Cardiac Physiome WorkShop 2016

in Seoul, Korea

August, 23 - 26
Asan Medical Center

Organization:
Cardiac Physiome Society
Host:
Korean Physiome Society
Sponsor:

Local committee
Hyo Won Bang, Chung-Ang University, **Dong Mook Kang**, Sungkyunkwan University
Eun Bo Shim, Kang Won National University, **Jin Han**, Inje University
Chae Hun Leem, University of Ulsan, **Jae Boum Youm**, Inje University
Sung Joon Kim, Seoul National University, **Ki Moo Lim**, Kumoh National Institute of Technology

Oral Presentations

TUESDAY, AUGUST 23

Place: ASAN Hall at Biomedical Research Center

16:00 ~	**Registration**
18:30 ~	**Welcome Reception**

WEDNESDAY, AUGUST 24

Place:B1 Auditorium

08:30 ~ 08:50	**Registration & Simple Breakfast**
08:50 ~ 09:00	**Opening remark** Leem Chae Hun, University of Ulsan

Plenary Lecture — Chair: Nic Smith

09:00 ~ 09:40	**The Visible Heart® Project and, "The Atlas of Human Cardiac Anatomy** Iaizzo Paul, University of Minnesota
09:40 ~ 10:00	**Coffee Break** — Place : Auditorium's Lobby

Arrhythmia Mechanisms — Chair: Hui-Nam Park

10:00 ~ 10:20	**Analysis of lead placement optimisation metrics in cardiac resynchronisation therapy with computational modelling** Smith Nic, University of Auckland
10:20 ~ 10:40	**P-wave terminal force is affected by site of earliest right atrial activation** Loewe Axel, Karlsruhe Institute of Technology(KIT)
10:40 ~ 11:00	**The different possible mechanisms of the perpetuation of Torsade de Pointes in the drug-induced Chronic AV Block Dog** Nele Vandersickel, Ghent University
11:00 ~ 11:20	**Dynamics of cardiac re-entry caused by interaction with anatomical features and ischaemic border zone re-perfusion: perturbation theory lessons** Biktasheva Irina, University of Liverpool
11:20 ~ 11:40	**Computational Analysis of Pro-Arrhythmic Effects of KCNQ1 Mutation in Cardiac Electro-mechanical Behaviour** Lim Ki Moo, Kumoh National Institute of Technology
11:40 ~ 12:00	**Poster teaser session**
12:00 ~ 14:00	**Lunch & Poster**

Plenary Lecture — Chair: Andrew McCulloch

14:00 ~ 14:40	**Mechano-chemical interactions in cardiac sarcomere contraction: a modeling study** Delhaas Tammo, Maastricht University
14:40 ~ 15:00	**Coffee Break** — Place : Auditorium's Lobby

Cardiac cell and Mitochondria — Chair: Dan Beard

15:00 ~ 15:20	**A biophysical model of human cardiac contraction** Land Sander, King's College London
15:20 ~ 15:40	**A Human Ventricular Excitation-Contraction Coupling Model** Himeno Yukiko, Ritsumeikan University
15:40 ~ 16:00	**A quantitative investigation of the effect of altered mitochondrial organisation and function on cardiomyocyte performance** Ghosh Shouryadipta, University of Melbourne

16:00 ~ 16:20	**A simulation study on roles of Ca^{2+} in constancy of cardiac energy metabolites during workload transition** **Takeuchi Ayako, University of Fukui**	
16:20 ~ 16:40	**Substrate dependent change of mitochondrial function : experiment and simulation** **Leem Chae Hun, University of Ulsan**	
16:40 ~ 17:00	**A Comparison of Recent Human Ventricular Myocyte Models using Mathematical Decomposition of Dynamics** **Shimayoshi Takao, Kyushu University**	
17:00~	**Free Time**	

THURSDAY, AUGUST 25

Place:B1 Auditorium

08:30 ~ 09:00	**Registration & Simple Breakfast**	**Place : Auditorium's Lobby**
Plenary Lecture Chair		**Chair : James B. Bassingthwaighte**
09:00 ~ 09:40	**Multi-scale, multi-physics heart simulation** **Suguiura Seiryo, University of Tokyo**	
09:40 ~ 10:00	**Coffee Break**	**Place : Auditorium Lobby**
Cardiac Mechanics : Methodology		**Chair : Eun Bo Shim**
10:00 ~ 10:20	**High Resolution Data Assimilation of Passive Cardiac Elastic Heterogeneity in an Infarcted Human** **Balaban Gabriel, Simula Research Laboratory**	
10:20 ~ 10:40	**In Vivo Cardiomyocyte Orientation Mapping with Diffusion Tensor MRI** **Aliotta Eric, UCLA**	
10:40 ~ 11:00	**MRI-Based finite element model to characterize myocardial kinematics and passive stiffness** **Luigi Perotti, UCLA**	
11:00 ~ 11:20	**Electromechanical Viscoactive Constitutive Model of the Heart** **Aditya Ponnaluri, UCLA**	
11:20 ~ 11:40	**Poster teaser session**	
12:00 ~ 14:00	**Lunch & Poster**	
Plenary Lecture		**Chair : Satoshi Matsuoka**
14:00 ~ 14:40	**A vessel-length based method of coronary hemodynamics and its clinical application** **Shim Eun Bo, Kang Won National University**	
14:40 ~ 15:00	**Coffee Break**	**Place : Auditorium Lobby**
Cardiac Mechanics		**Chair : Iaizzo Paul**
15:00 ~ 15:20	**Multi-Scale Modeling and Systems Mechanobiology of Ventricular Hypertrophy and Failure** **McCulloch Andrew, UC San Diego**	
15:20 ~ 15:40	**Patient-Specific MRI-Based Active Contraction and Relaxation Right Ventricle Models With Different Zero-Load Diastole and Systole Geometries for Better Stress and Strain Calculations** **Tang Dalin, WPI**	
15:40 ~ 16:00	**Mitral Valve Regurgitation: can image and computational modelling derived biomarkers enhance patient stratification and optimise treatment?** **Rivolo Simone, King's College London**	
16:00 ~ 16:20	**A Novel Biomechanical Approach to Virtual Mitral Valve Repair** **Kim Hyunggun, Sungkyunkwan University**	
16:20 ~ 16:40	**Coffee Break**	**Place : Auditorium's Lobby**

Clinical Application : Model Based Approach		Chair: Seiryo Suguiura
16:40 ~ 17:00	**Prospective CRT Outcome Prediction through Modelling: Challenges, Lessons & Reflections** Lee Jack, King's College London	
17:00 ~ 17:20	**Data Assimilation in Cardiac Modelling using Adjoint Methods** Samuel Wall, Simula Research Laboratory	
17:20 ~ 17:40	**An in silico ECG data base of drug effects for proarrhythmic risk assessment by UT-Heart and K-computer** Okada Jun-ichi, The University of Tokyo	
17:40 ~ 18:00	**The spatiotemporal stability of dominant frequency sites in in-silico modeling of 3-dimensional left atrial mapping of atrial fibrillation** Lim Byounghyun, Yonsei University	
18:00 ~ 18:15	**Next Venue Discussion**	
18:15 ~ 18:25	**Closing remark** Yung E Earm & James B. Bassingthwaighte	
18:30 ~	**Official Dinner**	Place : ASAN Hall

FRIDAY, AUGUST 26

Place:B1 Auditorium

Satellite Symposium(The 5th e-Heart symposium)

Simulation materials for fundamental understanding of cardiac cellular physiome

08:50 ~ 09:00	**Opening remarks** Yung E Earm, Seoul National University	
General electrical activity of an excitable cell		Chair : Yung E Earm
09:00 ~ 09:50	**Automaticity and membrane excitation** Yukiko Himeno, Ritsumeikan University	
09:50 ~ 10:40	**E-C coupling and arrhythmia** Akinori Noma, Ritsumeikan University	
10:40 ~ 11:00	**Coffee Break**	Place : Auditorium's Lobby
Homeostasis and metabolism at cellular level		Chair : Chae Hun Leem
11:00 ~ 11:50	**Ionic concentrations and cell volume regulation** Trevor Powell, Oxford University	
11:50 ~ 12:40	**Enzyme activity and metabolism** Jae Boum Youm, Inje University	
12:40 ~ 13:00	**Closing Remarks** Akinori Noma, Ritsumeikan University	

Posters

AhJin Ryu
Analysis of Correlation between Cerebrovascular Stenosis and Cerebrovascular Reserve by Using a 3D Model

Akitoshi Maeda
A capillary model to analyze glucose supply at increasing cellular demands

Ameneh Asgari Targhi
Analytical description of Action Potential Duration restitution and alternans in a single-cell cardiac model

Ana Rahma Yuniarti
Multi-scale Computational Analysis of Cardiac Pumping Efficacy according to Electrical Conduction Velocity and Action Potential Duration.

Byounghyun Lim

Dominant frequency ablation terminates atrial fibrillation depending on conduction velocity in-silico 3-dimensional model of left atrium

Chu-Pin Lo

Drug Models of Cardiac Channelopathies

Fan Longling

Modeling Active Contraction and Relaxation of Left Ventricle Using Different Zero-Load Diastole and Systole Geometries

JackLee

Modelling Epicardial-Myocardial Coronary Flow, Mechanics & in silico Wave Intensity Analysis

Jun-Seop Song

Arrhythmogenic left atrial appendage in atrial fibrillation: role of heterogeneous curvature in spatial dispersion of action potential duration and wavebreak

Kosuke Taniguchi

Relation between Activation Time and Hemodynamics - Simulation Study with Hemodynamic Model Comprising Cardiac Tissue Model

Kweon, Jihoon

Prediction model for functional assessment of coronary stenoses: mathematical modeling and clinical validation

Kyung Eun Lee

Computational analysis of instantaneous flow reserve of coronary arteries

Lee Philhwa

Ventricular-vascular interaction and impedance matching in coronary vasoregulation

Lluch Eric

Meshless Discretization Method Applied to Cardiac Electrophysiology

Michael Liu

Ventricular tissue simulations consisting of coupled spatially-detailed cells

Minki Hwang

The effect of autonomic nervous system on the cardiac wave dynamics of atrial fibrillation

Natsuki yamamoto

The ionic mechanisms underlying the propagation of action potential and the extracellular potential changes analyzed in a one dimensional cell array of human ventricular cell models

Saki Maekawa

Measurement of cardiac action potentials in anesthetized guinea pig for estimating drug action on conductance of ionic channels

Simone Rivolo

Left ventricular-coronary coupling and coronary wave intensity analysis

Syohei Umehara

Mathematical Analysis of NA-induced Automaticity of the Rat Pulmonary Vein Cardiomyocyte

Tae Heon Noh, Kyehan Rhee

Effects of viscoelastic properties of atherosclerotic plaque on lumen diameter variation

Taiki Tatara

Semi-automatic mapping of variables between biological function model and numerical calculation scheme

Ujihara, Mirei

Ionic mechanisms underlying ventricular fibrillation examined in a one dimensional array of human ventricular myocyte model

Yoo Seok Kim

Electromechanical Responses of Ventricles Under Various Severity of Fibrosis: Simulation Study

Yuttamol Muangkram

A Huxley-based contraction model to reconstruct the accompanying ATP consumption in cardiac myocytes

Zhinuo Wang

Quantifying uncertainty in model-based estimates of tissue stiffness in the failing human heart

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Chae Hun Leem, University of Ulsan

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Jin Han, Inje University
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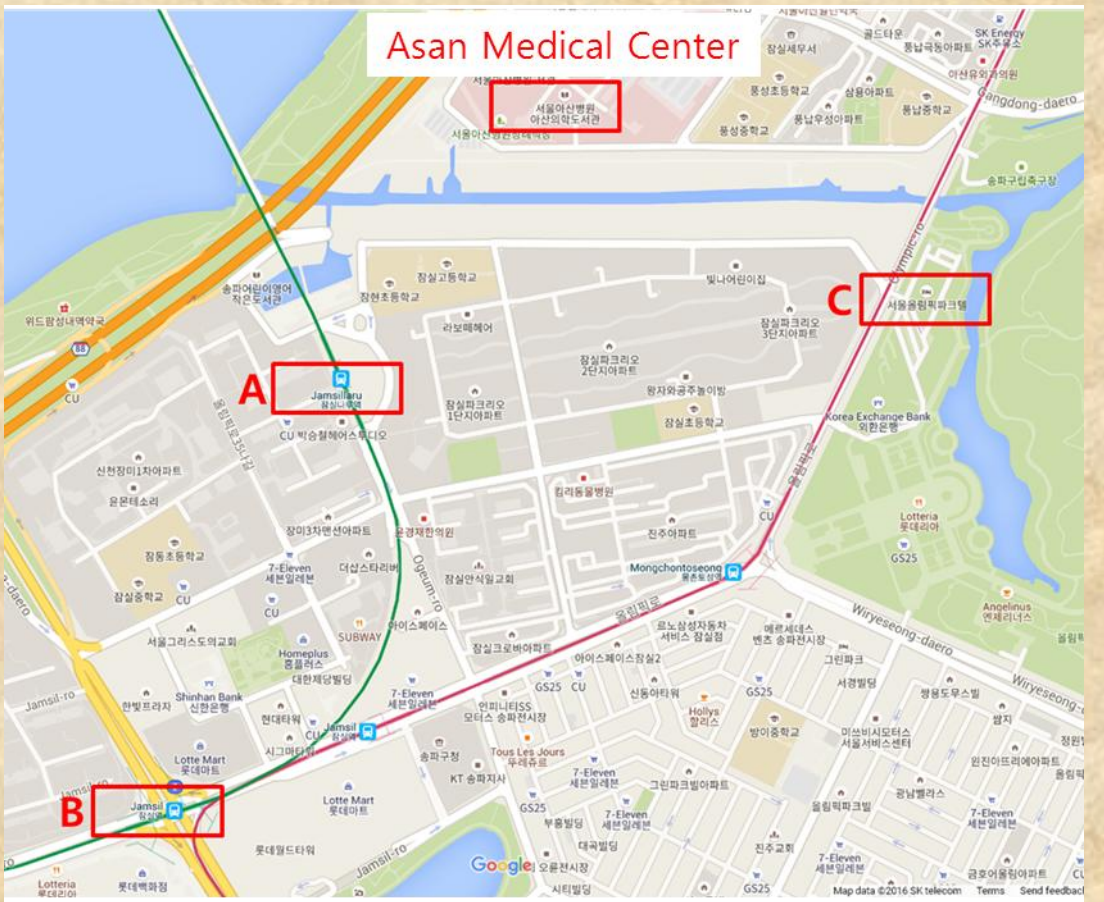
in Seoul, Korea

INFORMATION

1. Location of Asan medical center



A — Jamsilnaru Station(No.2, Green Line)

- Take the Subway and get off at Jamsilnaru Station
- Get out from Exit No.1 of the station and walk to hospital shuttle bus stop
- Take the hospital shuttle bus from there
- Arrive at Asan Medical Center

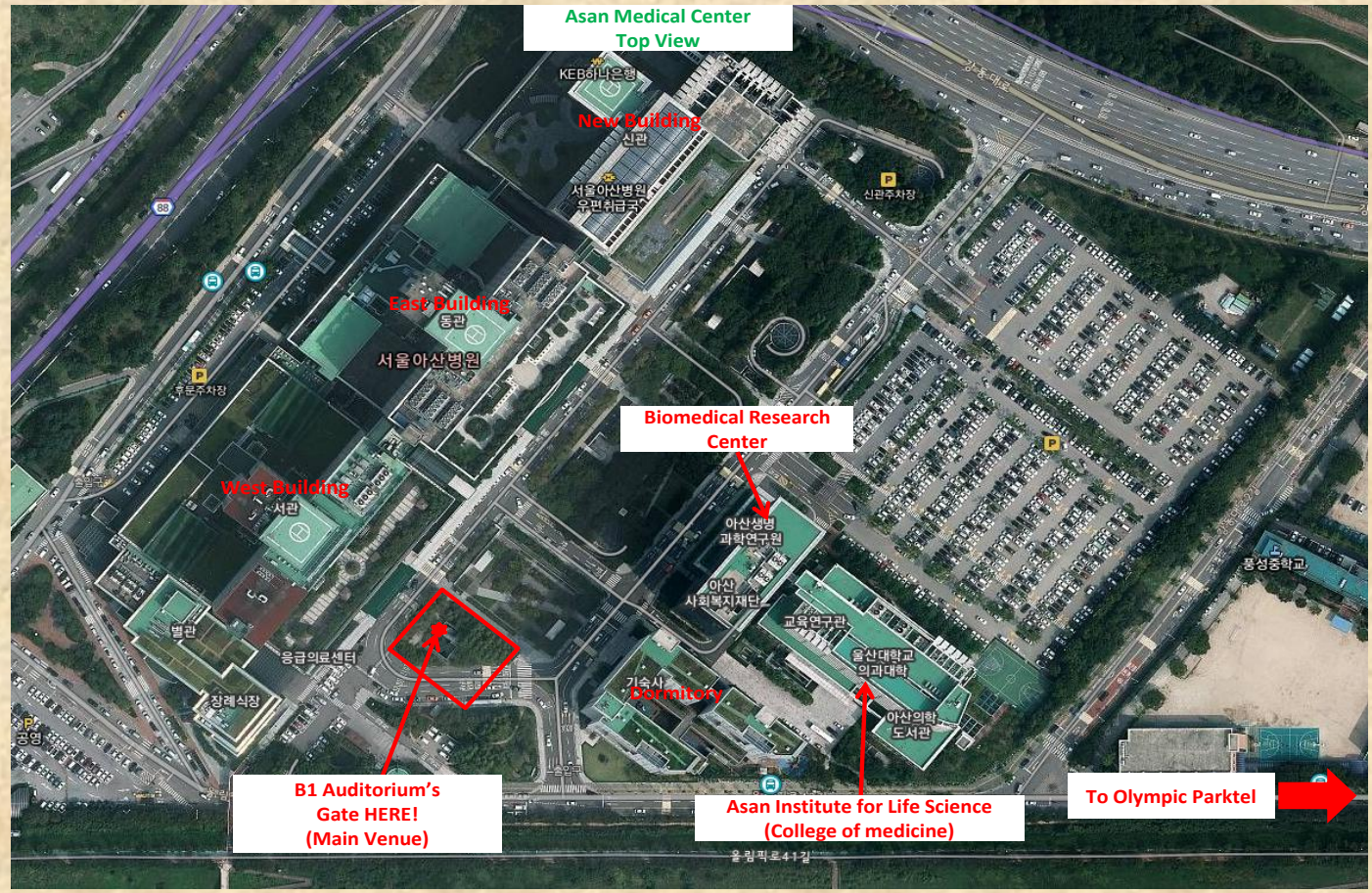
B — Jamsil Station(No.2, Green Line)

- Take the Subway and get off at Jamsilnaru Station
- Get out from Exit No.7 of the station and walk to bus stop
- Take No.4318 bus from there
- Arrive at Asan Medical Center

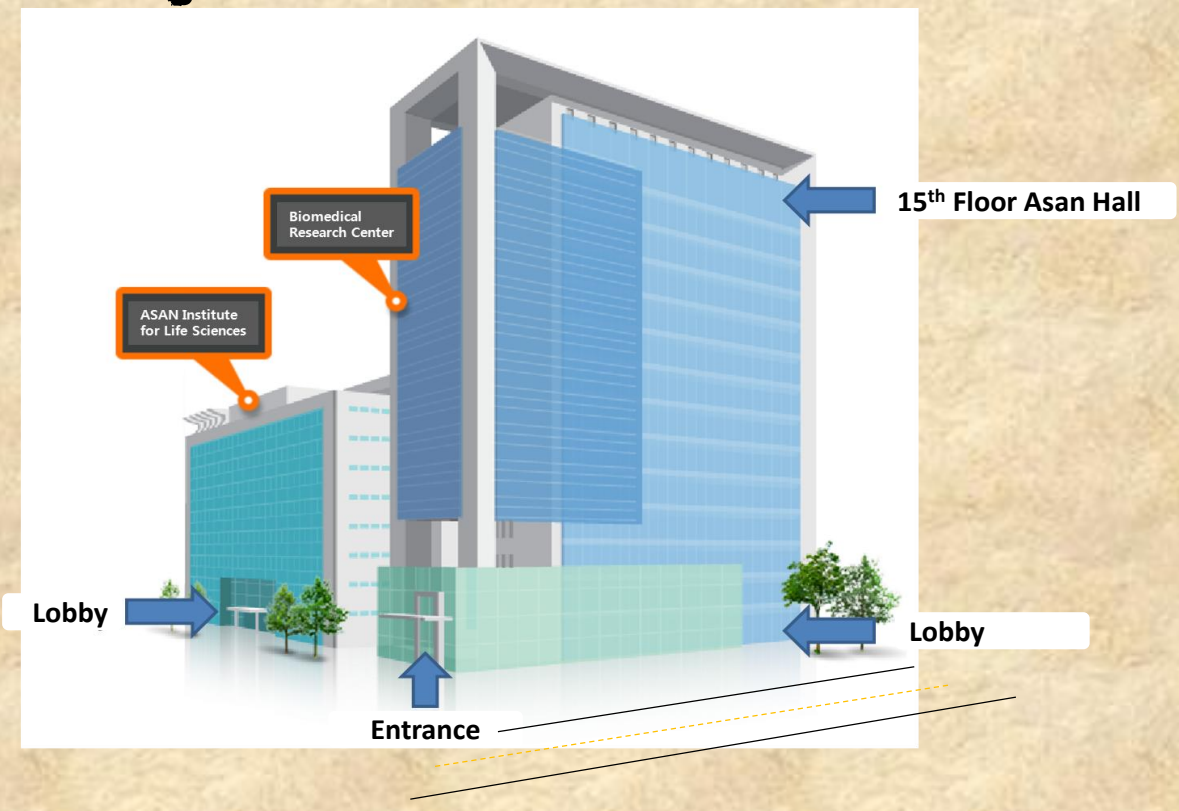
C — Seoul Olympic Parktel

- Take No.4318 bus in front of the hotel
- Arrive at Asan Medical Center

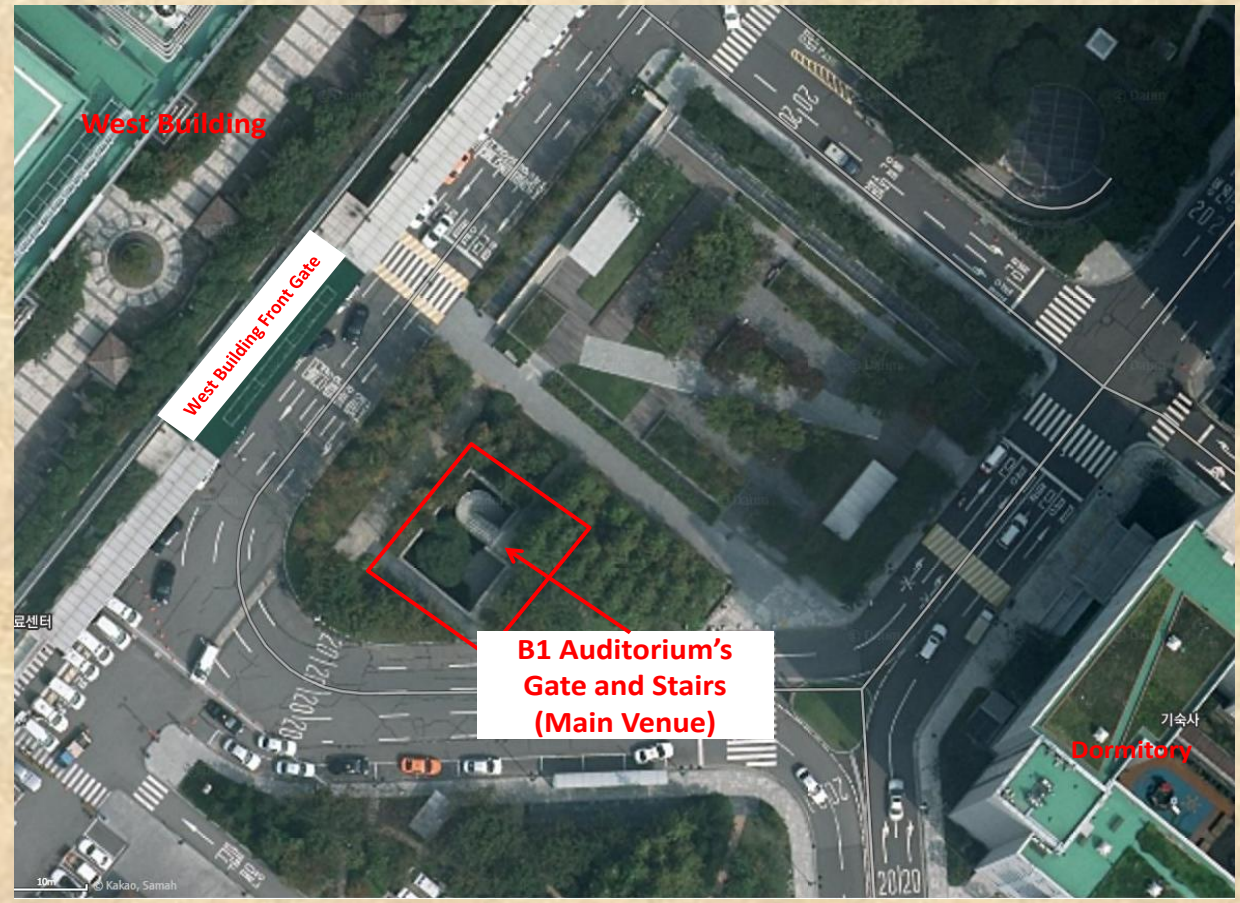
2. Map of Asan Medical center.



3. Building information



4. B1 Auditorium (Main Venue).



-B1 Auditorium's Gate is located in front of West Building Front Gate.

5. Venue information

1) Welcome Reception & Registration (23 day)

- 15th Floor ASAN Hall at Biomedical Research Center

2) Registration & Oral and Poster presentations (24- 25day)

- B1 Auditorium

3) Official Dinner (25 day)

- 15th Floor ASAN Hall at Biomedical Research Center

4) Satellite Symposium (26 day)

- B1 Auditorium

5. Accommodation

1) Location

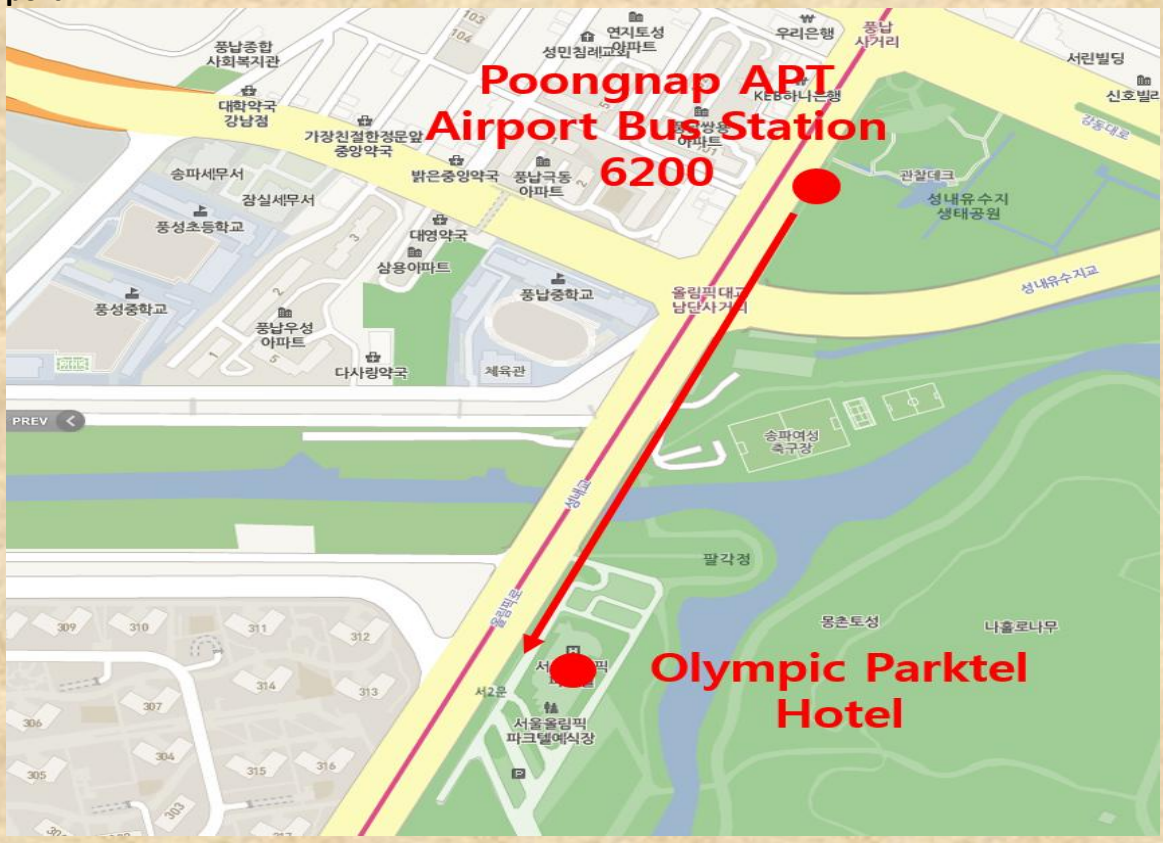
- **Subway Line No. 8 Mongchontoseong Station, Exit 1 / 700m straight ahead (about 10 minutes on foot)**
- **Subway Line No. 2 Jamsillaru Station transferring to a bus heading for Cheonho-dong or 15 minutes on foot from the station**
- **Street Address : 448, Olympic-ro, Songpa-gu, Seoul (zip: 138-749)**
- **Inquiry Contacts : TEL : +82-2-410-2114 FAX : +82-2-410-2100~1**
- **The hotel website is http://www.parktel.co.kr/english/index.asp**

2) From incheon airport to the olympic parktel

Unfortunately, there is no direct connection from the airport to the front of the hotel. There are three buses you can use to reach the hotel.

- 6006 : At the gate 5A and 11B of the incheon airport, you can take 6006 airport limousine bus and get off at Mongchontoseong bus station. The hotel is 10 mins walking distance from the bus station. The bus is operated from 5:30am to 23:06pm at the airport.

- 6200 : The fastest bus to Olympic Parktel. At the gate 5A and 11B of the incheon airport, you can take 6200 airport limousine bus and get off at Poongnap-Apt bus station, the first bus stop from the airport. The hotel is 10 mins walking distance from the bus station. The bus is operated from 5:30am to 23:06pm at the airport.



- KAL limousine : At the gate 4B and 11A of the incheon airport, you can take KAL limousine bus and get off at the Lotte Hotel(Jamsil). You need to take the taxi to the Olympic-Parktel.

6. Poster Presentation.

All posters should be hung by Wednesday (8/24) morning.
Poster presenters should be preparing for the poster teaser session.
The CPW2016 provides poster boards. The board dimensions are 1m x 2m.
The poster sizes are 90cm x 120cm.