

## Schedule (일정표)

## ▶ 11월 2일 목요일

Time	Contents			
	박희택홀 (Hall A)	양윤선홀 (Hall B)	GDR-1 (Hall C)	GDR3-6
14:00-18:00	<b>Symposium 1:</b> TRP Channel (Invited Speakers, Markus Delling, Kido Mizuho, Sponsored by Seoul National University and Prof. So I)			Po-1 (GDR3-4, 오후 1시부터 계시)
18:00-20:00				Poster Presentation and Welcome Reception (Sponsored by Korea Ion Channel Research Group)

## ▶ 11월 3일 금요일

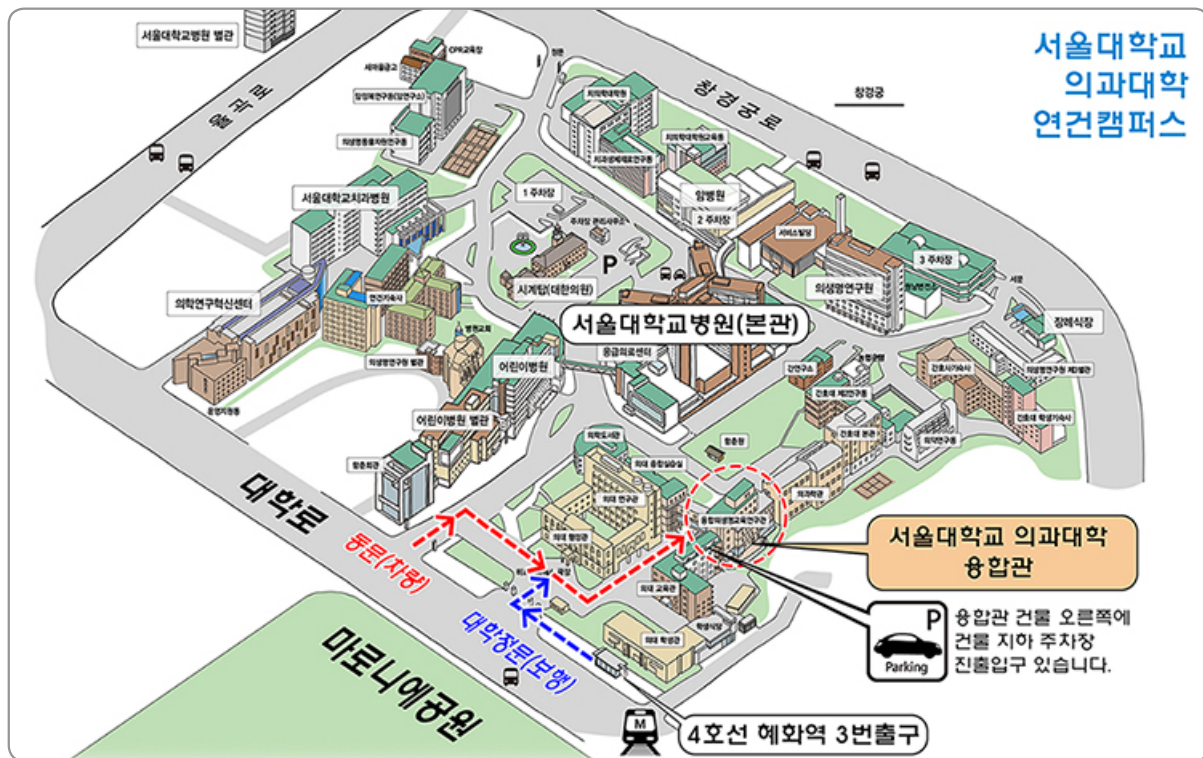
Time	Contents				
	박희택홀 (Hall A)	양윤선홀 (Hall B)	GDR-1 (Hall C)	GDR3-6	
09:00-09:15	Opening Ceremony				
09:15-11:30	<b>Symposium 2:</b> Physiology of Neuropsychiatric Disease	<b>Symposium 3:</b> Inflammation and Pathophysiological Signaling (Sponsored by MRC in Ehwa Womans University)			<b>Symposium 4:</b> Cardiac Physiology and Arrhythmia
11:30-12:00	Coffee Break & Poster Presentation (지정번호 발표자 대기)				
12:00-12:45	Nikon Luncheon Seminar (Lunch, 100 Boxes, 12:00-12:40)	Steering Committee Meeting (Lunch)	Po-2 (GDR 4-5)		
12:45-14:00	<b>Poster-Oral (1)</b> (12:45-14:00)	<b>Poster-Oral (2)</b> (12:45-14:00)			
14:00-14:30	Coffee Break & Poster Presentation (지정번호 발표자 대기)				
14:30-15:30	<b>Plenary Lecture</b> - Prof. Paul Worley				
15:30-18:00	<b>Symposium 5:</b> Learning & Memory	<b>Symposium 6:</b> Vascular Physiology (Invited Speaker - Prof. Michael Hill, Sponsored by Ischemic/Hypoxic Disease Institute, Seoul National University)			<b>Symposium 7:</b> Mitochondria Physiology (Invited Speaker Prof. Wollheim, Sponsored by MRC in Yonsei Wonju University)
18:00-20:00			Group Photo (사진촬영) Official Buffet-Dinner (간친회)		

▶ 11월 4일 토요일

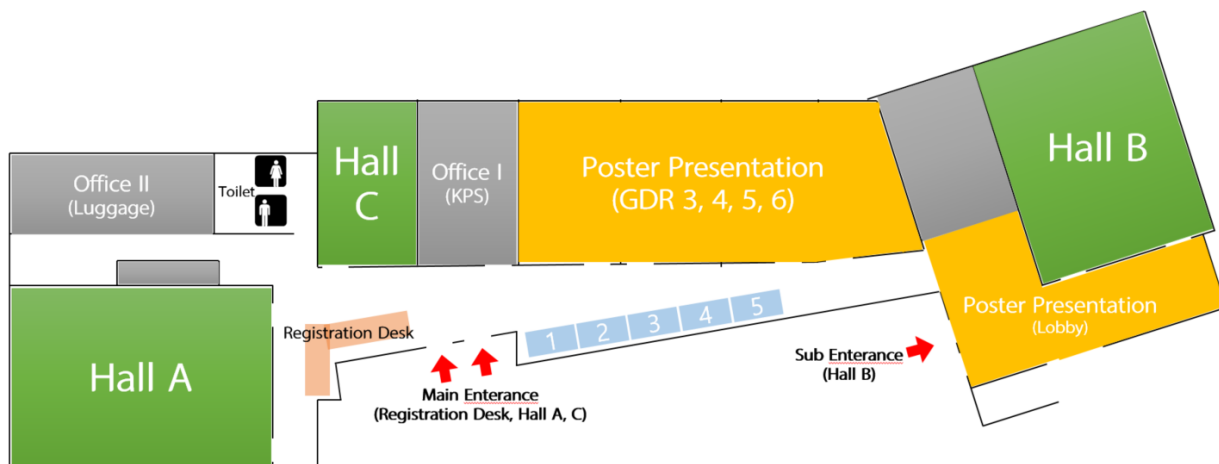
Time	Contents			
	박희택홀 (Hall A)	양윤선홀 (Hall B)	GDR-1 (Hall C)	GDR3-6
09:00-11:15	<b>Symposium 8:</b> KSEP/IMPACT Symposium (Invited Speakers; David A. Hood, P. Darrell Neuffer)	<b>Symposium 9:</b> Chemical Senses (Sponsored by MRC in Yonsei University College of Dentistry)	<b>Symposium 10:</b> Recent Biomedical Approaches in the Outside	Po-3 (GDR 5-6)
11:15-12:15	Coffee Break & Poster Presentation (지정번호 발표자 대기)			
12:15-13:30	IMPACT-Lunch for KSEP Members and Speakers	Yudang Awards Ceremony (유당학술상 시상식)  KPS Members Annual Ceremoy with Lunch (대한생리학회총회)		
13:30-17:00	<b>Symposium 11:</b> KSEP/IMPACT Symposium (Invited Speaker; Jacob M. Haus)	<b>Symposium 12:</b> Functional Food	<b>Symposium 13:</b> Current Status of Research on Novel Tissue, Primo Vascular System (Invited Speakers, B.S. Kwon, K.A. Kang)	

## Venue Guide (학술대회장 안내)

### 캠퍼스 맵



### 서울대학교 의과대학 융합관



이사회: Hall B (양윤선홀) - 11.3(금) 12:00

전시 부스: 1-싸이텍코리아, 2-매직트리, 3-에드사이언, 4-라이프텍, 5-KISTI

## Scientific Program (학술프로그램)

### ► Symposium (11월 2일 목요일)

Contents	
Symposium 1: TRP Channel	Chair: 서인석 (서울대)
Dual action of the $G\alpha_q$ -PLC $\beta$ -PI(4,5)P $_2$ pathway on TRPC1/4 and TRPC1/5 heterotetramers	Jongyun Myeong (Seoul National University College of Medicine)
Functional role of coiled coil domain in the gating of TRPC3/6	Kyu Pil Lee (Chungnam National University, College of Veterinary Medicine)
Renoprotection of Klotho through TRPC6 downregulation	Seung-Kuy Cha (Yonsei University Wonju College of Medicine)
Role of Trp channels in the control of feeding behavior and metabolism	Jong-Woo Sohn (Department of Biological Sciences, Korea Advanced Institute of Science and Technology)
Ca $^{2+}$ signaling in primary cilia during development and disease	Markus Delling (UCSF, USA)
Oral barrier formation via temperature-sensitive TRP channels	Kido Mizuho (Saga University, Japan)
The hypothalamic TRPV1 channels in regulation of food intake	Dong Kun Lee (Gyeongsang National University School of Medicine)
Acceleration of skin barrier restoration by topical botanical products via transient receptor potential V3	Joo Hyun Nam (Dongguk University College of Medicine)
The intracellular Ca $^{2+}$ channel TRPML3 is a PtdIns3P effector that regulates early autophagosome biogenesis	Hyun Jin Kim (Sungkyunkwan University School of Medicine)
The ER/PM microdomain, PI(4,5)P $_2$ and the regulation of STIM1-Orai1 channel function	Seok Choi (Chosun University School of Medicine)

## ► Poster Oral Presentation (11월 3일 금요일)

Time	Contents
12:45-12:55	PO-A-01 (P1-02): Novel KCNQ4 mutations in Korean patients with nonsyndromic hearing loss <i>Hyun Been Choi (Sungkyunkwan University)</i>
12:55-13:05	PO-A-02 (P1-04): PRMT7 regulates neuronal excitability via modulation of NALCN activity <i>Xianlan Wen (Sungkyunkwan University)</i>
13:05-13:15	PO-A-03 (P3-02): Peripheral GABA <sub>A</sub> receptor-mediated signals facilitate chronic inflammatory pain <i>Pa Reum Lee (Seoul National University)</i>
13:15-13:25	PO-A-04 (P3-03): SHP2 mutation mediated cell type specific dysregulation of Ras-Erk signaling pathway <i>Hyun-Hee Ryu (Seoul National University, Chung-Ang University)</i>
13:25-13:35	PO-A-05 (P3-04): Climbing fiber burst-mediated sensory coding is directly represented in post-synaptic Purkinje cell <i>Seung-Eon Roh (Seoul National University, Kyung Hee University)</i>
13:35-13:45	PO-A-06 (P3-05): Channel-mediated GABA release from reactive astrocytes in epileptic hippocampus <i>Chiranjivi Neupane (Chungnam National University)</i>
13:45-13:55	PO-A-07 (P4-02): The E3 ligase c-Cbl inhibits cancer cell migration by neddylation of the proto-oncogene c-Src <i>Jun Bum Park (Seoul National University)</i>
12:45-12:55	PO-B-01 (P2-03): STIM2 and STIM1 have similarities and differences, but both regulate Ca <sup>2+</sup> movement in skeletal muscle <i>Mi Ri Oh (The Catholic University of Korea)</i>
12:55-13:05	PO-B-02 (P1-01): Calcium-sensing receptor is a critical mediator of chemotaxis and chemokinesis in immune cells <i>Fengjiao Chang (Seoul National University)</i>
13:05-13:15	PO-B-03 (P1-03): Molecular mechanism of voltage-gated Ca <sup>2+</sup> channel regulation by membrane PIP <sub>2</sub> <i>Cheon-Gyu Park (DGIST)</i>
13:15-13:25	PO-B-04 (P4-01): WNK1-mediated Ca <sup>2+</sup> signaling is a novel culprit for hepatic stellate cell activation and fibrosis <i>Kyu-Hee Hwang (Yonsei University Wonju College of Medicine)</i>
13:25-13:35	PO-B-05 (P2-01): Higher vulnerability of catecholamine-induced arrhythmia in isolated right atrial myocytes <i>Ami Kim (Sungkyunkwan University)</i>
13:35-13:45	PO-B-06 (P3-06): Singular mechanisms of the thermal sweating to central sudomotor in tropical Africans <i>Jeong-Beom Lee (Soonchunhyang University)</i>
13:45-13:55	PO-B-07 (P7-01): Mesothelial cells demarcate the subunits of organ surface primo vascular tissue <i>Chae Jeong Lim (Seoul National University)</i>

► Symposium (11월 3일 금요일)

Contents	
<b>Symposium 2: Physiology of Neuropsychiatric Disease</b>	<b>Chair: 신찬영 (건국대), 이용석 (서울대)</b>
Reduction of microRNA targeting Drd2 leads to thalamocortical dysfunction in schizophrenia mouse models <i>Sungkun Chun (Chonbuk National University Medical School)</i>	
Synapse organization by autism-associated synaptic adhesion molecules <i>Jaewon Ko (Department of Brain and Cognitive Sciences, DGIST)</i>	
Excessive dopamine receptor activation in the dorsal striatum promotes autistic-like behaviors <i>Pyung-Lim Han (Department of Brain and Cognitive Sciences, Ewha Womans University)</i>	
Critical role of NMDA receptor function on the modulation of behavioral deficits in animal models of autism spectrum disorder <i>Chan Young Shin (Konkuk University School of Medicine)</i>	
<b>Symposium 3: Inflammation and Pathophysiological Signaling</b>	<b>Chair: 이지희 (이화여대)</b>
Identification of Sirtuin 6 as a novel target in macrophage switch and inflammation <i>Byung-Hyun Park (Chonbuk National University Medical School)</i>	
SREBP-1 links lipogenesis to macrophage phagocytosis via mTOR signaling <i>Seung-Soon Im (Keimyung University School of Medicine)</i>	
Effect of necrotic cell microenvironment on glioma progression <i>Youn-Hee Choi (Ewha Womans University)</i>	
Programming of macrophages by apoptotic cancer cells inhibits cancer progression and metastasis <i>Jihee Lee (Ewha Womans University)</i>	
<b>Symposium 4: Cardiac Physiology and Arrhythmia</b>	<b>Chair: 우선희 (충남대)</b>
Modulation of autonomic nerve system and cardiac arrhythmia <i>Eue-Keun Choi (Department of Internal Medicine, Seoul National University Hospital)</i>	
Sympathetic nerve blocks promote anti-inflammatory response by activating JAK2-STAT3-mediated signaling cascade in rat myocarditis model: a novel mechanism with clinical implications <i>Boyoung Joung (Department of Internal Medicine, Yonsei University College of Medicine)</i>	
Localized signaling regulation of cardiac ion channels through progesterone receptor <i>Junko Kurokawa (Department of Bio-Informational Pharmacology, School of Pharmaceutical Sciences, University of Shizuoka, Japan)</i>	
The molecular nature of a calcium spark <i>Shi-Qiang Wang (State Key Laboratory of Membrane Biology, College of Life Sciences, Peking University, China)</i>	
<b>Symposium 5: Learning &amp; Memory</b>	<b>Chair: 장성호 (서울의대)</b>
Neural firing patterns in the hippocampal formation in visual contextual environment <i>Inah Lee (Department of Brain and Cognitive Science, Seoul National University)</i>	
Neuron-specific nucleosome remodeling factor critical for emotional memory consolidation <i>Jin-Hee Han (Department of Biological Sciences, KAIST Institute for the BioCentury)</i>	
Layer-specific neuromodulation of long-term synaptic plasticity in the visual cortex <i>Duck-Joo Rhie (Department of Physiology, College of Medicine, The Catholic University of Korea)</i>	
Metaplasticity in the lateral habenula of depressed brains <i>ChiHye Chung (Department of Biological Sciences, Konkuk University)</i>	

Symposium 6: Vascular Physiology	Chair: 최수경 (연세의대), 김성준 (서울의대)
Contribution of AT1R mechanoactivation to the arterial myogenic response and its regulation by RGS5 protein in skeletal muscle arterioles	Michael Hill (University of Missouri-Columbia, USA)
Role of Kv7 channel in vasoreactivity of various blood vessels	Sewon Lee (Incheon National University)
Ancient signaling revisited: Crosstalk between reactive oxygen species and calcium in vascular smooth muscle angiotensin II signaling	Moo-Yeol Lee (Dongguk University)
Stimulation of autophagy improves vascular function in the mesenteric arteries of type 2 diabetic mice	Soo-Kyoung Choi (Yonsei University)
Physiological roles of ion channels and eNOS expressed in pulmonary artery smooth muscle	Sung Joon Kim (Seoul National University)
Symposium 7: Mitochondria Physiology	Chair: 박규상 (연세원주의대)
Improvement of mitochondrial function induced by bio-active fabrics and alternative motor effects	Jae-Hong Ko (Department of Physiology, College of Medicine, Chung-Ang University)
Impact of mitochondrial stress in POMC neurons on systemic metabolism	Min-Seon Kim (Division of Endocrinology and Metabolism, Asan Medical Center and University of Ulsan College of Medicine)
Regulation of insulin secretion by glucose and its blunting in diabetes through glucotoxicity	Claes B. Wolheim (University Medical Center, Geneva)
Calcineurin as a modulator of mitophagy in pancreatic beta cells	Myungshik Lee (Severance Biomedical Science Institute and the Dept. of Internal Medicine Yonsei University College of Medicine)
Mitochondrial chaperone HSP-60 enhances anti-bacterial immunity through up-regulating p38 MAP kinase signaling	Seung-Jae V. Lee (Department of Life Sciences, School of Interdisciplinary Bioscience and Bioengineering, and Information Technology Convergence Engineering, Pohang University of Science and Technology)
The critical roles of zinc in the regulation of mitochondrial oxidative stress	Sung-Ryul Lee (Department of Integrated Biomedical Science, Department of Physiology, Cardiovascular and Metabolic disease Center, College of Medicine, Inje University)

► Symposium (11월 4일 토요일)

Contents	
<b>Symposium 8: KSEP/IMPACT Symposium</b>	<b>Chair: 한 진 (인제대), 광효범 (인하대)</b>
Molecular evidence for “exercise as mitochondrial medicine”	David A. Hood (York University, Canada)
17 $\beta$ -estradiol directly lowers mitochondrial membrane microviscosity and improves bioenergetic function in skeletal muscle	P. Darrell Neufer (East Carolina University, USA)
Effects of inflammation on myogenic differentiation: Role of myokines and secretory vesicles	Ju-Hee Kang (Department of Pharmacology, Inha University, Korea)
Exercise, SIRT1, and mitochondrial biogenesis in vascular homeostasis	Ji Seok Kim (Gyongsang National University)
<b>Symposium 9: Chemical Senses</b>	<b>Chair: 문석준 (연세치대)</b>
Molecular mechanism of <i>Drosophila</i> taste receptors	Yong Taek Jeong (Yonsei University College of Dentistry)
The chemosensory GPCR SRI-14 are required for concentration-dependent odor preference in <i>C. elegans</i>	Kyuhyung Kim (DGIST)
Mood, memory and oral sensory input	Jeong Won Jahng (Seoul National University School of Dentistry)
Microfluidics-on-a-tongue imaging chamber for functional screening of taste cells in vivo	Myunghwan Choi (Department of Biomedical Engineering, Sungkyunkwan University)
<b>Symposium 10: Recent Biomedical Approaches in the Outside</b>	<b>Chair: 이은희 (가톨릭의대)</b>
A regulatory mechanism for tumor malignancy through a Zinc-finger protein 143	Hye Jin You (Department of Cancer Biomedical Science, NCC-GCSP, National Cancer Center, Korea)
Development of stem cell therapy	Soon-Jae Kwon (R&D Center MEDIPOST Co., Ltd.)
Protein shelled nanoparticle (PSNP) synthesis and its applications	Sang Hyun Moh (BIO-FD&C Co., Ltd)
Novel effects of extrinsic factors on skin homeostasis	Dong Wook Shin (Basic Innovation Research Institute, Amorepacific Corporation R&D Center)
<b>Symposium 11-1: KSEP/IMPACT Symposium</b>	<b>Chair: 김창근 (한체대), 김양하 (이화여대)</b>
Resolution of RAGE-mediated inflammation via aerobic exercise: acute and chronic effects	Jacob M. Haus (University of Illinois at Chicago, USA)
Physical activity differences in different symptoms among Korean population	Hee Jeong Jin (Korea Institute of Oriental Medicine)
Effect of muscle fatigue by neuromuscular electrical stimulation on ankle dorsiflexion, leaning backward and leaning forward	Sang Hun Lee (Korea Institute of Oriental Medicine)
Can neuroimaging be a plausible technique for qigong rehabilitation research?	Kyungmo Park (Kyunghee University)
<b>Symposium 11-2: KSEP/IMPACT Symposium</b>	<b>Chair: 김기진 (계명대), 강현식 (성균관대)</b>
Functional changes in the skeletal muscle fibers with aging and exercise	Jong Hee Kim (Hanyang University)
Neuro-muscular junction and exercise	Jae Sung Park (Kongju National University)
Muscle over mind	Hyo Youl Moon (Seoul National University)
Is ursolic acid an exercise mimetics?	Sang Hyun Kim (Chonbuk National University)

Symposium 12: Functional Food		Chair: 김선희 (전북의대), 진영호(경희의대)
Development of functional food for improving sperm motility		Hye Kyung Kim (Kyungsung University)
Nitrate–nitrite–nitric oxide pathway: the missing link in the management of blood pressure		Hyun–Ock Pae (Wonkwang University School of Medicine)
<i>In vivo</i> nitric oxide measurements using an electrochemical microelectrode in a rat model		Jae Ho Shin (Kwangwoon University)
Potential protective effects of fermented garlic extract against myocardial ischemia–reperfusion injury		Gi–Ja Lee (Kyung Hee University)
Rice bran promotes non–rapid eye movement sleep through histamine type 1 receptors		Young Ho Jin (Kyung Hee University)
Symposium 13: Current Status of Research on Novel Tissue, Primo Vascular System		Chair: 류판동 (서울수의대)
Historical review on the primo vascular system		Kwang–Sup Soh (Seoul National University)
HAR–NDS (hyaluronic acid–rich node and duct system): stem cells and innate immunity		Byoung S. Kwon (Eutilex, Co., Ltd., and Tulane University)
A review on primo vascular system research in the U.S.		Kyung Aih Kang (University of Louisville, Louisville, Kentucky)
Plasticity of organ surface primo vascular system tissue in heart failure		Pan–Dong Ryu (Seoul National University)
Expression of genes in primo vasculature floating lymphatic endothelium under lipopolysaccharide		Sang Suk Lee (Sangji University)

## Plenary Lecture

- S 30** Memory, circuits, and cognitive failure in Alzheimer's disease  
Paul Worley  
Department of Neuroscience, Johns Hopkins University School of Medicine, USA

## Symposium

### Symposium 1: TRP Channel

- S 31** S-I-1 Dual action of the  $G_{q_i}$ -PLC $\beta$ -PI(4,5)P $_2$  pathway on TRPC1/4 and TRPC1/5 heterotetramers  
Jongyun Myeong<sup>1</sup>, Juyeon Ko<sup>1</sup>, Misun Kwak<sup>1</sup>, Kodaji Ha<sup>1</sup>, Chansik Hong<sup>2</sup>, Dongki Yang<sup>3</sup>, Hyun Jin Kim<sup>4\*</sup>, Ju-Hong Jeon<sup>1</sup>, Insuk So<sup>1\*</sup>  
<sup>1</sup>Department of Physiology, Seoul National University College of Medicine, <sup>2</sup>Department of Physiology, Chosun University School of Medicine, <sup>3</sup>Department of Physiology, College of Medicine, Gachon University, <sup>4</sup>Department of Physiology, Sungkyunkwan University School of Medicine, Korea
- S 31** S-I-2 Functional role of coiled coil domain in the gating of TRPC3/6  
Kyu Pil Lee  
Department of Physiology, Chungnam National University, Daejeon, Korea
- S 31** S-I-3 Renoprotection of Klotho through TRPC6 downregulation  
Ji-Hee Kim, Kyu-Hee Hwang, Hung Minh Tran, Kyu-Sang Park, Seung-Kuy Cha  
Departments of Physiology and Global Medical Science, Institute of Lifestyle Medicine and Mitohormesis Research Center, Yonsei University Wonju College of Medicine, Wonju, Gangwon-do, Korea
- S 31** S-I-4 Role of Trp channels in the control of feeding behavior and metabolism  
Jong-Woo Sohn  
Department of Biological Sciences, KAIST
- S 31** S-I-5 Ca<sup>2+</sup> signaling in primary cilia during development and disease  
Markus Delling  
Physiology, UCSF School of Medicine
- S 32** S-I-6 Oral barrier formation via temperature-sensitive TRP channels  
Mizuho A. Kido  
Department of Anatomy and Physiology, Faculty of Medicine, Saga University
- S 32** S-I-7 The hypothalamic TRPV1 channels in regulation of food intake  
Dong Kun Lee  
Department of Physiology, Institute of Health Sciences, Gyeongsang National University School of Medicine, Korea
- S 32** S-I-8 Acceleration of skin barrier restoration by topical botanical products via transient receptor potential V3  
Joo Hyun Nam  
Department of Physiology, Dongguk University College of Medicine
- S 32** S-I-9 The intracellular Ca<sup>2+</sup> channel TRPML3 is a PtdIns3P effector that regulates early autophagosome biogenesis  
So Woon Kim<sup>1</sup>, Mi Kyung Kim<sup>1</sup>, Kyoung Sun Park<sup>2</sup>, Hyun Jin Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, Sungkyunkwan University School of Medicine, Suwon, <sup>2</sup>Wide River Institute of Immunology, Seoul National University College of Medicine, Gangwon-do, Korea
- S 33** S-I-10 The ER/PM microdomain, PI(4,5)P $_2$  and the regulation of STIM1-Orai1 channel function  
Seok Choi  
Department of Physiology, College of Medicine, Chosun University

### Symposium 2: Physiology of Neuropsychiatric Disease

- S 33** S-II-1 Reduction of microRNA targeting Drd2 leads to thalamocortical dysfunction in schizophrenia mouse models  
Sungkun Chun  
Department of Physiology, Chonbuk National University Medical School
- S 33** S-II-2 Synapse organization by autism-associated synaptic adhesion molecules  
Jaewon Ko  
Department of Cognitive and Brain Sciences, Daegu Gyeonbuk Institute of Science and Technology (DGIST), Daegu, Korea
- S 34** S-II-3 Excessive dopamine receptor activation in the dorsal striatum promotes autistic-like behaviors  
Pyung-Lim Han  
Departments of Brain and Cognitive Sciences, Ewha Womans University
- S 34** S-II-4 Critical role of NMDA receptor function on the modulation of behavioral deficits in animal models of autism spectrum disorder  
Chan Young Shin  
School of Medicine, Konkuk University, Seoul, Korea

**Symposium 3: Inflammation and Pathophysiological Signaling**

- S 35** S-III-1 Identification of Sirtuin 6 as a novel target in macrophage switch and inflammation  
Byung-Hyun Park  
Department of Biochemistry and Metaflammation Research Center, Chonbuk National University Medical School
- S 35** S-III-2 SREBP-1 links lipogenesis to macrophage phagocytosis via mTOR signaling  
Seung-Soon Im  
Department of Physiology, Keimyung University School of Medicine, Daegu, Korea
- S 35** S-III-3 Effect of necrotic cell microenvironment on glioma progression  
Youn-Hee Choi  
Department of Physiology, Ewha Womans University School of Medicine, Seoul, Korea
- S 35** S-III-4 Programming of macrophages by apoptotic cancer cells inhibits cancer progression and metastasis  
Jihee Lee  
Department of Physiology and Tissue Injury Defense Research Center, College of Medicine, Ewha Womans University, Seoul, Korea

**Symposium 4: Cardiac Physiology and Arrhythmia**

- S 36** S-IV-1 Modulation of autonomic nerve system and cardiac arrhythmia  
Eue-Keun Choi  
Department of Internal Medicine, Seoul National University Hospital
- S 36** S-IV-2 Sympathetic nerve blocks promote anti-inflammatory response by activating JAK2-STAT3-mediated signaling cascade in rat myocarditis model: a novel mechanism with clinical implications  
Boyoung Joung  
Division of Cardiology, Yonsei University College of Medicine, Seoul, Korea
- S 36** S-IV-3 Localized signaling regulation of cardiac ion channels through progesterone receptor  
Junko Kurokawa  
Department of Bio-Informational Pharmacology, School of Pharmaceutical Sciences, University of Shizuoka
- S 36** S-IV-4 The molecular nature of a calcium spark  
Shi-Qiang Wang  
State Key Laboratory of Membrane Biology, College of Life Sciences, Peking University, Beijing, China

**Symposium 5: Learning & Memory**

- S 37** S-V-1 Neural firing patterns in the hippocampal formation in visual contextual environment  
Inah Lee  
Department of Brain and Cognitive Science, Seoul National University
- S 37** S-V-2 Neuron-specific nucleosome remodeling factor critical for emotional memory consolidation  
Jin-Hee Han  
Department of Biological Sciences, KAIST Institute for the BioCentury (KIB), KAIST
- S 38** S-V-3 Layer-specific neuromodulation of long-term synaptic plasticity in the visual cortex  
Duck-Joo Rhie, Hyun-Jong Jang, Kwang-Hyun Cho  
Department of Physiology, Catholic Neuroscience Institute, College of Medicine, The Catholic University of Korea, Seoul, Korea
- S 38** S-V-4 Metaplasticity in the lateral habenula of depressed brains  
ChiHye Chung  
Department of Biological Sciences, Konkuk University

**Symposium 6: Vascular Physiology**

- S 38** S-VI-1 Contribution of AT1R mechanoactivation to the arterial myogenic response and its regulation by RGS5 protein in skeletal muscle arterioles  
Michael A. Hill, Kwangseok Hong, Gerald A. Meininger  
Dalton Cardiovascular Research Center and Department of Medical Pharmacology and Physiology, University of Missouri-Columbia, MO 65211, USA
- S 38** S-VI-2 Role of Kv7 channel in vasoreactivity of various blood vessels  
Sewon Lee<sup>1,2</sup>, Yan Yang<sup>2</sup>, Miles A. Tanner<sup>2</sup>, Min Li<sup>2</sup>, Michael A. Hill<sup>2</sup>  
<sup>1</sup>Division of Sport Science & Sport Science Institute, Incheon National University, Incheon, Korea, <sup>2</sup>Dalton Cardiovascular Research Center and Department of Medical Pharmacology & Physiology, University of Missouri-Columbia, MO, USA
- S 39** S-VI-3 Ancient signaling revisited: Crosstalk between reactive oxygen species and calcium in vascular smooth muscle angiotensin II signaling  
Moo-Yeol Lee  
College of Pharmacy, Dongguk University, Goyang, Gyeonggi-do, Korea

- S 39 S-VI-4 Stimulation of autophagy improves vascular function in the mesenteric arteries of type 2 diabetic mice  
Youngin Kwon, Seonhee Byeon, Soo-Kyoung Choi  
Department of Physiology, College of Medicine, Brain Korea 21 Plus Project for Medical Sciences, Yonsei University, Seoul, Korea
- S 39 S-VI-5 Physiological roles of ion channels and eNOS expressed in pulmonary artery smooth muscle  
Sung Joon Kim<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Hypoxic/Ischemic Disease Institute, Seoul National University College of Medicine

## Symposium 7: Mitochondria Physiology

- S 40 S-VII-1 Improvement of mitochondrial function induced by bio-active fabrics and alternative motor effects  
Jae-Hong Ko  
Department of Physiology, College of Medicine, Chung-Ang University
- S 40 S-VII-2 Impact of mitochondrial stress in POMC neurons on systemic metabolism  
Min-Seon Kim  
Division of Endocrinology and Metabolism, Asan Medical Center and University of Ulsan College of Medicine, Seoul, Korea
- S 41 S-VII-3 Regulation of insulin secretion by glucose and its blunting in diabetes through glucotoxicity  
Claes B. Wollheim  
Department Cell Physiology and Metabolism, University Medical Center, Switzerland and Lund University Diabetes Center, Malmö, Sweden
- S 41 S-VII-4 Calcineurin as a modulator of mitophagy in pancreatic beta cells  
Kihyoun Park<sup>1,2</sup>, Heyjin Lim<sup>1,2</sup>, Myung-shik Lee<sup>2</sup>  
<sup>1</sup>Department of Health Sciences and Technology, SAHST, Sungkyunkwan University, Seoul, <sup>2</sup>Severance Biomedical Science Institute and the Department of Internal Medicine Yonsei University College of Medicine, Seoul, Korea
- S 41 S-VII-5 Mitochondrial chaperone HSP-60 enhances anti-bacterial immunity through up-regulating p38 MAP kinase signaling  
Dae-Eun Jeong<sup>1</sup>, Dongyeop Lee<sup>1</sup>, Sun-Young Hwang<sup>1</sup>, Yujin Lee<sup>1</sup>, Jee-Eun Lee<sup>1</sup>, Mihwa Seo<sup>2</sup>, Woosoon Hwang<sup>1</sup>, Keunhee Seo<sup>1</sup>, Ara B. Hwang<sup>1</sup>, Murat Artan<sup>3</sup>, Heehwa G. Son<sup>1</sup>, Jay-Hyun Jo<sup>1</sup>, Haeshim Baek<sup>1</sup>, Young Min Oh<sup>1</sup>, Youngjae Ryu<sup>4</sup>, Hyung-Jun Kim<sup>4</sup>, Chang Man Ha<sup>4</sup>, Joo-Yeon Yoo<sup>1</sup>, Seung-Jae V. Lee<sup>1,2,3</sup>  
<sup>1</sup>Department of Life Sciences, <sup>2</sup>School of Interdisciplinary Bioscience and Bioengineering, and <sup>3</sup>Information Technology Convergence Engineering, Pohang University of Science and Technology, Pohang, Gyeongbuk, <sup>4</sup>Research Division, Korea Brain Research Institute, Daegu, Korea
- S 41 S-VII-6 The critical roles of zinc in the regulation of mitochondrial oxidative stress  
Sung Ryul Lee<sup>1</sup>, Jin Han<sup>2</sup>  
<sup>1</sup>Department of Integrated Biomedical Science, <sup>2</sup>Department of Physiology, Cardiovascular and Metabolic Disease Center, College of Medicine, Inje University

## Symposium 8: KSEP/IMPACT Symposium

- S 42 S-VIII-1 Molecular evidence for “exercise as mitochondrial medicine”  
D. A. Hood, J. M. Memme  
Muscle Health Research Centre, School of Kinesiology and Health Science, York University, Toronto, Canada
- S 42 S-VIII-2 17 $\beta$ -estradiol directly lowers mitochondrial membrane microviscosity and improves bioenergetic function in skeletal muscle  
Maria J. Torres<sup>1,2</sup>, Kim A. Kew<sup>3</sup>, Terence E. Ryan<sup>1,4</sup>, Edward Ross Pennington<sup>1,5</sup>, Chien-Te Lin<sup>1,4</sup>, Katherine A. Buddo<sup>3</sup>, Amy M. Fix<sup>1</sup>, Cheryl A. Smith<sup>1,4</sup>, Laura A. Gilliam<sup>1,4</sup>, Sira Karvinen<sup>6</sup>, Dawn A. Lowe<sup>6</sup>, Espen E. Spangenburg<sup>1,4</sup>, Tonya N. Zeczycki<sup>1,5</sup>, Saame Raza Shaikh<sup>1,5</sup>, P. Darrell Neuffer<sup>1,2,4</sup>  
<sup>1</sup>East Carolina Diabetes and Obesity Research Institute, <sup>2</sup>Department of Kinesiology, <sup>3</sup>Department of Chemistry, <sup>4</sup>Department of Physiology, <sup>5</sup>Department of Biochemistry & Molecular Biology, East Carolina University, Greenville, NC 27834, USA, <sup>6</sup>Department of Rehabilitation Medicine, Medical School, University of Minnesota, Minneapolis, MN 55455, USA
- S 43 S-VIII-3 Effects of inflammation on myogenic differentiation: Role of myokines and secretory vesicles  
Ju-Hee Kang<sup>1,2</sup>, Sujin Kim<sup>2,3</sup>, Hyo Bum Kwak<sup>3</sup>, Dong-Ho Park<sup>3</sup>  
<sup>1</sup>Department of Pharmacology, College of Medicine, <sup>2</sup>Hypoxia-related Disease Research Center, <sup>3</sup>Department of Kinesiology, Inha University
- S 43 S-VIII-4 Exercise, SIRT1, and mitochondrial biogenesis in vascular homeostasis  
Ji-Seok Kim  
GNU Exe-Physio Lab., Department of Physical Education, College of Education, Gyeongsang National University, Jinju, Korea

## Symposium 9: Chemical Senses

- S 44 S-IX-1 Molecular mechanism of *Drosophila* taste receptors  
Yong Taek Jeong, Seok Jun Moon  
Department of Oral Biology, Yonsei University College of Dentistry
- S 44 S-IX-2 The chemosensory GPCR SRI-14 are required for concentration-dependent odor preference in *C. elegans*  
Kyuhyung Kim  
Department of Brain & Cognitive Sciences, DGIST, Daegu, Korea

- S 44 S-IX-3 Mood, memory and oral sensory input  
Jeong Won Jahng  
Dental Research Institute, Seoul National University School of Dentistry, Seoul, Korea
- S 44 S-IX-4 Microfluidics-on-a-tongue imaging chamber for functional screening of taste cells in vivo  
Jisoo Han, Myunghwan Choi  
Department of Biomedical Engineering, Sungkyunkwan University

## Symposium 10: Recent Biomedical Approaches in the Outside

- S 45 S-X-1 A regulatory mechanism for tumor malignancy through a Zinc-finger protein 143  
Hye Jin You  
Translational Research Branch, Research Institute, Department of Cancer Biomedical Science, NCC-GCSP, National Cancer Center, Korea
- S 45 S-X-2 Development of stem cell therapy  
Soon-Jae Kwon  
R&D Center MEDIPOST Co., Ltd.
- S 45 S-X-3 Protein shelled nanoparticle (PSNP) synthesis and its applications  
Sang Hyun Moh  
BIO-FD&C Co., Ltd)
- S 45 S-X-4 Novel effects of extrinsic factors on skin homeostasis  
Dong Wook Shin  
Basic Science & Innovation Division, Amorepacific Corporation R&D Center

## Symposium 11-1: KSEP/IMPACT Symposium

- S 46 S-XI-1-5 Resolution of RAGE-mediated inflammation via aerobic exercise: acute and chronic effects  
Jacob Haus  
Kinesiology and Nutrition, University of Illinois at Chicago
- S 46 S-XI-1-6 Physical activity differences in different symptoms among Korean population  
HeeJeong Jin, Ki Hyun Park, Sang-Hyuk Kim, HoSeock Kim, Siwoo Lee  
Korean Institute of Oriental Medicine, Daejeon, Korea
- S 46 S-XI-1-7 Effect of muscle fatigue by neuromuscular electrical stimulation on ankle dorsiflexion, leaning backward and leaning forward  
Hyun Kyoon Lim<sup>1</sup>, Sungha Kim<sup>2</sup>, Eun Kyug Bae<sup>2</sup>, Sujeong Mun<sup>2</sup>, Bongyoung Ahn<sup>1</sup>, Donghyun Lee<sup>1,3,4</sup>, Sanghun Lee<sup>2\*</sup>  
<sup>1</sup>Center for Medical Metrology KRISS, <sup>2</sup>Korean Medicine Fundamental Research Division, KIOM, <sup>3</sup>Department of Biomedical Engineering, Konyang University
- S 46 S-XI-1-8 Can neuroimaging be a plausible technique for qigong rehabilitation research?  
Kyungmo Park  
Department of Biomedical Engineering, Kyung Hee University, Yongin, Korea

## Symposium 11-2: KSEP/IMPACT Symposium

- S 47 S-XI-2-9 Functional changes in the skeletal muscle fibers with aging and exercise  
Jong-Hee Kim<sup>\*</sup>  
Department of Physical Education, Hanyang University
- S 47 S-XI-2-10 Neuro-muscular junction and exercise  
Jae-sung Park  
Department of Physical Education, Kongju National University College of Education
- S 47 S-XI-2-11 Muscle over mind  
Hyo Youl Moon  
Institute of Sport Science, Seoul National University, Seoul, Korea
- S 48 S-XI-2-12 Is ursolic acid an exercise mimetics?  
Sang Hyun Kim  
Chonbuk National University, Korea

## Symposium 12: Functional Food

- S 49 S-XII-1 Development of functional food for improving sperm motility  
Hye Kyung Kim  
College of Pharmacy, Kyungsung University, Busan, Department of Urology, Medical School, Chonbuk National University, Jeonju, Korea
- S 49 S-XII-2 Nitrate-nitrite-nitric oxide pathway: the missing link in the management of blood pressure  
Hyun-Ock Pae  
Wonkwang University School of Medicine, Iksan, Korea

- S 49** S-XII-3 *In vivo* nitric oxide measurements using an electrochemical microelectrode in a rat model  
Jae Ho Shin<sup>1</sup>, Ji-Ja Lee<sup>2</sup>  
<sup>1</sup>Department of Chemistry, College of Natural Science, Kwangwoon University, <sup>2</sup>Department of Biomedical Engineering, College of Medicine, Kyung Hee University
- S 49** S-XII-4 Potential protective effects of fermented garlic extract against myocardial ischemia-reperfusion injury  
Gi-Ja Lee<sup>1</sup>, Young Ju Lee<sup>1</sup>, Doyeon Lee<sup>1</sup>, So Min Shin<sup>2</sup>, Jin Sun Lee<sup>2</sup>, Hyun Soo Chun<sup>3</sup>, Jae Ho Shin<sup>2</sup>  
<sup>1</sup>Department of Biomedical Engineering, College of Medicine, Kyung Hee University, <sup>2</sup>Department of Chemistry, College of Natural Science, Kwangwoon University, <sup>3</sup>Department of National Cosmetics Science, Sunchon National University
- S 50** S-XII-5 Rice bran promotes non-rapid eye movement sleep through histamine type 1 receptors  
Eunhee Yang, Sojin Kim, Young-Ho Jin  
Department of Physiology, College of Medicine, Kyung Hee University, Seoul, Korea

### Symposium 13: Current Status of Research on Novel Tissue, Primo Vascular System

- S 50** S-XIII-1 Historical review on the primo vascular system  
Kwang-Sup Soh  
Department of Physics and Astronomy, Seoul National University
- S 50** S-XIII-2 HAR-NDS (hyaluronic acid-rich node and duct system): stem cells and innate immunity  
Seung J. Lee<sup>1</sup>, Beom K. Choi<sup>2</sup>, Byoung S. Kwon<sup>1,3</sup>  
<sup>1</sup>Eutilex, <sup>2</sup>National Cancer Center and <sup>3</sup>Tulane University
- S 51** S-XIII-3 A review on primo vascular system research in the U.S.  
Kyung Aih Kang  
University of Louisville, Louisville, Kentucky, Auburn University, Auburn, Alabama, USA
- S 51** S-XIII-4 Plasticity of organ surface primo vascular system tissue in heart failure  
Chae Jeong Lim, Yiming Shen, So Yeong Lee, Pan Dong Ryu  
Department of Veterinary Pharmacology, College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National University, Seoul, Korea
- S 51** S-XIII-5 Expression of genes in primo vasculature floating lymphatic endothelium under lipopolysaccharide  
Ji Yoon Lee<sup>1</sup>, Jun Young Shin<sup>2</sup>, Su Hee Kim<sup>2</sup>, Da Woon Choi<sup>2</sup>, Sang Heon Choi<sup>2</sup>, Jong Ok Ji<sup>3</sup>, Jong Gu Choi<sup>2</sup>, Min Suk Rho<sup>2</sup>, Sang Suk Lee<sup>2</sup>  
<sup>1</sup>Department of Biomedical Laboratory Science, <sup>2</sup>Department of Oriental Biomedical Engineering, <sup>3</sup>Department of Oriental-Western Biomedical Engineering and Goodpl Inc., Sangji University

### Poster Oral Presentation

- PO-A-01 (P1-02)** Novel KCNQ4 mutations in Korean patients with nonsyndromic hearing loss  
Hyun Been Choi<sup>1\*</sup>, Jinsei Jung<sup>2\*</sup>, Young Ik Koh<sup>3\*</sup>, Joon Suk Lee<sup>3</sup>, Seyoung Yu<sup>3</sup>, Sung Huhn Kim<sup>2</sup>, Jae Hyun Jae<sup>2</sup>, Jieun An<sup>1</sup>, Ami Kim<sup>1</sup>, Heon Yung Gee<sup>2</sup>, Jae Young Choi<sup>2</sup>, Tong Mook Kang<sup>1</sup>  
<sup>1</sup>Department of Physiology, Single Cell Network Research Center, Sungkyunkwan University School of Medicine, Suwon, <sup>2</sup>Department of Otorhinolaryngology, Brain Korea 21 PLUS Project for Medical Sciences, Yonsei University College of Medicine, Seoul, <sup>3</sup>Department of Pharmacology, Brain Korea 21 PLUS Project for Medical Sciences, Yonsei University College of Medicine, Seoul, Korea
- PO-A-02 (P1-04)** PRMT7 regulates neuronal excitability via modulation of NALCN activity  
Xianlan Wen<sup>1</sup>, Tuan Anh Vuong<sup>2</sup>, Hyunsu Kang<sup>1</sup>, Jong-Sun Kang<sup>2</sup>, Hana Cho<sup>1</sup>  
<sup>1</sup>Department of Physiology, and <sup>2</sup>Molecular and Cellular Biology, Samsung Biomedical Research Institute, Sungkyunkwan University School of Medicine, Suwon, Korea
- PO-A-03 (P3-02)** Peripheral GABA<sub>A</sub> receptor-mediated signals facilitate chronic inflammatory pain  
Pa Reum Lee<sup>1</sup>, Seo-Yeon Yoon<sup>1,2</sup>, Yong Ho Kim<sup>3</sup>, Seog Bae Oh<sup>1,2</sup>  
<sup>1</sup>Department of Brain and Cognitive Sci., Col. of Natural Sci., Seoul Natl. Univ., Seoul, <sup>2</sup>Dent. Res. Inst. and Department of Neurobio. & Physiology, School of Dentistry, Seoul Natl. Univ., Seoul, <sup>3</sup>Department of Physiology, Col. of Medicine, Gachon Univ., Incheon, Korea
- PO-A-04 (P3-03)** SHP2 mutation mediated cell type specific dysregulation of Ras-Erk signaling pathway  
Hyun-Hee Ryu<sup>1,2†</sup>, Tae-Hyun Kim<sup>3†</sup>, Minkyung Kang<sup>1,4</sup>, DaeHee Han<sup>3</sup>, Yong Gyu Kim<sup>1,4</sup>, Jiyeon Ha<sup>1</sup>, Chae-Seok Lim<sup>3</sup>, Chul-Hong Kim<sup>2</sup>, Sang Jeong Kim<sup>1,4,6</sup>, Alcino J. Silva<sup>5</sup>, Jung-Woong Kim<sup>2\*</sup>, Bong-Kiun Kaang<sup>3\*</sup>, Yong-Seok Lee<sup>1,4,6\*</sup>  
<sup>1</sup>Department of Physiology, Seoul National University College of Medicine, <sup>2</sup>Department of Life Science, Chung-Ang University, <sup>3</sup>School of Biological Sciences, College of Natural Sciences, Seoul National University, <sup>4</sup>Department of Biomedical Sciences, Seoul National University College of Medicine, Seoul, Korea, <sup>5</sup>Department of Neurobiology, Integrative Center for Learning and Memory, Brain Research Institute, University of California Los Angeles, California, USA, <sup>6</sup>Neuroscience Research Institute, Seoul National University College of Medicine, Seoul, Korea
- PO-A-05 (P3-04)** Climbing fiber burst-mediated sensory coding is directly represented in post-synaptic Purkinje cell  
Seung-Eon Roh<sup>1,3\*</sup>, Seung Ha Kim<sup>1,2</sup>, Yong-Gyu Kim<sup>1</sup>, Chang-Hyun Ryu<sup>1</sup>, Chang-Eop Kim<sup>1</sup>, Sun Kwang Kim<sup>3</sup>, Sang Jeong Kim<sup>1,2</sup>  
<sup>1</sup>Department of Physiology and <sup>2</sup>Department of Biomedical Science, College of Medicine, Seoul National University, <sup>3</sup>Department of Physiology, College of Korean Medicine, Kyung Hee University, Seoul, Korea

- PO-A-06 (P3-05) Channel-mediated GABA release from reactive astrocytes in epileptic hippocampus  
Chiranjivi Neupane<sup>1</sup>, Sudip Pandit<sup>1</sup>, Ramesh Sarma<sup>1</sup>, Junsung Woo<sup>2</sup>, C Justin Lee<sup>2</sup>, Jin Bong Park<sup>1</sup>  
<sup>1</sup>Department of Physiology, School of Medicine and Brain Research Institute, Chungnam National University, Daejeon, <sup>2</sup>Center for Neural Science, Korea Institute of Science and Technology (KIST), Seoul, Korea
- PO-A-07 (P4-02) The E3 ligase c-Cbl inhibits cancer cell migration by neddylation of the proto-oncogene c-Src  
Gun-Woo Lee<sup>1</sup>, Jun Bum Park<sup>1</sup>, Sung Yeon Park<sup>2,3</sup>, Seo Jieun<sup>1</sup>, Seung-Hyun Shin<sup>1</sup>, Jong-Wan Park<sup>1,2</sup>, Sang Jung Kim<sup>1,2,3</sup>, Masatoshi Watanabe<sup>4</sup>, Yang-Sook Chun<sup>1,2,3\*</sup>  
<sup>1</sup>Department of Biomedical Science, <sup>2</sup>Ischemic/Hypoxic Disease Institute, <sup>3</sup>Department of Physiology, Seoul National University College of Medicine, Seoul, <sup>4</sup>Laboratory for Medical Engineering, Graduate School of Engineering, Yokohama National University
- PO-B-01 (P2-03) STIM2 and STIM1 have similarities and differences, but both regulate Ca<sup>2+</sup> movement in skeletal muscle  
Mi Ri Oh<sup>1</sup>, Keon Jin Lee<sup>1</sup>, Mei Huang<sup>1</sup>, Jin Ock Kim<sup>2</sup>, Do Han Kim<sup>2</sup>, Chung-Hyun Cho<sup>3</sup>, Eun Hui Lee<sup>1</sup>  
<sup>1</sup>Department of Physiology, College of Medicine, The Catholic University of Korea, Seoul, <sup>2</sup>School of Life Sciences, GIST, Gwangju, <sup>3</sup>Department of Pharmacology, College of Medicine, Seoul National University, Seoul, Korea
- PO-B-02 (P1-01) Calcium-sensing receptor is a critical mediator of chemotaxis and chemokinesis in immune cells  
Fengjiao Chang, Jin Man Kim, Kyungpyo Park  
Department of Physiology, School of Dentistry, Seoul National University and Dental Research Institute, Seoul, Korea
- PO-B-03 (P1-03) Molecular mechanism of voltage-gated Ca<sup>2+</sup> channel regulation by membrane PIP<sub>2</sub>  
Cheon-Gyu Park, Byung-Chang Suh\*  
Department of Brain & Cognitive Sciences, DGIST, Daegu, Korea
- PO-B-04 (P4-01) WNK1-mediated Ca<sup>2+</sup> signaling is a novel culprit for hepatic stellate cell activation and fibrosis  
Kyu-Hee Hwang<sup>1-4</sup>, Ji-Hee Kim<sup>1,3,4</sup>, Soo-Jin Kim<sup>1-4</sup>, Hung Minh Tran<sup>1-4</sup>, In Deok Kong<sup>1-3</sup>, Kyu-Sang Park<sup>1-4</sup>, Seung-Kuy Cha<sup>1-4\*</sup>  
Departments of <sup>1</sup>Physiology and <sup>2</sup>Global Medical Science, <sup>3</sup>Institute of Lifestyle Medicine, and <sup>4</sup>Mitohormesis Research Center, Yonsei University Wonju College of Medicine, Wonju, Gangwon-do, Korea
- PO-B-05 (P2-01) Higher vulnerability of catecholamine-induced arrhythmia in isolated right atrial myocytes  
Ami Kim, Jieun An, Hyun Bin Choi, Tong Mook Kang  
Department of Physiology, Single Cell Network Research Center, Sungkyunkwan University School of Medicine, Suwon, Korea
- PO-B-06 (P3-06) Singular mechanisms of the thermal sweating to central sudomotor in tropical Africans  
Jeong-Beom Lee<sup>1\*</sup>, Young-Ki Min<sup>1</sup>, Jeong-Ho Kim<sup>2</sup>, Yun Su Eun<sup>2</sup>, Jin Wook Kim<sup>2</sup>, Seo Yun Jung<sup>2</sup>, Suk Min Han<sup>2</sup>, Jae Yeong Bae<sup>2</sup>, Hee-Jin Lee<sup>3</sup>, Mi-Young Lee<sup>3</sup>  
<sup>1</sup>Department of Physiology, College of Medicine, Soonchunhyang University, Cheonan, <sup>2</sup>A Student at the College of Medicine, Soonchunhyang University, Cheonan, <sup>3</sup>Global Graduate School of Healthcare, Soonchunhyang University, Asan, Korea
- PO-B-07 (P7-01) Mesothelial cells demarcate the subunits of organ surface primo vascular tissue  
Chae Jeong Lim<sup>1</sup>, Yeo Sung Yoon<sup>2</sup>, So Yeong Lee<sup>1</sup>, Pan Dong Ryu<sup>1</sup>  
Departments of <sup>1</sup>Veterinary Pharmacology and <sup>2</sup>Anatomy & Cell Biology, College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National University, Seoul, Korea

## Poster Presentation

### P1: Ion Channels

- S 52 P1-01 (PO-B-02) Calcium-sensing receptor is a critical mediator of chemotaxis and chemokinesis in immune cells  
Fengjiao Chang, Jin Man Kim, Kyungpyo Park  
Department of Physiology, School of Dentistry, Seoul National University and Dental Research Institute, Seoul, Korea
- S 52 P1-02 (PO-A-01) Novel KCNQ4 mutations in Korean patients with nonsyndromic hearing loss  
Hyun Been Choi<sup>1\*</sup>, Jinsei Jung<sup>2\*</sup>, Young Ik Koh<sup>3\*</sup>, Joon Suk Lee<sup>3</sup>, Seyoung Yu<sup>3</sup>, Sung Huhn Kim<sup>2</sup>, Jae Hyun Jae<sup>2</sup>, Jieun An<sup>1</sup>, Ami Kim<sup>1</sup>, Heon Yung Gee<sup>3</sup>, Jae Young Choi<sup>2</sup>, Tong Mook Kang<sup>1</sup>  
<sup>1</sup>Department of Physiology, Single Cell Network Research Center, Sungkyunkwan University School of Medicine, Suwon, <sup>2</sup>Department of Otorhinolaryngology, Brain Korea 21 PLUS Project for Medical Sciences, Yonsei University College of Medicine, Seoul, <sup>3</sup>Department of Pharmacology, Brain Korea 21 PLUS Project for Medical Sciences, Yonsei University College of Medicine, Seoul, Korea
- S 53 P1-03 (PO-B-03) Molecular mechanism of voltage-gated Ca<sup>2+</sup> channel regulation by membrane PIP<sub>2</sub>  
Cheon-Gyu Park, Byung-Chang Suh\*  
Department of Brain & Cognitive Sciences, DGIST, Daegu, Korea
- S 53 P1-04 (PO-A-02) PRMT7 regulates neuronal excitability via modulation of NALCN activity  
Xianlan Wen<sup>1</sup>, Tuan Anh Vuong<sup>2</sup>, Hyunsu Kang<sup>1</sup>, Jong-Sun Kang<sup>2</sup>, Hana Cho<sup>1</sup>  
<sup>1</sup>Department of Physiology, and <sup>2</sup>Molecular and Cellular Biology, Samsung Biomedical Research Institute, Sungkyunkwan University School of Medicine, Suwon, Korea
- S 53 P1-05 Regulation of spontaneous glutamate release by presynaptic M-type K<sup>+</sup> channels in the hippocampal pyramidal neurons  
Byoung Ju Lee, Jae-Han Kwon, Suk-Ho Lee, Won-Kyung Ho  
Cell Physiology Laboratory Department of Physiology, bioMembrane Plasticity Research Center, Seoul National University College of Medicine

- S 53** P1-06 Altered Na<sup>+</sup> and Cl<sup>-</sup> transporting activity and dysregulated pH homeostasis in hyperkalemic db/db cardiac arrest  
Minjeong Ji, Wanhee Suk, Kuk Hui Son, Jeong Hee Hong\*  
Department of Physiology, College of Medicine, Gachon University
- S 54** P1-07 Modulation of mesenchymal stem cell tropism through the recruitment and enhanced activity of SLC4A7  
Dongun Lee<sup>1,2</sup>, Junyoung Park<sup>3</sup>, Dongwoo Khang<sup>3</sup>, Jeong Hee Hong<sup>1</sup>  
<sup>1</sup>Gachon University, <sup>2</sup>Lee Gil Ya Cancer and Diabetes Institute, <sup>3</sup>Department of Physiology, College of Medicine, Gachon University
- S 54** P1-08 Gai-mediated TRPC4 activation by polycystin-1 contributes to the endothelial function via STAT1 activation  
Misun Kwak<sup>1,2</sup>, Chansik Hong<sup>3</sup>, Jongyun Myeong<sup>1,2</sup>, Ju-Hong Jeon<sup>1,2</sup>, Insuk So<sup>1,2</sup>  
<sup>1</sup>Department of Physiology and Institute of Dermatological Science, <sup>2</sup>Department of Biomedicines, Seoul National University College of Medicine, Seoul, <sup>3</sup>Department of Physiology, School of Medicine, Chosun University, Gwangju, Korea
- S 54** P1-09 Regulation of TRPC4, TRPC5 homotetrameric and TRPC1/4, C1/5 heterotetrameric channel activity by PI(4,5)P<sub>2</sub> hydrolysis  
Juyeon Ko, Jongyun Myeong, Insuk So  
Department of Physiology, Seoul National University College of Medicine, Seoul, Korea
- S 54** P1-10 Restored activity of HCO<sub>3</sub><sup>-</sup> transporters by knockdown of spinophilin enhance invasive function of lung cancer cells  
Soyoung Hwang, Kuk Hui Son, Jeong Hee Hong  
Department of Physiology, Gachon University College of Medicine, Incheon
- S 55** P1-11 Dapoxetine, a selective serotonin reuptake inhibitor inhibits voltage-gated K<sup>+</sup> channels in coronary arterial smooth muscle cells from rabbit  
Jin Ryeol An<sup>1</sup>, Won Sun Park<sup>1</sup>, Sung Hun Na<sup>2</sup>  
<sup>1</sup>Department of Physiology, Kangwon National University School of Medicine, Chuncheon, <sup>2</sup>Department of Obstetrics and Gynecology, Kangwon National University Hospital, Kangwon National University School of Medicine, Chuncheon, Korea
- S 55** P1-12 Anti-diabetic drug nateglinide induces vasodilation via activation of voltage-dependent K<sup>+</sup> channels in aortic smooth muscle  
Hongliang Li<sup>1</sup>, Sung Hun Na<sup>2</sup>, Won Sun Park<sup>1</sup>  
<sup>1</sup>Department of Physiology, Kangwon National University School of Medicine, Chuncheon, <sup>2</sup>Department of Obstetrics and Gynecology, Kangwon National University Hospital, Kangwon National University School of Medicine, Chuncheon, Korea
- S 55** P1-13 A tricyclic antidepressant, nortriptyline inhibits the voltage-dependent K<sup>+</sup> channels in coronary arterial smooth muscle cells from rabbit  
Sung Eun Shin<sup>1</sup>, Won Sun Park<sup>1</sup>, Sung Hun Na<sup>2</sup>  
<sup>1</sup>Department of Physiology, Kangwon National University School of Medicine, Chuncheon, <sup>2</sup>Department of Obstetrics and Gynecology, Kangwon National University Hospital, Kangwon National University School of Medicine, Chuncheon, Korea
- S 55** P1-14 Salivary spinophilin tunes chloride/bicarbonate exchangers for the Cl<sup>-</sup> secretion in salivary glands  
Sang Ah Lee<sup>1</sup>, Dongun Lee<sup>1</sup>, Dong Min Shin<sup>3</sup>, Jeong Hee Hong<sup>1</sup>, Kuk Hui Son<sup>2</sup>  
<sup>1</sup>Department of Physiology, College of Medicine, Gachon University, <sup>2</sup>Department of Thoracic and Cardiovascular Surgery, Gachon University Gil Medical Center, Gachon University, <sup>3</sup>Yonsei University School of Dentistry
- S 56** P1-15 GNB5 regulates TRPC3 and store-operated Ca<sup>2+</sup> entry mediated bone remodeling  
Namju Kang, Yu-Mi Yang, Dong Min Shin, Soonhong Park  
Department of Oral Biology, BK21 PLUS project, Yonsei University College of Dentistry, Seoul, Korea
- S 56** P1-16 Real-time assessment of shear-induced ATP release from a rat atrial myocyte using sniffer-patch clamp  
Min-Jeong Son, Joon-Chul Kim, Qui Anh Le, Kyoung Hee Kim, Sun-Hee Woo  
College of Pharmacy, Chungnam National University, Daejeon, Korea
- S 56** P1-17 Temperature-dependent increase of the calcium sensitivity and activation kinetics of ANO6 Cl<sup>-</sup> channel variants  
Haiyue Lin<sup>1</sup>, Joo Hyun Nam<sup>2</sup>, Sung Joon Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, Seoul National University College of Medicine, Seoul, <sup>2</sup>Department of Physiology, Dongguk University College of Medicine, Gyeongju, Korea
- S 57** P1-18 Identification of critical amino acids in the C-terminal of TREK-2 K<sup>+</sup> channel for ATP- and pH<sub>i</sub>-sensitive regulation  
Joohan Woo<sup>1</sup>, Young Keul Jeon<sup>1</sup>, Yin-Hua Zhang<sup>1</sup>, Joo Hyun Nam<sup>2</sup>, Dong Hoon Shin<sup>3</sup>, Sung Joon Kim<sup>1</sup>  
<sup>1</sup>Department of physiology, College of Medicine, Seoul National University, Seoul, <sup>2</sup>Department of physiology & Ion Channel Disease Research Center, College of Medicine, Dongguk University, Kyungju, <sup>3</sup>Department of Pharmacology, College of Medicine, Yonsei University, Seoul, Korea
- S 57** P1-19 Anoctamin1 does not function as ion channel in head and neck squamous cell carcinoma due to lack of surface expression  
Young Keul Jeon, Joo Han Woo, Ji Hyun Jang, Seong Woo Choi, Hai Yue Lin, Yin Ming Zhe, Sung Joon Kim  
Department of Physiology, Seoul National University, College of Medicine
- S 57** P1-20 Carbonic anhydrase 12 E/K mutation modulates the function of AQP5 in submandibular glands  
Min Jae Kim<sup>†</sup>, Jung Yun Kang, Jeong Hee Hong, Dong Min Shin\*  
Department of Oral Biology, BK21 PLUS Project, Yonsei University College of Dentistry, Seoul, Korea

- S 57** P1-21 Augmentation of  $\text{Ca}^{2+}$ -induced  $\text{Ca}^{2+}$  release by chrysosplenol C via sensitization of  $\text{Ca}^{2+}$  release sites in ventricular myocytes  
Joon-Chul Kim<sup>1</sup>, Jun Wang<sup>1</sup>, Bojjibabu Chidipi<sup>1</sup>, Min-Jeong Son<sup>1</sup>, Young Ho Kim<sup>1</sup>, Nguyen Manh Cuong<sup>2,3</sup>, Sun-Hee Woo<sup>1</sup>  
<sup>1</sup>College of Pharmacy, IDRD, Chungnam National University, Daejeon, Korea, <sup>2</sup>Institute of Chemistry, Vietnam Academy of Science and Technology (VAST), Hanoi, Vietnam, <sup>3</sup>Institute of Natural Products Chemistry, VAST, Hanoi, Vietnam
- S 58** P1-22 De-energized mitochondrial function in permeabilized rat ventricle myocytes  
Quynh Mai Ho, Jeong Hoon Lee, Duong Duc Pham, Ki Hwan Hong, Kim Sung Jin, Yeon Joo Jung, Ho Sun Lee, Chae Hun Leem  
Department of Physiology, College of Medicine, Ulsan University, Seoul, Korea
- S 58** P1-23 The critical role of three charged residues in TRPC5 pore region in interaction with englerin A  
SeungJoo Jeong<sup>1</sup>, Minji Kim<sup>2</sup>, Eunice Yon June Park<sup>1</sup>, Jinhong Wie<sup>3</sup>, Ju-hong Jeon<sup>1</sup>, Insuk So<sup>1</sup>  
<sup>1</sup>Department of Physiology, Seoul National University College of Medicine, Seoul, <sup>2</sup>Chungnam National University, College of Veterinary Medicine, Daejeon, Korea, <sup>3</sup>Department of Biology, University of Pennsylvania, Philadelphia, Pennsylvania, USA
- S 58** P1-24 Identification of clustered phosphorylation sites in PKD2L1: how PKD2L1 channel activation is regulated by cAMP signaling pathway  
Eunice Yon June Park<sup>1</sup>, Misun Kwak<sup>1</sup>, Kotdaji Ha<sup>2</sup>, Insuk So<sup>1\*</sup>  
<sup>1</sup>Department of Physiology, Seoul National University, College of Medicine, Seoul, Korea, <sup>2</sup>Department of Physiology, University of California, San Francisco, California, USA
- S 59** P1-25 TRPM7 mediates mechanosensitivity in adult rat odontoblasts  
Jonghwa Won<sup>1</sup>, Hue Vang<sup>2</sup>, Ji Hyun Kim<sup>1</sup>, Youngnam Kang<sup>2</sup>, Seog Bae Oh<sup>1,2\*</sup>  
<sup>1</sup>Department of Brain and Cognitive Sciences, College of Natural Sciences, Seoul National University, Seoul, <sup>2</sup>Dental Research Institute and Department of Neurobiology & Physiology, School of Dentistry, Seoul National University, Seoul, Korea
- S 59** P1-26 Menadione generates reactive oxygen species and accumulates intracellular calcium in mouse pancreatic acinar cells  
Kyung Jin Choi, Shin Hye Kim, Dong Kwan Kim, Se Hoon Kim, Hyung Seo Park  
Department of Physiology, College of Medicine, Konyang University, Daejeon, Korea
- S 59** P1-27 Function of carboxyl coiled coil of TRPC3 in the gating mechanism  
Tharaka Darshana Wijerathne, Ji Hyun Kim, Min Ji Kim, Kyu Pil Lee  
Department of Physiology, College of Veterinary Medicine, Chungnam National University, Daejeon, Korea
- S 59** P1-28 Quercetin inhabits hSlo3 in a pH and calcium dependent manner through possible inhibition of Phosphatidylinositol kinases  
Tharaka Darshana Wijerathne, Ji Hyun Kim, Min Ji Kim, Kyu Pil Lee  
Department of Physiology, College of Veterinary Medicine, Chungnam National University, Daejeon, Korea
- S 60** P1-29 Electrophysiological characterization of trpc6 mutants associated with kidney diseases  
Tharaka Darshana Wijerathne, Ji Hyun Kim, Min Ji Kim, Kyu Pil Lee  
Department of Physiology, College of Veterinary Medicine, Chungnam National University, Daejeon, Korea
- S 60** P1-30 The N-terminus of  $\beta$ -subunits regulates the  $\text{PIP}_2$  sensitivity of voltage-gated calcium channels  
Seong-Hyeon Byeon, Byung-Chang Suh  
Department of Brain and Cognitive Sciences, DGIST
- S 60** P1-31 Hydroxyphenyl octanediamide-induced antinociception via transient receptor potential vanilloid subtype 4 modulation  
Geunyeol Choi, Sungjae Yoo, Seung-In Choi, Ji Yeon Lim, Minseok Kim, Hong Hua Piao, Pyung Sun Cho, Sun Wook Hwang  
Department of Biomedical Sciences and Department of Physiology, Korea University College of Medicine, Seoul, Korea
- S 60** P1-32 Diphenyleneiodonium (DPI) attenuates  $\text{Ca}^{2+}$  transient and contraction via desensitization of cardiac  $\text{Ca}^{2+}$  release sites independently of NADPH oxidase  
Jun Wang, Joon-Chul Kim, Min-Jeong-Son, Sun-Hee Woo  
College of Pharmacy, Chungnam National University, Daejeon, Korea
- S 61** P1-33 Effects of nitric oxide on voltage-dependent  $\text{K}^+$  currents in human cardiac fibroblasts by PKC pathway  
Hyemi Bae, Jeongyoon Choi, Youngwon Kim, Donghee Lee, Jaehong Ko, Hyoweon Bang, Inja Lim  
Department of Physiology, College of Medicine, Chung-Ang University, Seoul, Korea
- S 61** P1-34 Effects of nitric oxide on voltage-gated  $\text{K}^+$  currents in human cardiac fibroblasts  
Hyemi Bae, Jeongyoon Choi, Youngwon Kim, Donghee Lee, Jaehong Ko, Hyoweon Bang, Inja Lim  
Department of Physiology, College of Medicine, Chung-Ang University, Seoul, Korea
- S 61** P1-35 Determine proarrhythmic risk of 4-oxononanal (4-ONE) by the comprehensive *in vitro* proarrhythmia assay (CiPA)  
Seong Woo Choi, Yin-Hua Zhang, Sung Joon Kim  
Department of Physiology, Seoul National University College of Medicine

- S 61** P1-36 Hydrolyzable ATP modulates PIP<sub>2</sub> sensitivity of Anoctamin1/TMEM16A  
Woori Ko<sup>1</sup>, Joo Hyun Nam<sup>2</sup>, Byung-Chang Suh<sup>1\*</sup>  
<sup>1</sup>Department of Brain & Cognitive Sciences, DGIST, Daegu, <sup>2</sup>Department of Physiology and Ion channel Disease Research Center, College of Medicine, Dongguk University, Korea
- S 62** P1-37 Kv3.1 and Kv3.4 are involved in cancer cell migration and invasion  
Min Seok Song, Su Min Park, Jeong Seok Park, Jin Ho Byun, Hee Jung Jin, Seung Hyun Seo, Pan Dong Ryu, So Yeong Lee  
Laboratory of Veterinary Pharmacology, College of Veterinary Medicine, Seoul National University
- S 62** P1-38 Lipopolysaccharide reduces THIK-1 in Macrophages through AMPK activation  
Marie Merci Nyiramana<sup>1,2</sup>, Eun-Jin Kim<sup>2</sup>, Ji Hyeon Ryu<sup>2</sup>, Dong-Kun Lee<sup>1,2</sup>, Seong-Geun Hong<sup>1,2</sup>, Jaehee Han<sup>2</sup>, Dawon Kang<sup>1,2\*</sup>  
<sup>1</sup>Department of Convergence Medical Science, Gyeongsang National University, Jinju, <sup>2</sup>Department of Physiology, College of Medicine Institute of Health Sciences, Gyeongsang National University, Jinju, Korea
- S 62** P1-39 The involvement of two-pore domain potassium channels on epithelial-mesenchymal transition in cancer cells  
Yangmi Kim  
Department of Physiology, College of Medicine, Chungbuk National University, Cheongju, Korea
- S 63** P1-40 A novel SCN5A mutation results in ventricular arrhythmia with distinct molecular pharmacology and therapeutic response  
Hyun-jeong Pyo<sup>1</sup>, Hyun-Ji Kim<sup>1</sup>, Bok-Geon Kim<sup>2</sup>, June Huh<sup>3</sup>, Chang-Seok Ki<sup>4</sup>, Jae Boum Youm<sup>5</sup>, Jong-Sun Kang<sup>2</sup>, Hana Cho<sup>1</sup>  
<sup>1</sup>Department of Physiology, and <sup>2</sup>Molecular and Cellular Biology, Samsung Biomedical Research Institute, Sungkyunkwan University School of Medicine, Suwon, <sup>3</sup>Division of Pediatric Cardiology, Department of Pediatrics, and <sup>4</sup>Department of Laboratory Medicine and Genetics, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, <sup>5</sup>Department of Physiology, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University, Busan, Korea

## P2: Muscle Physiology

- S 63** P2-01 (PO-B-05) Higher vulnerability of catecholamine-induced arrhythmia in isolated right atrial myocytes  
Ami Kim, Jieun An, Hyun Bin Choi, Tong Mook Kang  
Department of Physiology, Single Cell Network Research Center, Sungkyunkwan University School of Medicine, Suwon, Korea
- S 63** P2-02 The vasodilatory mechanisms of repaglinide, a member of meglitinide anti-diabetic drugs by activating protein kinase A and protein kinase G in aortic smooth muscle  
Hongliang Li<sup>1</sup>, Sung Eun Shin<sup>1</sup>, Mi Seon Seo<sup>1</sup>, Jin Ryeol An<sup>1</sup>, Sung Hun Na<sup>2</sup>, Won Sun Park<sup>1</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Department of Obstetrics and Gynecology, Kangwon National University Hospital, Kangwon National University School of Medicine, Chuncheon, Korea
- S 63** P2-03 (PO-B-01) STIM2 and STIM1 have similarities and differences, but both regulate Ca<sup>2+</sup> movement in skeletal muscle  
Mi Ri Oh<sup>1</sup>, Keon Jin Lee<sup>1</sup>, Mei Huang<sup>1</sup>, Jin Ock Kim<sup>2</sup>, Do Han Kim<sup>2</sup>, Chung-Hyun Cho<sup>3</sup>, Eun Hui Lee<sup>1</sup>  
<sup>1</sup>Department of Physiology, College of Medicine, The Catholic University of Korea, Seoul, <sup>2</sup>School of Life Sciences, GIST, Gwangju, <sup>3</sup>Department of Pharmacology, College of Medicine, Seoul National University, Seoul, Korea
- S 64** P2-04 Isocitrate dehydrogenase 2 inhibition stimulate vascular inflammation in response to oxidative stress  
Su-Jeong Choi<sup>1,2,3</sup>, Harsha Nagar<sup>1,2,3</sup>, Shuyu Piao<sup>1,2,3</sup>, Seonhee Kim<sup>1,2,3</sup>, Ikjun Lee<sup>1,3</sup>, Sung-min Kim<sup>1,3</sup>, Saet-byel Jung<sup>1,4</sup>, Jeon-Woo Park<sup>5</sup>, Byeong Hwa Jeon<sup>1,3</sup>, Hee-Jung Song<sup>1,6</sup>, Cuk-Seong Kim<sup>1,2,3\*</sup>  
<sup>1</sup>Department of Medical Science, School of Medicine, Chungnam National University, Daejeon, <sup>2</sup>Department of BK21Plus CNU Integrative Biomedical Education Initiative, <sup>3</sup>Department of Physiology, School of Medicine, Chungnam National University, Daejeon, <sup>4</sup>Department of Endocrinology, <sup>5</sup>Department of Thoracic and Cardiovascular Surgery, School of Life Sciences, College of Natural Science, Kyungbook National University, Taegu, <sup>6</sup>Department of Neurology, School of Medicine, Chungnam National University Hospital, Daejeon, Korea
- S 64** P2-05 Altered redox state modulates endothelial K<sub>Ca</sub>2.3 and K<sub>Ca</sub>3.1 levels in normal pregnancy and preeclampsia  
Shinkyu Choi, Seung-Eun Cho, Ji Aee Kim, Hai-yan Li, Suk Hyo Suh  
Department of Physiology, Medical School, Ewha Womans University, Seoul, Korea
- S 64** P2-06 Attenuation of NaHS-induced stimulation of ANP secretion from hypertrophied atria  
Lamei Yu, Byung Mun Park, Thi Ai Phuong Hoang, Suhnn Hee Kim  
Department of Physiology, Research Institute for Endocrine Sciences, Chonbuk National University Medical School, Jeonju, Korea
- S 65** P2-07 Cardioprotective effects of alamandine via MrgD receptor by anti-apoptosis and ANP system in rats  
Byung Mun Park, Thi Ai Phuong Hoang, Lamei Yu, Suhnn Hee Kim  
Department of Physiology, Research Institute for Endocrine Sciences, Chonbuk National University Medical School, Jeonju, Korea
- S 65** P2-08 CR6-interacting factor 1 deficiency impairs vascular function by inhibiting the Sirt1-endothelial nitric oxide synthase pathway  
Harsha Nagar<sup>1,2,3</sup>, Su-Jeong Choi<sup>1,2</sup>, Shuyu Piao<sup>1,2,3</sup>, Seonhee Kim<sup>1,2,3</sup>, Ikjun Lee<sup>1,3</sup>, Sung-min Kim<sup>1,3</sup>, Saet-byel Jung<sup>1,4</sup>, Jeon-Woo Park<sup>5</sup>, Byeong Hwa Jeon<sup>1,3</sup>, Hee-Jung Song<sup>1,6</sup>, Cuk-Seong Kim<sup>1,2,3\*</sup>  
<sup>1</sup>Department of Medical Science, <sup>2</sup>Department of BK21Plus CNU Integrative Biomedical Education Initiative, <sup>3</sup>Department of Physiology, School of Medicine, Chungnam National University, Daejeon, <sup>4</sup>Department of Endocrinology, <sup>5</sup>Department of Thoracic and Cardiovascular Surgery, School of Life Sciences, College of Natural Science, Kyungbook National University, Taegu, <sup>6</sup>Department of Neurology, School of Medicine, Chungnam National University Hospital, Daejeon, Korea

- S 65** P2-09 Neuronal nitric oxide synthase  $\beta$  is attached to myofilament and maintains sarcomere structure in cardiomyocyte  
Ji Hyun Jang, Sung Joon Kim, Yin Hua Zhang  
Department of Physiology, Seoul National University, College of Medicine, Seoul, Korea
- S 66** P2-10 *Salicornia europaea* extract suppresses vascular neointima formation through inhibiting MAPK pathway-mediated responses in vascular smooth muscle cells  
Long Cui<sup>1</sup>, Kang Pa Lee<sup>1</sup>, Seung Hyo Jung<sup>1</sup>, Mee-Hyang Kweon<sup>2</sup>, Yunkyoung Ryu<sup>1</sup>, Kyung Jong Won<sup>1</sup>, Bokyoung Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, School of Medicine, Konkuk University, Chungju, <sup>2</sup>Research Center, Phyto Corporation, Seoul, Korea
- S 66** P2-11 The APE1/Ref-1 inhibits inorganic phosphate-induced vascular calcification in vascular smooth muscle cells and ex vivo aorta  
Eun Ok Lee<sup>1</sup>, Ki Mo Lee<sup>1</sup>, Yu Ran Lee<sup>1</sup>, Hee Kyoung Joo<sup>1</sup>, Myoung Soo Park<sup>1</sup>, Cuk-Seong Kim<sup>1</sup>, Sunga Choi<sup>1</sup>, Jin Ok Jeong<sup>2</sup>, Byeong Hwa Jeon<sup>1\*</sup>  
<sup>1</sup>Research Institute of Medical Sciences, Department of Physiology, School of Medicine, Chungnam National University, Daejeon, <sup>2</sup>Division of Cardiology, Department of Internal Medicine, Chungnam National University, Daejeon, Korea
- S 66** P2-12 Fast, transient relaxation of rat pulmonary artery by angiotensin II via AT1-eNOS signaling pathways  
Hae Jin Kim, Ji Hyun Jang, Yin-Hua Zhang, Sung Joon Kim  
Department of Physiology, Seoul National University College of Medicine, Seoul, Korea
- S 66** P2-13 Attenuation of vascular contractility in metastatic breast cancer mice  
Rany Vorn<sup>1,2</sup>, Hae Young Yoo<sup>1</sup>  
<sup>1</sup>Chung-Ang University College of Nursing, Seoul, <sup>2</sup>Chung-Ang University Graduate School, Seoul, Korea

### P3: Neurophysiology

- S 67** P3-01 Development of autaptic sympathetic neuronal culture for studying the functional communication between autonomic neurons and satellite glial cells  
Seong Jun Kang, Choong-Ku Lee, So Hyun Kim, Seong-Woo Jeong  
Department of Physiology, Yonsei University Wonju College of Medicine, Wonju, Korea
- S 67** P3-02 (PO-A-03) Peripheral GABA<sub>A</sub> receptor-mediated signals facilitate chronic inflammatory pain  
Pa Reum Lee<sup>1</sup>, Seo-Yeon Yoon<sup>1,2</sup>, Yong Ho Kim<sup>3</sup>, Seog Bae Oh<sup>1,2</sup>  
<sup>1</sup>Department of Brain and Cognitive Sci., Col. of Natural Sci., Seoul Natl. Univ., Seoul, <sup>2</sup>Dent. Res. Inst. and Department of Neurobio. & Physiology, School of Dentistry, Seoul Natl. Univ., Seoul, <sup>3</sup>Department of Physiology, Col. of Medicine, Gachon Univ., Incheon, Korea
- S 67** P3-03 (PO-A-04) SHP2 mutation mediated cell type specific dysregulation of Ras-Erk signaling pathway  
Hyun-Hee Ryu<sup>1,2†</sup>, Tae-Hyun Kim<sup>3†</sup>, Minkyung Kang<sup>1,4</sup>, DaeHee Han<sup>3</sup>, Yong Gyu Kim<sup>1,4</sup>, Jiyeon Ha<sup>1</sup>, Chae-Seok Lim<sup>3</sup>, Chul-Hong Kim<sup>2</sup>, Sang Jeong Kim<sup>1,4,6</sup>, Alcino J. Silva<sup>5</sup>, Jung-Woong Kim<sup>2\*</sup>, Bong-Kiun Kaang<sup>3\*</sup>, Yong-Seok Lee<sup>1,4,6\*</sup>  
<sup>1</sup>Department of Physiology, Seoul National University College of Medicine, <sup>2</sup>Department of Life Science, Chung-Ang University, <sup>3</sup>School of Biological Sciences, College of Natural Sciences, Seoul National University, <sup>4</sup>Department of Biomedical Sciences, Seoul National University College of Medicine, Seoul, Korea, <sup>5</sup>Department of Neurobiology, Integrative Center for Learning and Memory, Brain Research Institute, University of California Los Angeles, California, USA, <sup>6</sup>Neuroscience Research Institute, Seoul National University College of Medicine, Seoul, Korea
- S 68** P3-04 (PO-A-05) Climbing fiber burst-mediated sensory coding is directly represented in post-synaptic Purkinje cell  
Seung-Eon Roh<sup>1,3\*</sup>, Seung Ha Kim<sup>1,2</sup>, Yong-Gyu Kim<sup>1</sup>, Chang-Hyun Ryu<sup>1</sup>, Chang-Eop Kim<sup>1</sup>, Sun Kwang Kim<sup>3</sup>, Sang Jeong Kim<sup>1,2</sup>  
<sup>1</sup>Department of Physiology and <sup>2</sup>Department of Biomedical Science, College of Medicine, Seoul National University, <sup>3</sup>Department of Physiology, College of Korean Medicine, Kyung Hee University, Seoul, Korea
- S 68** P3-05 (PO-A-06) Channel-mediated GABA release from reactive astrocytes in epileptic hippocampus  
Chiranjivi Neupane<sup>1</sup>, Sudip Pandit<sup>1</sup>, Ramesh Sarma<sup>1</sup>, Junsung Woo<sup>2</sup>, C Justin Lee<sup>2</sup>, Jin Bong Park<sup>1</sup>  
<sup>1</sup>Department of Physiology, School of Medicine and Brain Research Institute, Chungnam National University, Daejeon, <sup>2</sup>Center for Neural Science, Korea Institute of Science and Technology (KIST), Seoul, Korea
- S 68** P3-06 (PO-B-06) Singular mechanisms of the thermal sweating to central sudomotor in tropical Africans  
Jeong-Beom Lee<sup>1\*</sup>, Young-Ki Min<sup>1</sup>, Jeong-Ho Kim<sup>2</sup>, Yun Su Eun<sup>2</sup>, Jin Wook Kim<sup>2</sup>, Seo Yun Jung<sup>2</sup>, Suk Min Han<sup>2</sup>, Jae Yeong Bae<sup>2</sup>, Hee-Jin Lee<sup>3</sup>, Mi-Young Lee<sup>3</sup>  
<sup>1</sup>Department of Physiology, College of Medicine, Soonchunhyang University, Cheonan, <sup>2</sup>A Student at the College of Medicine, Soonchunhyang University, Cheonan, <sup>3</sup>Global Graduate School of Healthcare, Soonchunhyang University, Asan, Korea
- S 69** P3-07 Selective expression of Kv4.1 in mature granule cells contributes to sparse firing of hippocampal dentate gyrus  
Kyung-Ran Kim<sup>1,2,3</sup>, Sooyun Kim<sup>1,2,3</sup>, Young Ho Suh<sup>4</sup>, Jong-Sun Kang<sup>5</sup>, Suk-Ho Lee<sup>1,2,3</sup>, Hana Cho<sup>6,7\*</sup>, Won-Kyung Ho<sup>1,2,3\*</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Biomembrane Plasticity Research Center, <sup>3</sup>Neuroscience Research Institute, <sup>4</sup>Department of Biomedical Science, Seoul National University College of Medicine, Seoul, Department of <sup>5</sup>Molecular Cell Biology and <sup>6</sup>Physiology, Sungkyunkwan University School of Medicine, Suwon, Korea, <sup>7</sup>Lead Contact
- S 69** P3-08 Spinal D-serine modulates neuronal nitric oxide synthase phosphorylation leading to the development of mechanical allodynia in a mouse model of neuropathic pain  
Sheu-Ran Choi, Hoon-Seong Choi, Ho-Jae Han, Jang-Hern Lee  
Department of Veterinary Physiology, BK21 PLUS Program for Creative Veterinary Science Research, Research Institute for Veterinary Science and College of Veterinary Medicine, Seoul National University, Seoul, Korea

- S 69** P3-09 Serotonin increases inhibitory but not excitatory synaptic transmission in the substantia gelatinosa neurons of trigeminal subnucleus caudalis  
Seon Hui Jang, Thi Huyen Phuong Tran, Seong Kyu Han, Soo Joung Park  
Department of Oral Physiology and Institute of Oral Bioscience, School of Dentistry, Chonbuk National University, Jeonju, Jeonbuk, Korea
- S 69** P3-10 The potential role of TLR2 on alcohol-induced behaviors  
Yujin Jang, Min hee Lee, Dong Kwan Kim  
Department of Physiology, Konyang University College of Medicine, Daejeon, Korea
- S 70** P3-11 Regulation of NMDAR receptiveness through calpain inhibition in midbrain dopamine neurons  
Shin Hye Kim, Sun Hee Jeon, Hoo Shin Lee, Dong Kwan Kim, Hyung Seo Park, Se Hoon Kim  
Department of Physiology, College of Medicine, Konyang University, Daejeon, Korea
- S 70** P3-12 Pharmacological inhibition of eIF2 $\alpha$  phosphorylation can rescue synaptic plasticity and memory deficits in Alzheimer's disease mouse models  
Kyoung-Doo Hwang<sup>1</sup>, Myeong Seong Bak<sup>2</sup>, Sang Jeong Kim<sup>2</sup>, Sangmyung Rhee<sup>1</sup>, Yong-Seok Lee<sup>2</sup>  
<sup>1</sup>Department of Life Science, College of Natural Science, Chung-Ang University, Seoul, <sup>2</sup>Department of Physiology, Department of Biomedical Science, Seoul National University College of Medicine, Seoul, Korea
- S 70** P3-13 Branch specific input wiring on distal tuft dendrites of L5 pyramidal neurons in primary somatosensory cortex  
Young-Eun Han, Jun-Ho Choi, Jong-Cheol Rah  
Department of Structure & Function of Neural Network, Korea Brain Research Institute, Daegu, Korea
- S 70** P3-14 The role of spinal cord D-serine in the development of mirror-image pain: different modulation of astrocyte sigma-1 receptors and gap junctions on D-serine production  
Hoon-Seong Choi, Sheu-Ran Choi, Ho-Jae Han, Jang-Hern Lee\*  
Department of Veterinary Physiology, BK21 PLUS Program for Creative Veterinary Science Research, Research Institute for Veterinary Science and College of Veterinary Medicine, Seoul National University, Seoul, Korea
- S 71** P3-15 Correlation between hippocampal ensemble dynamics and memory specificity  
Myeong Seong Bak, Yong-Seok Lee  
Department of Physiology, Department of Biomedical Science, Seoul National University College of Medicine, Seoul, Korea
- S 71** P3-16 Repurposed drugs for acute ischemic stroke  
Dong Hyeon Lee<sup>1,2</sup>, Kang Ahn<sup>1</sup>, Jongman Yoo<sup>2,3</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Institute of Basic Medical Sciences, <sup>3</sup>Department of Microbiology, School of Medicine, CHA University
- S 71** P3-17 Adrenergic modulation of cerebellar glial activity during nociception  
Seung Ha Kim<sup>1,2</sup>, Seung-Eon Roh<sup>1,3</sup>, Sun Kwang Kim<sup>3</sup>, Sang Jeong Kim<sup>1,2</sup>  
<sup>1</sup>Department of Physiology and <sup>2</sup>Department of Biomedical Science, College of Medicine, Seoul National University, <sup>3</sup>Department of Physiology, College of Korean Medicine, Kyung Hee University
- S 71** P3-18 Sex-specific behavioral abnormalities in Tert transgenic mice  
Ki Chan Kim<sup>1</sup>, Kyu Suk Cho<sup>1</sup>, Edson Luck Gonzales<sup>1</sup>, Schley Valencia<sup>1</sup>, Soo Yeon Kim<sup>2</sup>, Kyoung Ja Kwon<sup>1</sup>, Chan Young Shin<sup>1</sup>  
<sup>1</sup>Department of Pharmacology, School of Medicine, Konkuk University, <sup>2</sup>Department of Life Science, College of Natural Science, Ewha Woman's University
- S 72** P3-19 Construction of time-evolving pain-related brain network by literature-mining  
Jihong Oh, Chang-Eop Kim  
Department of Physiology, Gachon University College of Korean Medicine, Gyeonggi-do, Korea
- S 72** P3-20 Metabotropic glutamate receptor 5 in the brain governs sensory pain and negative mood symptoms in the spinal nerve injured rats: [11C] ABP688 PET study  
Geehoon Chung<sup>1,2</sup>, Chae Young Kim<sup>1,3</sup>, Sang Jeong Kim<sup>1,2,3,4</sup>  
<sup>1</sup>Department of Physiology, Seoul National University College of Medicine, <sup>2</sup>Department of Brain and Cognitive Sciences, Seoul National University College of Natural Sciences, <sup>3</sup>Department of Biomedical Sciences, Seoul National University College of Medicine, <sup>4</sup>Neuroscience Research Institute, Seoul National University College of Medicine
- S 72** P3-21 In adolescence, elevation of GABA activity in the ventral hippocampus is related with anxiety- and aggressive- like behavior induced by neonatal maternal separation  
Sang Yep Shin, Sun Seek Min  
Department of Physiology and Biophysics Eulji University of Medicine, Eulji University, Daejeon, Korea
- S 73** P3-22 Pacemaking of midbrain dopamine neurons: role of TRPC3 and NALCN channels  
Ki Bum Um<sup>1</sup>, Lutz Birnbaumer<sup>2</sup>, Hyun Jin Kim<sup>1</sup>, Myoung Kyu Park<sup>1</sup>  
<sup>1</sup>Department of Physiology, Sungkyunkwan University School of Medicine, Suwon, Korea, <sup>2</sup>IB-INTECH, Univ Nacional de San Martin; Av 25 de Mayo y Francia, San Martin CP1650, Prov Buenos Aires, Argentina
- S 73** P3-23 Metabotropic glutamate receptor 5 is involved in 0.1 mM [Mg<sup>2+</sup>]<sub>o</sub>-induced [Ca<sup>2+</sup>]<sub>i</sub> spikes in cultured rat hippocampal neurons  
Su Jeong Jeon, Ji Seon Yang, Yi Jae Hong, Shin Hee Yoon  
Department of Physiology, College of Medicine, The Catholic University of Korea, Seoul, Korea
- S 73** P3-24 Syringaresinol reduces excitatory synaptic transmission and picrotoxin-induced epileptic activity through the

presynaptic modulation at the hippocampal CA3-CA1 synapses

Young Seon Cho, Woo Seok Song, Sang Ho Yoon, Kyeong-Yeol Park, Myoung-Hwan Kim

Department of Physiology and Biomedical Sciences, Seoul National University College of Medicine

- S 73** P3-25 Purkinje cell specific STAT3 regulates emotional memory formation at excitatory synapses  
Jeong-Kyu Han  
Seoul National University College of Medicine
- S 74** P3-26 Effect of cell type-specific expression of a RASopathy-associated mutations on learning and memory  
Minkyung Kang<sup>1,2</sup>, Benjamin G. Neel<sup>3</sup>, Yong-Seok Lee<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, Seoul National University College of Medicine, Seoul, <sup>2</sup>Department of Biomedical Sciences, Seoul National University College of Medicine, Seoul, Korea, <sup>3</sup>Laura and Isaac Perlmutter Cancer Center, New York University Langone Medical Center, New York, USA
- S 74** P3-27 Neuroprotective effects of 3,3'-diindolylmethane on hippocampal neuropathology following pilocarpine-induced status epilepticus  
Mi-Hye Kim<sup>1,2</sup>, Yeong Ran Hwang<sup>3</sup>, Hee Jung Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, College of Medicine, <sup>2</sup>Department of Medical Laser, Graduate School, <sup>3</sup>Department of Biological Sciences, College of Natural Sciences, Dankook University, Cheonan, Korea
- S 74** P3-28 Long-term depression of intrinsic excitability accompanied by the synaptic depression in the cerebellar purkinje cells  
Hyun Geun Shim<sup>1,2\*</sup>, Dong Cheol Jang<sup>1,3\*</sup>, Sang Jeong Kim<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Department of Biomedical Science, College of Medicine, <sup>3</sup>Department of Brain and Cognitive Science, College of Natural Science, Seoul National University
- S 75** P3-29 Encoding rules for multiple stimulus features of touch and pain in the S1 cortex  
Yoorim Kim<sup>1</sup>, Chang-Eop Kim<sup>2</sup>, Heera Yoon<sup>3</sup>, Sun Kwang Kim<sup>3,4</sup>, Sang Jeong Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, School of Medicine, Seoul National University, Seoul, <sup>2</sup>Department of Physiology, College of Korean Medicine, Gacheon University, Kyunggi-do, <sup>3</sup>Department of Science in Korean Medicine, Graduate School, Kyung Hee University, Seoul, <sup>4</sup>Department of Physiology, College of Korean Medicine, Kyung Hee University, Seoul, Korea
- S 75** P3-30 Effects of resveratrol on the substantia gelatinosa neurons of the subnucleus caudalis in immature mice  
Seon Hui Jang, Soo Joung Park, Seong Kyu Han\*  
Department of Oral Physiology and Institute of Oral Bioscience, School of Dentistry, Chonbuk National University, Jeonju, Jeonbuk, Korea
- S 75** P3-31 Activation of pathway-specific synaptic inputs onto layer 5 pyramidal neurons in visual cortex revealed by FM1-43 dye unloading  
Kwang-Hyun Cho<sup>1</sup>, Kayoung Joo<sup>1</sup>, Mina Yoon<sup>1</sup>, Hyun-Jong Jang<sup>1,2</sup>, Duck-Joo Rhie<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, College of Medicine, <sup>2</sup>Catholic Neuroscience Institute, The Catholic University of Korea, Seoul, Korea
- S 75** P3-32 Analgesic effects of low frequency stimulator on docetaxel-induced neuropathic pain in mice  
Suk-Yun Kang, Yeonhee Ryu, O Sang Kwon, Kwang-Ho Choi, Jun Bum Kim  
KM Fundamental Research Division, Korea Institute of Oriental Medicine, Daejeon, Korea
- S 76** P3-33 Direct experimental evidences for modulation of cortical neural excitability of transcranial direct current stimulation in the intact somatosensory cortex of rats  
Min Sun Kim, Ho Koo, Byung Rim Park  
Department of Physiology, Wonkwang University School of Medicine
- S 76** P3-34 Inhibition of spinal PPAR-gamma affects negative influence to motor function recovery after spinal contusive injury in rats  
Youngkyung Kim<sup>1,2</sup>, Kyu-Won Park<sup>1</sup>, Jeonghwa Oh<sup>1</sup>, Junesun Kim<sup>2</sup>, Young Wook Yoon<sup>1</sup>  
<sup>1</sup>Department of Physiology and Neuroscience Research Institute, <sup>2</sup>BK21 PLUS Program, Department of Public Health Sciences, Graduate School, Korea University, Seoul, Korea
- S 76** P3-35 Layer- and cell type- specific cholinergic regulation of synaptic transmission in pyramidal neurons in the rat visual cortex  
Kayoung Joo<sup>1</sup>, Mina Yoon<sup>1</sup>, Kwang-Hyun Cho<sup>1</sup>, Hyun-Jong Jang<sup>1,2</sup>, Duck-Joo Rhie<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Catholic Neuroscience Institute, College of Medicine, The Catholic University of Korea, Seoul, Korea
- S 77** P3-36 Mossy fibre synaptic inputs are privileged to induce long-term potentiation of intrinsic excitability in CA3 pyramidal cells  
Kisang Eom<sup>1</sup>, Jung Ho Hyun<sup>2</sup>, Jaeyoung Yoon<sup>1</sup>, Sooyun Kim<sup>1</sup>, Won-Kyung Ho<sup>1</sup>, Suk-Ho Lee<sup>1</sup>  
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- S 77** P3-37 Density and output of sweat glands contribute to sudomotor activity in tropical Africans and temperate Koreans  
Jeong-Beom Lee<sup>1\*</sup>, Young-Ki Min<sup>1</sup>, Jeong-Ho Kim<sup>2</sup>, Yun Su Eun<sup>2</sup>, Jin Wook Kim<sup>2</sup>, Seo Yun Jung<sup>2</sup>, Suk Min Han<sup>2</sup>, Jae Yeong Bae<sup>2</sup>, Hee-Jin Lee<sup>3</sup>, Mi-Young Lee<sup>3</sup>  
<sup>1</sup>Department of Physiology, College of Medicine, Soonchunhyang University, Cheonan, <sup>2</sup>A Student at the College of Medicine, Soonchunhyang University, Cheonan, <sup>3</sup>Global Graduate School of Healthcare, Soonchunhyang University, Asan, Korea
- S 77** P3-38 *Cinnamomi Cortex* and its major phytochemicals alleviate oxaliplatin-induced cold and mechanical allodynia in rodents

Ji Hwan Lee<sup>1</sup>, Woojin Kim<sup>2</sup>, Sun Kwang Kim<sup>1,2</sup>

<sup>1</sup>Department of Science in Korean Medicine, Graduate School, Kyung Hee University, Seoul, <sup>2</sup>Department of Physiology, College of Korean Medicine, Seoul, Korea

- S 78** P3-39 Anti-despair-like behavior in RalBP1-mutant mice presumably caused by reduced synaptic inhibition in the hippocampus  
Sang Ho Yoon, Kyeong-Yeol Park, Woo Seok Song, Young Seon Cho, Myoung-Hwan Kim  
Department of Physiology, Seoul National University College of Medicine, Seoul, Korea
- S 78** P3-40 Effects of transcranial direct current stimulation on saturated long-term potentiation in visual cortex of rats  
Ho Koo, Byung Rim Park, Min Sun Kim  
Department of Physiology, Wonkwang University School of Medicine, Iksan, Korea
- S 78** P3-41 Zone-dependency of Purkinje cell Ca<sup>2+</sup> dynamics originate from zone-dependent heterogeneity of CF input  
Seung-Eon Roh<sup>1,3</sup>, Seung Ha Kim<sup>1,2</sup>, Yong-Gyu Kim<sup>1</sup>, Chang-Eop Kim<sup>1</sup>, Sun Kwang Kim<sup>3</sup>, Sang Jeong Kim<sup>1,2</sup>  
<sup>1</sup>Department of Physiology and <sup>2</sup>Department of Biomedical Science, College of Medicine, Seoul National University, <sup>3</sup>Department of Physiology, College of Korean Medicine, Kyung Hee University, Seoul, Korea
- S 78** P3-42 Presynaptic mitochondrial calcium release enhances short-term facilitation during brief high-frequency stimulation  
Che Ho Yang, Won-Kyung Ho, Suk-Ho Lee  
Department of Physiology, Seoul National University College of Medicine
- S 79** P3-43 The role of cerebellar Purkinje cell's intrinsic excitability in fear conditioning  
Jaegwon Lee, Dong Cheol Jang, Hyun Geun Shim, Myeong-seong Bak, Sang Jeong Kim  
Department of Physiology Seoul National University College of Medicine
- S 79** P3-44 Phenylalanine facilitates long-term depression in the hippocampus  
Woo Seok Song, Sang Ho Yoon, Young Seon Cho, Kyeong-Yeol Park, Myoung-Hwan Kim  
Department of Physiology and Biomedical Sciences, Seoul National University College of Medicine, Seoul, Korea
- S 79** P3-45 Distinctive firing properties of pyramidal neurons in infralimbic and prelimbic areas of medial prefrontal cortex  
Jaehan Kwon, Weonjin Yu, Suk Ho Lee, Won-Kyung Ho  
Department of Physiology, Seoul National University College of Medicine, Seoul, Korea

#### P4: Molecular Physiology

- S 79** P4-01 (PO-B-04) WNK1-mediated Ca<sup>2+</sup> signaling is a novel culprit for hepatic stellate cell activation and fibrosis  
Kyu-Hee Hwang<sup>1-4</sup>, Ji-Hee Kim<sup>1,3,4</sup>, Soo-Jin Kim<sup>1-4</sup>, Hung Minh Tran<sup>1-4</sup>, In Deok Kong<sup>1-3</sup>, Kyu-Sang Park<sup>1-4</sup>, Seung-Kuy Cha<sup>1-4\*</sup>  
Departments of <sup>1</sup>Physiology and <sup>2</sup>Global Medical Science, <sup>3</sup>Institute of Lifestyle Medicine, and <sup>4</sup>Mitohormesis Research Center, Yonsei University Wonju College of Medicine, Wonju, Gangwon-do, Korea
- S 80** P4-02 (PO-A-07) The E3 ligase c-Cbl inhibits cancer cell migration by neddylation of the proto-oncogene c-Src  
Gun-Woo Lee<sup>1</sup>, Jun Bum Park<sup>1</sup>, Sung Yeon Park<sup>2,3</sup>, Seo Jieun<sup>1</sup>, Seung-Hyun Shin<sup>1</sup>, Jong-Wan Park<sup>1,2</sup>, Sang Jung Kim<sup>1,2,3</sup>, Masatoshi Watanabe<sup>4</sup>, Yang-Sook Chun<sup>1,2,3\*</sup>  
<sup>1</sup>Department of Biomedical Science, <sup>2</sup>Ischemic/Hypoxic Disease Institute, <sup>3</sup>Department of Physiology, Seoul National University College of Medicine, Seoul, <sup>4</sup>Laboratory for Medical Engineering, Graduate School of Engineering, Yokohama National University
- S 80** P4-03 TRPC6 regulate NFATc1 and TLR signaling in osteoclastogenesis  
Yu-Mi Yang, Dong Min Shin  
Department of Oral Biology, Yonsei University College of Dentistry, Seoul, Korea
- S 80** P4-04 Activation of transient receptor potential melastatin 7 (TRPM7) channel increases basal autophagy and reduces amyloid  $\beta$ -peptide  
Hyun Geun Oh, Sungkwon Chung  
Department of Physiology, Sungkyunkwan University School of Medicine, Suwon, Korea
- S 80** P4-05 Gas6 inhibit epithelial-mesenchymal transition in lung alveolar epithelial cells  
Ji-Hae Jung, Young-So Yoon, Ye-Ji Lee, Jihee Lee Kang  
Department of Physiology, Tissue Injury Defense Research Center, School of Medicine, Ewha Womans University, Seoul, Korea
- S 81** P4-06 Simvastatin treatment boosts benefits of apoptotic cell infusion in murine lung fibrosis  
Ye-Ji Lee, Meung-Joo Kim, Ji-Hye Jung, Young-So Yoon, Youn-Hee Choi, Jihee Lee Kang  
Department of Physiology, Tissue Injury Defense Research Center, School of Medicine, Ewha Womans University, Seoul, Korea
- S 81** P4-07 Exposure of macrophages to apoptotic cells inhibits lung fibroblast invasion  
Yong-Bae Kim<sup>1</sup>, Jihee Lee<sup>1,2</sup>  
<sup>1</sup>Tissue Injury Defense Research Center, <sup>2</sup>Department of Physiology, School of Medicine, Ewha Womans University, Seoul, Korea
- S 81** P4-08 Downregulation of mitochondrial PDP1 is required for the early stage differentiation of embryonic stem cell to cardiac myocytes  
Hyoung Kyu Kim, Hye Jin Heo, Jin Han

National Research Laboratory for Mitochondrial Signaling, Department of Physiology, Department of Health Sciences and Technology, BK21 Plus Project Team, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University, Busan, Korea

- S 81**    P4-09    Cardiac mitochondrial metabolism and function  
Jin Han  
National Research Laboratory for Mitochondrial Signaling, Department of Physiology, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University, Busan, Korea
- S 82**    P4-10    Low-intensity ultrasound decreases high glucose- and sodium nitroprusside-induced nitric oxide generation in the human retinal pigment epithelial cells  
Mrigendra Bir Karmacharya<sup>1</sup>, Binika Hada<sup>2</sup>, Byung Hyune Choi<sup>2</sup>, So Ra Park<sup>1\*</sup>  
<sup>1</sup>Department of Physiology and Biophysics, <sup>2</sup>Department of Biomedical Sciences, Inha University College of Medicine, Incheon, Korea
- S 82**    P4-11    Novel function of Jumonji C (JmjC) domain-containing protein in osteoclastogenesis  
Seon-Young Kim<sup>1</sup>, Hye-Jin Kim<sup>1</sup>, Do Won Jung<sup>1</sup>, Jong-Wan Park<sup>2</sup>, Yang-Sook Chun<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Ischemic/Hypoxic Disease Institute, Seoul National University College of Medicine, Seoul, Korea
- S 82**    P4-12    Leptin suppresses glutamate-induced apoptosis through regulation of ERK1/2 signaling pathways in rat primary astrocytes  
Hyunju Park, So-Hee Ahn, Yieun Jung, Joo Chun Yoon, Youn-Hee Choi\*  
Departments of Physiology, Tissue Injury Defense Research Center, Ewha Womans University School of Medicine
- S 83**    P4-13    Minor ginsenosides inhibits growth, migration and invasion of neuroblastoma cells via caspase activation and suppressing epithelial mesenchymal transition  
Jung Mi Oh<sup>1</sup>, Hye Lan Kim<sup>1</sup>, Jung-woo Lee<sup>2</sup>, Sungkun Chun<sup>1</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Department of Anesthesiology and Pain Medicine, Chonbuk National University Medical School, Jeonju, Korea
- S 83**    P4-14    CRIF-1 deficiency increases senescence through SIRT3 pathway in endothelial cells  
Seonhee Kim<sup>1,2,3</sup>, Shuyu Piao<sup>1,2,3</sup>, Harsha Nagar<sup>1,2,3</sup>, Su-jeong Choi<sup>1,2,3</sup>, Ik jun Lee<sup>1,3</sup>, Sungmin Kim<sup>1,3</sup>, Saet-byel Jung<sup>1,4</sup>, Byeong Hwa Jeon<sup>1,3</sup>, Hee-Jung Song<sup>1,5</sup>, Cuk-seong Kim<sup>1,2,3\*</sup>  
<sup>1</sup>Department of Medical Science, School of Medicine, Chungnam National University, Daejeon, <sup>2</sup>Department of BK21Plus CNU Integrative Biomedical Education Initiative, <sup>3</sup>Department of Physiology, School of Medicine, Chungnam National University, Daejeon, <sup>4</sup>Department of Endocrinology, School of Medicine, Chungnam National University, Daejeon, <sup>5</sup>Department of Neurology, School of Medicine, Chungnam National University, Daejeon, Korea
- S 83**    P4-15    Minor Rh3 induces apoptotic cell death in SK-N-BE (2) human neuroblastoma cells through a caspase-dependent pathway  
Jung Mi Oh<sup>1</sup>, Hye Lan Kim<sup>1</sup>, Jung-woo Lee<sup>2</sup>, Sungkun Chun<sup>1</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Department of Anesthesiology and Pain Medicine, Chonbuk National University Medical School, Jeonju, Korea
- S 83**    P4-16    Glucocorticoid receptor positively regulates transcription of FNDC5 in the liver  
Hyoung Kyu Kim, Min Kim, Jin Han\*  
National Research Laboratory for Mitochondrial Signaling, Department of Physiology, Department of Health Sciences and Technology, BK21 Plus Project Team, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University, Busan, Korea
- S 84**    P4-17    Mitochondrial molecular targets of nobletin in the neuroprotective mechanism in primary cortical neurons and isolated brain mitochondria  
Khulan Amarsanaa, Ji Hyung Lee, Sung-Cherl Jung, Su-Yong Eun  
Department of Physiology, Jeju National University School of Medicine, Jeju, Korea
- S 84**    P4-18    Functional roles of P2X7 receptor and NALP3 inflammasome in head and neck cancer  
Sangwoo Lee, JuYoung Bae, Kyungpyo Park\*  
Department of Oral Physiology, School of Dentistry, Seoul National University
- S 84**    P4-19    Role of NEDDylation pathway in non alcoholic fatty liver disease  
Uk-Il Ju<sup>1</sup>, Do-Won Jeong<sup>1</sup>, Jong-Wan Park<sup>1,2</sup>, Yang-Sook Chun<sup>1,2,3</sup>  
<sup>1</sup>Department of Biomedical Sciences, <sup>2</sup>Ischemic/Hypoxic Disease Institute, <sup>3</sup>Department of Physiology, Seoul National University College of Medicine
- S 84**    P4-20    Valproic acid promotes caspase-dependent apoptosis and autophagy in human lung cancer cells  
Bo Ram Han, Hyun Kyung Park, Woo Hyun Park\*  
Department of Physiology, Medical School, Research Institute for Endocrine Sciences, Chonbuk National University, Jeonju, Korea
- S 85**    P4-21    Crif1 deficiency inhibits keloid fibroblasts migration, proliferation and extracellular matrix synthesis  
Sungmin Kim<sup>1,2,3,4</sup>, Su-jeong Choi<sup>1,2,3</sup>, Harsha Nagar<sup>1,2,3</sup>, Shuyu Piao<sup>1,2,3</sup>, Seonhee Kim<sup>1,2,3</sup>, Ikjun Lee<sup>1,2,3</sup>, Byeong Hwa Jeon<sup>1,3</sup>, Sang-Ha Oh<sup>4</sup>, Cuk-Seong Kim<sup>1,2,3\*</sup>  
<sup>1</sup>Department of Medical Science, School of Medicine, Chungnam National University, Daejeon, <sup>2</sup>Department of BK21Plus CNU Integrative Biomedical Education Initiative, <sup>3</sup>Department of Physiology, School of Medicine, Chungnam National University, Daejeon, <sup>4</sup>Department of Plastic and Reconstructive Surgery, Chungnam National University Hospital, Daejeon, Korea
- S 85**    P4-22    CR6 interacting factor-1 linked with tetrahydrobiopterin deficiency and endothelial nitric oxide synthase uncoupling  
Ikjun Lee<sup>1,2,3</sup>, Shuyu Piao<sup>1,2,3</sup>, Seonhee Kim<sup>1,2,3</sup>, Harsha Nagar<sup>1,2,3</sup>, Su-Jeong Choi<sup>1,2,3</sup>, Sung-min Kim<sup>1,2,3</sup>, Saet-byel Jung<sup>1,4</sup>, Byeong Hwa Jeon<sup>1,3</sup>, Hee-Jung Song<sup>1,5</sup>, Cuk-Seong Kim<sup>1,2,3\*</sup>

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- S 85** P4-23 Treatment of valproic acid enhances arsenic trioxide-induced cell death in human large cell lung cancer cells  
Hyun Kyung Park, Bo Ram Han, Woo Hyun Park\*  
Department of Physiology, Medical School, Research Institute for Endocrine Sciences, Chonbuk National University, Jeonju, Korea
- S 86** P4-24 Regulation of lipocalin-2 expression by nitric oxide under inflammatory condition in RINm5F islet beta-cells  
Seo-Yoon Chang, Hyun-Jong Jang, Yang-Hyeok Jo, Myung-Jun Kim  
Department of Physiology, College of Medicine, The Catholic University of Korea, Seoul, Korea
- S 86** P4-25 Role of PHF2 in the development of non-alcoholic fatty liver disease  
Do-Won Jeong<sup>1</sup>, Kyoung-Hwa Lee<sup>2</sup>, Yang-Sook Chun<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Department of Biomedical Sciences, Seoul National University College of Medicine, Seoul, Korea
- S 86** P4-26 Inhibitory effect of corylifol C on RANKL-induced osteoclast differentiation and bone resorption  
Jung Yun Kang, Inik Chang, Dong Min Shin  
Department of Oral Biology, BK21 PLUS Project, Yonsei University College of Dentistry, Seoul, Korea
- S 87** P4-27 Negative regulation of Wnt/ $\beta$ -catenin signaling pathway by SIRT 6 inhibits the growth and metastasis in hepatocellular carcinoma  
Hua Jin, Soo Mi Kim\*  
Department of Physiology, Institute for Medical Science, Chonbuk National University Medical School, Jeonju, Korea
- S 87** P4-28 Identification of cytokines that induce cisplatin resistance and migration secreted from macrophage  
Taehee Kim, Sang Do Lee  
Department of Physiology, Department of thoracic surgery, Chungnam National University School of Medicine, Daejeon, Korea
- S 87** P4-29 Inactivation of YAP by rhBMP-2 suppresses the proliferation of human colorectal cancer cell  
Yu Chuan Liu, Soo Mi Kim\*  
Department of Physiology, Institute for Medical Sciences, Chonbuk National University Medical School, Jeonju, Korea
- S 87** P4-30 The effect of macrophage-secreted IL-1 $\beta$  on migration in lung cancer A549 cells  
Han Na Choi, Taehee Kim, Sang Do Lee  
Department of Physiology, Department of thoracic surgery, Chungnam National University School of Medicine, Daejeon, Korea
- S 88** P4-31 Activation of TTP by resveratrol suppresses the growth and invasion of colorectal cancer cells  
Hua Jin, Soo Mi Kim\*  
Department of Physiology, Institute for Medical Science, Chonbuk National University Medical School, Jeonju, Korea
- S 88** P4-32 Protein kinase C  $\beta$  II induces endothelial dysfunction via mitochondrial ROS generation in HUVECs  
Hee Kyoung Joo<sup>1</sup>, Yu Ran Lee<sup>1</sup>, Eun Ok Lee<sup>1</sup>, Myoung Soo Park<sup>2</sup>, Sunga Choi<sup>1</sup>, Cuk-Seong Kim<sup>1</sup>, Byeong Hwa Jeon<sup>1</sup>  
<sup>1</sup>Research Institute for Medical Sciences, Department of Physiology, School of Medicine, Chungnam National University, Daejeon, <sup>2</sup>Preclinical Research Center, Chungnam National University Hospital, Daejeon, Korea
- S 88** P4-33 Activation of SREBP signaling by HN1 promotes the growth and metastasis in hepatocellular carcinoma  
Hua Jin, Soo Mi Kim\*  
Department of Physiology, Institute for Medical Science, Chonbuk National University Medical School, Jeonju, Korea
- S 88** P4-34 Role of collagen triple helix repeat containing-1 in esophageal adenocarcinoma cells  
Soo Mi Kim\*  
Department of Physiology, Institute for Medical Science, Chonbuk National University Medical School, Jeonju, Korea
- S 89** P4-35 Inactivation of Akt by UA induced apoptosis in esophageal cancer cells  
Ruo Yu Meng, Soo Mi Kim\*  
Department of Physiology, Institute for Medical Sciences, Chonbuk National University Medical School, Jeonju, Korea
- S 89** P4-36 SOX12 is involved in sphingosylphosphorylcholine-induced smooth muscle-like cell differentiation of human mesenchymal stem cells via reactive oxygen species  
Suji Baek<sup>1</sup>, Kang Pa Lee<sup>1</sup>, Seung Hyo Jung<sup>1</sup>, Yunkyoung Ryu<sup>1</sup>, Hwan Myung Lee<sup>2</sup>, Kyung Jong Won<sup>1</sup>, Bokyoung Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, School of Medicine, Konkuk University, Seoul, <sup>2</sup>Department of Cosmetic Science, College of Life and Health, Hoseo University, Asan, Korea
- S 89** P4-37  $\alpha$ Klotho ameliorates diabetic nephropathy via stabilizing podocyte  $\text{Ca}^{2+}$  signaling  
Ji-Hee Kim<sup>1,3,4</sup>, Kyu-Hee Hwang<sup>1,4</sup>, Hung Minh Tran<sup>1,4</sup>, In Deok Kong<sup>1,3</sup>, Kyu-Sang Park<sup>1,4</sup>, Seung-Kuy Cha<sup>1,4\*</sup>  
Departments of <sup>1</sup>Physiology and <sup>2</sup>Global Medical Science, <sup>3</sup>Institute of Lifestyle Medicine, and <sup>4</sup>Mitohormesis Research Center, Yonsei University Wonju College of Medicine, Wonju, Gangwon-do, Korea
- S 89** P4-38 Tau-mediated circadian rhythm disruption and cognitive dysfunction in Alzheimer's disease mouse model  
Ahbin Kim<sup>1</sup>, Ji Hyun Park<sup>2</sup>, Haeng Jun Kim<sup>1</sup>, Hyundong Song<sup>1</sup>, Sehyung Cho<sup>2</sup>, Inhee Mook-Jung<sup>1\*</sup>  
<sup>1</sup>Department of Biochemistry & Biomedical Science, College of Medicine, Seoul National University, Seoul, <sup>2</sup>College of Medicine, Kyunghee University, Seoul, Korea
- S 90** P4-39 In vitro trans-differentiation of primary mouse hepatic stellate cells via TGF- $\beta$ -ERK-mTOR axis  
Soo-Jin Kim, Ranjan Das, Luong Dai Ly, Nhung Thi Nguyen, Kyu-Hee Hwang, Ji-Hee Kim, Seung-Kuy Cha,

**Kyu-Sang Park**

Department of Physiology, Yonsei University Wonju College of Medicine, Wonju, Korea

- S 90 P4-40** Role of mitochondrial phosphate transporters in vascular calcification  
**Nhung Thi Nguyen**, Tuyet Thi Nguyen, Soo-Jin Kim, Luong Dai Ly, Seung-Kuy Cha, Kyu-Sang Park  
Department of Physiology, Yonsei University Wonju College of Medicine, Wonju, Korea
- S 90 P4-41** Association of mGluR-dependent LTD at excitatory synapses with endocannabinoid-dependent LTD of inhibitory synapses leads to EPSP to spike potentiation at Schaffer collateral-CA1 synapses  
**Hye-Hyun Kim**<sup>1,2,3</sup>, Joo Min Park<sup>4</sup>, Suk-Ho Lee<sup>1,2,3</sup>, Won-Kyung Ho<sup>1,2,3\*</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Biomembrane Plasticity Research Center, <sup>3</sup>Neuroscience Research Center, Seoul National University College of Medicine, Seoul, <sup>4</sup>Center for Cognition and Sociality, Institute for Basic Science, Daejeon, Korea
- S 90 P4-42** Investigation of physiological function of the murine bitter taste receptor Tas2r108  
**Su-Young Ki**, Ki-Myung Chung, Young-Kyung Cho, Kyung-Nyun Kim  
Department of Physiology and Neuroscience, College of Dentistry and Research Institute of Oral Sciences, Gangneung-Wonju National University, Gangneung, Korea
- S 91 P4-43** Hepatoprotective effects of oyster-derived Tyr-Ala peptide on fulminant hepatitis  
**Adrian S. Siregar**<sup>1,2</sup>, Soo Buem Cho<sup>3</sup>, Eun-Jin Kim<sup>1</sup>, Chengliang Xie<sup>4</sup>, Marie Merci Nyiramana<sup>1,2</sup>, Si-Hyang Park<sup>5</sup>, Dae Hyun Song<sup>6</sup>, Nam-Gil Kim<sup>7</sup>, Yeung Joon Choi<sup>8</sup>, Sang Soo Kang<sup>4</sup>, Dawon Kang<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, College of Medicine and Institute of Health Sciences, Gyeongsang National University, <sup>2</sup>Department of Convergence Medical Science, Gyeongsang National University, <sup>3</sup>Department of Radiology, Gyeongsang National University Changwon Hospital, <sup>4</sup>Department of Anatomy, College of Medicine, Gyeongsang National University, <sup>5</sup>Sun Marine Biotech Co., <sup>6</sup>Department of Pathology, College of Medicine, Gyeongsang National University, <sup>7</sup>Department of Marine Biology and Aquaculture and Institute of Marine Industry, and <sup>8</sup>Department of Seafood Science and Technology and Institute of Marine Industry, Gyeongsang National University
- S 91 P4-44** The intracellular Ca<sup>2+</sup> channel TRPML3 is a PtdIns3P effector that regulates early autophagosome biogenesis  
**So Woon Kim**<sup>1</sup>, Mi Kyung Kim<sup>1</sup>, Kyoung Sun Park<sup>2</sup>, Hyun Jin Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, Sungkyunkwan University School of Medicine, Suwon, <sup>2</sup>Wide River Institute of Immunology, Seoul National University College of Medicine, Gangwon-do, Korea
- S 91 P4-45** Palmitoylation controls trafficking of the intracellular Ca<sup>2+</sup> channel TRPML3 to regulate autophagy  
**Dong Hyun Kim**, **Yun Min Park**, Mi Kyung Kim, So Woon Kim, Hyun Jin Kim  
Department of Physiology, Sungkyunkwan University School of Medicine, Suwon, Korea
- S 92 P4-46** Role of endothelin-2 in renal cell carcinoma  
**SeulKi Kim**, InIk Chang, Dong Min Shin  
Department of Oral Biology, BK21 PLUS Project, Yonsei University College of Dentistry, Seoul, Korea
- S 92 P4-47** Role of physiological ET-1 in bone remodeling  
**Ji su Sun**, Dong Min Shin, Inik Chang  
Department of Oral Biology, BK21 PLUS Project, Yonsei University College of Dentistry, Seoul, Korea
- S 92 P4-48** Inhibition of neddylation facilitates cell migration through enhanced phosphorylation of caveolin-1 in PC3 and U373 cells  
**Sung Yeon Park**, Yang-Sook Chun  
Department of Physiology, Seoul National University College of Medicine, Seoul, Korea
- S 92 P4-49** Familial Alzheimer's presenilin 1 mutation elevate cellular cholesterol levels and facilitates lipid raft localization of  $\beta$ -amyloid precursor protein  
**Yoon Young Cho**, Oh-Hoon Kwon, Hyun Geun Oh, Sungkwon Chung  
Department of Physiology, Sungkyunkwan University School of Medicine
- S 93 P4-50** Insulin increases O-GlcNAcylation of amyloid precursor protein promoting its non-amyloidogenic processing  
**Oh Hoon Kwon**, Sungkwon Chung  
Department of Physiology, Sungkyunkwan University School of Medicine, Suwon, Korea
- S 93 P4-51** Characterization of molecular mechanisms underlying voltage-gated Ca<sup>2+</sup> channel modulation by DREADD  
**Yong-Seuk Kim**, Byung-Chang Suh  
Department of Brain & Cognitive Sciences, DGIST, Daegu, Korea

**P5: Exercise & Endocrine Physiology**

- S 93 P5-01** The effect of fibroblast growth factor receptor signaling inhibition during resistance training on muscle and bone quality in mice  
**Suhan Cho**<sup>1</sup>, Hansol Song<sup>1</sup>, Byoung Hun So<sup>1</sup>, Min-ji Kang<sup>1</sup>, Hoyoun Kim<sup>1</sup>, Didi Zhang<sup>1</sup>, Youn Ju Kim<sup>2,4</sup>, Ho-Young Lee<sup>3</sup>, Je Kyung Seong<sup>2,4</sup>, Wook Song<sup>1,5</sup>  
<sup>1</sup>Health and Exercise Science Laboratory, Institute of Sport Science, Seoul National University, Seoul, <sup>2</sup>Laboratory of Developmental Biology and Genomics, Institute of Veterinary Science, and BK21 Program for Veterinary Science, College of Veterinary Medicine, Seoul National University, Seoul, <sup>3</sup>Department of Nuclear Medicine, Seoul National University Bundang Hospital, Seung-Nam, <sup>4</sup>Korea Mouse Phenotyping Center (KMPC), Seoul National University, Seoul, <sup>5</sup>Institute on Aging, Seoul National University, Seoul, Korea
- S 94 P5-02** VEGF-A expressing adipose tissue shows rapid beiging, enhanced survival after transplantation and confers IL4-independent metabolic improvements

Min Kim<sup>1</sup>, Jiyoung Park<sup>2</sup>, Philipp Scherer<sup>3</sup>, Jin Han<sup>1</sup>

<sup>1</sup>National Research Laboratory for Mitochondrial Signaling, Department of Physiology, College of Medicine, Inje University, Cardiovascular and Metabolic Disease Center, Inje University, Busan, <sup>2</sup>Department of Biological Sciences, School of Life Sciences, Ulsan National Institute of Science and Technology, Ulsan, Korea, <sup>3</sup>Touchstone Diabetes Center, Departments of Internal Medicine and Cell Biology, University of Texas Southwestern Medical Center, Dallas, TX 75390, USA

- S 94** P5-03 Toxicological evaluation of dithiocarbamate fungicide mancozeb in vivo  
Hye Yeon Park<sup>1</sup>, Seung Hee Choi<sup>1</sup>, Nara Kim<sup>1</sup>, Hwa-Kyoung Chung<sup>1</sup>, Seong-Chun Kwon<sup>1</sup>, Daeho Kwon<sup>2</sup>, Jae Seok Song<sup>3</sup>, Byong-Gon Park<sup>1</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Microbiology, <sup>3</sup>Preventive Medicine, College of Medicine, Catholic Kwandong University, Korea
- S 94** P5-04 Effects of exercise training on muscle damage, muscle fatigue, and mitochondrial function in atorvastatin-treated rat skeletal muscles  
Jun-Won Heo<sup>1,2</sup>, Mi-Hyun No<sup>1,2</sup>, Su-Sie Yoo<sup>1,2</sup>, Jae-Ho Yang<sup>1,2</sup>, Dong-Ho Park<sup>1,2</sup>, Ju-Hee Kang<sup>2,3</sup>, Dae-Yun Seo<sup>4</sup>, Jin Han<sup>4</sup>, Chang-Ju Kim<sup>5</sup>, Hyo-Bum Kwak<sup>1,2\*</sup>  
<sup>1</sup>Department of Kinesiology, <sup>2</sup>WCSL, <sup>3</sup>Department of Pharmacology and Medicinal Toxicology Research Center, Inha University, <sup>4</sup>National Research Laboratory for Mitochondrial Signaling, Department of Physiology, Department of Health Sciences and Technology, BK21 Project Team, Cardiovascular and Metabolic Disease Center, Inje University College of Medicine, <sup>5</sup>Department of Physiology, Kyung Hee University School of Medicine
- S 95** P5-05 The effects of neuroimmune cytokines and neurotrophins by exercise in aging rats  
Nayoung Ahn<sup>1</sup>, Kijin Kim<sup>1</sup>, Changhyun Lim<sup>2</sup>, Changkeun Kim<sup>2</sup>  
<sup>1</sup>Keimyung University, <sup>2</sup>Korea National Sport University
- S 95** P5-06 Effects of exercise on cardiac contractility in mouse heart  
Tae Hee Koh, Jubert Marquez, Hyoung Kyu Kim, Ji Min Park, Young Deok Seo, Su-Bin Song, Ja Eun Ahn, Hyun Jin Ahn, Chanbo Eun, Jin Han, Jae Boum Youm  
Department of Physiology, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University
- S 95** P5-07 The body weight difference between dual energy X-ray absorptiometry and multi-frequency bioelectrical impedance analysis attenuates the equivalence of the body composition assessment  
Duong Duc Pham<sup>1</sup>, Seung Ku Lee<sup>3</sup>, Chol Shin<sup>2,3\*</sup>, Nan Hee Kim<sup>4</sup>, Chae Hun Leem<sup>1\*</sup>  
<sup>1</sup>Department of Physiology, Ulsan College of Medicine, <sup>2</sup>Division of Pulmonary, Sleep, and Critical Care Medicine, Department of Internal Medicine, Korea University Ansan Hospital, <sup>3</sup>Institute of Human Genomic study, Korea University Ansan, <sup>4</sup>Division of Endocrinology, Sleep, Korea University Ansan Hospital
- S 96** P5-08 Effects of combined treatment of chiropractic and isometric exercise on static balance and dynamic balance in subject of cervical alignment  
Il-Yong Park, Jae-Ho Khil  
Department of Sports Medicine, Kyung Hee University College of Physical Education
- S 96** P5-09 Exercise training improves erectile function in aged rat  
Dae Yun Seo<sup>1</sup>, Sung Ryul Lee<sup>1</sup>, Hyo Bum Kwak<sup>2</sup>, Hyuntea Park<sup>3</sup>, Hyun Seok Bang<sup>4</sup>, Kyo Won Seo<sup>1</sup>, Yeon Hee Noh<sup>1</sup>, Kang-Moon Song<sup>5</sup>, Ji-Kan Ryu<sup>5</sup>, Kyung Soo Ko<sup>1</sup>, Byoung Doo Rhee<sup>1</sup>, Jin Han<sup>1\*</sup>  
<sup>1</sup>National Research Laboratory for Mitochondrial Signaling, Department of Physiology, Department of Health Sciences and Technology, BK21 Plus Project Team, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University, Busan, <sup>2</sup>Department of Kinesiology, Inha University, Incheon, <sup>3</sup>Department of Health Care and Science, Dong-A University, Busan, <sup>4</sup>Department of Physical Education, College of Health, Social Welfare and Education, Tong Myong University, Busan, <sup>5</sup>National Research Center for Sexual Medicine, Department of Urology, Inha University School of Medicine, Incheon, Korea
- S 96** P5-10 Effects of exercise training on serum level of sclerostin in breast cancer survivors  
Jae Seung Chang<sup>1,2</sup>, Tae-ho Kim<sup>1,2</sup>, In Deok Kong<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, Yonsei University Wonju College of Medicine, <sup>2</sup>Yonsei institute of Sports Science & Exercise Medicine, Yonsei University

## P6: Diet, Phytochemicals

- S 97** P6-01 *Spirodela polyrrhiza* and its chemical constituents vitexin exert anti-allergic effects via ORA1 channel inhibition  
Yu-Ran Nam<sup>1,2</sup>, Hyun Jong Kim<sup>1,2</sup>, Joo Hyun Nam<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, Dongguk University College of Medicine, Gyeongju, <sup>2</sup>Channelopathy Research Center (CRC), Dongguk University College of Medicine, Goyang, Gyeonggi-do, Korea
- S 97** P6-02 *Spirodela polyrrhiza* extract and its flavonoid luteolin inhibit Cl<sup>-</sup> secretion in human airway epithelial cells via the calcium-dependent Cl<sup>-</sup> channel anoctamin-1  
Hyun Jong Kim<sup>1,2</sup>, Yu-Ran Nam<sup>1,2</sup>, Joo Hyun Nam<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, Dongguk University College of Medicine, Gyeongju, <sup>2</sup>Channelopathy Research Center (CRC), Dongguk University College of Medicine, Goyang, Gyeonggi-do, Korea
- S 97** P6-03 Acceleration of skin barrier restoration by Korean herbs via transient receptor potential V3  
Yu-Ran Nam<sup>1,2</sup>, Woo Kyung Kim<sup>2,3</sup>, Joo Hyun Nam<sup>1,2</sup>  
<sup>1</sup>Department of Physiology, Dongguk University College of Medicine, Gyeongju, <sup>2</sup>Channelopathy Research Center (CRC), Dongguk University College of Medicine, Goyang, Gyeonggi-do, <sup>3</sup>Department of Internal Medicine, Graduate School of Medicine, Dongguk University, Goyang, Gyeonggi-do, Korea
- S 97** P6-04 Systems-level mechanisms of action of *Panax ginseng*: a network pharmacological approach  
Sa-Yoon Park<sup>1</sup>, Ji-Hun Park<sup>1</sup>, Hyo-Su Kim<sup>1</sup>, Choong-Yeol Lee<sup>1</sup>, Hae-Jeung Lee<sup>2</sup>, Ki Sung Kang<sup>3\*</sup>, Chang-Eop Kim<sup>1\*</sup>

<sup>1</sup>Department of Physiology, College of Korean Medicine, Gachon University, <sup>2</sup>Department of Food and Nutrition, College of BioNano Technology, Gachon University, <sup>3</sup>Department of Preventive Medicine, College of Korean Medicine, Gachon University

- S 98** P6-05 Sargacromenol D from *Sargassum siliquastrum* as a novel selective L-type Ca<sup>2+</sup> channel blocker  
Won-Chul Cho<sup>1</sup>, Hwa-Kyoung Chung<sup>2</sup>, Nara Kim<sup>2</sup>, Seong-Chun Kwon<sup>2</sup>, Woon-Seob Shin<sup>3</sup>, Seokjoon Lee<sup>4</sup>, Byong-Gon Park<sup>2</sup>  
<sup>1</sup>Department of Thoracic and Cardiovascular Surgery, Gangneung Asan Hospital, Ulsan University College of Medicine, Gangneung, <sup>2</sup>Department of Physiology, <sup>3</sup>Microbiology, <sup>4</sup>Pharmacology, College of Medicine, Catholic Kwandong University, Korea
- S 98** P6-06 Novel synthetic antihypertensive agents from the marine naturo-mimetics  
Nara Kim<sup>1</sup>, Hwa-Kyoung Chung<sup>1</sup>, Seong-Chun Kwon<sup>1</sup>, Woon-Seob Shin<sup>2</sup>, Seokjoon Lee<sup>3</sup>, Byong-Gon Park<sup>1</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Microbiology, <sup>3</sup>Pharmacology, College of Medicine, Catholic Kwandong University, Korea
- S 98** P6-07 Symptom regulating effects of *Quisqualis indica linn* in benign prostatic hyperplasia rat model  
Dae-geon Kim<sup>1</sup>, Joo-heon Kim<sup>1,2</sup>, Kyu-pil Lee<sup>3</sup>  
<sup>1</sup>Department of Veterinary Physiology, College of Veterinary Medicine, Gyeongsang National University, Jinju, <sup>2</sup>Institute of Animal Medicine, College of Veterinary Medicine, Gyeongsang National University, Jinju, <sup>3</sup>Department of Veterinary Physiology, College of Veterinary Medicine, Chungnam National University, Daejeon, Korea
- S 99** P6-08 Echinochrome A increase the mass and function of the mitochondria by upregulation of mitochondria biogenesis genes  
Joon Yong Noh, Seung Hun Jeong, Hyoung Kyu Kim, Yeon Hee Noh, Jubert Marquez, Kyung Soo Ko, Byoung Doo Rhee, Nari Kim, Jin Han  
National Research Laboratory for Mitochondrial Signaling, Department of Physiology, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University, Busan, Korea
- S 99** P6-09 HS1793 compound activates PGC-1 $\alpha$  via AKT/mTOR signaling and improves mitochondrial biogenesis and function in mouse skeletal muscle cell model  
Jubert Marquez, Jin Han<sup>#</sup>  
Department of Physiology, BK21 Plus Project Team, Cardiovascular and Metabolic Disease Center, College of Medicine, Inje University, Busan, Korea
- S 99** P6-10 *Polygoni avicularis (polygonum aviculare L.)* improves diabetic nephropathy in db/db mice  
Ji Hun Park<sup>1,2</sup>, Hye Yoom Kim<sup>1,2</sup>, So Young Eun<sup>1,2</sup>, Byung Hyuk Han<sup>1,2</sup>, Eun Sik Choi<sup>1,2</sup>, Yun Jung Lee<sup>1,2</sup>, Ho Sub Lee<sup>1,2</sup>, Dae Gill Kang<sup>1,2\*</sup>  
<sup>1</sup>Hanbang Cardio-Renal Syndrome Research Center, <sup>2</sup>College of Oriental Medicine and Professional Graduate School of Oriental Medicine, Wonkwang University, Iksan, Jeonbuk, Korea
- S 99** P6-11 Ojeoksan suppressed TNF- $\alpha$ -induced vascular inflammation in human umbilical vein endothelial cells  
Byung Hyuk Han<sup>1,2</sup>, You Mee Ahn<sup>1,2</sup>, So Young Eun<sup>1,2</sup>, Ji Hun Park<sup>1,2</sup>, Chan Ok Son<sup>1,2</sup>, Yun Jung Lee<sup>1,2</sup>, Dae Gill Kang<sup>1,2</sup>, Ho Sub Lee<sup>1,2\*</sup>  
<sup>1</sup>Hanbang Cardio-Renal Syndrome Research Center, <sup>2</sup>College of Oriental Medicine and Professional Graduate School of Oriental Medicine, Wonkwang University, Iksan, Jeonbuk, Korea
- S 100** P6-12 *Dianthus superbus* attenuates angiotensin II-induced glomerular fibrosis in human renal mesangial cells  
Jung Joo Yoon<sup>1,2</sup>, Byung Hyuk Han<sup>1,2</sup>, Ji Hun Park<sup>1,2</sup>, Da Hye Jeong<sup>1,2</sup>, Chan Ok Son<sup>1,2</sup>, Yun Jung Lee<sup>1,2</sup>, Ho Sub Lee<sup>1,2</sup>, Dae Gill Kang<sup>1,2\*</sup>  
<sup>1</sup>Hanbang Cardio-Renal Syndrome Research Center, <sup>2</sup>College of Oriental Medicine and Professional Graduate School of Oriental Medicine, Wonkwang University, Iksan, Jeonbuk, Korea
- S 100** P6-13 Korean red ginseng ameliorates high fat/high cholesterol diet-induced hypertriglyceridemia and endothelial dysfunction  
Hye Yoom Kim<sup>1,2</sup>, Xian Jun Jin<sup>1,2</sup>, Mi Hyeon Hong<sup>2,3</sup>, Seon Mi Ko<sup>4</sup>, Seung Mi Hwang<sup>4</sup>, Dong joong Im<sup>4</sup>, You Mee Ahn<sup>1,2</sup>, Hyun Ju Kim<sup>1</sup>, Ho Sub Lee<sup>1,2</sup>, Dae Gill Kang<sup>1,2</sup>, Yun Jung Lee<sup>1,2\*</sup>  
<sup>1</sup>Hanbang Cardio-Renal Syndrome Research Center, <sup>2</sup>College of Oriental Medicine and Professional Graduate School of Oriental Medicine, <sup>3</sup>Department of Convergence Technology for Food Industry, Wonkwang University, Iksan, Jeonbuk, <sup>4</sup>Institute of Jinan Red Ginseng, Jinan-gun, Jeonbuk, Korea
- S 100** P6-14 *Chrysanthemum boreale* makino essential oil and its single compound sabinene alleviates starvation-induced atrophy in L6 cells  
Yunkyoung Ryu<sup>1</sup>, Long Cui<sup>1</sup>, Seung Hyo Jung<sup>1</sup>, Suji Baek<sup>1</sup>, Kang Pa Lee<sup>1</sup>, Junghwan Kim<sup>2</sup>, Kyung Jong Won<sup>1</sup>, Bokyung Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, School of Medicine, Konkuk University, Chungju, <sup>2</sup>Department of Physical Therapy, College of Public Health & Welfare, Yonjin University, Yonjin, Korea

## P7: Other Areas

- S 101** P7-01 (PO-B-07) Mesothelial cells demarcate the subunits of organ surface primo vascular tissue  
Chae Jeong Lim<sup>1</sup>, Yeo Sung Yoon<sup>2</sup>, So Yeong Lee<sup>1</sup>, Pan Dong Ryu<sup>1</sup>  
Departments of <sup>1</sup>Veterinary Pharmacology and <sup>2</sup>Anatomy & Cell Biology, College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National University, Seoul, Korea
- S 101** P7-02 Sex difference of feeding behavior and gastrointestinal function in response to stress in rat  
Min Seob Kim, Yong Sung Kim, Han-Seung Ryu, Suck Chei Choi, Mi-sung Park, Seong Hoon Park, Joong Goo Kwon,

Moon Young Lee  
Wonkwang University, Korea, Iksan, Catholic University of Daegu

- S 101 P7-03** The effects of aerobic circulation on the body composition of obese men consuming LCHF  
Uichol Kwon  
Kongju National University
- S 101 P7-04** Necrox-5 exerts anti-inflammation and regulates mitochondrial biogenesis in hypoxia-reoxygenation (HR) treated rat hearts  
Nguyen Thi Tuyet Anh<sup>1</sup>, H. K. Kim<sup>1</sup>, T. T. Vu<sup>1,2</sup>, S. R. Lee<sup>1</sup>, J. Marquez<sup>1</sup>, N. Kim<sup>1</sup>, K. S. Ko<sup>1</sup>, B. D. Rhee<sup>1</sup>, J. Han<sup>1</sup>  
<sup>1</sup>National Research Laboratory for Mitochondrial Signaling, Cardiovascular and Metabolic Disease Center, Department of Medicine, BK21 Project Team, Department of Physiology, Inje University, Busan, Korea, <sup>2</sup>VNU University of Science, Hanoi, Vietnam
- S 102 P7-05** <sup>1</sup>H-NMR-based metabolomic studies of bisphenol A in zebrafish (Danio rerio)  
Changshin Yoon<sup>1,2</sup>, Dahye Yoon<sup>1</sup>, Junghee Cho<sup>1</sup>, Siwon Kim<sup>1</sup>, Heonho Lee<sup>1</sup>, Hyeonsoo Choi<sup>1</sup>, Suhkman Kim<sup>1</sup>  
<sup>1</sup>Department of Chemistry, Center for Proteome Biophysics and Chemistry Institute for Functional Materials, Pusan National University, Busan, <sup>2</sup>National Research Laboratory for Mitochondrial Signaling, Department of Physiology, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University, Korea
- S 102 P7-06** Morphological changes in organ surface primo vascular tissue in the rats with anemia  
Yiming Shen, Chae Jeong Lim, So Yeong Lee, Pan Dong Ryu  
Department of Veterinary Pharmacology, College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National University, Seoul, Korea
- S 102 P7-07** Histological features of the hyaluronic acid-rich tissue in subcutaneous layer of rat abdomen  
Chae Jeong Lim, So Yeong Lee, Pan Dong Ryu  
Department of Veterinary Pharmacology, College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National University, Seoul, Korea
- S 103 P7-08** Sea hare hydrolysates induce M1 macrophage polarization  
In-Seok Jang<sup>1</sup>, Marie Merci Nyiramana<sup>2,3</sup>, Ji Hyeon Ryu<sup>3</sup>, Eun-Jin Kim<sup>3</sup>, Adrian S. Siregar<sup>2,3</sup>, Hyun Jae Nam<sup>4</sup>, Chang Hyun Lee<sup>4</sup>, Jae Seok Lee<sup>3</sup>, James Hong<sup>5</sup>, Si-Hyang Park<sup>6</sup>, Yeung Joon Choi<sup>7</sup>, Min-Kyoung Shin<sup>8</sup>, Jaehee Han<sup>2,3</sup>, Dawon Kang<sup>2,3</sup>  
<sup>1</sup>Department of Thoracic and Cardiovascular Surgery, Gyeongsang National University Hospital, Jinju, <sup>2</sup>Department of Convergence Medical Science, Gyeongsang National University, Jinju, <sup>3</sup>Department of Physiology, College of Medicine, Gyeongsang National University, Jinju, <sup>4</sup>Departments of Premedicine and Medicine, College of Medicine, Gyeongsang National University, Jinju, Korea, <sup>5</sup>Mounds View High School, 1900 Lake Valentine Rd, Arden Hills, MN 55112, USA, <sup>6</sup>Sunmarin Biotech, Tongyeong, <sup>7</sup>Department of Seafood Science and Technology and Institute of Marine Industry, Gyeongsang National University, Tongyeong, <sup>8</sup>Department of Microbiology, College of Medicine, Gyeongsang National University, Jinju, Korea
- S 103 P7-09** The monosodium iodoacetate (MIA) injection into intervertebral disc of rat accelerate disc degeneration  
Hye Rim Suh, Eui Ho Park, Sun Wook Moon, Hee Chul Han  
Department of Physiology, College of Medicine and Neuroscience Research Institute, Korea University, Seoul, Korea
- S 103 P7-10** Typing individual breast cancer patients using genomic modules activated in normal breast tissue  
Hye Young Kim<sup>1,2</sup>, Jin Hyuk Kim<sup>1</sup>  
<sup>1</sup>Department of Physiology, <sup>2</sup>Institute of Medical Science, Hanyang University, Seoul, Korea
- S 104 P7-11** Adipose-derived stem cells enhance phagocytic activity of peripheral blood mononuclear cells in a rat model of atopic dermatitis  
Jaehee Lee<sup>1</sup>, Leejin Park<sup>2</sup>, Hyeyoung Kim<sup>1</sup>, Bong-il Rho<sup>2</sup>, Rafael Taeho Han<sup>1</sup>, Seung Keun Back<sup>3</sup>, Heung Sik Na<sup>1</sup>  
<sup>1</sup>Neuroscience Research Institute and Department of Physiology, Korea University College of Medicine, Seoul, <sup>2</sup>Glovi Plastic Surgery Clinic, <sup>3</sup>Department of Pharmaceutics & Biotechnology, College of Medicine Engineering, Konyang University, Chungnam, Korea
- S 104 P7-12** Expression of interleukin-33 induced by inflammatory cytokines in mouse macrophages  
Jeongyoon Choi, Hyoweon Bang  
Department of Physiology, College of Medicine, Chung-Ang University
- S 104 P7-13** Brain function (effects of physical exercise and calorie restriction)  
Yi Sub Kwak  
Department of Physical Education, Dong-Eui University, Busan, Korea