Friday, September 25

8:30-8:40 **Opening Address**

8:40 **Plenary Lecture**
Paul Kubes *Calgary, Canada*
Chaired by **Makoto Suematsu** *Tokyo, Japan*

9:45 **Research Symposia**

12:00 **Luncheon Seminars**

12:45-14:25 **Coffee Break**

12:50-14:20 **Poster Presentations** (Odd numbers)

14:25 **Research Symposia**

Friday, September 25 Room A

8:30 - 8:40 Opening Address

8:40 - 9:40 Plenary Lecture 1

Chair: Makoto Suematsu (Keio University School of Medicine, Tokyo, Japan)

PL1 **Imaging the microcirculation in infections**
Paul Kubes
University of Calgary, Calgary, Canada

9:45 - 11:45 Hybrid Symposium 1

Sponsored by Kyowa Hakko Kirin California, Inc.

Myeloid cell trafficking in disease

Chairs: Catherine C. Hedrick (Division of Inflammation Biology, La Jolla Institute for Allergy and Immunology, La Jolla, USA)
Paul Kubes (University of Calgary, Calgary, Canada)

HS1-1 **Patrolling monocytes in vascular homeostasis**
Catherine C. Hedrick
Division of Inflammation Biology, La Jolla Institute for Allergy and Immunology, La Jolla, USA

HS1-2 **Fate and function of neutrophils in sterile injury**
Cynthia J. Meininger
Texas A&M Health Science Center, USA

HS1-3 **Tracking the origins of tumor-infiltrating monocytes using KikGR and Fucci technologies**
Francis H.W. Shand[1,2], Satoshi Ueha[1], Mikiya Otsuji[1], Suang S. Koid[2,3], Shigeyuki Shichino[1], Tatsuya Tsukui[1], Mizuha Kosugi-Kanaya[1,4], Jun Abe[1], Michio Tomura[5], James Ziogas[2], Kouji Matsushima[1]
[1]Department of Molecular Preventive Medicine, Graduate School of Medicine, The University of Tokyo, Japan, [2]Department of Pharmacology and Therapeutics, The University of Melbourne, Victoria, Australia, [3]St. Vincent's Institute of Medical Research, Fitzroy, Victoria, Australia, [4]Department of Hematology, Graduate School of Medicine, Hokkaido University, Hokkaido, Japan, [5]Laboratory of Immunology, Faculty of Pharmacy, Osaka-Ohtani University, Osaka, Japan

HS1-4 **Recruitment of monocytes and macrophages to the site of sterile injury**
Jing Wang, Paul Kubes
Department of Physiology and Pharmacology, University of Calgary, Calgary, AB, Canada

HS1-5 (ESR) **Immune suppression after stroke**
Connie H.Y. Wong
Centre for Inflammatory Diseases, Department of Medicine, Monash University, Australia

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12:00 - 12:45 Luncheon Seminar 2

Chair: Norihiro Suzuki (Department of Neurology, Keio University School of Medicine, Japan)

LS2 **Metabolic systems in cancer and ischemia; mechanisms in search of treatments**
Makoto Suematsu
Keio University School of Medicine, Japan

Sponsored by Otsuka Pharmaceutical Co., Ltd.

14:25 - 16:25 Hybrid Symposium 2

TRP channels and vascular disease

Chairs: Scott Earley (Department of Pharmacology, University of Nevada School of Medicine, Reno, NV, USA)
Mark T. Nelson (Department of Pharmacology, University of Vermont, Burlington, VT, USA)

HS2-1 **The exquisite control of endothelial function by TRPV4 channels**
Mark T. Nelson, Thomas A. Longden, Adrian D. Bonev, Kalev Freeman, Swapnil K. Sonkusare
Department of Pharmacology, University of Vermont, Burlington VT, USA

HS2-2 **Cerebrovascular protective effects of TRPA1 channels**
Scott Earley
Department of Pharmacology, University of Nevada School of Medicine, Reno, NV, USA

HS2-3 **TRPV4 sparklets in arteriolar smooth muscle**
Luis Fernando Santana
Department of Physiology & Membrane Biology, University of California Davis, CA, USA

HS2-4 (ESR) **TRPV1-mediated Ca^{2+} influx and constriction of the meningeal vasculature**
Masayo Koide[1], Inessa Manuelyan[1], Arsalan U. Syed[1], Swapnil K. Sonkusare[1], Bo Shui[2], Michael I. Kotlikoff[2], Mark T. Nelson[1], George C. Wellman[1]
[1]Department of Pharmacology, University of Vermont College of Medicine, Burlington, VT, USA, [2]College of Veterinary Medicine Cornell University, Ithaca, NY, USA

HS2-5 (ESR) **Extracellular histones activate local and propagating endothelial calcium signals**
Daniel Collier, Swapnil K. Sonkusare, Adrian M. Sackheim, Nuria Villalba, Kalev Freeman, Mark T. Nelson
The Department of Pharmacology, University of Vermont, VT, USA

Friday, September 25 Room B-1

9:45 - 11:45 Hybrid Symposium 3

Sponsored by European Vascular Biology Organization (EVBO)

Inflammation, oxidative stress and microRNAs in vascularisation

Chairs: Jozef Dulak (Jagiellonian University, Poland)
Ed van Bavel (Department of Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, The Netherlands)

HS3-1 **Cross-talk between antioxidant genes and microRNAs in blood vessel formation**

Urszula Florczyk, Bart Krist, Mateusz Mendel, Agnieszka Jazwa, Anna Grochot-Przeczek, Alicja Jozkowicz, Jozef Dulak

Department of Medical Biotechnology, Faculty of Biochemistry, Biophysics and Biotechnology, Jagiellonian University, Poland

HS3-2 **Role of CLIC proteins in the regulation of pulmonary vascular inflammation and angiogenesis**

Beata Wojciak-Stothard

Centre for Pharmacology and Therapeutics, Experimental Medicine, Imperial College London, London, UK

HS3-3 **The intrinsic system that governs angiogenesis and stress resistance of vascular endothelium**

Yasufumi Sato

Department of Vascular Biology, Institute of Development, Aging and Cancer, Tohoku University, Japan

HS3-4 (ESR) **Gene expression analysis in small arteries of spontaneously hypertensive rats: Evidence for ER stress**

Teresa Palao[1], Karl Swärd[2], Aldo Jongejan[3], Perry D. Moerland[3], Judith de Vos[1], Angela van Weert[1], Silvia M. Arribas[4], Gergely Groma[1], Ed van Bavel[1], Erik N.T.P. Bakker[1]

[1]Department of Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, The Netherlands, [2]Department of Experimental Medical Science, Lund University, Lund, Sweden, [3]Bioinformatics Laboratory, Academic Medical Center, Amsterdam, The Netherlands, [4]Departamento de Fisiología, Facultad de Medicina, Universidad Autónoma de Madrid, Spain

HS3-5 (ESR) **VEGF knockdown in muscle improves recovery of blood flow after ischaemia**

Maria J.C. Machado, Federica Riu, David O. Bates

Unit of Cancer Biology, Division of Cancer and Stem Cells, School of Medicine, University of Nottingham, UK

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12:00 - 12:45 Luncheon Seminar 3

LS3 **The FRET mouse: Activity imaging of signaling molecules in transgenic mice expressing FRET biosensor**

Michiyuki Matsuda

Department of Pathology and Biology of Diseases, Graduate School of Medicine, Kyoto University, Japan

Sponsored by Olympus Corporation

14:25 - 16:25 Hybrid Symposium 4

Sponsored by European Society for Microcirculation and British Microcirculation Society

Metabolics, flowmotion and vascular control —A Tribute to Late Professor Olga Hudlická—

Chairs: Axel R. Pries (Charité-Universitätsmedizin Berlin, Institute of Physiology, Berlin, Germany)
Roland Pittman (Virginia Commonwealth University, USA)

HS4-1 Early insights linking muscle metabolism, vascular control and regulation of physiological angiogenesis
Stuart Egginton
University of Leeds, Leeds, UK

HS4-2 Methods for the investigation of flowmotion
Michelle A. Keske, Sarah J. Blackwood, Stephen Rattigan
Menzies Institute for Medical Research, University of Tasmania, Australia

HS4-3 Flow motion dynamics of blood flow and oxygenation
Geraldine Clough[1)], Katarzyna Kuliga[1,2)], Andrew Chipperfield[1)]
[1)]Faculty of Medicine, University of Southampton, Southampton, UK, [2)]Faculty of Engineering and the Environment, University of Southampton, Southampton, UK

HS4-4 Arteriolar oxygen sensing in situ
N.H. Holstein-Rathlou
Department of Biomedical Sciences, University of Copenhagen, Denmark

HS4-5 Mapping oxygen in the brain of awake mice
Serge Charpak, Declan Lyons, Alexander Parpaleix, Morgane Roche
Laboratory of Neurophysiology and New Microscopy, Inserm U1128, University Paris Descartes, Paris, France

HS4-6 Metabolic regulation: Insights from simulation approaches
Axel R. Pries[1)], Timothy W. Secomb[2)], Bettina Reglin[1)]
[1)]Charité–Universitätsmedizin Berlin, Institute of Physiology, Berlin, Germany, [2)]Department of Physiology, University of Arizona, Tucson, AZ, USA

Friday, September 25 Room B-2

9:45 - 11:45 Hybrid Symposium 5

Sponsored by The Microcirculation Society

Mechanobiology: Roles of cellular and non-cellular elements

Chairs: Gerald A. Meininger (University of Missouri-Columbia, USA)
Michael A. Hill (Dalton Cardiovascular Reseach Center, University of Missouri, USA)

HS5-1 Endothelial-smooth muscle cell interactions in the regulation of vascular tone
Kim A. Dora
University of Oxford, UK

HS5-2 **Structural and cellular mechanisms underlying adaptive and pathological vascular responses to mechanical forces**

Michael A. Hill, Zahra Nourian, Kwangseok Hong, Jorge Castorena Gonzalez, Luis Martinez-Lemus, Gerald A. Meininger
Dalton Cardiovascular Reseach Center, University of Missouri, USA

HS5-3 **Mechanosensitive $G_{q/11}$-protein coupled receptors mediate myogenic vasoconstriction**

Michael Mederos y Schnitzler, Ursula Storch, Thomas Gudermann
Ludwig-Maximilians-Universität München, Germany

HS5-4 **Cytoskeletal reorganization: A fundamental process linked to vascular smooth muscle contraction**

William C. Cole
Smooth Muscle Research Group, Department of Physiology & Pharmacology, University of Calgary, Calgary, Canada

HS5-5 (ESR) **Continuous serelaxin infusion alters circumferential wall stiffness but not myogenic tone of mesenteric resistance arteries in spontaneously hypertensive rats**

Maria Jelinic[1)], Nicola Kahlberg[1)], Chen Huei Leo[1)], Marianne Tare[2)], Laura J. Parry[1)]
[1)]School of BioSciences, The University of Melbourne, VIC, Australia, [2)]Department of Physiology and School of Rural Health, Monash University, VIC, Australia

12:00 - 12:45 Luncheon Seminar 4

Activated neutrophil and microcirculation

Chair: Kazuhide Higuchi (Osaka Medical College Hospital, Japan)

LS4-1 **Granulocyte/monocyte apheresis (GMA) therapy for ulcerative colitis: updated evidences**

Yuji Naito
Department of Gastroenterology and Hepatology, Kyoto Prefectural University of Medicine, Kyoto, Japan

LS4-2 **Microcirculation of mononuclear cells to the inflamed intestinal microvessels**

Ryota Hokari
Department of Internal Medicine, National Defense Medical College, Saitama, Japan

Sponsored by JIMRO Co., Ltd.

14:25 - 16:25 Hybrid Symposium 6

Sponsored by The Company of Biologists/Bone Research Society

Bone microcirculation: A potential therapeutic target

Chairs: Nicola J. Brown (Microcirculation Research Group, Department of Oncology, University of Sheffield, UK)
Gabri van der Pluijm (Leiden University Medical Center, Department of Urology, Leiden, The Netherlands)

HS6-1 **Coupling of angiogenesis and osteogenesis in bone**

Anjali Kusumbe, Saravana Ramasamy, Ralf Adams
Max Planck Institute for Molecular Biomedicine, Germany

HS6-2 **BMP2 regulates both osteogenesis and angiogenesis during postnatal bone repair**

Louis Gerstenfeld[1], Beth Bragdon[1], Thomas Cheng[1], Elise Morgan[2]
[1]Department of Orthopaedic Surgery and Molecular and Translational Medicine, Boston University School of Medicine, Boston, MA, USA, [2]Department of Mechanical Engineering, Boston University College of Engineering, Boston, MA, USA

HS6-3 **The molecular signature of the stroma response in prostate cancer-induced osteoblastic bone metastasis highlights expansion of hematopoietic and prostate epithelial stem cell niches**

Gabri van der Pluijm[1], Janine Hensel[2], Geertje van der Horst[1], Marco G. Cecchini[2]
[1]Leiden University Medical Center, department of Urology, Leiden, The Netherlands., [2]Urology Research Laboratory, Department of Urology and Clinical Research, University of Bern, Switzerland

HS6-4 **Novel approaches to investigating tumour-endothelial interactions**

Nicola J. Brown
Microcirculation Research Group, Department of Oncology, University of Sheffield, UK

HS6-5 (ESR) **The importance of the perivascular niche in the early stage of breast cancer bone colonisation**

Gloria Allocca, Hannah K. Brown, Ingunn Holen, Nicola J. Brown
Department of Oncology, University of Sheffield, UK

Friday, September 25 Room C-1

9:45 - 11:15 Young Investigators Symposium

Chairs: Shaun Sandow (Faculty of Science, Health, Education and Engineering, University of the Sunshine Coast, Maroochydoore, Australia)
Angela Shore (University of Exeter Medical School, UK)

YIS-1 **VEGF-A_{165}b ameliorates vascular dysfunction in diabetic retinopathy**

Nikita Ved[1,3], R.P. Hulse[1], S.M. Bestall[1,2], L.F. Donaldson[2], J.W. Bainbridge[3], David O. Bates[1]
[1]Tumour and Vascular Biology Laboratories, Cancer Biology, School of Medicine, Queen's Medical Centre, Nottingham, UK, [2]School of Life Sciences, University of Nottingham, Nottingham, UK, [3]Institute of Ophthalmology, University College London, London, UK

YIS-2 **Exercise training ameliorates microvascular deterioration and VEGF signaling downregulation in aging rat brain**

Sheepsumon Viboolvorakul[1], Maethinee Sakhakorn[2], Suthiluk Patumraj[2]
[1]Department of Medical Science, Faculty of Science, Rangsit University, Pathum Thani, Thailand, [2]Center of Excellence for Microcirculation, Department of Physiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

YIS-3 **Vascular effects on astrocytes Ca2+ dynamics in cerebral cortex**

Cam Ha T. Tran, Grant R. Gordon
Hotchkiss Brain Institute, University of Calgary, Alberta, Canada

YIS-4 **Large-area surface-enhanced raman spectroscopy imaging as a novel method to visualize alterations in small molecular metabolites in ischemic brain tissues**

Megumi Shiota[1,2], Shogo Yamazoe[1,2], Mayumi Kajimura[2], Makoto Suematsu[2], Masayuki Naya[1]
[1]Frontier Core-Technology Laboratories, R&D Management Headquarters, FUJIFILM Corporation, Japan, [2]Department of Biochemistry, Keio University School of Medicine, and JST ERATO Suematsu Gas Biology Project, Japan

YIS-5 **Dynamics of angiogenesis and blood flow in mouse long bone**

Saravana Ramasamy[1], Anjali Kusumbe[1], Jaba Gamrekelashvili[2], Florian Limbourg[2], Ralf Adams[1]

[1]Max Planck Institute for Molecular Biomedicine, University of Muenster, Muenster, Germany, [2]Hannover Medical School, Hannover, Germany

YIS-6 **Clonidine restores pressor responsiveness to phenylephrine and angiotensin II in ovine sepsis**

Yugeesh R. Lankadeva[1,2], Junko Kosaka[1], Lindsea Booth[1], Roger G. Evans[2], Luc Quintin[3], Rinaldo Bellomo[4], Clive N. May[1]

[1]Florey Institute of Neuroscience and Mental Health, University of Melbourne, Victoria, Australia, [2]Department of Physiology, Monash University, Victoria, Australia, [3]University of Lyon, Lyon, France, [4]Department of Intensive Care and Department of Medicine, Austin Health, Heidelberg and The Australian and New Zealand Intensive Care Research Centre, Victoria, Australia.

YIS-7 **Complex signalling pathways determine the role of Kv7 channels in relaxations of the rat mesenteric artery**

Jennifer B. Stott, Iain A. Greenwood

Institute of Cardiovascular and Cell Sciences London, St George's University of London, London, UK

14:25 - 15:55 Symposium 1

Pericytes and microcirculation

Chairs: Theodor Burdyga (The Department of Cellular and Molecular Physiology, Institute of Translational Medicine, University of Liverpool, UK)
Claire Peppiatt-Wildman (The Universities of Kent and Greenwich at Medway, UK)

S1-1 **Pericyte-containing retinovessels: The yin-yang of their physiology and pathobiology**

Donald G. Puro

Departments of Ophthalmology & Vision Sciences and Molecular & Integrative Physiology, University of Michigan, USA

S1-2 **Pacemaker role of pericytes in the microvasculature of visceral organs**

Hikaru Hashitani

Department of Cell Physiology, Graduate School of Medical Sciences, Nagoya City University, Nagoya, Japan

S1-3 **The evolving role of renal pericytes**

Claire Peppiatt-Wildman

The Universities of Kent and Greenwich at Medway, UK

S1-4 **How myocytes and pericytes integrate Ca^{2+} signalling and tone in ureteric microvascular networks *in situ***

Theodor Burdyga, Lyudmyla Borysova

The Department of Cellular and Molecular Physiology, Institute of Translational Medicine, University of Liverpool, UK

Saturday, September 26

8:30 **Plenary Lecture**
Serge Charpak *Paris, France*
Chaired by **Roland Pittman** *Richmond, USA*

9:35 **Research Symposia**

11:50 **Luncheon Seminars**

12:40 **The Benjamin W. Zweifach Award**
D. Neil Granger *Shreveport, USA*
Chaired by **Rolando E. Rumbaut** *Houston, USA*

13:25 **The Nishimaru-Tsuchiya International Award**
Fitz-Roy E. Curry *Davis, USA*
Chaired by **Hiroshi Nagata** *Kanagawa, Japan*

14:10-16:05 **Coffee Break**

14:10-15:40 **Poster Presentations** (Even numbers)

16:05 **Research Symposia**

17:50 **Evening Seminar**

Saturday, September 26 Room A

8:30 - 9:30 Plenary Lecture 2

Chair: Roland Pittman (Virginia Commonwealth University, USA)

PL2 **Two-photon fluorescence and lifetime microscopy of neuronal activity, blood flow and oxygen dynamics in the mouse brain**

Serge Charpak
Laboratory of Neurophysiology and New Microscopies, Inserm U1128, University Paris Descartes, Paris, France

9:35 - 11:35 Hybrid Symposium 7

Sponsored by The Journal of Physiology

Microvascular plasticity and developmental priming: Impact on human health

Chairs: Geraldine Clough (Faculty of Medicine, University of Southampton, Southampton, UK)
Giovanni Mann (Kings College London, UK)

HS7-1 **Developmental aspects of a life course approach to healthy ageing**

Mark A. Hanson[1)], Cyrus Cooper[1)], Avan Aihie-Sayer[1)], Robert Eendebak[2)], Geraldine F. Clough[1)], John Beard[2)]
[1)]University of Southampton, Southampton, UK, [2)]World Health Organisation

HS7-2 **Gestational xenobiotic exposures: Microvascular implications for the past, present, and future**

Phoebe A. Stapleton
Department of Physiology and Pharmacology, West Virginia University, Morgantown, WV, USA

HS7-3 (ESR) **Heterogeneity of coronary vasculature and its complex development**

Yuichiro Arima
Department of Cardiovascular Medicine, Kumamoto-University, Kumamoto, Japan

HS7-4 **Retinal vascular imaging in early life: Insights into processes and risk of cardiovascular disease**

Tien Wong
Duke-NUS Graduate Medical School Singapore, Singapore

11:50 - 12:35 Luncheon Seminar 5

Chair: Norihiro Suzuki (Department of Neurology, Keio University School of Medicine, Japan)

LS5 **What is the severity of Dementia?**

Yasuo Terayama
Department of Internal Medicine, School of Medicine, Iwate Medical University, Japan

Sponsored by Eisai Co., Ltd.

SAT

12:40 - 13:25 The Benjamin W. Zweifach Award

Chair: Rolando E. Rumbaut (Baylor College of Medicine, Houston, TX, USA)

AW1 **Reperfusion injury: Lessons learned from the microcirculation**

D. Neil Granger

LSU Health Science Center-Shreveport, Shreveport, USA

13:25 - 14:10 The Nishimaru-Tsuchiya International Award

Chair: Hiroshi Nagata (Department of Internal Medicine, Keiyu Hospital, Japan)

AW2 **From molecular mechanisms to functional vascular exchange: Investigations using cellular, single vessel, and whole organ approaches**

Fitz-Roy E. Curry

Department of Physiology and Membrane Biology, School of Medicine, University of California, Davis, USA

16:05 - 17:35 Symposium 2

Sponsored by The Japanese Vascular Biology and Medicine Organization (JVBMO)

Recent advances in angiogenesis and lymphangiogenesis

Chairs: Yoshiaki Kubota (The Laboratory of Vascular Biology, Keio University, Tokyo, Japan)
Nobuyuki Takakura (Department of Signal Transduction, Research Institute for Microbial Diseases, Osaka University, Osaka, Japan)

S2-1 **Neuronal VEGF endocytosis triggers the programmed regression of hyaloid vessels**

Yoshiaki Kubota

The Laboratory of Vascular Biology, Keio University, Tokyo, Japan

S2-2 **Apelin/APJ system regulates parallel juxtapositional alignment of arteries and veins**

Nobuyuki Takakura

Department of Signal Transduction, Research Institute for Microbial Diseases, Osaka University, Osaka, Japan

S2-3 **Calcium imaging of endothelial cells helps understanding of angiogenic sprouting and tip-stalk determination**

Naoki Mochizuki, Yasuhiro Yokota, Hiroyuki Nakajima, Shigetomo Fukuhara

Department of Cell Biology, National Cerebral and Cardiovascular Center, Osaka, Japan

S2-4 **Roles of signaling and transcriptional networks during endothelial-to-mesenchymal transition**

Tetsuro Watabe

Tokyo University of Pharmacy and Life Science, Japan

17:50 - 18:50 Evening Seminar

Clinical Impact of Microvascular Image using CT, MR and US

Chair: Makoto Suematsu (Keio University School of Medicine, Japan)

ES-1 **Visualizing Microcirculation by CT and MRI: Development of Perfusion Imaging**
Masahiro Jinzaki
Department of Radiology, Keio University School of Medicine, Japan

ES-2 **Seeing the unseen～clinical significance of Superb Microvascular Imaging～**
Jiro Hata
Department of Endoscopy and Ultrasound, Kawasaki Medical University, Japan

Sponsored by Toshiba Medical Systems Corporation

Saturday, September 26 Room B-1

9:35 - 11:35 Hybrid Symposium 8

Platelets: Key mediators of inflammation in the microcirculation

Chairs: Rolando E. Rumbaut (Baylor College of Medicine, Houston, TX, USA)
Michael J. Hickey (Centre for Inflammatory Diseases, Department of Medicine, Monash University, Australia)

HS8-1 **Contributions of platelets to inflammation and neutrophil recruitment in the acutely inflamed glomerulus**
Michael J. Hickey
Centre for Inflammatory Diseases, Department of Medicine, Monash University, Australia

HS8-2 **Platelet-leukocyte interdependence in the inflamed microcirculation**
Rolando E. Rumbaut
Baylor College of Medicine, Houston, TX, USA

HS8-3 **Platelets are rapid responders to bacteremia**
Paul Kubes
University of Calgary, Calgary, Canada

HS8-4 **Platelet abnormalities in inflammatory bowel disease**
D. Neil Granger
LSU Health Science Center–Shreveport, Shreveport, USA

HS8-5 (ESR) **Uridine triphosphates analogues as inhibitors of platelet aggregation**
Muhammad Aslam[1)], Christian Tanislav[2)], Christian Hamm[1)], Dursun Guenduez[1)]
[1)]Department of Cardiology and Angiology, Justus Liebig University, Giessen, Germany, [2)]Department of Neurology, Justus Liebig University, Giessen, Germany

SAT

11:50 - 12:35 Luncheon Seminar 6

Chair: Yuji Naito (Molecular Gastroenterology and Hepatology, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Japan)

LS6 **Role of inflammatory activation for the symptom generation in the gut—gut microcirculation and functional gastrointestinal disorders (FGIDs)**

Hidekazu Suzuki

Division of Gastroenterology and Hepatology, Department of Internal Medicine, Keio University School of Medicine, Tokyo, Japan

Sponsored by DAIICHI SANKYO COMPANY, LIMITED/AstraZeneca K.K.

16:05 - 17:35 Symposium 3

Sponsored by The Microcirculatory Society and Kyowa Hakko Kirin California, Inc.

New insights into immune cell regulation in microcirculation

Chairs: Mariappan Muthuchamy (Texas A&M Health Science Center, USA)
Klaus Ley (La Jolla Institute for Allergy & Immunology, USA)

S3-1 **Neutrophil recruitment during inflammation**

Markus Sperandio

Ludwig-Maximilians-Universitat, Germany

S3-2 **Patrolling monocytes in atherosclerotic arteries**

Klaus Ley[1)], Nilanjan Ray[2)], Sara McArdle[1)]

[1)]La Jolla Institute for Allergy & Immunology, USA, [2)]University of Alberta, Canada

S3-3 **Dendritic cell migration through afferent lymphatic vessels**

Cornelia Halin

ETH Zurich, Switzerland

S3-4 **Interactions between mast cells, MHC class II positive cells and eosinophils by the adult and aged lymphatic vessels**

Anatoliy A. Gashev[1)], Irina Tsoy Nizamutdinova[1)], Victor Chatterjee[1)], Walter E. Cromer[1)], Giuseppina Dusio[2)], Richard Tobin[3)], David C. Zawieja[1)], M. Karen Newell Rogers[2,3)]

[1)]Department of Medical Physiology, College of Medicine, Texas A&M University Health Science Center, USA, [2)]Baylor Scott & White Health Care, Temple, TX, USA., [3)]Department of Surgery, College of Medicine, Texas A&M University Health Science Center, USA

9:35 - 11:35 Hybrid Symposium 9

Sponsored by JST, ERATO

What can mass spectrometric analysis offer?
—Bridge between local metabolism and microvascular functions—

Chairs: Per E. Andrén (Biomolecular Imaging and Proteomics, Department of Pharmaceutical Biosciences, Uppsala University, Uppsala, Sweden)
Jonathan V. Sweedler (University of Illinois at Urbana-Champaign, Urbana, IL,USA)

HS9-1 **Measuring the chemistry in tissues and individual cells using mass spectrometry**

Jonathan V. Sweedler

University of Illinois at Urbana–Champaign, Urbana, IL, USA

HS9-2 **Development of an imaging mass spectrometry technique for visualizing localized cellular signaling mediators in tissues**

Yuki Sugiura

Department of Biochemistry, Keio University School of Medicine; Japan Science and Technology Agency, PRESTO Program, Tokyo, Japan

HS9-3 **Visualization of metabolites localization at the micro-region using imaging mass spectrometry**

Tsuyoshi Nakanishi

MS Business Unit, Shimadzu Corporation, Kyoto, Japan

HS9-4 **Microscopic imaging mass spectrometry reveals a host-dependent mechanism for ammonia detoxification in the tumor-bearing liver of superimmunodeficient NOG mice**

Mitsuyo Ohmura[1,2], Megumi Shiota[1,2,4], Akiko Kubo[1], Takehiro Yamamoto[1,2], Sakino Toue[1,5], Kan Handa[3], Kenji Kawai[1,6], Chiyoko Nishime[1,6], Shogo Yamazoe[1,2,4], Masayuki Naya[1,2,4], Yasuaki Kabe[1,2], Makoto Suematsu[1,2]

[1]Department of Biochemistry, Keio University, School of Medicine, Tokyo, Japan, [2]JST ERATO Suematsu Gas Biology Project, Japan, [3]Department of Surgery, Keio University, School of Medicine, Japan, [4]Frontier Core-Technology Laboratories, R&D Management Headquarters, FUJIFILM Corporation, Japan, [5]Institute for Innovation, Ajinomoto Co., Inc., Japan, [6]Central Institute for Experimental Animals, Japan

HS9-5 **Quantitative mass spectrometry imaging and profiling of neurotransmitters, neuropeptides and drugs directly in tissue sections**

Per Andrén

Biomolecular Imaging and Proteomics, Department of Pharmaceutical Biosciences, Uppsala University, Uppsala, Sweden

11:50 - 12:35 Luncheon Seminar 7

Chair: Per Andren (Uppsala University, Sweden)

LS7 **Basics of imaging mass spectrometry and applications in pharmacology using Mass Microscope**

Shuichi Shimma

Laboratory of Bioresource Eng (Metabolomics) , Department of Biotechnology, Division of Advanced Science and Biotechnology, Graduate School of Engineering, Osaka University, Japan

Sponsored by SHIMADZU CORPORATION

16:05 - 17:35 Symposium 4

Recent advances in cerebral microcirculation —A Tribute to Late Professors Minoru Tomita, Makishige Asano, and Makoto Katori—

Chairs: Norio Tanahashi (Saitama Medical University International Medical Center, Japan)
Jing-Yan Han (Department of Integration of Traditional Chinese and Western Medicine, School of Basic Medical Sciences, Peking University, Beijing, China.)

S4-1 **Reendothelialization process by resident endothelial cells of the pial artery after the damage through a photochemical reaction**

Yoshiaki Itoh

Department of Neurology, Osaka City University Graduate School of Medicine, Osaka, Japan

S4-2 **Cilostazol inhibits leukocyte-endothelial cell interactions in murine microvessels after transient bilateral common carotid artery occlusion**

Takuya Fukuoka, Takeshi Hayashi, Makiko Hirayama, Hajime Maruyama, Norio Tanahashi

Saitama Medical University International Medical Center, Saitama, Japan

S4-3 **Inhibitory effect of caffeic acid on ADP-induced cerebral thrombosis involves mitogen-activated protein kinases**

Quan Li, Yu Lu, Yu-Ying Liu, Kai Sun, Jing-Yu Fan, Chuan-She Wang, Jing-Yan Han

Department of Integration of Chinese and Western Medicine, School of Basic Medical Sciences, Peking University; Tasly Microcirculation Research Center, Peking University Health Science Center, Beijing, China

S4-4 **Ameliorating effects of Chinese herb compound preparation on cerebral microcirculatory disturbances and neuronal injuries after ischemia-reperfusion**

Kai Sun[1)], Xiang-Shun Xu[1)], Fang Wang[1)], Ping Huang[1)], Chang-Man Zhou[3)], Jing-Yu Fan[1)], Jing-Yan Han[1,2)]

[1)]Tasly Microcirculation Research Center, Peking University Health Science Center, Beijing, China, [2)]Department of Integration of Chinese and Western Medicine, School of Basic Medical Sciences, Peking University, Beijing, China, [3)]Department of Anatomy, School of Basic Medical Sciences, Peking University, Beijing, China

SAT

Sunday, September 27

8:30 **Research Symposia**

10:05 **Research Symposia**

12:20 **Luncheon Seminars**

13:15 **Research Symposia**

14:45-15:15 **Coffee Break**

15:15 **Plenary Lecture**
Peter Carmeliet *Leuven, Belgium*
Chaired by **Shinichi Takahashi** *Tokyo, Japan*

16:15-16:25 **Closing Remarks**

8:30 - 10:00 Symposium 5

Endogenous mediators of endothelial barrier stability: Basic mechanisms and implications in human vascular disease and recovery

Chairs: Fitz-Roy E. Curry (Department of Physiology and Membrane Biology, School of Medicine, University of California, Davis, USA)
Rolf Reed (University of Bergen, Norway)

S5-1 Evolving concepts in the regulation of endothelial barrier permeability: Tonic modulation of endothelial barrier functions and inflammatory cell trafficking

Fitz-Roy E. Curry

Department of Physiology and Membrane Biology, School of Medicine, University of California, Davis, USA

S5-2 Distinct cell-specific protective actions of atrial- and C-type natriuretic peptides in acute postischemic microcirculatory inflammation

Wen Chen[1)], Katharina Völker[1)], Birgit Gaßner[1)], Franziska Werner[1)], Anja Rabenhorst[2)], Karin Hartmann[2)], Michaela Kuhn[1)]

[1)]Institute of Physiology, University of Wuerzburg, Germany, [2)]Department of Dermatology, University of Cologne, Germany

S5-3 Atrial natriuretic peptide (ANP) down-regulates neutrophil recruitment on inflamed endothelium by reducing PMN deformability, while adhesive function is maintained

Scott I. Simon[1)], Vasilios Morikis[1)], Volkmar Heinrich[1)], Fitz-Roy E. Curry[1,2)]

[1)]Department of Biomedical Engineering, University of California, Davis, USA, [2)]Department of Physiology and Membrane Biology, School of Medicine, University of California, Davis, USA

S5-4 cAMP dependent pathways: New insights from Epac knockout mice

Reidun Kopperud, Cecilie B. Ryg, Rolf Reed, Stein Ove Doeskeland

Department of Biomedicine, Faculty of medicine and dentistry, University of Bergen, Norway

S5-5 Regulation of cerebral post-ischemic inflammation by DAMPs and immune cells

Takashi Shichita[1,2)], Akihiko Yoshimura[1)]

[1)]Department of Microbiology and Immunology, School of Medicine, Keio University, Japan, [2)]Precursory Research for Embryonic Science and Technology (PRESTO), Japan Science and Technology Agency (JST), Japan

10:05 - 12:05 Hybrid Symposium 10

Sponsored by The European Society for Microcirculation

Building vascular networks: Determination, randomness and functional control

Chair: Axel R. Pries (Charité-Universitätsmedizin Berlin, Institute of Physiology, Berlin, Germany)

HS10-1 Sprouting and splitting in organ vascular development

Valentin Djonov

Institute of Anatomy, University of Bern, Bern, Switzerland

HS10-2 **Formation and maintenance of microvascular networks by angiogenesis, remodeling and pruning: An integrative model**

Timothy W. Secomb[1], Axel R. Pries[2]

[1]Department of Physiology, University of Arizona, Tucson, AZ, USA, [2]Charite-Universitatsmedizin Berlin, Germany

HS10-3 (ESR) **Relationship between microvascular blood flow and angiogenic factors in pre-eclampsia**

Anshuman Ghosh[1,3], Nick Freestone[2], Francesca Arrigoni[2], Nick Anim-Nyame[1,3]

[1]School of Life Sciences, Kingston University, London, Kingston upon Thames, UK, [2]School of Pharmacy, Kingston University, London, Kingston upon Thames, UK, [3]Department of Obstetrics & Gynaecology, Kingston Hospital, Kingston upon Thames, UK

HS10-4 (ESR) **Arterial-venous identity specification in pre-vascularized engineered implants requires perivascular cell recruitment and is impaired in diabetes**

Sara S. Nunes de Vasconcelos[1,2], Xuetao Sun[1], Mansoor Husain[1], Wafa Altalhi[1]

[1]University Health Network, Toronto, Canada, [2]Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Canada

12:20 - 13:05 Luncheon Seminar 8

Chair: Masato Kasuga (National Center for Global Health and Medicine, Tokyo, Japan)

LS8 **Organ Memory and Vasculo-Metabolic Niche**

Hiroshi Itoh

Division of Endocrinology, Metabolism and Nephrology Department of Internal Medicine, Keio University School of Medicine, Japan

Sponsored by ONO PHARMACEUTICAL CO., LTD.

13:15 - 14:45 Symposium 6

Sponsored by Microcirculation

Metabolism and tumor microcirculation/angiogenesis

Chairs: Dai Fukumura (Massachusetts General Hospital, USA)
Rakesh K. Jain (Massachusetts General Hospital, USA)

S6-1 **Angiogenesis revisited: Endothelial cell metabolism as a target?**

Peter Carmeliet

Laboratory of Angiogenesis and Neurovascular Link, Vesalius Research Center, Leuven Belgium; Department of Oncology, KU Leuven, Leuven, Belgium

S6-2 **Looking back 30 years of discovery of the EPR effect of nanomedicine for treatment, imaging and next generation PDT for cancer: Problems, solutions and prospects**

Hiroshi Maeda

Institute of Drug Delivery Science, Sojo University, Kumamoto, Japan

S6-3 **Molecular targeting of tumor vasculatures**

Gou Young Koh

Graduate School of Medical Science and Engineering, KAIST, Daejeon, Korea

S6-4 **CO-sensitive membrane receptors regulating metabolic systems for regulating cancer proliferation and chemoresistance**

Makoto Suematsu[1,2], Ikko Koike[1,2], Tatsuya Yamamoto[1,2], Yasuaki Kabe[1,2]
[1]Keio University School of Medicine, Tokyo, Japan, [2]JST ERATO Suematsu Gas Biology Project, Department of Biochemistry, Keio University School of Medicine, Tokyo, Japan

S6-5 **Overcoming obesity-induced tumor progression and resistance to anti-angiogenic therapy**

Dai Fukumura
Massachusetts General Hospital and Harvard Medical School, Boston, USA

15:15 - 16:15 Plenary Lecture 3

Chair: Shinichi Takahashi (Department of Neurology, Keio University School of Medicine, Tokyo, Japan)

PL3 **Angiogenesis revisited: Endothelial cell metabolism as a target?**

Peter Carmeliet
Laboratory of Angiogenesis and Neurovascular Link, Vesalius Research Center–VIB, Department of Oncology, KU Leuven, Leuven, Belgium

16:15 - 16:25 Closing Remarks

Sunday, September 27 Room B-1

8:30 - 10:00 Symposium 7

Structure and function of the endothelial glycocalyx
—A Tribute to Late Professor Brian Duling—

Chairs: Randal O. Dull (Department of Anesthesiology, University of Illinois at Chicago, College of Medicine, Chicago, USA)
Hans Vink (Department of Physiology, Maastricht University, The Netherlands)

S7-1 **Clinical assessment of glycocalyx: A tool to monitor vascular risk in patients?**

Hans Vink
Department of Physiology, Maastricht University, The Netherlands

S7-2 **The lung glycocalyx in pressure-dependent albumin transport and permeability**

Randal O. Dull, Andreia Chignalia, Ayman Isbatan, Avni Bavishi
Department of Anesthesiology, University of Illinois at Chicago, College of Medicine, Chicago, USA

S7-3 **The endothelial glycocalyx as a barrier to leukocyte adhesion and its stabilization with low molecular weight heparin**

Herbert H. Lipowsky, Anne Lescanic, Rachna Sah
Department of Biomedical Engineering, Penn State University, USA

S7-4 **Genetic deletion of endothelial hyaluronan induces albuminuria and progressive glomerulopathy**

Bernard van den Berg[1,3], Margien G.S. Boels[1], Cristina Avramut[2], Erik Jansen[3], Sascha Meldner[4], Jasper van Gemst[5], Martijn J.C. Dane[1], Johan van der Vlag[5], Hans Vink[6], Abraham Koster[2], Anton-Jan van Zonneveld[1], Herman-Josef Grone[4], Eelco de Koning[1,3], Ton J. Rabelink[1]

[1]The Einthoven Laboratory for Vasular Medicine, Department of Nephrology, Leiden University Medical Center, Leiden, The Netherlands, [2]Department of Molecular Cell Biology, LUMC, Leiden, The Netherlands, [3]Hubrecht Institute for Developmental Biology and Stem Cell Research, Utrecht, The Netherlands, [4]Department of Cellular and Molecular Pathology, DKFZ, Heidelberg, Germany, [5]Department of Nephrology, RUNMC, Nijmegen, The Netherlands, [6]Department of Physiology, MUMC, Maastricht, The Netherlands

10:05 - 12:05 Hybrid Symposium 11

Microvascular plasticity in health and disease

Chairs: Jay Hoying (University of Louisville, USA)
Mark Olfert (School of Medicine, West Virginia University, Morgantown, WV, USA)

HS11-1 **Hydrogen sulfide-nitric oxide stimulation of VEGF ischemic vascular remodeling**

Christopher G. Kevil

Departments of Pathology, Molecular and Cellular Physiology, and Cell Biology and Anatomy, LSU Health Shreveport, USA

HS11-2 **Unveiling the cellular and molecular mechanism underlying vascular development by fluorescence-based bio-imaging in zebrafish**

Shigetomo Fukuhara, Naoki Mochizuki

Department of Cell Biology, National Cerebral and Cardiovascular Center Research Institute, Japan

HS11-3 **Perivascular cell dynamics in the vasculatures of the eye**

Tailoi Chan-Ling[1], Samuel J. Adamson[1], Louise C. Baxter[1], Mark E. Koina[1,2], Frank Arfuso[1,3], Michele C. Madigan[4,5], Ping Hu[1,6]

[1]Discipline of Anatomy & Histology, Sydney Medical School, Bosch Institute, The University of Sydney, Sydney, Australia, [2]Department of Anatomical Pathology, ACT Pathology, The Canberra Hospital, Garran, Australian Capital Territory, Australia, [3]School of Anatomy, Physiology and Human Biology, Faculty of Science, The University of Western Australia, Crawley, Western Australia, Australia, [4]School of Optometry, University of New South Wales, New South Wales, Australia, [5]Save Sight Institute, The University of Sydney, New South Wales, Australia, [6]Department of Ophthalmology, Eugene & Marilyn Glick Eye Institute, Indiana University, Indianapolis, IN, USA

HS11-4 **Adaptation of the coronary microcirculation in aging: Is regeneration possible?**

Amanda J. LeBlanc

Department of Physiology, University of Louisville, Louisville, KY, USA

HS11-5 **Angioregulatory peptide responses to physical deconditioning**

Mark Olfert

School of Medicine, West Virginia University, Morgantown, WV, USA

12:20 - 13:05 Luncheon Seminar 9

Chair: Hiroshi Nagata (Department of Internal Medicine, Keiyu Hospital, Japan)

LS9 **Effects of SGLT2 inhibitors on renal function**

Akira Nishiyama

Department of Pharmacology, Kagawa University Medical School, Kagawa, Japan

Sponsored by Taisho Toyama Pharmaceutical Co., Ltd.

13:15 - 14:45 Symposium 8

Sponsored by Braedius Medical B. V.

Microvascular remodeling in the coronary circulation

Chairs: Maria Siebes (University of Amsterdam, The Netherlands)
Fumihiko Kajiya (Kawasaki University of Medical Welfare, Japan)

S8-1 **Coronary microvascular remodeling and dysfunction in ischemic heart disease**

Dirk J. Duncker

Experimental Cardiology, Thoraxcenter, Erasmus University Medical Center, Rotterdam, The Netherlands

S8-2 **Coronary microvascular remodeling: Linking experimental findings in animals with observations in patients**

Jos A.E. Spaan, Maria Siebes

Department of Biomedical Engineering and Physics, Academic Medical Center, University of Amsterdam, The Netherlands

S8-3 **Coronary microvascular remodeling-model approaches**

Yunlong Huo

Department of Mechanics and Engineering Science, College of Engineering, Peking University, Beijing, China

S8-4 **Coronary functional remodeling in Takotsubo cardiomyopathy**

Vahagn Ohanyan, Liya Yin, William Chilian

Integrative Medical Sciences, Northeast Ohio Medical University, Rootstown, OH, USA

8:30 - 10:00 **Symposium 9**

The role of EDRF (NO and EDHF), H_2S and CO in microcirculation

Chairs: Toyotaka Yada (Department of Medical Engineering, Kawasaki Medical School and Kawasaki University of Medical Welfare, Kurashiki, Japan)

Paul M. Vanhoutte (State Key Laboratory of Pharmaceutical Biotechnology & Department of Pharmacology & Pharmacy, Li Ka Shing Faculty of Medicine, the University of Hong Kong, China)

S9-1 **Mechanisms for enhanced endothelium-derived hyperpolarizing factor-mediated responses**

Shigeo Godo, Hiroko Saito, Shuhei Tanaka, Akiyo Ito, Yosuke Ikumi, Hiroaki Shimokawa

Department of Cardiovascular Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan

S9-2 **Carbon monoxide regulates directional biotransformation of glucose via protein arginine methylation**

Takehiro Yamamoto, Naoharu Takano, Kyoko Ishiwata, Makoto Suematsu

Department of Biochemistry, School of Medicine, Keio University, Tokyo, Japan

S9-3 **Significance of nitric oxide synthases in the cardiovascular system: Lessons from triple nitric oxide synthases null mice**

Masato Tsutsui[1)], Hiroaki Shimokawa[2)], Nobuyuki Yanagihara[3)], Yutaka Otsuji[4)]

[1)]Department of Pharmacology, Graduate School of Medicine, University of the Ryukyus, Okinawa, Japan, [2)]Department of Cardiovascular Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan, [3)]Department of Pharmacology, School of Medicine, University of Occupational and Environmental Health, Kitakyushu, Japan, [4)]Second Department of Internal Medicine, School of Medicine, University of Occupational and Environmental Health, Kitakyushu, Japan

S9-4 **NO the gate-keeper of endothelial function**

Paul M. Vanhoutte

State Key Laboratory of Pharmaceutical Biotechnology & Department of Pharmacology & Pharmacy, Li Ka Shing Faculty of Medicine, the University of Hong Kong, China

10:05 - 12:05 Hybrid Symposium 12

Disease intervention: Targeting the microcirculation

Chairs: Marianne Tare (Monash University, Australia)
Timothy V. Murphy (Physiology, School of Medical Sciences, University of New South Wales, Sydney, Australia)

HS12-1 RGS5 integrates angiotensin II and PPAR vascular signaling to regulate blood pressure during pregnancy

Vasyl Holobotovskyy[1], Yee Seng Chong[1], Leo Leader[2], Timothy V. Murphy[3], Shaun L. Sandow[4], Marianne Tare[5], Leonard F. Arnolda[6], Ruth Ganss[1]

[1]Harry Perkins Institute of Medical Research, The University of Western Australia, Western Australia, Australia, [2]School of Womens and Childrens Health, Faculty of Medicine, University of New South Wales, Sydney, Australia, [3]Physiology, School of Medical Sciences, University of New South Wales, Sydney, Australia, [4]Faculty of Science, Health, Education and Engineering, University of the Sunshine Coast, Maroochydoore, Australia, [5]Department of Physiology, Monash University, Clayton, Victoria, Australia, [6]Medical School, Australian National University & Cardiology Department, Canberra Hospital, Canberra, Australia

HS12-2 Inflammasome activity is essential for one kidney/deoxycorticosterone acetate/salt-induced hypertension in mice

Shalini M. Krishnan[1], Jennifer K. Dowling[2], Yeong H. Ling[1], Henry Diep[1], Christopher T. Chan[1], Dorota Ferens[1], Michelle M. Kett[3], Anita Pinar[2], Chrishan S. Samuel[1], Antony Vinh[1], Thiruma V. Arumugam[4,5], Tim D. Hewitson[6], Barbara K. Kemp-Harper[1], Avril A. B. Roberston[7], Mathew A. Cooper[7], Eicke Latz[8,9,10], Ashley Mansell[2], Christopher G. Sobey[1,11], Grant R. Drummond[1,11]

[1]Department of Pharmacology, Monash University, Clayton, Victoria, Australia, [2]Centre for Innate Immunity and Infectious Diseases, MIMR-PHI Institute of Medical Research, Clayton, Victoria, Australia, [3]Department of Physiology, Monash University, Clayton, Victoria, Australia, [4]Department of Physiology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, [5]School of Pharmacy, Sungkyunkwan University, Suwon, Korea, [6]Department of Nephrology, Royal Melbourne Hospital, Parkville, Victoria, Australia, [7]Division of Chemistry and Structural Biology, Institute for Molecular Bioscience, The University of Queensland, Brisbane, Australia, [8]Institute of Innate Immunity, University Hospital, University of Bonn, Bonn, Germany, [9]Department of Infectious Diseases and Immunology, University of Massachusetts Medical School, Worcester, Massachusetts, USA, [10]German Center for Neurodegenerative Diseases, Bonn, Germany, [11]Department of Surgery, Monash Medical Centre, Southern Clinical School, Monash University, Clayton, Victoria, Australia

HS12-3 Further insight into vascular Kv7 channel function

Jennifer B. Stott, Iain A. Greenwood

Institute of Cardiovascular and Cell Sciences, St George's University of London, London, UK

HS12-4 Serelaxin reduces endothelium-derived vasoconstrictor prostanoids in mesenteric arteries of spontaneously hypertensive rats

Chen Huei Leo[1], Marianne Tare[2], Laura J. Parry[1]

[1]School of BioSciences, The University of Melbourne, Parkville, VIC, Australia, [2]Department of Physiology and School of Rural Health, Monash University, VIC, Australia

HS12-5 Fundamental role for the KCNE4 ancillary subunit in Kv7.4 regulation of arterial tone

Thomas A. Jepps[1], Georgina Carr[2], Pia R. Lundegaard[1], Soren-Peter Olesen[1], Iain A. Greenwood[1,2]

[1]Ion Channel Group, Department of Biomedical Sciences, University of Copenhagen, Denmark, [2]Vascular Biology Research Centre, Institute for Cardiovascular and Cell Sciences, St Georges University of London, London, UK

HS12-6 **Natriuretic peptides in the treatment of pulmonary hypertension: PDE2 inhibition augments their therapeutic capacity**

Kristen J. Bubb[1], Sarah L. Trinder[1], Reshma S. Baliga[1], Robert M. H. Allen[1], Jigisha Patel[2], Lucie H. Clapp[2], Raymond J. MacAllister[2], Adrian J. Hobbs[1]

[1]William Harvey Research Institute, Barts & The London School of Medicine & Dentistry, Queen Mary University of London, London, UK, [2]Centre for Clinical Pharmacology, University College London, London, UK

12:20 - 13:05 Luncheon Seminar 10

Chair: Hideyuki Saya (Institute for Advanced Medical Research, School of Medicine, Keio University, Tokyo, Japan)

LS10 **Regulation of Brain Microvascular Angiogenesis and Vascular Integrity**

Calvin Kuo

Department of Medicine, Stanford University School of Medicine, Hematology Division, CA, USA

Sponsored by Chugai Pharmaceutical Co., Ltd.

13:15 - 14:45 Symposium 10

Sponsored by Journal of Vascular Research (JVR)

Impact of mitochondrial function on vascular function and disease

Chairs: Ulrich Pohl (Ludwig-Maximilians-University Munich, Germany)
John G. McCarron (Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK)

S10-1 **Rapid determination of mitochondrial size, shape, position, density and motility in live fully-differentiated vascular smooth muscle cells reveal changes in hypertension and age**

Susan Chalmers[1], Christopher D. Saunter[2], John M. Girkin[2], John G. McCarron[1]

[1]Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK, [2]Durham University, UK

S10-2 **Mitochondrial thioredoxin reductase and its importance for vascular homeostasis**

Heike Beck[1], Marcus Conrad[2], Julian Kirsch[1], Rabea Hinkel[3], Ulrich Pohl[1]

[1]Walter Brendel Centre of Experimental Medicine, University of Munich, Munich, Germany, [2]Helmholtz Center Munich, Munich, Germany, [3]Medizinische Klinik und Poliklinik I, Klinikum Grosshadern, Munich, Germany

S10-3 **The role of endothelial mitochondrial damage in microvascular rarefaction and fibrosis**

Hazel H. Szeto

Research Program in Mitochondrial Therapeutics, Department of Pharmacology, Weill Cornell Medical College, New York, NY, USA

Poster Presentations

Poster Presentations

Setup: 8:00-11:00, Friday, September 25

Discussion: 12:50-14:20, Friday, September 25 Posters with odd numbers. ex. P1, P3, P5...

14:10-15:40, Saturday, September 26 Posters with even numbers. ex. P2, P4, P6...

Removal: 12:00-16:00, Sunday, September 27

Angiogenesis/Lymphangiogenesis/Microvascular Remodeling/Injury & Repair

P1 **Tetrahydrocurcumin induced tumor vascular normalization via inhibition of vascular endothelial growth factor expression in cervical cancer xenografts in nude mice**

Bhornprom Yoysungnoen[1)], Parvapan Bhattarakosol[2)], Suthiluk Patumraj[3)], Chatchawan Changtam[4)]

[1)]Division of Physiology, Faculty of Medicine, Thammasat University, Rangsit Campus, Pathumthani, Thailand, [2)]Department of Microbiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [3)]Department of Physiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [4)]Division of Physical Science, Faculty of Science and Technology, Huachiew Chalermprakiet University, Samut Prakarn, Thailand

P2 (ESR*) **VEGF knockdown in muscle improves recovery of blood flow after ischaemia**

Maria J.C. Machado, Federica Riu, David O. Bates

Unit of Cancer Biology, Division of Cancer and Stem Cells, School of Medicine, University of Nottingham, UK

*Also selected for oral presentation at Hybrid Symposium 3

P3 **Cyanidin attenuates tumor chemotherapy-induced neurotoxicity via inhibition of ROS-mediated DNA damage and apoptosis in PC12 cells**

Yuan Wang[1,2)], Da-wei Li[1)], Kun Wang[1,3)], Shuai Zhang[1)], Ya-jun Hou[1)], Ming-feng Yang[1)], Cun-dong Fan[1)], Bao-liang Sun[1,4)]

[1)]Key Lab of Cerebral Microcirculation in Universities of Shandong, Taishan Medical University, Taian, Shandong, China, [2)]Shandong Provincial Hospital Affiliated to Shandong University, Jinan, Shandong Province, China, [3)]Taishan Vocational College of Nursing, Taian, Shandong Province, China, [4)]Affiliated Hospital of Taishan Medical University, Taian, Shandong, China

P4 **Minimally invasive surgery joint local cooling lavage protects rats brain from ICH-induced inflammation injury and apoptosis**

Hui Yuan[1)], Xi-chang Liu[2,3)], Kun Wang[3,4)], Shuai Zhang[3)], Ya-jun Hou[3)], Ming-feng Yang[3)], Cun-dong Fan[3)], Bao-liang Sun[1,3)]

[1)]Affiliated Hospital of Taishan Medical University, Taian, Shandong, China, [2)]Yantai Affiliated Hospital of Binzhou Medical University, Yantai, Shan Dong Province, China, [3)]Key Lab of Cerebral Microcirculation in Universities of Shandong, Taishan Medical University, Taian, Shandong, China, [4)]Taishan Vocational College of Nursing, Taian, Shandong Province, China

P5 **Microsomal prostaglandin E synthase-1 up-regulates COX-2 derived PGE2 in endothelial cell under hypoxia condition in mouse ischemic hind limb model**

Hideki Amano[1)], Yoshiya Ito[2)], Ryo Takahashi[1)], Koji Eshima[3)], Shizuo Akira[4)], Masataka Majima[1)]

[1)]Department of Pharmacology Kitasato University School of Medicine, Kanagawa, Japan, [2)]Department of Surgery Kitasato University School of Medicine, Kanagawa, Japan, [3)]Department of Immunology Kitasato University School of Medicine, Kanagawa, Japan, [4)]Department of Host Defense, Research Institute for Microbial Deseases, Osaka University, Japan

P6 **The role of limbal lymphatics in corneal fluid homeostasis and proper pathogen clearance**

Jaeryung Kim[1)], Do Young Park[1)], Junyeop Lee[2)], Jongshin Kim[1)], Gou Young Koh[1)]
[1)]The Laboratory of Vascular Biology and Stem Cells, Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, [2)]Department of Ophthalmology, Asan Medical Center, Seoul, Korea

P7 **Role of TP signaling in enhancement of lymphangiogenesis in diaphragms during endotoxin induced petitonitis in mice**

Hiromi Matsuda[1)], Kanako Hosono[1)], Shuh Narumiya[2)], Masataka Majima[1)]
[1)]Dept. of Pharmacol., Kitasato Uni. Med., Sagamihara, Kanagawa, Japan, [2)]Dept. of Graduate School of Medcine, Medical Innovation Center, Kyoto Uni., Kyoto, Japan

P8 **Increased mouse mesenchymal stem cells homing and neovascularization in LPS-induced inflammation in aged rats after exercise training**

Suthiluk Patumraj[1)], Maethinee Sakhakorn[1)], Sheepsumon Viboolvorakul[2)], Nipan Isarasena[3)]
[1)]Center of Excellence for Microcirculation, Department of Physiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [2)]Department of Medical Science, Faculty of Science, Rangsit University, Pathumthanee, Thailand, [3)]Stem Cell and Cell Therapy Research Unit, Department of Pharmacology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

P9 **Mechanistic effects of spinal cord injury on splanchnic vascular functions and roles of regenerative medicine**

Noriko Iida
Department of Neurophysiology, University of Hiroshima, Hiroshima, Japan

P10 **The role of interleukin-7 in lymphatic vessel function and its therapeutic potential for the treatment of lymphedema and chronic skin inflammation**

Martina Vranova[1)], Maria Iolyeva[1)], David Aebischer[1)], Stefanie Meier[1)], Daniela Impellizzieri[2)], Onur Boyman[2)], Steven T. Proulx[1)], Cornelia Halin[1)]
[1)]Institute of Pharmaceutical Sciences, ETH Zurich, Zurich, Switzerland, [2)]Laboratory of Applied Immunobiology, University of Zurich, Zurich, Switzerland

P11 **Glycation of vitronectin inhibits VEGF-induced angiogenesis by uncoupling VEGF receptor-2-alphav beta3 integrin cross-talk**

Liqun Wang, Ningbo Pang, Yongjie Li, Ni Chen, Meiping Ren, Xin Deng, Jianbo Wu
Drug Discovery Research Center, Luzhou Medical College, Sichuan, China

P12 **Pre-treatment effects of low-dose simvastatin on wound healing in diabetic mice**

Supakanda Sukpat[1)], Nipan Israsena[2)], Suthiluk Patumraj[3)]
[1)]Ph.D. Program in Medical Science, Department of Physiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [2)]Stem cell and Cell Therapy Research Unit, Department of Pharmacology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [3)]Center of Excellence for Microcirculation, Department of Physiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

P13 **Host vascular invasion within newly induced glomeruli in engineered renal tisseus**

Sachiko Sekiya, Tatsuya Shimizu, Teruo Okano
Institute of Advanced Biomedical Engineering and Science

P14 **RhoJ is an effective and selective target of antiangiogenic cancer therapy**

Sang Heon Suh[1)], Chan Kim[2)], Gou Young Koh[1)]
[1)]The Laboratory of Vascular Biology and Stem cells, BioMedical Research Center, Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, [2)]Department of Medical Oncology, Severance Hospital, Seoul, Korea

P15 **Neocollateral formation supplements collateral remodeling after acute arteriolar occlusion in the chick chorioallantoic membrane**

Weiwei Xiang[1)], Bettina Reglin[1)], Wenwei Rong[1)], Bianca Nitzsche[1)], Martin Maibier[1)], Alfredo Ruggeri[3)], Pedro Guimaraes[3)], Axel R. Pries[1,2)]

[1)]Institute of Physiology, Charite-Universitaetsmedizin Berlin, Berlin, Germany, [2)]Deutsches Herzzentrum Berlin, Berlin, Germany, [3)]Department of Information Engineering, University of Padova, Padova, Italy

P16 **The effects of cell arrangement on vessel diameter in a microfluidic angiogenesis model**

Ryosuke Murai, Hiroyuki Uwamori, Ryo Sudo

Department of System Design Engineering, Keio University, Japan

P17 **Role of microsomal prostaglandin E synthase (mPGES)-1 in hepatic ischemia/reperfusion injury**

Nobuyuki Nishizawa[1)], Yoshiya Ito[1)], Ken Kojo[1)], Hirotoki Ohkubo[1)], Tomoyoshi Inoue[3)], Hideki Amano[2)], Masataka Majima[2)], Masahiko Watanabe[1,2)]

[1)]Department of Surgery, Kitasato University School of Medicine, Japan, [2)]Department of Pharmacology, Kitasato University School of Medicine, Japan, [3)]Department of Gastroenterology, Kitasato University School of Medicine, Japan

P18 **Notch pathway targets proangiogenic regulator Sox17 to restrict angiogenesis**

Il-Kug Kim, Seung-Hun Lee, Sungsu Lee, Hanseul Yang, Sukhyun Song, Kangsan Kim, Gou Young Koh, Injune Kim

Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea

P19 **Angiogenesis and lymphangiogenesis in MALT lymphoma in stomach, liver: Significance of VASH2**

Masahiko Nakamura[1)], Anders Overby[1)], Tetsufumi Takahashi[1)], Hidenori Matsui[2)]

[1)]School of Pharmacy, Kitasato University, Tokyo, Japan, [2)]Kitasato Institute for Life Sciences, Kitasato University, Tokyo, Japan

P20 (ESR*) **Arterial-venous identity specification in pre-vascularized engineered implants requires perivascular cell recruitment and is impaired in diabetes**

Sara S. Nunes de Vasconcelos[1,2)], Xuetao Sun[1)], Mansoor Husain[1)], Wafa Altalhi[1)]

[1)]University Health Network, Toronto, Canada, [2)]Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Canada

*Also selected for oral presentation at Hybrid Symposium 10

P21 **Mass transport from bloodstream to biosensors: Impact of convection and diffusion**

Bruce Klitzman[1)], Eugenia H. Cho[1)], Lin Liao[1)], Alina Boico[1)], Gregory Palmer[1)], Luisa M. Szott[1)], Scott P. Nichols[2)], Janna Register[1)], Natalie A. Wisniewski[2)], Tuan Vo-Dinh[1)]

[1)]Duke University, USA, [2)]Profusa, Inc., South San Francisco, USA

P22 **FRG1 and its interacting partner EEF1A: Putative angiogenic regulators**

Manjusha Dixit, Md. Khurshidul Hassan, Ankit Tiwari

School of Biological Sciences, National Institute of Science Education and Research, Bhubaneswar, India

P23 **Differential effects of cAMP/PKA and cAMP/Epac signalling on in vitro angiogenesis: Role of Rho GTPases**

Muhammad Aslam[1)], Susanne Rohrbach[2)], Christian Hamm[1)], Dursun Guenduez[1)]

[1)]Department of Cardiology and Angiology, Justus Liebig University, Giessen, Germany, [2)]Institute of Physiology, Justus Liebig University, Giessen, Germany

P24 **Physiological role of anti-angiogenic VEGF isoforms**

David O. Bates

Cancer Biology, Division of Cancer and Stem Cells, School of Medicine, University of Nottingham, Queen's Medical Centre, Nottingham, UK

P25 **VEGF-A_{165}b ameliorates vascular dysfunction in diabetic retinopathy**

Nikita Ved[1,3], R.P. Hulse[1], S.M. Bestall[1,2], L.F. Donaldson[2], J.W. Bainbridge[3], David O. Bates[1]

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P26 **Effects of shuangdan mingmu capsule on the expression of retinal VEGF and VEGFR protein activity in rats with diabetic retinopathy**

Yu-Hui Qin[1,2], Wen-Juan Li[1,2], Xi Zhang[1,2], Zong-Shun Dai[1,2], Xiao-Liu Chen[1,2], Ya-Sha Zhou[1,2], Yan-Jun Ling[1,2], Bing Zheng[1,2]

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Atherosclerosis/Thrombosis/Platelets

P27 **The clinical efficacy and immunomodulatory mechanism of Yi Qi Tong Yang soup treating chronic immune thrombocytopenia**

Xiupeng Yang, Yonggang Xu

Department of Hematology, Xiyuan Hospital, China Academy of Traditional Chinese Medicine, China

P28 **Laser-induced thrombus formation in angiotensin II type 1 and type 2 receptor-knockout murine brain microvasculature observed on intravital fluorescence microscopy**

Hajime Maruyama, Takuya Fukuoka, Takeshi Hayashi, Makiko Hirayama, Masaki Takao, Norio Tanahashi

Department of Neurology and Cerebrovascular Medicine, Saitama Medical University International Medical Center, Hidaka, Japan

P29 **Inhibitory effect of caffeic acid on ADP-induced thrombus formation and platelet activation involves mitogen-activated protein kinases**

Quan Li[1], Yu Lu[2], Yu-Ying Liu[1], Jing-Yu Fan[1], Chuan-She Wang[3], Jing-Yan Han[3]

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P30 (ESR*) **Uridine triphosphates analogues as inhibitors of platelet aggregation**

Muhammad Aslam[1], Christian Tanislav[2], Christian Hamm[1], Dursun Guenduez[1]

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*Also selected for oral presentation at Hybrid Symposium 8

P31 **Induction of DNA damage-mediated cell cycle arrest in human glioma cells by caudatin, a natural cytostatic reagent**

Xiao-yan Fu[1,2], Kun Wan[2,3], Shuai Zhang[2], Ya-jun Hou[2], Ming-feng Yang[2], Jing-yi Sun[1], Cun-dong Fan[2], Bao-liang Sun[2]

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P32 **Monoolein suppresses tumor growth and angiogenesis in human cervical cancer xenografts in nude mice**

Sudarut Rongpan[1], Benjamas Wongsatayanon[2], Amporn Jariyapongskul[3]

[1]Biomedical science program, Faculty of Medicine, Srinakharinwirot University, Bangkok, Thailand, [2]Department of Microbiology, Faculty of Medicine, Srinakharinwirot University, Bangkok, Thailand, [3]Department of Physiology, Faculty of Medicine, Srinakharinwirot University, Bangkok, Thailand

P33 **Arctigenin, an antiausterity antitumor agent, increases intra-tumor blood circulation through vascular re-modeling in vivo**

Takanori Kawashima[1], Masayuki Yamaguchi[2], Kazunobu Onuki[2], Kenta Murata[1], Shinae Kondoh[5], Satoshi Yomoda[1], Ryuji Takahashi[1], Katsuya Tsuchihara[4], Hiroshi Fujii[2], Hiroyasu Esumi[3]

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P34 **Acanthus ebracteatus Vahl could inhibit tumor growth and tumor angiogenesis associated with inhibition of hypoxia-inducible factor-1 regulatory pathway in human cervical carcinoma cell implanted nude mice**

Natchaya Wongeakin[1], Toshiki Watanabe[2], Taksanee Mahasiripanth[3], Parvapan Bhattarakosol[4], Suthiluk Patumraj[5]

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P35 **Arctigenin enhances the chemosensitivity to chemotherapeutic agents through microcirculatory changes**

Kenta Murata[1], Shigeki Chiba[1], Takanori Kawashima[1], Satoshi Yomoda[1], Ryuji Takahashi[1], Izumi Umeda[3], Motohiro Kojima[4], Hirofumi Fujii[3], Atsushi Ochiai[4], Katsuya Tsuchihara[2], Hiroyasu Esumi[5]

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P36 **Mechanical properties of human bone marrow endothelial cells and their adhesive interaction with breast cancer cells measured by atomic force microscopy**

Gerald A. Meininger[1,3], Leike Xie[1,2], Nicola J. Brown[1,5], Olga V. Glinski[3,4], Vladislav V. Glinsky[2,4]

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P37 (ESR*) **The importance of the perivascular niche in the early stage of breast cancer bone colonisation**

Gloria Allocca, Hannah K. Brown, Ingunn Holen, Nicola J. Brown

Department of Oncology, University of Sheffield, UK

*Also selected for oral presentation at Hybrid Symposium 6

P38 **LKB1/AMPK regulates autophagy-mediated MMP-9 expression to promote cancer cell development during microenvironmental stress**

Hitoshi Endo, Takahiro Nezu, Masayuki Tatemichi

Community Health, Tokai Univ Sch Med, Kanagawa, Japan

Cell Signaling: Proteins, Pathways, and Mechanisms

P39 **Curcumin antagonizes beta-amyloid-induced neurotoxicity in PC12 cells, from rational design to signaling pathways**

Kun Wang[1,2], Shuai Zhang[2], Ya-jun Hou[2], Ming-feng Yang[2], Jing-yi Sun[3], Xiao-yan Fu[3], Cun-dong Fan[2], Bao-liang Sun[2]

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P40 (ESR*) **Gene expression analysis in small arteries of spontaneously hypertensive rats: Evidence for ER stress**

Teresa Palao[1], Karl Swärd[2], Aldo Jongejan[3], Perry D. Moerland[3], Judith de Vos[1], Angela van Weert[1], Silvia M. Arribas[4], Gergely Groma[1], Ed van Bavel[1], Erik N.T.P. Bakker[1]

[1]Department of Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, The Netherlands, [2]Department of Experimental Medical Science, Lund University, Lund, Sweden, [3]Bioinformatics Laboratory, Academic Medical Center, Amsterdam, The Netherlands, [4]Departamento de Fisiología, Facultad de Medicina, Universidad Autónoma de Madrid, Spain

*Also selected for oral presentation at Hybrid Symposium 3

P41 **Repression of autophagy in gastric epithelial cells infected with H. pylori induces CD44 expression through the accumulation of CagA oncoprotein**

Hitoshi Tsugawa[1], Yuki Kashiwazaki[2], Hideki Mori[2], Juntaro Matsuzaki[2], Tatsuhiro Masaoka[2], Makoto Suematsu[1], Hidekazu Suzuki[2]

[1]Department of Biochemistry and Integrative Medical Biology, Keio University, School of Medicine, Tokyo, Japan, [2]Internal Medicine, Keio University, School of Medicine, Tokyo, Japan

P42 **Chemoprevention of astragalus in lung adenocarcinoma**

Linlin Lu, Zhongqiu Liu, Yunli Tong, Yuting Liu, Xiaoxiao Qi, Ying Wang, Lijun Zhu

International Institute for Translational Chinese Medicine, China

P43 **Caudatin induces caspase-dependent apoptosis in human glomia cells with involvement of mitochondrial dysfunction**

Cun-dong Fan[1)], Xiao-yan Fu[2)], Kun Wang[1,3)], Shuai Zhang[1)], Ya-jun Hou[1)], Ming-feng Yang[1)], Jing-yi Sun[2)], Xiao-yi Yang[1)], Bao-liang Sun[1)]

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Cerebral Circulation

P44 **Enhanced neuroprotective effects against ischemic brain injury by intranasal delivery of granulocyte colony-stimulating factor in rats**

Ming-feng Yang[1)], Kun Wang[1,2)], Shuai Zhang[1)], Ya-jun Hou[1)], Zong-yong Zhang[1)], Da-wei Li[1)], Cun-dong Fan[1)], Bao-liang Sun[1,3)]

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P45 **Pre-reperfusion of curcumin could protect blood-brain barrier against I/R Injury associated with Nrf2, NF-kappa-B, and caspase-3 expressions in Transient MCAO Rat Model**

Wei Li[1)], Nijasri Charnnarong[2)], Suthiluk Patumraj[3)]

[1)]International Ph.D Program in Medical Science, Physiology Department, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [2)]Division of Neurology, Department of Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [3)]Excellence Center for Microcirculation, Physiology Department, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

P46 **Exercise training ameliorates microvascular deterioration and VEGF signaling downregulation in aging rat brain**

Sheepsumon Viboolvorakul[1)], Maethinee Sakhakorn[2)], Suthiluk Patumraj[2)]

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P47 **Interstitial transport in the rodent brain**

Beatrice Bedussi, Monique GJTB van Lier, Jonas W. Bartstra, Judith de Vos, Maria Siebes, Ed Van Bavel, Erik N.T.P. Bakker

Department of Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, The Netherlands

P48 **Abnormal ROK activity contributes to the dysfunctional myogenic response of cerebral arteries of type 2 diabetic Goto-Kakizaki rats**

Khaled S. Abd-Elrahman, Emma J. Walsh, Michael P. Walsh, William C. Cole

The Smooth Muscle Research Group, Libin Cardiovascular Institute and Hotchkiss Brain Institute, Cumming School of Medicine, University of Calgary, Calgary, AB, Canada

P49 **Microcirculatory disturbance after subarachnoid hemorrhage**

Mami Ishikawa[1)], Mayumi Kajimura[2)], Takayuki Morikawa[2)], Gen Kusaka[1)], Yuichi Tanaka[1)], Makoto Suematsu[2)]

[1)]Department of Neurosurgery, Saitama Medical Center, Jichi Medical University, Saitama, Japan, [2)]Deparment of Biochemistry, School of Medicine, Keio University, Japan

P50 **Vasoreactivity of intracortical penetrating arteries of the cerebral cortex in response to cortical spreading depression and hypercapnia in anesthetized mice**

Miyuki Unekawa[1)], Yutaka Tomita[1,2)], Haruki Toriumi[1)], Takashi Osada[1)], Kazuto Masamoto[3,4)], Iwao Kanno[4)], Norihiro Suzuki[1)]

[1)]Deptartment of Neurology, Keio University School of Medicine, Tokyo, Japan, [2)]Tomita Hospital, Okazaki, Japan, [3)]Brain Science Inspired Life Support Research Center, University of Electro-Communications, Chofu, Japan, [4)]Molecular Imaging Center, National Institute of Radiological Sciences, Chiba, Japan

P51 **Dynamics of red blood cells in intraparenchymal capillaries and arterial diameter during cortical spreading depression observed with high-speed camera confocal fluorescence microscope in anesthetized mice**

Yutaka Tomita[1,2)], Miyuki Unekawa[1)], Haruki Toriumi[1)], Takashi Osada[1)], Kazuto Masamoto[3,4)], Hiroshi Kawaguchi[4,5)], Yoshiaki Itoh[6)], Iwao Kanno[4)], Norihiro Suzuki[1)]

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P52 **Implications of alphaV-beta3 integrin signalling in the regulation of Ca2+ waves and myogenic tone in cerebral arteries**

Donald G. Welsh[1,2)], Rania E. Mufti[2)], Anil Zechariah[1,2)], Maria Sancho[1,2)], Neil Mazumdar[1,2)], Suzanne E. Brett[1,2)]

[1)]Dept. Physiology & Pharmacology, University of Western Ontario, Canada, [2)]Dept. of Physiology & Pharmacology, University of Calgary, Canada

P53 **Smooth muscle/endothelial KIR channels tune electrical communication in cerebral arteries**

Maria Sancho[1,2)], Bjorn O. Hald[3)], Nina Samson[2)], Ahmed Hashad[1,2)], Sean Marrelli[4)], Donald G. Welsh[1,2)]

[1)]Dept. Physiology & Pharmacology, University of Western Ontario, Canada, [2)]Dept. of Physiology & Pharmacology, University of Calgary, Canada, [3)]Dept. of Biomedical Sciences, University of Copenhagen, Denmark, [4)]Baylor College of Medicine, Houston TX, USA

P54 **Novel intact ex vivo preparation of pressurized intracerebral arterioles and capillaries reveals conducted upstream vasodilation following application of neurovascular coupling agents onto capillaries**

Fabrice Dabertrand, Joseph E. Brayden, Mark T. Nelson

Department of Pharmacology, College of Medicine, University of Vermont, Vermont, USA

P55 **Retrograde regenerative electrical signaling through capillary K_{IR} channels regulates blood flow into the brain**

Thomas A. Longden[1)], Fabrice Dabertrand[1)], Albert L. Gonzales[1)], Masayo Koide[1)], Mark T. Nelson[1,2)]

[1)]Department of Pharmacology, The University of Vermont, USA, [2)]Institute of Cardiovascular Sciences, The University of Manchester, UK

P56 **Focal cerebral ischemic stroke results in endothelial BK_{Ca} expression and altered function, with no change in TRPV4 function, in middle cerebral artery**

Shaun L. Sandow[1], Nicole M. Jones[2], Hong L. Nguyen[2], David C. Ellinsworth[3], T. Hilton Grayson[2], Rohan Grimley[4], Andrew Dettrick[4], Timothy V. Murphy[5]

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P57 **Intranasal delivery of calcitonin gene-related peptide enhances arterial NO-cGMP pathway and reduces cerebral vasospasm after experimental subarachnoid hemorrhage**

Bao-liang Sun[1,2], Yuan Wang[1,2], Ming-feng Yang[2], Da-wei Li[2], Cun-dong Fan[2], Zong-yong Zhang[2], Lei-lei Mao[2], Hui Yuan[1,2], Xiao-yi Yang[1,2]

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P58 **Three-dimensional microcirculation imaging with fluorescence red blood cells in anesthetized rat cerebral cortex**

Kazuto Masamoto[1,2], Hiroyuki Takuwa[2], Yoko Ikoma[2], Iwao Kanno[2]

[1]Brain Science Inspired Life Support Research Center, University of Electro-Communications, Japan, [2]Molecular Imaging Center, National Institute of Radiological Sciences, Inage, Chiba, Japan

P59 **Preliminary study on mitophagy and its role after ischemic injury in rats**

Wei Zuo[1,2], Naihong Chen[1,2]

[1]State Key Laboratory of Bioactive Substances and Functions of Natural Medicines, Department of Pharmacology, Institute of Materia Medica, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China, [2]Beijing Key Laboratory of New Drug Mechanisms and Pharmacological Evaluation, China

Ion Channels and Transporters

P60 **Activation of the small-conductance calcium-activated potassium (SK) channels in freshly isolated coronary arterial endothelial cells by shear stress**

Hon-Chi Lee, Tong Lu, Xiao-Li Wang, Qiang Chai, Jingchao Li

Mayo Clinic, USA

P61 (ESR*) **TRPV1-mediated Ca^{2+} influx and constriction of the meningeal vasculature**

Masayo Koide[1], Inessa Manuelyan[1], Arsalan U. Syed[1], Swapnil K. Sonkusare[1], Bo Shui[2], Michael I. Kotlikoff[2], Mark T. Nelson[1], George C. Wellman[1]

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*Also selected for oral presentation at Hybrid Symposium 2

P62 **Complex signalling pathways determine the role of Kv7 channels in relaxations of the rat mesenteric artery**

Jennifer B. Stott, Iain A. Greenwood

Institute of Cardiovascular and Cell Sciences, St George's University of London, London, UK

P63 **Activators of KCa channels enhance endothelium-dependent modulation of nerve-evoked constriction in rat mesenteric arteries**

Stephanie E. Lunn[1], Shaun L. Sandow[2], Timothy V. Murphy[3], Ran Wei[1], Paul M. Kerr[4], Frances Plane[1]

[1]Department of Pharmacology, University of Alberta, Edmonton, Alberta, Canada, [2]Inflammation and Healing Cluster, Faculty of Science, Health, Education and Engineering, University of the Sunshine Coast, Maroochydore DC, Australia, [3]Department of Physiology, School of Medical Sciences, University of New South Wales, Sydney NSW, Australia, [4]Faculty of Health and Community Studies, MacEwan University, Robbins Health Learning Centre, Edmonton, Alberta, Canada

P64 **Investigation of the functional role of TRPC3 and TRPV4 in endothelium-dependent modulation of tone in rat mesenteric arteries**

Ran Wei[1], Stephanie E. Lunn[1], Shaun L. Sandow[2], Timothy V. Murphy[3], Paul M. Kerr[4], Frances Plane[1]

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Coronary Circulation

P65 **Micro channel array flow analyze research of elderly hypertension erythrocyte hemorheology**

Wei Xiong, Jiangang Liu, Hao Li

Xiyuan Hospital, China Academy of Chinese Medical Sciences, Beijing, China

P66 **The effect of panax notoginseng component eluting stent on intimal hyperplasia in porcine coronary artery**

Dawu Zhang[1], Jiangang Liu[1], Fuhai Zhao[1], Peili Wang[1], Lei Zhang[1], Jianpeng Du[1], Dazhuo Shi[1], Jiatao Feng[2], Xinmiao Liang[2]

[1]Department of Cardiology, Xiyuan Hospital, China Academy of Chinese Medical Sciences, China, [2]Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, Liaoning Province, China

P67 **H_2O_2-induced coronary collateral arterioles compensates NO-mediated small arteriolar endothelial dysfunction during coronary occlusion in diabetic dogs in vivo**

Toyotaka Yada[1], Hiroaki Shimokawa[2], Masami Goto[1], Yasuo Ogasawara[1], Fumihiko Kajiya[1]

[1]Department of Medical Engineering, Kawasaki Medical School, Kurashiki, Japan, [2]Department of Cardiovascular Medicine, Tohoku University Graduate School of Medicine, Japan

Endothelial Cell Biology

P68 **S-nitrosylation of VASP mediates the increase in microvascular permeability in response to pro-inflammatory agents**

Fabiola A. Sanchez[1], Natalie Marin[1], Anita H. Guequen[1], Patricia N. Zamorano[1], Jose M. Sarmiento[2], Mauricio Boric[3], Cynthia J. Meininger[4], Walter Duran[5]

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P69 **Myeloperoxidase modulates endothelial glycocalyx and influences vascular properties**

Kashish Manchanda, Stephan Baldus, Anna Klinke
Department of Cardiology, Heart Center, University Hospital Cologne, Cologne, Germany

P70 **In vitro and in vivo confirmation of new concept of pulmonary blood flow-mediated CO_2 gas excretion in the lungs**

Yoshiko Kawai[1,2], Toshio Ohhashi[2]
[1]Department of Physiology, Shinshu University School of Medicine, Matsumoto, Japan, [2]Department of Innovation of Medical and Health Sciences Research, Shinshu University School of Medicine, Japan

Gasbiology: O_2, NO, CO, H_2S, and Other Small Size Mediators

P71 **Hydrogen sulfide-induced vasodilation involves activation of endothelial TRPV4 and BK channels in small mesenteric arteries**

Jay S. Naik, Jessica M. Osmond, Nancy L. Kanagy
University of New Mexico School of Medicine, USA

P72 **Deletion of heme oxygenase-2 exacerbates cerebral energy metabolism during acute focal brain ischemia**

Takayuki Morikawa[1,2], Mayumi Kajimura[1,2], Shinichi Goto[1], Takao Hoshino[1], Takafumi Yoshioka[1], Akiko Kubo[1], Yasoo Sugiura[1], Takako Hishiki[1], Makoto Suematsu[3]
[1]Department of Biochemistry, Keio University School of Medicine, Tokyo, Japan, [2]JST, ERATO, Suematsu Gas Biology Project, [3]Graduate School of Medicine, Keio University, Tokyo, Japan

P73 **Hypoxia-inducible factors induce cystathionine β-synthase gene expression under hypoxia**

Naoharu Takano[1,2,3,4], Ying-Jie Peng[5], Ganesh K. Kumar[5], Weibo Luo[3,6], Hongxia Hu[3,4], Larissa A. Shimoda[7,8], Makoto Suematsu[1,2], Nanduri R. Prabhakar[5], Gregg L. Semenza[3,4,6,7,9,10,11]
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P74 **Deletion of heme oxygenase-2 increases baseline microvascular flow in the murine cerebral cortex**

Shinichi Goto[1], Mayumi Kajimura[1,2], Takayuki Morikawa[1,2], Mami Ishikawa[3], Makoto Suematsu[4]
[1]Department of Biochemistry, Keio University School of Medicine, Tokyo, Japan, [2]JST, ERATO, Suematsu Gas Biology Project, Tokyo, Japan, [3]Department of Neurosurgery, Saitama Medical Center, Jichi Medical University, Saitama, Japan, [4]Graduate School of Medicine, Keio University, Tokyo, Japan

Imaging

P75 **Possible implication of xanthine oxidase activation on the pathogenesis diabetic nephropathy**

Seiji Itano, Minoru Satoh, Yuji Sogawa, Atsushi Uchida, Hiroyuki Kadoya, Hajime Nagasu, Tamaki Sasaki, Naoki Kashihara
Department of Nephrology and Hypertension, Kawasaki Medical School, Okayama, Japan

P76 **Endothelial dysfunction as a marker of the acute pancreatitis severity**

Anna I. Ershova[1,2], Aleksandr V. Popov[1,2], Sergey Y. Podtaev[2], Dmitriy A. Mineev[3], Natalya N. Popova[1], Vladimir P. Cheremiskin[4], Bella T. Pashyan[4]
[1]The Department of Hospital Surgery, Perm State Medical University, Perm, Russia, [2]The Laboratory of Physical hydrodynamics, Institute of Continuous Media Mechanics, Ural Branch of Russian Academy of Science, Perm, Russia, [3]The Department of General Surgery, Perm State Medical University, Perm, Russia, [4]The Department of Obstetrics and Gynecology, Perm State Medical University, Perm, Russia

P77 **Preliminary results from a novel implementation of a non-invasive laser speckle imaging (LSI) technique during free-flap breast reconstruction**

Cynthia To[1], Jacqueline E. Rees-Lees[2], Rodney J. Gush[3], Kim M. Gooding[1], Nick H. Cawrse[2], David W. Oliver[2], Peter J. Saxby[2], John H. Palmer[2], Andrew D.H. Wilson[2], Angela C. Shore[1]
[1]Diabetes and Vascular Medicine, University of Exeter Medical School and NIHR Exeter Clinical Research Facility, Exeter, UK, [2]Department of Plastic and Reconstructive Surgery, Royal Devon and Exeter Hospital, Exeter, Devon, UK, [3]Moor Instruments, Axminster, Devon, UK

P78 **Comparison of tissue viability imaging and laser speckle contrast imaging for assessment of microvascular function**

Fredrik Iredahl, Simon Farnebo, Erik Tesselaar, Folke Sjoberg
Department for Plastic Surgery, Hand Surgery and Burns, University of Linkoping, Sweden

P79 **Assessment of venous stasis in the skin using polarization spectroscopy imaging**

Max Bergkvist, Fredrik Iredahl, Erik Tesselaar, Folke Sjoberg, Simon Farnebo
Department of Plastic Surgery, Hand Surgery and Burns, Linkoping University, Sweden

P80 **Nanoscale nonlinear elasticity in blood vessels of living mammalians studied by atomic force microscopy**

Qing Ha, You D. Mao, Dong Han
National Center for Nanoscience and Technology, Beijing, China

P81 **Visualization of in vivo renin activity and its application to study the pathogenetic mechanisms of diabetic nephropathy**

Minoru Satoh, Kengo Kidokoro, Seiji Itano, Hajime Nagasu, Tamaki Sasaki, Naoki Kashihara
Department of Nephrology and Hypertension, Kawasaki Medical School, Kurashiki, Okayama, Japan

P82 **Quantification of myocardial blood flow in mice using contrast echocardiography**

Tatevik Hakobyan, Liya Yin, Vahagn Ohanyan, William Chilian
Northeast Ohio Medical University, USA

P83 **Microaneurysms in deep capillary plexus layer are associated with diabetic macular edema**

Norio Hasegawa, Miho Nozaki, Noriaki Takase, Munenori Yoshida, Yuichiro Ogura
Department of Ophthalmology & Visual Science, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan

P84 **Combined intra-operative thermal and laser speckle contrast imaging to assess bowel perfusion: A case study**

Costanzo Di Maria[1,3], Paul J. Hainsworth[2,3], John Allen[1,3]
[1]Microvascular Diagnostics Service, Regional Medical Physics Department, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK, [2]Colorectal Surgical Service, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK, [3]Institute of Cellular Medicine, Faculty of Medical Sciences, Newcastle University, Newcastle upon Tyne, UK

P85 **Bone and microvascular imaging by k-edge subtraction μCT using synchrotron lights with zirconia contrast medium**

Takeshi Matsumoto[1], Shinya Itamochi[2], Shota Sato[2]
[1]Tokushima University Institute of Technology and Science, Japan, [2]Osaka University Graduate School of Engineering Science, Japan

P86 **Enlargement of foveal avascular zone in diabetic patients evaluated by En Face OCT angiography**

Noriaki Takase[1,2], Miho Nozaki[1], Aki Kato[1], Hironori Ozeki[3], Munenori Yoshida[1], Yuichiro Ogura[1]
[1]Department of Ophthalmology & Visual Science, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan, [2]Department of Ophthalmology, Daido Clinic, Nagoya, Japan, [3]Ozeki Eye Clinic, Kanie, Japan

P87 **Three-dimensional characterization of microvessels in whole organs and small animals co-localized with labeled biomarkers by a fluorescent imaging cryomicrotome system (3D-FICS)**

Maria Siebes, Johannes G.G. Dobbe, Paul R. Bloemen, Jeroen P.H. van den Wijngaard, Pepijn van Horssen, Janina C.V. Schwarz, Monique GJTB van Lier, Nazanin Hakimzadeh, Elco R. Oost, Jos A.E. Spaan
Dept. of Biomedical Engineering and Physics, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

P88 **Large-area surface-enhanced Raman spectroscopy imaging as a novel method to visualize alterations in small molecular metabolites in ischemic brain tissues**

Megumi Shiota[1,2], Shogo Yamazoe[1,2], Mayumi Kajimura[2], Makoto Suematsu[2], Masayuki Naya[1]
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Inflammation/Leukocyte-endothelium Interactions/Immune Cell Trafficking

P89 **Effect of nicotine on DSS-induced murine colitis in point of adhesion molecules on the microvascular endothelium**

Koji Maruta, Masaaki Higashiyama, Chikako Watanabe, Chie Kurihara, Yoshikiyo Okada, Kenichi Yoshikawa, Sunsuke Komoto, Kengo Tomita, Soichiro Miura, Ryota Hokari
Department of Internal Medicine, National Defense Medical College, Tokorozawa, Japan

P90 **Monocytes interact with neutrophils in the glomerular microcirculation to promote acute glomerulonephritis**

Michael J. Hickey[1)], Michaela Finsterbusch[1)], Pam Hall[1)], Anqi Li[1)], A. Richard Kitching[2)]

[1)]Centre for Inflammatory Diseases, Department of Medicine, Monash University, Australia, [2)]Departments of Nephrology and Paediatric Nephrology, Monash Medical Centre, Australia

P91 **Nitric oxide activates ICAM-1 on the endothelium at the onset of the inflammatory response**

Gaynor A. Aguilar[1)], Pia C. Burboa[2)], Jose M. Sarmiento[3)], Ingrid P. Ehrenfeld[4)], Fabiola A. Sanchez[1)]

[1)]Immunology Institute, Medicine Department, Austral University of Chile, Valdivia, Chile, [2)]Pontifical Catholic University of Chile, Chile, [3)]Physiology Institute, Austral University of Chile, Chile, [4)]Histology and Pathology Institutes, Austral University of Chile, Chile

P92 **Atrial natriuretic peptide (ANP) down-regulates neutrophil recruitment on inflamed endothelium by reducing PMN deformability, while adhesive function is maintained**

Scott I. Simon[1)], Vasilios Morikis[1)], Volkmar Heinrich[1)], Fitz-Roy E. Curry[1,2)]

[1)]Department of Biomedical Engineering, University of California, Davis, USA, [2)]Department of Physiology and Membrane Biology, School of Medicine, University of California, Davis, USA

P93 **Immune cell derived NGF links dysfunction of the immune and sympathetic nervous systems in obesity-related hypertension**

Rebecca E. Haddock[1)], Grant R. Drummond[3)], Klaus I. Matthai[1)], Antony Vinh[3)], Carola G. Vinuesa[2)], Julia I. Ellyard[2)], Susan K. Morton[1)], Caryl E. Hill[1)]

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P94 **Leukotriene B4 (LTB4) receptor type 1 (BLT1) attenuates acetaminophen-induced liver injury through inhibiting hepatic neutrophil activation**

Ken Kojo[1,2)], Yoshiya Itoh[2)], Nobuyuki Nishizawa[1,2)], Hirotoki Ohkubo[2)], Masahiko Watanabe[2)], Masataka Majima[1)]

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P95 (ESR*) **Immune suppression after stroke**

Connie H.Y. Wong

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*Also selected for oral presentation at Hybrid Symposium 1

P96 **Platelet-lymphocyte crosstalk: A key microvascular response to inflammation**

Elena Y. Senchenkova, Janice Rassell, Joshua R. Fage, Hideaki Hozumi, D. Neil Granger

Louisiana State University Health Science Center, USA

P97 **The administration of antioxidants reduced the leukocytes-endothelial interaction induced by ultraviolet B irradiation in cutaneous microvasculature**

Akira Ushiyama[1)], Masako Ohsawa[1)], Chika Ohsawa[2)], Shiori Fujita[2)], Tomomi Suwa[2)], Soichiro Yamada[2)], Kenji Hattori[2)], Kazuyuki Ishii[2)]

[1)]Department of Environmental Health, National Institute of Public Health, Saitama, Japan, [2)]Department of Hygienic Chemistry, Meiji Pharmaceutical University, Japan

P98 **Wavelet-analysis of skin temperature oscillations for revealing endothelial dysfunction in patients with type 2 diabetes**

Sergey Y. Podtaev[1)], Rodion Stepanov[1)], Elena Smirnova[2)], Evgenia Loran[2)]

[1)]Institute of Continuous Media Mechanics, Ural Branch of Russian Academy of Science, Perm, Russia, [2)]The Department of Endocrinology, Perm State Medical University, Perm, Russia

P99 **Evaluation of endothelial dysfunction in patients with metabolic syndrome based on the wavelet-analysis of skin temperature oscillations**

Sergey Y. Podtaev[1)], Elena Smirnova[2)], Sofia Shulkina[2)], Evgenia Loran[2)]

[1)]Institute of Continuous Media Mechanics, Ural Branch of Russian Academy of Science, Perm, Russia, [2)]The Department of Endocrinology, Perm State Medical University, Perm, Russia

P100 **Different limited femoral artery and balloon dilatation to establish the diabetes chronic lower limb ischemia rat model**

Lubo Ma[1,2)], Jiangang Liu[1)], Suying Hao[2)]

[1)]Xiyuan Hospital, China Academy of Chinese Medical Sciences, Beijing, China, [2)]Dongfang Hospital, Beijing University of Chinese Medicine, Beijing, China

P101 **A cell culture microdevice with a continuous oxygen gradient for microvascular research in vitro**

Kanae Kadokura[1)], Asako Sato[1)], Yuma Okazaki[2)], Kosuke Tsukada[1)]

[1)]Graduate School of Fundamental Science and Technology, Keio University, Kanagawa, Japan, [2)]Department of Applied Physics and Physico-Informatics, Faculty of Science and Technology, Keio University, Kanagawa, Japan

P102 **The protective effect of panax quinquefoliu saponin and panax pseudo-ginseng components on gastric mucosal lesions induced by dual antiplatelet drugs in rat with myocardial infarction**

Jiangang Liu, Qingxiang Zhang, Dawu Zhang, Lei Zhang, Dazhuo Shi

Department of Cardiology, Xiyuan Hospital, China Academy of Chinese Medical Sciences, China

P103 **Evaluation of laser speckle flowgraphy: Development of novel skin blood flow measurement technique**

Yoshinao Nagashima[1,4)], Yuko Ohsugi[1)], Yoshifumi Niki[1)], Kouji Maeda[1)], Takashi Okamoto[2)], Sachiko Oh-ishi[3)], Masataka Majima[4)]

[1)]Tokyo Research Laboratories, Kao Corporation, Tokyo, Japan, [2)]Department of Systems Design and Informatics, Kyushu Institute of Technology, Fukuoka, Japan, [3)]Basic Research Division, Kitasato Institute, Tokyo, Japan, [4)]Department of Pharmacology, Kitasato University School of Medicine, Kanagawa, Japan

P104 **Automated methodology for ex vivo measurement of vascular permeability**

Adrian M. Sackheim[1)], Laurel Haines[1)], Rebecca Kuzma[1)], Carl Silver[3)], Nuria Villalba[2)], Kalev Freeman[1)]

[1)]Department of Surgery, University of Vermont, Burlington, VT, USA, [2)]Department of Pharmacology, University of Vermont, Burlington, VT, USA, [3)]Instrumentation and Model Facility, University of Vermont, Burlington, VT, USA

P105 **Quantification and imaging of regional vascular permeability and partial pressure of oxygen in tumor microcirculation**

Keitaro Oda, Kosuke Tsukada

Graduate School of Fundamental Science and Technology, Keio University, Kanagawa, Japan

P106 **Clinical microvascular imaging: A review of techniques**

John Allen[1], Kevin Howell[2]
[1]Microvascular Diagnostics, Regional Medical Physics Department, Freeman Hospital, Newcastle upon Tyne, UK, [2]Microvascular Diagnostics, Institute of Immunity and Transplantation, The Royal Free Hospital, London, UK

P107 **Photoplethysmography and its application to clinical physiological measurement: An overview**

John Allen
Microvascular Diagnostics, Regional Medical Physics Department1, Freeman Hospital, Newcastle upon Tyne, UK

P108 **Utility of combined fluorescence spectroscopy and tissue oxygen saturation measurements in systemic sclerosis: A pilot study**

John Allen[1,3], Costanzo Di Maria[1,3], Alan Murray[3], Lesley Ottewell[2], Bridget Griffiths[2]
[1]Microvascular Diagnostics, Regional Medical Physics Department, Freeman Hospital, Newcastle upon Tyne, UK, [2]Rheumatology, Freeman Hospital, Newcastle upon Tyne, UK, [3]Institute of Cellular Medicine, Faculty of Medical Sciences, Newcastle University, Newcastle upon Tyne, UK

P109 **Photoplethysmography assessment of endothelial function in patients with Raynaud's phenomenon and systemic sclerosis: A pilot study**

Neil McKay[1], Bridget Griffiths[1], Costanzo Di Maria[2,3], Stephen Hedley[2], Alan Murray[3], John Allen[2,3]
[1]Rheumatology, Freeman Hospital, Newcastle upon Tyne, UK, [2]Microvascular Diagnostics, Regional Medical Physics Department, Freeman Hospital, Newcastle upon Tyne, UK, [3]Institute of Cellular Medicine, Faculty of Medical Sciences, Newcastle University, Newcastle upon Tyne, UK

P110 **A proposed integral diagnosis system with D-dimer for siagnosis of non-overt and overt disseminated intravascular coagulation**

Dong-min Shi, Wen-jing Li
Suzhou Municipal Hospital affiliated to Nanjing Medical University, Su Zhou, China

Lymphatic and Venular Function

P111 **Pharmacological modulators of intracellular calcium alter mesenteric lymphatic contractions**

Andrea Trujillo, Shaquria P. Adderley, Christopher P. Katnik, Javier Cuevas, Jerome W. Breslin
Department of Molecular Pharmacology and Physiology, University of South Florida, Florida, USA

P112 **Estimation of pressure drop required for lymph flow through initial collecting lymphatics**

Walter L. Murfee, Scott A. Stewart, David C. Sloas
The Department of Biomedical Engineering, Tulane University, USA

P113 **Supervised exercise training as an adjunct therapy for venous ulceration: Protocol for a randomised controlled feasibility trial in a National Healthcare Service**

Markos Klonizakis[1], Garry Tew[2], Anil Gumber[1], Geoff Middleton[3], Helen Crank[1], Jonathan Michaels[4]
[1]Centre for Sports and Exercise Science, Sheffield Hallam University, Sheffield, UK, [2]University of York, York, UK, [3]University of Lincoln, Lincoln, UK, [4]University of Sheffield, Sheffield, UK

Metabolomics and Disease

P114 **Hypothermic intervention causes reciprocal changes in acetylated metabolites in neonatal hypoxia-ischemia**

Toshiki Takenouchi[1,2], Yuki Sugiura[1,3], Takayuki Morikawa[1,4], Tsuyoshi Nakanishi[1,5], Yoshiko Nagahata[1,4], Tadao Sugioka[1], Kurara Honda[1,3], Akiko Kubo[1,4], Takako Hishiki[1,4], Tomomi Matsuura[1,4], Takao Hoshino[1], Takao Takahashi[2], Makoto Suematsu[1,4], Mayumi Kajimura[1,4]

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P115 **Effects of cigarette smoking on retinal circulation in patients with type 2 diabetes**

Tsuneaki Omae, Taiji Nagaoka, Akitoshi Yoshida

Department of Ophthalmology, Asahikawa Medical University, Asahikawa, Hokkaido, Japan

Microvascular Cell Signaling Pathways

P116 **Which inward rectifier K^+ channels contribute to resting tone and K^+-induced dilation of skeletal muscle resistance arteries in mice?**

William F. Jackson, Jessica Pettis, Brendan Mullan

Pharmacology & Toxicology, Michigan State University, USA

P117 **The alpha1-adrenergic agonists phenylephrine and noradrenaline enhance the inhibition of myogenic tone by endothelium-dependent vasodilators in rat cremaster resistance arteries**

Andrew P. Braun[1], Ramesh C. Mishra[1], Mohammad M. Rahman[1], Michael J. Davis[2], Heike Wulff[3], Michael A. Hill[2]

[1]Dept of Physiology and Pharmacology, Cumming School of Medicine, University of Calgary, Canada, [2]University of Missouri-Columbia, USA, [3]University of California-Davis, USA

P118 **N-cadherin, a novel mechano-sensor in small cerebral arteries**

Gerald A. Meininger, Zhe Sun, Min Li, Zhaohui Li, Michael A. Hill

Dalton Cardiovascular Research Center, University of Missouri, Columbia, MO, USA

P119 **G-protein mediated signaling pathways in myogenic responsiveness of mouse mesenteric artery**

Lars J. Jensen[1], Philomeena D. Joseph[1], Kristian Haanes[2], Susanne S. Hansen[2], Niklas R. Joergensen[2], Jakob L. Hansen[3], Max Salomonsson[4]

[1]Department of Veterinary Clinical and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark, [2]Glostrup Research Institute, Rigshospitalet, University of Copenhagen, Denmark, [3]Diabetes and Obesity Pharmacology, Novo Nordisk A/S, Maaloev, Denmark, [4]Department of Biomedical Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark

P120 (ESR*) **Extracellular histones activate local and propagating endothelial calcium signals**

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*Also selected for oral presentation at Hybrid Symposium 2

P121 **Histone deacetylase SIRT1 regulates autophagy of vascular adventitial fibroblasts through AKT/mTOR signaling pathway**

Weirong Wang, Tingting Li, Yanxiang Li, Xiaofeng Yang, Yanhao He, Rong Lin
Xi'an Jiaotong University Health Science Center, Xi'an, Shaanxi, China

Microvascular Flow Regulation/Oxygen Delivery/Networks

P122 **The role of glial cells in the regulation of retinal microcirculation in response to modulations in systemic oxygen tension**

Young-Seok Song, Taiji Nagaoka, Takafumi Yoshioka, Tomofumi Tani, Seigo Nakabayashi, Akitoshi Yoshida
Department of Ophthalmology, Asahikawa Medical University, Hokkaido, Japan

P123 **Skin microvascular assessments predict outcome of patients treated with extra-corporeal membrane oxygenation (ECMO)**

Van N.P. Tran[1)], Torjus Wester[3)], Goran Salerud[4)], Knut Kvernebo[1,2)]
[1)]The Circulation Laboratory, Dept. of Cardio-thoracic Surgery, Oslo University Hospital (OUS), Norway, [2)]Medical Faculty, University of Oslo, Norway, [3)]Department of plastic surgery, Ostfold Hospital, Norway, [4)]Institute of Biomedical Engineering, Linkoping Univeristy, Sweden

P124 (ESR*) **Relationship between microvascular blood flow and angiogenic factors in pre-eclampsia**

Anshuman Ghosh[1,3)], Nick Freestone[2)], Francesca Arrigoni[2)], Nick Anim-Nyame[1,3)]
[1)]School of Life Sciences, Kingston University, London, Kingston upon Thames. UK, [2)]School of Pharmacy, Kingston University, London, Kingston upon Thames, UK, [3)]Department of Obstetrics & Gynaecology, Kingston Hospital, Kingston upon Thames, UK

*Also selected for oral presentation at Hybrid Symposium 10

P125 **Thrombomoduline improves maternal and fetal outcomes in an experimental pre-eclampsia rat model**

Hirofumi Hino[1)], Miwa Nagata[2)], Sachi Shinmi[1)], Takeshi Tateda[1)]
[1)]Department of Anesthesiology, St. Marianna University School of Medicine, Kanagawa, Japan, [2)]Department of Anesthesia, Kawasaki Municipal Tama Hospital, Kanagawa, Japan

P126 **Skin trauma induces early deep vascular plexus hyperemia, while superficial papillary nutritive perfusion remains unchanged**

Liv K. Sundheim[1)], Ane H. Sporastoyl[1)], Torjus Wester[1)], Cathrine S. Nygaard[2)], Goran Salerud[3)], Knut Kvernebo[1)]
[1)]Circulation laboratory, Department of Cardio-thoracic Surgery, Oslo University Hospital and University of Oslo, Norway, [2)]Department of Neonatal Intensive Care, Oslo University Hospital, Ullevaal, Oslo, Norway, [3)]Institute of Biomedical Engineering, Linkoping Univeristy, Sweden

P127 **Metabolic long-term control of microvessel diameters: Roles of oxygen sensitivity, sensor localization and vasodilator or vasoconstrictor signalling**

Bettina Reglin[1)], Axel R. Pries[1,2)]
[1)]Department of Physiology, Charite-Universitaetsmedizin Berlin, Berlin, Germany, [2)]Deutsches Herzzentrum Berlin, Germany

P128 **Rescue of gap junction function restores blood flow in chicken chorioallantoic membrane vessel networks**

Bianca Nitzsche[1)], Willem Bintig[2)], Martin Maibier[1)], Michael Hoepfner[1)], Bettina Reglin[1)], Axel R. Pries[1)]
[1)]Inst. of Physiology, Charite-Universitaetsmedizin Berlin, Berlin, Germany, [2)]Inst. of Biochemistry, Charite-Universitaetsmedizin Berlin, Berlin, Germany

P129 **Assessing the microvascular response to insulin in rat skeletal muscle using intravital video microscopy**

Thorbjorn Akerstrom[1], Franciska Nilsson[1], Stephanie L. Milkovich[2], Daniel Goldman[2], Graham M. Fraser[2], Christian L. Brand[3], Ylva Hellsten[1], Christopher G. Ellis[2]

[1]Department of Nutrition, Exercise and Sports, University of Copenhagen, Copenhagen, Denmark, [2]Department of Medical Biophysics, University of Western Ontario, London, Canada, [3]Clamp Competency Center, Novo Nordisk A/S, Denmark

Microvascular Mechanics/Microvascular Modeling/Hemodynamics/Rheology

P130 **Is the time lag of pressure pulses in microcirculation associated to wave propagation?: A model study**

Qing Pan[1], Ruofan Wang[2], Bettina Reglin[3], Guolong Cai[4], Luping Fang[1], Axel R. Pries[3,5], Gangmin Ning[2]

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P131 **Adaptive mathematical modeling of pulsatile shear stress-mediated nitric oxide-vascular regulation**

Ruofan Wang[1], Qing Pan[2], Jin Chen[3], Bettina Reglin[4], Jing Yan[3], Axel R. Pries[4], Gangmin Ning[1]

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P132 **Diffusion of red blood cells in Poiseuille flow**

Cheng-Hsi Chuang[1], Kenji Kikuchi[2], Keiko Numayama-Tsuruta[1], Takami Yamaguchi[1], Takuji Ishikawa[1,2]

[1]Department of Biomedical Engineering, Graduate School of Biomedical Engineering, Tohoku University, Japan, [2]Department of Bioengineering and Robotics, Graduate School of Biomedical Engineering, Tohoku University, Japan

P133 **Increased arterial myogenic tone in an in vitro model of vascular insulin resistance**

Timothy V. Murphy[1], Shaun L. Sandow[1,2], George Ivanov[1]

[1]Physiology, School of Medical Sciences, University of NSW, Sydney, Australia, [2]Inflammation and Healing Cluster, Faculty of Science, Health, Education and Engineering, University of the Sunshine Coast, Australia

P134 **Quantification of geometrical differences between microangiopathy capillaroscopy images and controls**

Samuel G. Urwin[1], Bridget Griffiths[2,3], John Allen[1,3]

[1]Regional Medical Physics Department, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK, [2]Musculoskeletal Services, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK, [3]Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne, UK

P135 (ESR*) **Continuous serelaxin infusion alters circumferential wall stiffness but not myogenic tone of mesenteric resistance arteries in spontaneously hypertensive rats**

Maria Jelinic[1], Nicola Kahlberg[1], Chen Huei Leo[1], Marianne Tare[2], Laura J. Parry[1]

[1]School of BioSciences, The University of Melbourne, VIC, Australia, [2]Department of Physiology and School of Rural Health, Monash University, VIC, Australia

*Also selected for oral presentation at Hybrid Symposium 5

P136 **A novel parameter reflecting rheology and activity of leukocytes in ex vivo microvascular model**

Riha Shimizu[1], Takanori Yasu[2], Yuji Kikuchi[3], Nobuhiro Hata[4], Hirotsugu Fukuda[5]
[1]Department of Cardiovascular Surgery, Dokkyo Medical University Nikko Medical Center, Tochigi, Japan, [2]Department of Cardiovascular medicine, Dokkyo Medical University Nikko Medical Center, Tochigi, Japan, [3]Kikuchi Microtechnology Institute, Ibaraki, Japan, [4]National Institute of Advanced Industrial Science and Technology, Ibaraki, Japan, [5]Department of Cardiovascular surgery, Dokkyo Medical University, Tochigi, Japan

P137 **Scanning electron microscopic studies on morphological abnormalities of erythrocytes in alcoholic liver diseases**

Shinji Takashimizu[1], Seiichiro Kojima[1], Yasuhiro Nishizaki[2], Norihito Watanabe[1]
[1]Tokai University Hachioji Hospital, Tokyo, Japan, [2]Tokai University Tokyo Hospital, Tokyo, Japan

Microvascular Pathophysiology-pharmacology

P138 **Effects of alpha-mangostin on ocular hypoperfusion and blood retinal barrier leakage in type 2 diabetic rats**

Amporn Jariyapongskul, Chonticha Areebambud, Sunit Suksamrang, Chantana Mekseepralard
The Physiology Department, Faculty of medicine, Srinakharinwirot University, Bangkok, Thailand

P139 **Effects of acute and chronic paracetamol treatments on the alteration of blood brain barrier integrity in the cortical spreading depression migraine animal model**

Supang Maneesri-le Grand[1], Waranurin Yisarakun[1], Chattraporn Chantong[1], Wilawan Ji-au[1], Thananya Thongtan[2], Laddawan Lalert[1], Anan Srikiatkhachorn[3]
[1]Department of Pathology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [2]Department of Biochemistry, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [3]Department of Physiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

P140 **Chronic APAP treatment increases alteration of cultured brain endothelial cell line**

Waranurin Yisarakun[1], Thananya Thongtan[2], Nutnicha Tantarungsee[3], Tipthanan Chotipinit[3], Supang Maneesri-le Grand[3]
[1]Faculty of Allied Health Sciences, Burapha University, Chonburi, Thailand, [2]Department of Biochemistry, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, [3]Department of Pathology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

P141 **Somatostatin elicits dilation of isolated porcine retinal arterioles**

Shinichi Otani, Taiji Nagaoka, Tsuneaki Omae, Takayuki Kamiya, Shinji Ono, Akitoshi Yoshida
Department of Ophthalmology, Asahikawa Medical University, Asahikawa, Japan

P142 **Active fraction from Bixa orellana leave extract attenuates increased endothelial permeability induced by bradykinin in vitro**

Yoke Keong Yong[1], Zuraini Ahmad[2], Muhammad Nazrul Hakim Abdullah[2]
[1]Department of Human Anatomy, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia, [2]Department of Biomedical Science, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia

P143 **Arginase inhibition improves endothelial dysfunction in the systemic microvasculature following TBI**

Nuria Villalba[1], Adrian M. Sackheim[2], Ivette A. Nunez[2], Mark T. Nelson[1], George C. Wellman[1], Kalev Freeman[2]
[1]Department of Pharmacology, University of Vermont, Burlington, VT, USA, [2]Department of Surgery, University of Vermont, Burlington, VT, USA

P144 Diabetes and glomerular filtration barrier

Hiroshi Nakamoto, Toyotaka Yada
Department of Medical Engineering and Systems Cardiology, Kawasaki Medical School, Okayama, Japan

P145 Acute treatment with metformin prevents high glucose-induced endothelial dysfunction

Chris R. Triggle, Hong Ding, Suparna Ghosh
Department of Pharmacology and Medical Education, Weill Cornell Medical College, Qatar

P146 Microvascular and metabolic responses in the skin during local and systemic hyperinsulinemia: A microdialysis study

Fredrik Iredahl, Joakim Henricson, Folke Sjoberg, Erik Tesselaar, Simon Farnebo
Department of Plastic Surgery, Hand Surgery and Burns, Linkoping University, Sweden

P147 Exposure to early life vitamin D deficiency has lifelong implications for vascular and renal function

Marianne Tare[1,2], Kristen J. Bubb[1], Harold A. Coleman[1], Helena C. Parkington[1]
[1]Department of Physiology, Monash University, Melbourne, Australia, [2]School of Rural Health, Monash University, Churchill, Victoria, Australia

P148 Enhanced vascular sensitivity to angiotensin II in the mesenteric artery of late-pregnant relaxin deficient mice

Sarah A. Marshall[1], Sevvandi N. Senadheera[1], Chen Huei Leo[1], Jane E. Girling[2], Marianne Tare[3], Laura J. Parry[1]
[1]School of Biosciences, The University of Melbourne, Parkville, VIC, Australia, [2]Department of Obstetrics and Gynaecology, Royal Womens Hospital, Parkville, VIC, Australia, [3]Department of Physiology, Monash University, Clayton, VIC, Australia

P149 Development of CAST (Cancer Stromal Targeting) therapy

Masahiro Yasunaga[1], Shino Manabe[2], David Tarin[3], Yasuhiro Matsumura[1]
[1]Division of Developmental Therapeutics, National Cancer Center, EPOC, Japan, [2]Synthetic Cellular Chemistry Laboratory, RIKEN, Japan, [3]Department of Pathology, Moores/UCSD Comprehensive Cancer Center, University of California, USA

P150 Zipper-interacting protein kinase contributes to myogenic reactivity in the resistance microvasculature and hypercontractility in the SHR-model of essential hypertension

Sara R. Turner[1], Mona Chappellaz[1], Timothy A.J. Haystead[2], Justin A. MacDonald[1]
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Neuron-glia-vasculature

P151 Vascular effects on astrocytes Ca2+ dynamics in cerebral cortex

Cam Ha T. Tran, Grant R. Gordon
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P152 Evaluation of molecular mechanism of retinal neurovascular coupling using isolated porcine retinal arterioles

Shinji Ono[1,2], Taiji Nagaoka[1], Tsuneaki Omae[1], Shinichi Otani[1], Akitoshi Yoshida[1]
[1]Department of Ophthalmology, Asahikawa Medical University, Asahikawa, Hokkaido, Japan, [2]Asahikawa-Kose General Hospital, Japan

P153 **Dysfunction of neurovascular coupling in a mouse model of subarachnoid hemorrhage**

Masayo Koide, Evelyn A. Bulkeley, George C. Wellman
Department of Pharmacology, University of Vermont College of Medicine, Burlington, VT, USA

P154 **Spatiotemporal dynamics of cerebral blood flow during focal activation with optogenetic photostimulation to the cortical neurons and astrocytes**

Tatsushi Watanabe[1)], Kazuto Masamoto[1,2,3)], Miyuki Unekawa[4)], Haruki Toriumi[4)], Hiroyuki Takuwa[3)], Iwao Kanno[3)], Ko Matsui[5)], Kenji F. Tanaka[6)], Yutaka Tomita[4)], Norihiro Suzuki[4)]
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Oxidative Stress, Mitochondrial Metabolism and Redox

P155 **Suppression of high glucose-induced cell apoptosis in PC12 cells by DSePA through inhibition of ROS-mediated DNA damage and AKT inactivation**

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P156 **Transmembrane electron mediators to extract electron energies of RBC glycolysis for prolonged in vivo functional lifespan of an artificial oxygen carrier (Hb-Vesicles)**

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P157 **Traumatic brain injury increases plasma and microvascular reactive oxygen species**

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P158 **3, 4-dihydroxyl-phenyl lactic acid ameliorates cardiac reperfusion injury through restoring NADH dehydrogenase 1 alpha subunit 10**

Xiao-Yuan Yang[1)], Ke He[1)], Chun-Shui Pan[1)], Quan Li[1)], Yu-Ying Liu[4)], Li Yan[4)], Xiao-Hong Wei[4)], Bai-He Hu[4)], Xin Chang[4)], Xiao-Wei Mao[1)], Dan-Dan Huang[1)], Li-Jun Wang[2)], Shui-Wang Hu[3)], Yong Jiang[3)], Guo-Cheng Wang[4)], Jing-Yu Fan[4)], Tai-Ping Fan[5)], Jing-Yan Han[1)]
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P159 **Metabolic profiling of ischemic brains reveals multiple control points by cilostazol treatment**

Yasoo Sugiura[1,4], Mayumi Kajimura[1,2], Takayuki Morikawa[1,2], Tsuyoshi Nakanishi[1,3], Takako Hishiki[1,2], Makoto Suematsu[1,2]

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P160 **Carnosine attenuates early brain injury through its antioxidative and anti-apoptotic effects in a rat experimental subarachnoid hemorrhage model**

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P161 **Effects of NMDA receptor antagonist memantine on NO production, hydroxyl radical metabolism and ischemic change of hippocampal CA1 during cerebral ischemia and reperfusion in mice**

Yasuo Ito, Ryoji Nishioka, Masamizu Yamasato, Takahiro Sasaki, Ai Tanaka, Makiko Hirayama, Chika Kitabayashi, Nobuo Araki

Department of Neurology, Saitama Medical University, Saitama, Japan

P162 **Ferritin derived oxidative stress is a risk for liver damage even within reference range in male**

Yasuhiro Nishizaki[1], Chizumi Yamada[1], Noriaki Kishimoto[1], Nobushige Yukumatsu[1], Hirokazu Shiozawa[2], Norihito Watanabe[2], Rumiko Umeda[3], Masahiro Kikuchi[3], Takanori Kanai[3], Naoaki Ishii[4]

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P163 **Cytathionine β synthase is required to maintain glutathione hydropersulfide, a novel antioxidant molecule, in the murine lens**

Takafumi Yoshioka[1,2], Shinichi Goto[1], Yuki Okuda[1], Akiko Kubo[1], Isao Ishii[3], Takako Hishiki[1,4], Takehiro Yamamoto[1,5], Naoharu Takano[1,5], Takao Hoshino[1,6], Takashi Nakamura[1], Taiji Nagaoka[2], Akitoshi Yoshida[2], Makoto Suematsu[7], Mayumi Kajimura[1,5]

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P164 **Ganoderma lucidum polysaccharide peptide ameliorates acute kidney injury by reducing the endoplasmic reticulum and the mitochondrial stress cognitive/emotional deficits**

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Vascular Smooth Muscle Cells/Pericytes

P165 **Comparative investigation of Ca^{2+} signalling and vasomotor responses in the ureteric and cremaster muscle microvessels *in situ***

Lyudmyla Borysova, Theodor Burdyga
Department of Cellular and Molecular Physiology, University of Liverpool, Liverpool, UK

P166 **Pericytes exhibit asymmetric control at capillary bifurcations in the retinal vasculature**

Albert L. Gonzales[1)], Thomas A. Longden[1)], Bo Shui[2)], Michael I. Kotlikoff[2)], Mark T. Nelson[1)]
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P167 **A novel role for renal NMDA receptors: regulation of the renal microcirculation**

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Peripheral Circulation

P168 **Accuracy of small sized vessel flow measurements in 3D cine PC MRI with respiratory navigator gating**

Shohei Miyazaki[1)], Keiichi Itatani[1,2)], Hirofumi Hata[3)], Yusuke Inoue[4)]
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P169 **Skin microvascular function in women with peripartum anaemia**

Melanie R. Wittwer[1,2)], Yann Y. Chow[1,2)], Gus Dekker[3)], Vicki Clifton[3)], Margaret A. Arstall[1,2)]
[1)]Department of Cardiology, Lyell McEwin Hospital, South Australia, Australia, [2)]Discipline of Medicine, University of Adelaide, South Australia, Australia, [3)]Robinson Institute, Lyell McEwin Hospital, South Australia, Australia

P170 **Inhibition of neuronal nitric oxide synthase attenuates flicker-induced increment of retinal blood flow in cats**

Takafumi Yoshioka, Taiji Nagaoka, Young-Seok Song, Harumasa Yokota, Tomofumi Tani, Akitoshi Yoshida
Department of ophthalmology, Asahikawa Medical University, Hokkaido, Japan

P171 **Microvascular angina and skin microcirculation**

Andrey A. Fedorovich[1,2)], Galina Soboleva[1)], Irina Karpova[1)], Anatoliy Rogoza[1)], Yuriy Karpov[1)]
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P172 **Microcirculatory disorders in patients with arterial hypertension and high and very high cardiovascular risk**

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P173 Impact of actovegin on microcirculation in patients suffering chronic obliterating diseases of lower limb arteries

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Permeability/Fluid & Solute Exchange/Glycocalyx

P174 Prolonged shear stress modifies the composition of the endothelial glycocalyx

Dae Hyun Lee[1)], Martijn J.C. Dane[1)], Bernard van den Berg[1)], Margien G.S. Boels[1)], Johan van der Vlag[2)], Anton-Jan van Zonneveld[1)], Ton J. Rabelink[1)]
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P175 Role of mDia1 and Src in vascular hyperpermeability induced by advanced glycation end products

Xiao-hua Guo, Weijin Zhang, Xiao-yan Zhou, Qiao-bin Huang
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P176 Visualisation of small and large transport pores in cultured endothelium and their modification by different types of flow

Mean Ghim[1)], Paola Alpresa[1,2,3)], Spencer J. Sherwin[2)], Maarten van Reeuwijk[3)], Peter D. Weinberg[1)]
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P177 Galectin 8 induce increased microvascular permeability via S-nitrosylation of p120 catenin: Role in breast cancer

Patricia N. Zamorano[1)], Lorena M. Rebolledo[1)], Anita H. Guequen[1)], Fabiola A. Sanchez[1)], Luis A. Gonzalez[2)], Andrea M. Soza[2)], Ingrid P. Ehrenfeld[3)], Gonzalo A. Mardones[4)]
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P178 Use of a novel bioreactor to investigate effects of haemodynamic stresses on endothelial permeability

Stephen G. Gray[1)], Darryl Overby[1)], Anna Randi[2)], Peter D. Weinberg[1)]
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P179 Endothelial focal adhesion kinase mediates microvascular hyperpermeability during ischemia/reperfusion injury

Mack H. Wu, Clement G.Y. Yang
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P180 The effects on the endothelial glycocalyx layer and the microcirculatory parameters under septic condition in mice

Hanae Kataoka[1)], Akira Ushiyama[2)], Hayato Kawakami[3)], Yoshihiro Akimoto[3)], Sachie Matsubara[3)], Hideyuki Ochi[1)], Takehiko Iijima[1)]
[1)]Department of Perioperative Medicine, Division of Anesthesiology, Showa University School of Dentistry, Tokyo, Japan, [2)]National Institute of Public Health, Saitama, Japan, [3)]Kyorin University Scool of Medicine, Tokyo, Japan

P181 **Endothelial glycocalyx is lost in murine malaria infections and is associated with increased urokinase levels and downstream remodelling of the extracellular matrix**

Casper Hempel[1,2], Jon Sporring[3], Morgane Grand[4], Poul Hyttel[5], Trine Staalsoe[1,2], Joergen A.L. Kurtzhals[1,2]

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P182 **Purinergic receptor P2X7 is a mediator of blood-brain barrier breakdown and microvascular hyperpermeability**

Binu Tharakan, Himakarnika Alluri, Katie Wiggins-Dohlvik, Chinchusha Anasooya Shaji, Matthew L. Davis

Department of Surgery, Texas A&M University Health Science Center & Baylor Scott and White Health, Temple, Texas, USA

P183 **Association microvascular endothelial glycocalyx with structural alterations of vessels in hypertension patients**

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Stem Cells

P184 **Aged bone marrow-derived stem cells display increased pericyte fate in cultured microvascular networks**

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P185 **Complex microenvironments consisting of multiple vessel types maintains hematopoietic stem cells**

Anjali Kusumbe, Saravana Ramasamy, Ralf Adams

Max Planck Institute for Molecular Biomedicine

Translational Research

P186 **AngioChip: A biodegradable scaffold with built-in vasculature for tissue vascularization and direct surgical anastomosis**

Boyang Zhang[1,2], Miles Montgomery[1,2], M. Dean Chamberlain[2], Shinichiro Ogawa[7], Anastasia Korolj[1], Laura A. Wells[2], Aric Pahnke[1,2], Stephane Masse[5], Jihye Kim[3], Lewis Reis[2], Abdulah Momen[4], Sara S. Nunes[4], Aaron Wheeler[1,3], Kumaraswamy Nanthakumar[5], Gordon Keller[7], Michael V. Sefton[1,2], Milica Radisic[1,2,6]

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P187 **Does macular thickness vary in the early stages of diabetic retinopathy in type 2 diabetes?**

Kim M. Gooding[1], Angela C. Shore[1], Roland Ling[2], Francesco Casanova[1], Helen L. Looker[3], Elisabet Agardh[4]

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P188 **Human, in vivo, microvascular actions of glucagon-like peptide-1 and its analogues in health, obesity and well-controlled type 2 diabetes**

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P189 **Dynamics of angiogenesis and blood flow in mouse long bone**

Saravana Ramasamy[1], Anjali Kusumbe[1], Jaba Gamrekelashvili[2], Florian Limbourg[2], Ralf Adams[1]

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Myogenic Tone

P190 **A physiological role for TRPV4 sparklets**

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Late-Breaking Abstract

P191 **Differential effect of chronic stimulation on angiogenesis and oxygen transport capacity in skeletal muscle**

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