium at 20 ℃ for 7 days. The stability of the beads was tested by immersing them in a phosphate buffer solution at pH 7.0 on a vortex shaker with 3000 rpm/min. Cell growth and surface characterization of algal-alginate/zeolite 13X beads were investigated by optical images and scanning electron microscopy (SEM), respectively. It was found that zeolite 13X has the potential to improve the beads stability 17 min more than the control sample without zeolite 13X (i.e. dissolution time in the chelating agent). Also, the increased concentration of algal cells with respect to time during the incubation indicated a good biocompatibility of zeolite 13X for cell growth. The findings will have a significant impact to be used in various applications (e.g. wastewater treatment).
S0025 Session 6 Presentation 3 (16:05-16:20)	Functions of TRPM4 Through Bioinformatics Analyses and the Cytotoxic Effects of Its Inhibitor 9-Phenanthrol in Diffuse Large B-Cell Lymphoma **Kah Keng Wong** Universiti Sains Malaysia, Malaysia *Abstract*—Transient receptor potential cation channel subfamily M member 4 (TRPM4) is overexpressed in activated B-cell-like subtype of diffuse large B-cell lymphoma (ABC-DLBCL) associated with poor survival. In this study, its functions in the disease and the potency of its inhibitor 9-phenanthrol were investigated. The biological functions associated with *TRPM4* mRNA expression were examined through Gene Set Enrichment Analysis (GSEA) in ABC-DLBCL cases (n=15). The cytotoxicity of 9-phenanthrol in three ABC-DLBCL cell lines (SUDHL2, OCI-LY3, OCI-LY10) was tested at six different concentrations (0.01nM, 0.1nM, 1nM, 10nM, 25nM, 50nM). GSEA results showed that cell cycle gene sets conferred the highest number of gene sets representing 42% (n=21/50) of the top 50 most significantly enriched gene sets ranked according to false discovery rate (FDR; all 50 gene sets had FDR<0.01), followed by DNA replication (n=8/50; 16%) and RNA processing (n=8/50; 16%), suggesting the roles of TRPM4 in cell cycle progression and cellular division of ABC-DLBCL. In terms of the cytotoxicity effects of 9-phenanthrol, the resulting GI_{50} for all ABC-DLBCL cell lines ranged from 19nM-41.88nM. In conclusion, TRPM4 is potentially involved in the cell cycle progression and cellular division of ABC-DLBCL cells,

	and the TRPM4 inhibitor 9-phenanthrol was cytotoxic against ABC-DLBCL cells.
S0043 Session 6 Presentation 4 (16:20-16:35)	Improving Tripartite Network Approach Using Matrix Factorization for ncRNA-Disease Association Predictions **Takuya Mori**, Morihiro Hayashida, Tatsuya Akutsu and Jose C. Nacher Toho University, Japan *Abstract*—Recently, many studies have demonstrated the links between certain human disorders and specific mutation and deregulations of non-coding RNAs (ncRNA), which has fueled the interest and development of computational models for ncRNA-disease association prediction. In our previous research, we proposed a methodology that combined a resource-allocation method with pairwise sequence similarity computed on a tripartite network with three layers defined by ncRNA-target, and target-disease associations. Although the model evaluation shows a good prediction capability, we further examined additional improvements. First, we considered a more precise representation of the sequence similarity by replacing the similarity kernels. Second, we considered a variant of the non-negative matrix factorization data integration approach. In this method, the molecular relations between network layers are factorized in matrices whose matrix elements are subject to optimization. A preliminary comparison between all examined methods suggests that the enhanced factorization method may improve ncRNA-disease predictions.
S0056 Session 6 Presentation 5 (16:35-16:50)	Ecological Informatics Approach to Analyze Habitat Preferences of *Auricularia Delicata* in Bingungan Forest, Turgo Natural Forest Conservation Area **Dwiki Prasetiya** and Tien Aminatun Yogyakarta State University, Indonesia *Abstract*—Based on our previous research, *Auricularia delicata* has been detected as unique and important local mushroom in economic and ecological values which were newly recorded in Turgo tropical forest ecosystem, with exactly restricted distribution only in Bingungan forest. This research aimed to know habitat preferences of *Auricularia delicata* by using ecological informatics approach regarding to management forest-fungi efforts. To yield communicative interpretation, we used some analyses from Pearson correlation among physical and chemical characteristics of substrate as *Auricularia delicata* habitat, Bray-Curtis similarity and distance indices, NMDS (Non-Metric Multidimensional Scaling) ordination, hierarchical clustering with UPGMA (Unweighted Pair Group Method with Arithmetic Mean) and non-hierarchical clustering with K-means, till we could categorize habitat preferences from the very good, good, poor, and very poor categories.

Poster Session

Afternoon, January 8, 2018 (Tuesday)

Time: 15:35-17:30

Venue: Thyme (Level 2)

S2004 Poster 1	The Effects of PM10 on the Hospital Admission of Patients with Respiratory Disease in Seoul, Korea from 2002 to 2013 **Haeyong Pak** and Yunsuk Pak National Insurance Service Ilsan Hospital, South Korea *Abstract—*This study aimed to identify the effects of daily PM10 exposure on the admission of patients with respiratory diseases in Seoul, the capital city of Korea. We analyzed the National Health Insurance (NHI) Cohort database over a nine-year period (2002–2013). The research subjects were 13,974 patients who had been hospitalized with respiratory diseases, including chronic obstructive pulmonary disease (COPD), asthma, and pneumonia, during the twelve-year period, representing about 2% of the 10 million people in Seoul. We examined respiratory diseases in four age categories: all ages, <15, ≥65, and ≥75 years. Asthma, COPD, and pneumonia were investigated in all age groups. During the follow-up period, an increase of 10 ug/m3 in PM10 under the threshold of 50 ug/m3 of PM10 led to hospital admission in 1.38% of the age group younger than 15 years, 1.62% in those 65 years or older, 2.87% in patients 75 years or older and in 1.50% of pneumonia patients, 1.51% of COPD patients, and 1.55% of pneumonia and asthma patients. Our study found that high PM10 was associated with increased risk of admission of respiratory patients, especially in the elderly. People who already have a respiratory disease should refrain from exposure to particulate matter when there is a high concentration of PM10, especially older patients.
S2016 Poster 2	Occurrence of Chemical Contaminants and Additives in Consumer Products in Korea **Syed Wasim Sardar**, Naree Park, Younghun Choi and Junho Jeon Changwon National University South Korea *Abstract—*Consumer products (CPs) such as washing agents, cosmetics and personal care products are widely used in our daily life which contains thousands of chemicals and are considered as a primary source of humans and environmental exposure. However, there is substantial knowledge gap exists concerning the occurrence and concentration of these chemicals in CPs. To narrow this gap, we applied suspect and

	nontarget screening strategies using liquid chromatography - High resolution mass spectrometry (LC-HRMS) for identification of toxic chemicals in selected CPs, starting from a quantitative target screening approach to obtain an overview of the occurrence of known chemicals. Our results revealed that selected CPs consistently contains chemicals from multiple classes including isothiazolinones, and phatalates. The highest concentrations were determined for benzisothiazolone (517.8 μg/g) followed by Dimethyl phthalate (21.18 μg/g) with a detection frequency 30.5%, and 16.4%, % respectively. Other additives were also tentatively identified via suspect and nontarget screening.
S0015 Poster 3	A Text Mining Pipeline for Extracting Genotype-Phenotype Correlations of Neurodegenerative Diseases **Junbeom Jeon**, Dawoon Jung, Jinwoo Lee, Jungim Won, Kiyong Kim, Jeehee Yoon and Keonbae Lee Hallym University, Republic of Korea *Abstract*—The identification of genotype-phenotype correlations is very important in clinical research as it serves a basis of understanding diseases. We present a pipeline system to automate the extraction of genotype-phenotype correlations from biomedical literature. The used dataset is comprised of PubMed articles. We have analyzed genotype-phenotype correlations for neurodegenerative diseases including dystonia, ataxia, dementia, chorea, and parkinson. For each disease category, we assembled a *Disease corpus* by collecting a list of PMIDs from PubMed by using the semantic keyword search. Our approach for identifying genotype-phenotype correlations can be summarized as follows: (1) For each PMID in the *Disease corpus*, it collects the PubMed title, abstract and annotation results for gene and disease mentions by using the PubTator's named entity recognition tools. (2) A list of gene-disease entity pairs that are predicted to be correlated to the target disease is extracted and ranked by the use of two different algorithms; a Priori algorithm for frequent pattern mining and a co-occurrences-based soring scheme. (3) The two candidate ranked lists of correlations, *A priori rank list* and *Co-occurrence scoring list* are aggregated by using a statistical significance test. To assess the performance of our method, we compared our text mined results against curated correlations for five neurodegenerative diseases.
S0024 Poster 4	Effected Brewing Time and Temperature of *Centella Asiatica* Tea on Antioxidant Activity and Consumer Acceptance **Rungnattakan Ploenkutham**, Preeyapa Sripromma, Suksan Amornraksa, Patchanee Yasurin, Malinee Sriariyanun, Suvaluk Asavasanti and Aussama Soontrunnarudrungsri Assumption University, Thailand

Abstract—Centella asiatica has known as medical plant that used for treating bruises and reducing swelling. From the previous research lately, it reported that *C.asiatica* has properties to improve memory recognition and promote healthy skin. *C.asiatica* is herbal plant that available in the market, it has been developed to enhance the amount of antioxidant. Therefore, this study was aimed to determine the most effective brewing process of *C.asiatica* tea and study the amount of antioxidant activities. The temperature was vary with 80℃, 85℃, and 90℃ and time was 2, 3, 4, and 5 minutes. The formation of consuming tea was determined by 30 target panelists. The result showed that there was no significant difference among all temperature and time that were determined. The best temperature and time for brewing is 80℃ at 5 minutes because it saves energy and can extract the highest amount of antioxidant from herbal tea.

S0041 Poster 5	Effect of β-Amyloid Peptides on Mechanical Properties of POPC Lipid Bilayers **Dominik Drabik**, Grzegorz Chodaczek and Marek Langner Wrocław University of Science and Technology, Poland *Abstract*—Lipid vesicles have been used as simplified model membrane for studies on processes involving lipid membranes. They are considered soft matter structures and their shape deformation is integral to cellular processes. Mechanical phenomenon taking place in lipid bilayers, while often neglected, might be crucial to obtain entire view on cell membrane functioning - opening an emerging field called mechanomics. Self-assembly of lipids, a mechanically-driven process, allows to maintain internal homeostasis and substance transport. β-Amyloid peptides, one of main components of amyloid deposits, are believed to be a crucial factor in neurodegenerative disorders such as Alzheimer disease. It's hypothesized that mechanically stiff peptides alter mechanical properties of biological bilayers to such degree, that cause malfunction of self-assembly of lipids and perturb cell functioning. For this purpose we studied the effect of the peptides on mechanical properties – namely bending rigidity coefficient - of POPC lipid bilayers using both molecular dynamics simulation and thermal analysis fluctuation. Results from thermal analysis showed decrease of bending rigidity from $(22,3 \pm 4,2)$ to $(6,5 \pm 3,5)$ K_bT. Similar decrease was observed in MD simulations (from 17,8 to 10,5 K_bT). Combined experimental results with full-atom molecular dynamics simulations provided insight into mechanical phenomena taking place on lipid bilayer.
S0048	β-Cyclodextrin Inclusion Complex with Dimethyl[4-hydroxypiperidin-4-yl]Phosphonates as Green Plant Growth

Poster 6	Stimulators **Aigul Ye. Malmakova**, V. K. Yu, N. U. Kystaubayeva, A. G. Zazybin and T. E. Li Institute of Chemical Sciences, Kazakhstan *Abstract*—Herein we report on the synthesis the synthesis of new dimethyl [1-(benzyl-, 2-phenylethyl-)-4-hydroxypiperidin-4-yl)]phosphonates obtained by reacting 1-(benzyl- or 2-phenylethyl-)piperidone-4 with dimethylphosphite in presence of sodium methylate in hexane. NMR spectroscopy showed that the complexation of β-cyclodextrin (β-CD) (host) with the hydroxyphosphonate (guest) is accompanied by the entry of a hydrophobic aromatic fragment of the substrate molecule into the inner sphere of the host molecule. In addition, the supramolecular interaction of the hydrophilic part of the guest molecule with the outer surface of β-CD is shown. As a result, a 1:1 complex is formed. Dimethyl [1-(benzyl-, 2-phenylethyl-)-4-hydroxypiperidin-4-yl)]phosphonates showed perceptible stimulation of growth and development of stems and/or roots of spring wheat Triticum aestivum Kazakhstanskaya-10, Severyanka and Miras.
S0054 Poster 7	Molecular characterization and evolution of influenza C viruses in Thailand **Jira Chansaenroj**, Preeyaporn Vichaiwattana and Yong Poovorawan Chulalongkorn University, Thailand *Abstract*—In addition to the influenza A and B viruses which is responsible for seasonal influenza, influenza C virus is not as well-studied but is known to cause mild respiratory illness in young children. In Thailand, there is currently no epidemiological and molecular data on influenza C virus. A total of 1,070 clinical samples from children who experienced influenza-like illness between January 2015 and December 2017 which previously tested negative for influenza A and B viruses and RSV were screened for influenza C virus using real-time reverse-transcription polymerase chain reaction. Nucleotide sequences of the hemagglutinin-esterase (HE) gene from four positive samples were examined using phylogenetic analysis implemented in MEGA and BEAST software. The four Thai strains clustered in the SP82 and KA176 lineages and were genetically similar to strains previously identified in Japan and The Philippines. There was evidence of reassortment of the internal genes among the lineages. The nucleotide substitution rate of the HEF gene was 5.20×10^{-4} substitution/site/year, which was lower than those of the HA genes from influenza A (H3N2) and influenza B viruses. These results demonstrate the presence of influenza C virus infection in Thais, albeit with infrequent prevalence

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S0055 Poster 8	Inhibitory Mechanisms of Hinokitiol in A549 Lung Cancer Cells **Joen-Rong Sheu** Taipei Medical University, Taiwan *Abstract*—Hinokitiol, a natural monoterpenoid, was reported to have anticancer effects. However, the detailed mechanisms of hinokitiol on adenocarcinoma A549 cells remain to be fully elucidated. Thus, the current study was designed to evaluate the effect of hinokitiol on the migration of human lung adenocarcinoma A549 cells in vitro. When treated with non-toxic doses (1–5　M) of hinokitiol, the cell migration is markedly suppressed. Hinokitiol significantly reduced p53 and Bax expression. A dose-dependent inhibition of activated caspase-9 and -3 was observed in the presence of hinokitiol. An observed increase in matrix metalloproteinases (MMPs) -2/-9 was significantly inhibited by hinokitiol. Remarkably, when A549 cells were subjected to hinokitiol (1–5　M), there was an increase in the activities of antioxidant enzymes catalase (CAT) and superoxide dismutase (SOD) from the reduction in cells. In addition, the incubation of A549 cells with hinokitiol significantly activated the cytochrome c expression, which may be triggered by activation of caspase-9 followed by caspase-3. These observations indicate that hinokitiol inhibited the migration of lung cancer cells through several mechanisms, including the activation of caspases-9 and -3, induction of p53/Bax and antioxidant CAT and SOD, and reduction of MMP-2 and -9 activities.
S0061 Poster 9	New Iridium (III)-Derived Organometallic Compound Against Arterial Thrombosis **Yen-Jen Chen**, Chih-Wei Hsia, Joen-Rong Sheu and Cheng-Ying Hsieh Taipei Medical University, Taiwan *Abstract*—Platelet activation plays a major role in cardio and cerebrovascular diseases and cancer progression. Disruption of platelet activation represents an attractive therapeutic target for reducing the bidirectional cross talk between platelets and tumor cells. We recently developed an Ir (III)-derived complex, [Ir(Cp*)1-(2-pyridyl)-3-(2-hydroxyphenyl)imidazo[1,5-a]pyridine Cl]BF4 (Ir-11), which exhibited strong antiplatelet activity; hence, we assessed the therapeutic potential of Ir-11 against arterial thrombosis. In collagen-activated platelets, Ir-11 inhibited platelet aggregation, ATP-release, intracellular Ca^{2+} mobilization, P-selectin expression, and OH· formation as well as the phosphorylation of phospholipase Cγ2 (PLCγ2), protein kinase C (PKC), mitogen-activated protein kinases (MAPKs), and Akt. Neither the adenylate cyclase inhibitor nor the guanylate cyclase inhibitor reversed the Ir-11-mediated antiplatelet effects. In experimental mice, Ir-11 prolonged the bleeding time and reduced mortality associated with acute pulmonary thromboembolism.

	Ir-11 plays a crucial role by inhibiting platelet activation through the inhibition of the PLCγ2–PKC cascade and the subsequent suppression of Akt and MAPK activation, ultimately inhibiting platelet aggregation. Therefore, Ir-11 can be considered a new therapeutic agent against either arterial thrombosis or the bidirectional cross talk between platelets and tumor cells.
S0062 Poster 10	Inhibitory Mechanisms of Morin Hydrate in Human Platelet Activation **Chih-Wei Hsia** and Joen-Rong Sheu Taipei Medical University, Taiwan *Abstract*—Morin hydrate, a bioactive flavonoid, has been proven to prevent inflammation and apoptosis of cells. Flavonoids can reduce the risk of cardiovascular diseases, in which platelet activation plays a major role. This study investigated the effect of morin hydrate on platelet activation in vitro and in vivo. Morin hydrate markedly inhibited platelet aggregation stimulated by collagen in human platelets but not that stimulated by other agonists. In collagen-activated platelets, morin hydrate inhibited adenosine triphosphate (ATP) release; intracellular Ca^{2+} mobilization; P-selectin expression; and phosphorylation of phospholipase Cγ2 (PLCγ2), protein kinase C (PKC), and Akt. In mitogen-activated protein kinase (MAPK) activation, morin hydrate evidently diminished ERK2 or JNK1 activation, except for p38 MAPK. Additionally, morin hydrate markedly reduced the OH·signals in platelet suspensions but not in the cell-free system (Fenton reaction solution). In conclusion, morin hydrate crucially inhibits platelet activation through inhibition of the PLCγ2–PKC cascade and subsequent suppression of Akt and MAPK activation, thereby ultimately inhibiting platelet aggregation. Therefore, this paper suggests that morin hydrate constitutes a novel and potential natural therapeutic product for preventing or treating thromboembolic disorders.
S0083 Poster 11	Transduced PEP-1-GLRX1 Protein Inhibits Inflammatory Response by Regulation of MAPK and NF-κB Signaling Pathways in Macrophage Cells **Yeon Joo Choi**, Min Jea Shin, Dae Won Kim, Sung Ho Lee, Sunghou Lee, Won Sik Eum and Soo Young Choi Hallym University, Korea *Abstract*—Glutaredoxin 1 (GLRX1), a redox-regulator of the thioredoxin superfamily, is known to play an important role in cell survival as cellular anti-oxidant functions. Inflammation is highly associated with various diseases such as cancer, arthritis, and age-related diseases. Therefore, we investigated whether GLRX1 protected cells and tissues against inflammation. For transduction of protein into the cells and tissues, we prepared cell permeable PEP-1-GLRX1 protein. Protective

	effects of PEP-1-GLRX1 protein against lipopolysaccharide (LPS)-induced inflammatory responses in Raw 264.7 cells and in a 12-O-tetradecanoylphobol 13-acetate (TPA)-induced mouse model were observed. Using western blotting and fluorescence microscopy analysis, we confirmed that PEP-1-GLRX1 protein transduced into Raw 264.7 cells. Also, transduced PEP-1-GLRX1 protein markedly reduced levels of cyclooxygenase-2 (COX-2) and inducible nitric oxide synthase (iNOS) as well as suppressed activation of mitogen activated protein kinases (MAPKs) and nuclear factor-kappaB (NF-κB) caused by LPS in Raw 264.7 cells. Furthermore, immunohistochemial analysis demonstrated that PEP-1-GLRX1 protein transduced into skin tissues and significantly reduced ear edema in a TPA-induced mouse ear edema model. These results indicate that PEP-1-GLRX1 protein attenuates inflammatory responses in cells and animal model suggesting that PEP-1-GLRX1 protein can be used as therapeutic protein drug for inflammatory diseases.
S0085 Poster 12	Sin1 Regulates Proliferation and Invasion of Prostate Cancer via Pi3k-Akt-Mtorc2 Pathway Yunchuanxiang Huang, Lu Yang and **Ziyan Wang** University of Electronic Science and Technology of China, China *Abstract*—Prostate cancer is one of the most common malignant tumors in man, and its mortality is only behind skin cancer in the Caucasian population. In China, its incidence and mortality increase by years due to changed life style; but the prevention and therapy lag far behind American and European countries. Prostate cancer initiates due to the dysfunction of balance between proliferation and apoptosis in prostate epithelial cells, which is caused by abnormal AKT activation. Sin1 is the key component for mTORC2 complex, whose function directly determines the activity of the mTORC2 complex and AKT. Our early study found that Sin1 may involve in inhibiting AKT activation via binding with activating transcriptional factor 3(ATF3) to repress prostate cancer. For further exploring the role of Sin1, we checked Sin1 expression in human prostate cancer tissues. The results show that Sin1 level is corelated with progression and malignant of prostate cancer. Further inhibition of Sin1 expression in prostate cancer cells by siRNA destroyed the activation of mTORC2 and AKT, and attenuated cell invasion. While overexpression of Sin1, proliferation and invasion were elevated. Our findings reveal the vital role of Sin1 in prostate cancer, which may be a future target for therapy.
S0006 Poster 13	Research on Response Surface Optimization of Culture Medium for Antibacterial Substances Produced by Bacillus Amyloliquefaciens GN59 **Liu Yaping**, Zhao Bo, Emiliya Kalamiyets, Wu Peng and Chu Jie Qilu University of Technology, China

Abstract—Single factor optimization experiment and response surface optimization experiment were designed to research the influence of different culture medium components to bacteriostatic active substances produced by bacillus amyloliquefaciens GN59 strain, and a culture medium formula suitable for the GN59 strain to produce the bacteriostatic active substances was screened. In the single factor experiment, the optimal formula was: glucose 10.0g/L, $K_2HPO_4{\cdot}3H_2O$ 1.2 g/L, KH_2PO_4 1.0 g/L, $(NH_4)_2SO_4$ 2.00 g/L, $Na_3C_6H_5O_7{\cdot}3H_2O$ 0.9 g/L, and $MgSO_4{\cdot}7H_2O$ 0.15 g/L, and the bacteriostatic activity was improved by 14.32% in comparison with that before optimization. In the response surface optimization experiment, the optimal culture medium components were glucose 6.15 g/L, $K_2HPO_4{\cdot}3H_2O$ 1.2 g/L, KH_2PO_4 1.0 g/L, $(NH_4)_2SO_4$ 2.50 g/L, $Na_3C_6H_5O_7{\cdot}3H_2O$ 1.01 g/L, and $MgSO_4{\cdot}7H_2O$ 0.15 g/L, the bacteriostatic activity was improved by 31.18% in comparison with that before optimization, and meanwhile, the product cost was lowered, and batch low-cost and efficient fermentation production of the bacillus amyloliquefaciens GN59 strain was realized.

S0021

Poster 14

Semantic Segmentation of Colon Gland with Conditional Generative Adversarial Network

Liye Mei, Xiaopeng Guo and Chaowei Cheng
Yunnan University, China

Abstract—Semantic segmentation of colon gland is notoriously challenging due to their complex texture, huge variation, and the scarcity of training data with accurate annotations. It is even hard for experts, let alone computer-aided diagnosis systems. Recently, some deep convolutional neural networks (DCNN) based methods have been introduced to tackle this problem, achieving much impressive performance. However, these methods always tend to miss segmented results for the important regions of colon gland or make a wrong segmenting decision. In this paper, we address the challenging problem by proposed a novel framework through conditional generative adversarial network. First, the generator in the framework is trained to learn a mapping from gland colon image to a confidence map indicating the probabilities of being a pixel of gland object. The discriminator is responsible to penalize the mismatch between colon gland image and the confidence map. This additional adversarial learning facilitates the generator to produce higher quality confidence map. Then we transform the confidence map into a binary image using a fixed threshold to fulfill the segmentation task. We implement extensive experiments on the public benchmark MICCAI gland 2015 dataset to verify the effectiveness of the proposed method. Results demonstrate that our method achieve a better segmentation result in terms of visual perception and two quantitative metrics, compared with other methods.

S0026 Poster 15	Comparative Studies Between Hydrothermal Carbonation and Torrefaction for Biofuel Production from Poultry Litter **Rafail Isemin**, Aleksandr Mikhalev, Oleg Milovanov, Dmitry Klimov, Natalia Muratova, Kristina Krysanova, Yuri Teplitskii, Anatolii Greben'kov and Vadim Kogh-Tatarenko Tambov State Technical University, Russia *Abstract*—The results of comparative experiments on the production of biofuel from poultry litter (PL) by the method of low-temperature pyrolysis (Torrefaction) and hydrothermal carbonization are presented. Comparison of the obtained results shows that as a result of hydrothermal carbonation of PL (processing temperature 180-210 ℃, treatment time 240 minutes), the carbon content in the manure can be increased by 1.35 times, and the oxygen content is reduced in 2.2 times, the lower heat of combustion of the fuel obtained, which is similar in its characteristics to lignites, can be increased by 1.25 times to 19.7 MJ/kg. As a result of low-temperature pyrolysis in the fluidized bed at a temperature of 300 ℃ in a nitrogen medium and superheated water vapor, the carbon content can be increased by 1.16 times, and the oxygen content is reduced in 2.8 times. The lowest heat of combustion of the fuel produced can be increase by 1.13 times to 18.8 MJ/kg. Considering that the technology of PL treatment by low-temperature pyrolysis in the fluidized bed requires significantly less processing time (360-480 seconds), this technology can be fully considered as an alternative to hydrothermal carbonization.
S0027 Poster 16	Stability of Mitotic Spindle Using Computational Mechanics **Andrii Iakovliev,** Srinandan Dasmahapatra and Atul Bhaskar University of Southampton, UK *Abstract*—Fidelity of cell division depends on the ability of an internal cell structure called the mitotic spindle, to maintain the structural integrity of the cellular architecture despite being subject to high compressive loading. We propose a generic software tool called Spindle FEA that employs continuum mechanics and finite elements analysis (FEA) code Abaqus CAE to study the stability of mitotic spindles in various phases of mitosis. The proposed application has a modular structure which allows easy modification of any part of the analysis which is of particular importance considering that new knowledge of spindles is constantly emerging. Thanks to the highly optimised finite element solver used in Abaqus CAE, Spindle FEA is highly suitable for large multi-parametric studies which in turn may significantly benefit the planning of new experiments or identifying new key properties of the spindle. We also discuss the main physiological properties of spindles and show how they are modelled with the proposed technique as well as

	discuss all the essential analysis steps. We use Spindle FEA to study the buckling of a mitotic spindle in anaphase B to show how the additional stiffness of the lateral support of the spindle affects the left-right symmetry of cell division as well as to demonstrate the capacities of the proposed technique.
S0058 Poster 17	CNN-SVR for CRISPR-Cpf1 Guide RNA Activity Prediction with Data Augmentation **Guishan Zhang** and Xianhua Dai Sun Yat-sen University, China *Abstract*—CRISPR from Prevotella and Francisella 1 (Cpf1), a RNA-guided DNA endonuclease that belongs to a novel class II CRISPR system, has recently become a popular tool for genome editing. How to improve the on-target efficiency and specificity of this system is an important and challenging problem. This paper presents a method for CRISPR-Cpf1 guide RNA activity prediction. Convolutional Neural Network (CNN) and support vector regression (SVR) are combined for this purpose. In the proposed framework, single-base substitution mutation data augmentation technique is applied to generate guide RNAs with indel frequencies, thus increasing the labeled data. In the hybrid CNN-SVR model, CNN works as a trainable feature extractor and SVR performs as the regression operator. Specifically, a merged CNN-based regression model is used to pre-train the model for predicting Cpf1 activity based on target sequence composition. Considering the chromatin accessibility information, the SVR is used to generate the predictions. Experiments on the commonly datasets show that our algorithm outperforms the available state-of-the-art tools.
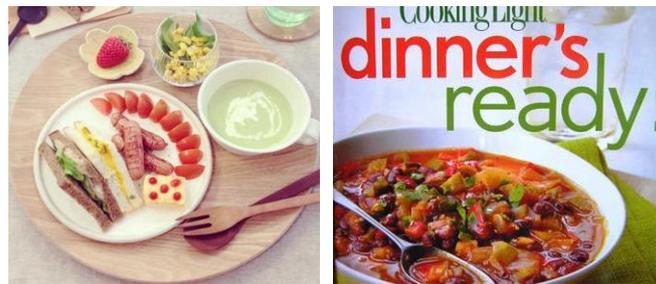
Dinner	
17:30-19:30	Lobby of Clove

Listeners

Listener 1
Zoran Stosic, Clinical Centre of Vojvodina, Serbia
Listener 2
Su-Kyung Shin, Keimyung University School of Medicine, South Korea
Listener 3
Seung Eun Song, Keimyung University School of Medicine, South Korea
Listener 4
Hyeok Kim, Kyunghee University, South Korea
Listener 5
Kyung Sik Yoon, Kyunghee University, South Korea
Listener 6
Chun-Chang Ho, Yonsei University, South Korea
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Suhyeon Lee, Yonsei University, South Korea
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Ji Yoon Park, Yonsei University, South Korea
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Bo Young Shin, Yonsei University, South Korea
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Jinsu Shin, Yonsei University, South Korea
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Giha Kim, Yonsei University, South Korea
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Ji Young Son, Good T Cells, Inc., South Korea
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Jee-Eun Yang, Yonsei University, South Korea
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Jianlin Cheng, University of Missouri, USA
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Jung Jin Yang, Catholic University, South Korea
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Songwook Lee, Korea National University of Transportation, South Korea
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Jose Nacher, Toho University, Japan

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| Listener 22 |
| **Zhaodi Zheng**, Shandong Normal University, China |
| Listener 23 |
| **Su He**, Nanjing University, China |
| Listener 24 |
| **Ekaterina Sukhorukova**, Polzunov Institute, Russia |
| Listener 25 |
| **Vladimir Mikhailov**, Polzunov Institute, Russia |
| Listener 26 |
| **Yuri Sukhorukov**, , Polzunov Institute, Russia |

Conference Venue

## Shaw Foundation Alumni House, National University of Singapore,

Singapore

Address: 11 Kent Ridge Drive, Singapore 119244
Tel: (+65) 6516 7700 Fax: (+65) 6464 1498
Email: sfahvenues@nus.edu.sg
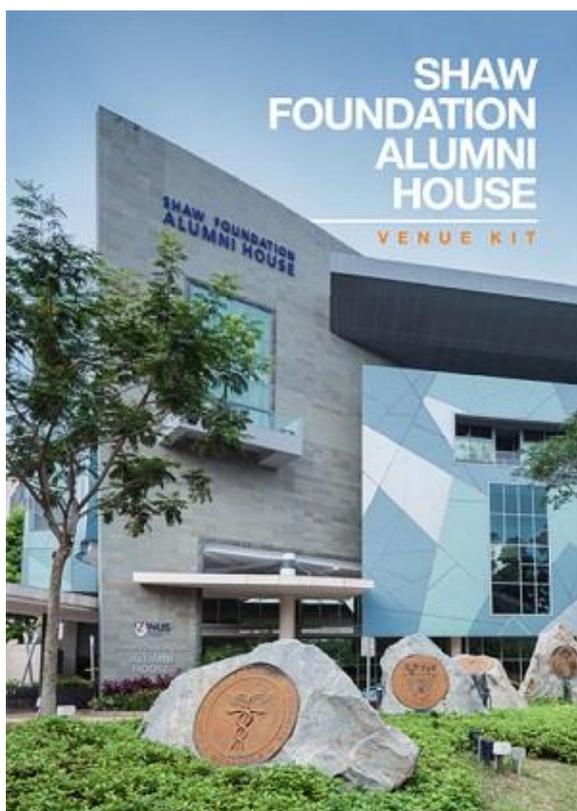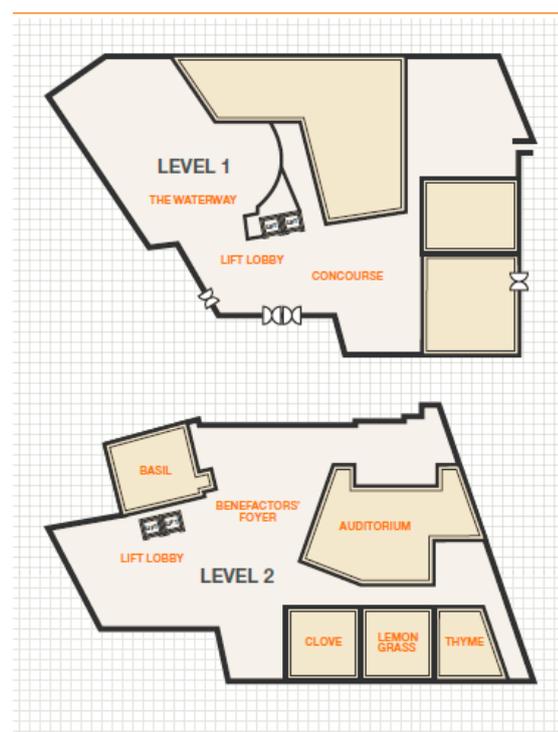
Hotel Recommendation

Tips: The registration fee does not cover the accommodation. It should be booked by participants themselves. The follows are some hotels for recommendation. It is suggested an early booking should be done.

Bay Hotel Singapore
http://www.bayhotelsingapore.com/
Park Avenue Rochester
http://parkavenueintl.com/parkavenuerochester/
Citadines Fusionopolis Singapore
http://www.citadines.com/singapore/singapore/citadines-fusionopolis-singapore/index.html

Map
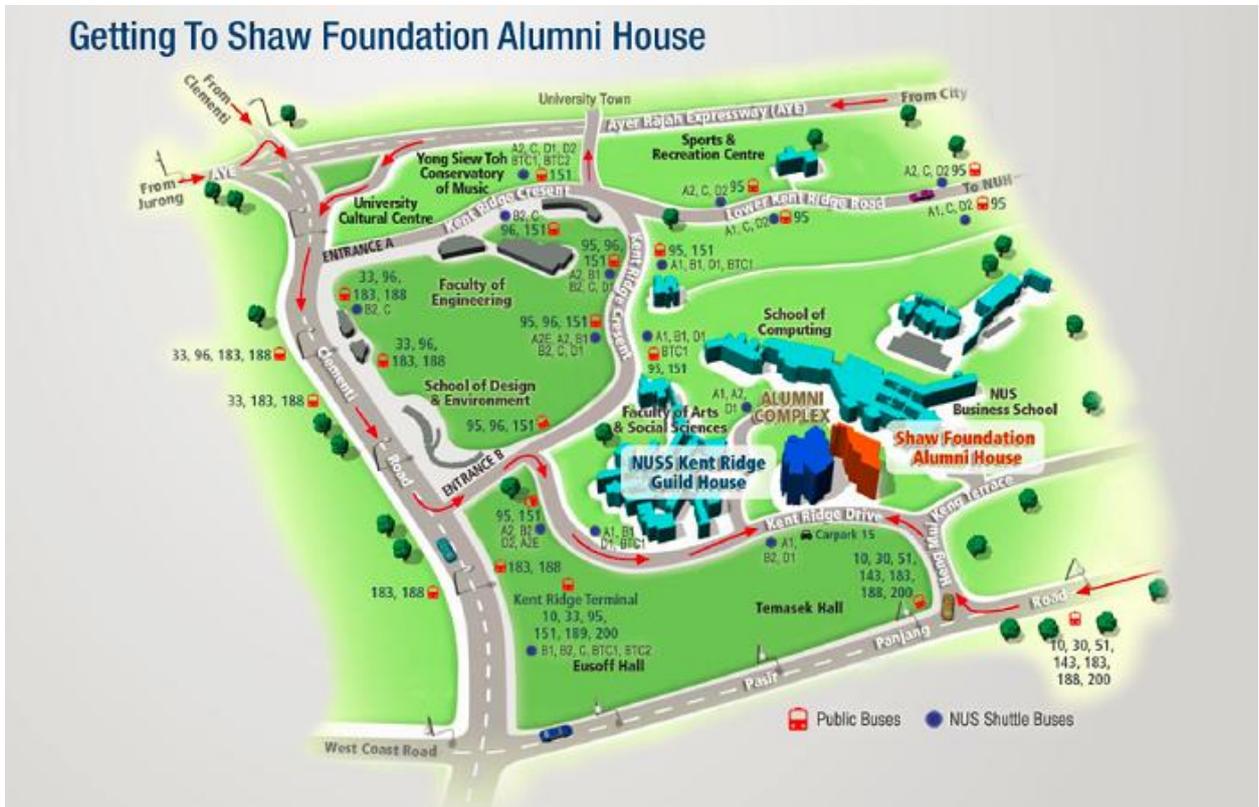
Academic Visit & Tour
9:00-17:00, January 9, 2019 (Wednesday)

Tips: 1. Gather at Bay Hotel Singapore 8:50 a.m.

2. The following places are for references, and the final schedule should be adjusted to the actual notice.

Time	Specific Arrangement
9:00-12:00	1. Merlion Park; 2. St Andrew's Cathedral; 3. Onna Marine Park;
12:00-14:00	4. Lunch
14:00-17:00	5. Gardens by the Bay; 6. Little India;

Merlion Park, is a Singapore landmark and major tourist attraction, located at One Fullerton, Singapore, near the Central Business District (CBD). The Merlion is a mythical creature with a lion's head and the body of a fish that is widely used as a mascot and national personification of Singapore. Two Merlion statues are located at the park. The original Merlion structure measures 8.6 meters tall and spouts water from its mouth. It has subsequently been joined by a Merlion cub, which is located near the original statue and measures just 2 metres tall.The park was first designed by the Singapore Tourism Board (STB) in 1964 as an emblem of Singapore.

St Andrew's Cathedral In the mid-1980's, St. Andrew's Cathedral was restored and renovated to its present. Though there are many changes in the liturgical space, they made every effort to respect the Victorian period during which the Cathedral was designed. Restoration architects, Bawlf, Cooper & Associates completed the design work. The decorative panels are designed by Nicholas Bawlf and based on the Book of Kells. The Cathedral's altar is of particular significance. It was built by acclaimed West Coast native artist Charles Elliot. The top of the altar is yellow cedar, weighing about 400 pounds, which rests on two traditional native "bent boxes". Each box has a different picture carved on each of its four sides, representing different events in the life of Christ or stories from Scripture. These altar panels are rotated several times a year, to coincide with the events in the Church's liturgical year. The lectern was carved by native artist Roy Henry Vickers. It has a carving of Christ on the front, symbolizing both death and resurrection, the red side being the crucified Christ wearing the crown of thorns and the black side being the risen Christ. A new icon of the Holy Family was formally installed on September 8, 2007. The icon, which is 7 feet high by 5 feet wide, is the largest ever written by iconographer André Prevost of Manitoba.

Chinatown in Singapore is a sharp contrastto the rest of the city, with low rise buildings and culture bursting out onto the streets, from the fragrant smells of traditional cuisine to the bold red and gold tones that run through the neighbourhood. This is an area that's proud of its heritage, and has it very much on display. There are ornate Chinese, Buddhist and Hindu temples, museums galore and plenty of opportunities to soak up the bustling streets lined with old shophouses.

Gardens by the Bay is an independent organization responsible for developing and managing one of Asia's foremost garden destinations.

The Gardens is led by a multidisciplinary team of professionals who have been involved in the greening of Singapore and had worked alongside international and local experts to develop the Gardens. It has an in-house team of skilled landscape designers,

horticulturists, arborists, engineers, plant health, garden and turf management experts, as well as plant research and orchid breeding professionals, who leverage on the extensive global network of plant sources cultivated during the development days, to continuously curate and grow the Gardens.

Guided by its vision to be a world of gardens for all to own, enjoy and cherish, Gardens by the Bay has earned numerous awards and accolades including the World Building of the Year in 2012, the President's Design Award (Singapore) in 2013, the Outstanding Achievement Award by the Themed Entertainment Association in 2014, the Largest Glass Greenhouse (Flower Dome) in the Guinness World Records for 2015, and the TripAdvisor Certificate of Excellence in 2016. These achievements are testament to the ongoing excellence of the Gardens and spur the team towards attaining greater success.

Little India, an ethnic district in Singapore. It is located east of the Singapore River—across from Chinatown, located west of the river—and north of Kampong Glam. Both areas are part of the urban planning area of Rochor. Little India is commonly known as Tekkain the Indian Singapore an community.

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Feedback Information

(Please fill this form and return it to conference specialist during the conference days.)

Personal Information	
Conference Name and Paper ID	
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Affiliation	

Please indicate your overall satisfaction with this conference with "√"

	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied
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Presentation and Paper Value					
Registration Process					
Venue					
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Do You Willing to Receive CBEES Future Conferences Information Via E-mail	Yes☐ No☐
Where did you get the conference information?	
Would you please specify the main reason for attending this conference?	
Did the conference fulfill your reason for attending?	Yes– Absolutely ☐ Yes- But not to my full extent ☐ No☐ (If "No", please tell us the main reason)

Would you please list the top 3 to 5 universities in your city?	
Other Field of Interest	
Any Other Suggestions/Comments	

Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs!