

09:10 - 10:10

KEYNOTE LECTURE 1

Chair: **Toru Maruyama**

Endothelium-dependent hyperpolarization (EDH) and endothelial dysfunction in hypertension: The role of endothelial ion channels

Kenichi Goto

Kyushu University

KEYNOTE LECTURE 2

Chair: **Takeshi Nakatani**

Clinical Management for Adverse Complications in Patients with Left Ventricular Assist Devices

Michinari Hieda

Kyushu University

09:10 - 10:40

SYMPOSIUM S4: Microfluidic and in silico device applications in hemorheology

Chairs: **Sara Hashmi**

S4-1 Microfluidic assays to investigate the role of red blood cell-derived extracellular vesicle in sickle cell disease

***Ran An An, Umut Gurkan**

Case Western Reserve University

S4-2 Hemorheology and pathophysiology of COVID-19 induced thrombosis predicted by Vein-Chip

Navaneeth Krishna Rajeeva Pandian, *Abhishek Jain

Texas A&M University

10:20 - 11:50

SYMPOSIUM S5: Mechanical circulatory support: from in-development to in vivo

Chairs: **Michael Simmonds, Tamas Alexy**

S5-1 The importance of blood rheology in left ventricular assist device therapy

***Mohammed Chowdhury¹, Valmiki Maharaj², Arianne Agdamag², Blair Edmiston³, Bellony Nzemenoh³, Victoria Charpentier⁴, Tamas Alexy²**

¹North Central Heart, Sioux Falls, SD, USA, ²Department of Medicine, Division of Cardiology, University of Minnesota, MN, USA, ³Department of Medicine, University of Minnesota, MN, USA, ⁴University of Minnesota Medical School, Minneapolis, MN, USA

S5-2 Hemo-compatibility related adverse events with left ventricular assist device (LVAD) support: past, present, and future

***Valmiki Maharaj¹, Mohammed Chowdhury², Arianne Agdamag¹, Blair Edmiston³, Bellony Nzemenoh³, Victoria Charpentier⁴, Tamas Alexy¹**

¹Department of Medicine, Division of Cardiology, University of Minnesota, MN, USA, ²North Central Heart, Sioux Falls, SD, USA, ³Department of Medicine, University of Minnesota, MN, USA, ⁴University of Minnesota Medical School, Minneapolis, MN, USA

S5-3 Analysis of the HeartMate 3 Pump Characteristics under Continuous and Pulsatile Flow Operation –An In Vitro Study

***Jo Pauls^{1,2}, Nicole Bartnikowski^{2,3}, E-Peng Seah², Clayton Semenzin², Martin Mapley²**

¹Griffith University - School of Engineering and Built Environment, ²Innovative Cardiovascular Engineering and Technology Laboratory, Critical Care Research Group, The Prince Charles Hospital, ³Queensland University of Technology - Science and Engineering Faculty

S5-4 Re-evaluation of blood trauma from a sublethal perspective

***Michael J Simmonds^{1,2}**

¹Menzies Health Institute Queensland, ²Griffith University, Australia

SYMPOSIUM S6: Multi-scale diagnosis of biorheology and microcirculation

Chairs: **Souichi Saeki, Yu Nakamichi, Daisuke Furukawa**

S6-1 Basic on Micro-tomographic Visualization of Tissue Rheological Properties by Mechanical Stimulation Using Optical Coherence Tomography

***Daisuke Furukawa¹, Souichi Saeki²**

¹Akita Prefectural University, Faculty of Systems Science and Technology, ²Meijo University, Graduate School of Science and Technology

S6-2 TBA

S6-3 Three-dimensional detection of hemodynamic changes in skin microcirculation by optical coherence tomography-angiography

***Yu Nakamichi**

Sanyo-Onoda City University

S6-4 Investigation the extensional effects on the viscosity distribution of bile in the cystic duct

***Ngoc Minh Nguyen¹, Hiromichi Obara²**

¹. Department of Mechanical Engineering, Thuyloi University, 175 Tay Son, Dong Da, Ha Noi, Vietnam , ²Department of Mechanical Systems Engineering, Tokyo Metropolitan University, 1-1 Minami Osawa, Hachioji, Tokyo, Japan

S6-5 Quantitative evaluation of flowing blood with the electrical parameters based on Hanai mixture equation

***Yusuke Nakajima¹, Daisuke Kawashima¹, Ryubu Shoji¹, Katsuhiro Matsuura², Masahiro Takei¹**

¹Division of Mechanical Engineering, Chiba University, ²Department of Veterinary Surgery, Tokyo University of Agriculture and Technology

S6-6 Development of butterfly type artificial atrioventricular valve with anisotropic valvular cusps by using collagenous connective tissue membrane "Biosheet(R)" induced by in-body tissue architecture

***Yota Sekido¹, Yasuhide Nakayama², Tsutomu TAJIKAWA³**

¹Kansai University, Graduate School of Science and Engineering, ²Biotube Co., Ltd, ³Kansai University, Faculty of Engineering Science

12:00 - 13:00

President-Invited Plenary Lecture - 1

Chair: **Toshiro Ohashi**

On the Path of Cell Biomechanics Research

Masaaki Sato

Tohoku University

14:20 - 15:50

SYMPOSIUM S7: Whole blood behaviours in chips, stents and capillary

Chairs: **Andreas Passos, Efstathios Kaliviotis**

S7-1 Investigation of hemorheological and hematological properties of blood in stented mice
***Despoina Kokkinidou^{1,2}, Konstantinos Kapnisis², Efstathios Kaliviotis¹, Andreas Anayiotos²**

¹Biorheology Laboratory, Dept. of Mechanical Engineering and Material Science and Engineering, Cyprus University of Technology, Cyprus, ²BioLISYS Laboratory, Dept. of Mechanical Engineering and Material Science and Engineering, Cyprus University of Technology, Cyprus

S7-2 Estimation of whole blood coagulation using image processing techniques

***Marinos Louka¹, Antonios Inglezakis², Constantinos Loizou², Savvas Psarelis³, Elena Nikiphorou⁴, Efstathios Kaliviotis¹**

¹Cyprus University of Technology, ²EMBio Diagnostics Ltd, Nicosia, Cyprus, ³Ministry of Health Cyprus, Nicosia, Cyprus, ⁴King's College London, King's College Hospital, London, UK

S7-3 Capillary blood flow on a chip: Influence of hemorheological factors. Capillary blood flow on a chip: Influence of hemorheological factors.

***Dimitris Pasi Pasias, Andreas Passos, Georgios Constantinides, Loukas Koutsokeras, Stavroula Balabani, Efstathios Kaliviotis**

Cyprus University of Technology

S7-4 Erythrocyte sedimentation rate measurements in a high aspect ratio microfluidic channel

***Andreas Passos¹, Antonis Nikolaidis¹, Charalampos Vryonidis¹, Konstantinos Loizou², Antonis Inglezakis², Efstathios Kaliviotis¹**

¹Dept. of Mechanical Engineering and Material Science and Engineering, Cyprus University of Technology, Cyprus, ²EMBio Diagnostics Ltd, Nicosia, Cyprus

S7-5 Influence of hemorheological parameters on the local velocity characteristics of blood in a superhydrophobic channel

***Efstathios Kaliviotis¹, Dimitris Pasi Pasias¹, Andreas Passos¹, Loukas Koutsokeras¹, Georgios Constantinides¹, Stavroula Balabani²**

¹Cyprus University of Technology, ²University College London

SYMPOSIUM S8: Mechanobiology of red cells

Chairs: **Michael Simmonds, Jon Detterich**

S8-1 Role of Piezo1 in red blood cell sickling

***Elie Nader^{1,2,3}, Aline Hatem⁴, Robin Bertot¹, Philippe Joly^{1,2,3}, Camille Boisson^{1,2,3}, Guillaume Bouyer⁴, Nicolas Guillot^{1,2,3}, Alexandra Gauthier^{1,2,3}, Solène Poutrel^{1,2,3}, Céline Renoux^{1,2,3}, Nicola Conran⁵, Flavia Costa⁵, Yves Bertrand³, Stéphane Égée⁴, Philippe Connes^{1,2,3}**

¹Laboratoire Interuniversitaire de Biologie de la Motricité (LIBM) EA7424, Team Vascular Biology and Red Blood Cell, Université Claude Bernard Lyon 1, Université de Lyon, Lyon, France, ²Laboratoire d'Excellence du Globule Rouge (Labex GR-Ex), PRES Sorbonne, Paris, France, ³Reference Center in Sickle cell disease, Thalassemia and rare red blood cell and erythropoiesis diseases, Hospices Civils de Lyon, Lyon, France., ⁴UMR 8227 CNRS-Sorbonne Université, Station Biologique, Place Georges Teissier, BP 74, 29682 Roscoff Cedex, France., ⁵Hematology Center, University of Campinas –UNICAMP, Cidade Universitária, Campinas-SP, Brazil

S8-2 Shear induced red blood cell nitric oxide production is increased in sickle cell disease

***Jon A Detterich^{1,2}, Silvie Suriyany¹, Honglei Liu¹, Pinar Ulker³, G Esteban Fernandez¹, Matthew Borzage¹, Rosalinda Wenby², Herbert J Meiselman², Henry J Forman⁴, Thomas D Coates¹**

¹Children's Hospital of Los Angeles, ²Keck School of Medicine, University of Southern California, ³Department of Physiology, Akdeniz University, ⁴Department of Gerontology, University of Southern California

S8-3 Contribution of red blood cells to pulmonary arterial hypertension pathogenesis: NOS activity and vessel responses

***Pinar Ulker¹, Ibrahim Basarici², Nur Özen¹, Ece Kilavuz¹, Fatih Kusak¹, Filiz Basrali¹, Nazmi Yaras³, Sadi Koksoy⁴, Mukadder Levent Celik⁵, Leyla Abueid¹, Ahmet Yildirim¹**

¹Department of Physiology, Medical Faculty, Akdeniz University, Antalya, Turkey., ²Department of Cardiology, Medical Faculty, Akdeniz University, Antalya, Turkey., ³Department of Biophysics, Medical Faculty, Akdeniz University, Antalya, Turkey., ⁴Department of Medical Microbiology, Medical Faculty, Akdeniz University, Antalya, Turkey., ⁵Department of Internal Medicine, University of Health Sciences Antalya Training and Research Hospital, Antalya, Turkey.

S8-4 Impaired mechanotransduction in diamide-treated erythrocytes

Lennart Kuck¹, Jason N. Peart², *Michael J. Simmonds¹

¹Biorheology Research Laboratory, Menzies Health Institute, Griffith University Gold Coast, Queensland, Australia, ²School of Medical Science, Griffith University Gold Coast, Queensland, Australia

SYMPOSIUM S9: Hemorheological Measurement and Analysis: RBCs and Platelets

Chairs: **Sehyun Shin, Dong-Guk Paeng**

S9-1 Deformability measurement of RBCs flowing in capillary channels using coflowing channels-based pressure sensor

***Yang Jun Kang¹, Sami Serhrouchni², Anna Bogdanova², Sung-Sik Lee³**

¹Chosun University, ²University of Zürich, ³ETH Zürich

S9-2 Numerical study of local parabolic rouleaux formation analyzed by axial and radial shear rates

Cheong-Ah Lee¹, *Dong-Guk Paeng^{1,2}

¹Jeju National University, ²University of Virginia

S9-3 Total volume ratio (TVR): a new parameter to evaluate the risk of aneurysm rupture

***Jinmu Jung¹, Ui Yun Lee¹, Hyosung Kwak², Dongwhan Lee¹**

¹Division of Mechanical Design Engineering, College of Engineering, Jeonbuk National University, Jeonju, South Korea, ²Department of Radiology, Jeonbuk National University Hospital, Jeonju, South Korea

S9-4 Measurement of platelet adhesion by using correlation mapping

***Eunseop Yeom**

Pusan National University

S9-5 Thrombus formation through upstream activation and downstream adhesion of platelets in a microfluidic system

***Sehyun Shin¹, SeonYoung Kim², ByoungKwon Lee³, ChaeSeung Lim⁴**

¹Korea University, ²Rheomeditech. Inc., ³Gangnam Severance Hospital, Yonsei University, ⁴Guro Hospital, Korea University

16:00 - 17:30

SYMPOSIUM S10: Rheological models and estimation of prognosis in clinical hemorheolog

Chairs: **Kalman Toth, Peter Kenyeres**

S10-1 Hemorheological alterations in patients with chronic cerebrovascular disease

***Peter Kenyeres¹, Kinga Totsimon¹, Alexandra Nagy³, Barbara Sandor¹, Katalin Biro¹, Laszlo Szapary², Kalman Toth¹, Zsolt Marton¹**

¹1st Department of Medicine, University of Pecs, Medical School, Pecs, Hungary, ²Department of Neurology, University of Pecs, Medical School, Pecs, Hungary, ³Department of Behavioral Sciences, University of Pecs, Medical School, Pecs, Hungary

S10-2 Novel predictors of future vascular events in post-stroke patients

***Diana Schrick¹, Erzsebet Ezer¹, Margit Tokes-Fuzesi², Tihamer Molnar¹**

¹Department of Anaesthesiology and Intensive Therapy, University of Pecs, Medical School, Pecs, Hungary, ²Department of Laboratory Medicine, University of Pecs, Medical School, Pecs, Hungary

S10-3 Hemorheological investigations in critically ill patients

***Zsolt Marton, Zsafia Eszter Szabo, Kinga Totsimon, Kalman Toth, Peter Kenyeres**

1st Department of Medicine, University of Pecs, Medical School, Pecs, Hungary

S10-4 Maternal hemorheological changes in early-onset preeclampsia

***Beata Csiszar^{1,2}, Gergely Galos^{1,2}, Peter Kenyeres^{1,2}, Kalman Toth^{1,2}, Barbara Sandor^{1,2}**

¹1st Department of Medicine, University of Pecs, Medical School, Pecs, Hungary, ²Szentagothai Research Centre, Pécs, Hungary

S10-5 The French paradox - from a rheological point of view

***Andras Toth^{1,2}, Barbara Sandor², Judit Papp^{2,3}, Miklos Rabai², Peter Kenyeres², Istvan Juricskay², Kalman Toth²**

¹Department of Medical Imaging, University of Pecs, Medical School, Pecs, Hungary, ²1st Department of Medicine, University of Pecs, Medical School, Pecs, Hungary, ³Hungarian Defence Forces Medical Centre, Budapest, Hungary

S10-6 Hemorheological, hematological and histological examination, and 3D flow simulation of arterio-venous fistulas or loop-shaped venous grafts in the rat

***Balazs Szabo¹, Adam Varga¹, Barbara Barath¹, Souleiman Ghanem¹, Orsolya Matolay², GyorgyTrencseny³, Levente Kiss-Papai⁵, Balazs Gasz⁵, Lajos Daroczi⁴, Norbert Nemeth¹**

¹Department of Operative Techniques and Surgical Research, University of Debrecen, Faculty of Medicine, Debrecen, Hungary, ²Department of Pathology, Faculty of medicine, University of Debrecen, Debrecen, Hungary, ³Division of Nuclear Medicine, Department of Medical Imaging, Faculty of medicine, University of Debrecen, Debrecen, Hungary, ⁴Institute of Physics, Department of Solid State Physics, Faculty of Physics, University of Debrecen, Debrecen, Hungary, ⁵Department of Surgical Research and Techniques, Faculty of Medicine, University of Pecs, Hungary

SYMPOSIUM S11: Known and unknown factors regulating the circulatory system

Chairs: **Kvetoslava Burda, Maria Fornal**

S11-1 Association of sulfur concentration in erythrocytes with heart geometry parameters and blood pressure

***Maria Fornal¹, Janusz Lekki², Jarosław Krolczyk¹, Barbara Wizner¹, Tomasz Grodzicki¹**

¹Jagiellonian University Medical College, Krakow, Poland, ²Institute of Nuclear Physics PAN, Krakow, Poland

S11-2 Results of blood research relating to: rheology, morphology and biochemistry of blood - man living 50 days in extremely low temperatures

***Zbigniew Joseph Dabrowski¹, Aneta Teleglow¹, Anna Marchewka¹, Maria Fornal²**

¹Academy of the Physical Education in Cracow, POLAND, ²Collegium Medicum, Jagiellonian University, Krakow, Poland

S11-3 Interactions of β -carotene with red blood cells - its effect on their stability and functioning

***Joanna Fiedor¹, Mateusz Przetocki¹, Aleksander Siniarski^{2,3}, Grzegorz Gajos^{2,3}, Nika Spiridis⁴, Kinga Freindl⁴, Kvetoslava Burda¹**

¹AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Krakow, Poland, ²Jagiellonian University Medical College, Krakow, Poland, ³The John Paul II Hospital, Krakow, Poland, ⁴Polish Academy of Sciences, Krakow, Poland

S11-4 Correlations between hemorheological parameters in a group of qualified honorary blood donors compared to those in a group of cardiovascular patients.

***Anna Marcinkowska-Gapinska**

Department of Biophysics, Karol Marcinkowski University of Medical Sciences in Poznan, Poland

S11-5 Can nanoparticles be responsible for the development of hypertension?

***Kvetoslava Burda¹, Joanna Fiedor¹, Magdalena Peter¹, Mateusz Przetocki¹, Jaroslaw Kiecana^{2,3}, Aleksander Siniarski^{2,3}, Grzegorz Gajos^{2,3}, Nika Spiridis⁴**

¹AGH-University of Science and Technology, Krakow, Poland, ²The John Paul II Hospital, Krakow, Poland, ³Jagiellonian University, Medical College, Krakow, Poland, ⁴Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Krakow, Poland

SYMPOSIUM S12: Colloidal Models in Red Cell Behaviour

Chairs: **Alexis Darras, Alexander Pribush**

S12-1 Intricate journey of micro- and nano-carriers for drug delivery in the blood stream

***Dmitry Fedosov**

Forschungszentrum Juelich GmbH

S12-2 Physical mechanism of erythrocytes sedimentation: experiments and gel-model

***Alexis Darras¹, Anil Kumar Dasanna², Thomas John¹, Gerhard Gompper², Lars Kaestner¹, Dmitry A. Fedosov², Christian Wagner¹**

¹Experimental Physics, Saarland University, 66123 Saarbruecken, Germany, ²Theoretical Physics of Living Matter, Institute of Biological Information Processing and Institute for Advanced Simulation, Forschungszentrum Jülich, 52425 Jülich, Germany

S12-3 The Erythrocyte Sedimentation Rate as a Diagnostic Biomarker for Neuroacanthocytosis Syndromes

Alexis Darras¹, Kevin Peikert^{2,3}, Antonia Rabe^{1,4}, François Yaya^{1,5}, Greta Simionato^{1,6}, Thomas John¹, Anil Kumar Dasanna⁷, Semen Bavalyy⁷, Jürgen Geisel⁸, Andreas Hermann^{2,3,9,10}, Dmitry A. Fedosov⁷, Adrian Danek¹¹, Christian Wagner^{1,12}, *Lars Kaestner^{1,4}

¹Experimental Physics, Saarland University, 66123 Saarbruecken, Germany, ²Translational Neurodegeneration Section "Albrecht-Kossel", Department of Neurology, University Medical Center Rostock, University of Rostock, Rostock, Germany, ³Neurodegenerative Diseases, Department of Neurology, Technische Universität Dresden, Dresden, Germany, ⁴Theoretical Medicine and Biosciences, Saarland University, 66424 Homburg, Germany, ⁵Laboratoire Interdisciplinaire de Physique, UMR 5588, 38402 Saint Martin d'Hères, France, ⁶Institute for Clinical and Experimental Surgery, Saarland University, 66424 Homburg, Germany, ⁷Institute of Biological Information Processing and Institute for Advanced Simulation, Forschungszentrum Jülich, 52425 Jülich, Germany, ⁸Central Clinical Laboratory, Saarland University, 66424 Homburg, Germany, ⁹DZNE, German Center for Neurodegenerative Diseases, Research Site Rostock/Greifswald, Rostock, Germany, ¹⁰Center for Transdisciplinary Neurosciences Rostock (CTNR), University Medical Center Rostock, University of Rostock, Rostock, Germany, ¹¹Neurologische Klinik und Poliklinik, Ludwig-Maximilians-Universität, 81366 Munich, Germany, ¹²Physics and Materials Science Research Unit, University of Luxembourg, Luxembourg City, Luxembourg

S12-4 Investigating the red blood cells (dis)aggregation mechanisms by means of optical tweezers

***Francois Yaya^{1,2}, Olivera Korculanin^{3,4}, Mehrnaz Babaki^{3,4}, Pavlik Lettinga^{3,4}, Christian Wagner¹, Kisung Lee⁵**

¹Experimental Physics, University of Saarland, Saarbrücken, Germany, ²Laboratoire Interdisciplinaire de Physique (LIPhy), CNRS and University of Grenoble, Grenoble, France, ³Biomacromolecular Systems and Processes (IBI-4), Forschungszentrum Jülich GmbH, Jülich, Germany, ⁴Laboratory for Soft Matter and Biophysics, KU Leuven, Leuven, Belgium, ⁵Center for Soft and Living Matter, Institute for Basic Science, Ulsan, South Korea

17:50 - 18:50

President-Invited Plenary Lecture - 2

Chair: **Alberto Caggiati**

Pathophysiology and treatment options for venous ulceration: Is there a role for exercise?

Markos Klonizakis

Lifestyle, Exercise and Nutrition Improvement (LENI) Research Group, Department of Nursing and Midwifery, Sheffield Hallam University, United Kingdom

19:00 - 20:00

Plenary Lecture for ISCH

Chair: **Brian Cooke**

Hemodynamic Functionality of Transfused Red Blood Cells – a Potent Effector of Transfusion Outcome

***Saul Yedgar¹, Neta Goldschmidt², Orly Zelig², Axel Pries³, Gregory Barshtein¹**

¹The Hebrew University Medical School, Jeruslaem, Israel, ²Hadasah Hospital, Jerusalem, Israel, ³Charite-Free University, Berlin, Germany

20:10 - 21:40

SYMPOSIUM S13: Preclinical and clinical studies on blood cells and microcirculation

Chairs: Lukas Prof. Prantl, Anna Maria Blocki

S13-1 Nanoparticle-mediated delivery of nucleic acids in primary human endothelial cells

***Manfred Gossen^{1,2}, Skadi Lau^{1,2}, Hanieh Moradian^{1,2,3}, Marc Behl¹, Andreas Lendlein^{1,2,3}**

¹Institute of Active Polymers, Helmholtz-Zentrum Hereon, Teltow, Germany, ²Berlin-Brandenburg Center for Regenerative Therapies (BCRT), Berlin, Germany, ³Institute of Biochemistry and Biology, University of Potsdam, 14476 Potsdam, Germany

S13-2 Long-term stabilization of three-dimensional perfusable microvascular networks in microfluidic devices

Ho-Ying WAN¹, Jack Chun Hin CHEN², Qinru XIAO², Christy Wingtung WONG¹, Yi-Ping Megan HO², Roger D. KAMM³, Sebastian BEYER², Anna Maria BLOCKI¹

¹Institute for Tissue Engineering and Regenerative Medicine, The Chinese University of Hong Kong, ²Department of Biomedical Engineering, Faculty of Engineering, The Chinese University of Hong Kong, ³Department of Biology and Mechanical Engineering, Massachusetts Institute of Technology

S13-3 New technologies to increase autologous fat grafting by stem cell enrichment

Prantl L, Eigenberger A, Felthaus O

University of Regensburg

S13-4 Assessment of leukocyte activation in the intestinal microcirculation in a novel model of CNS injury-induced immunodepression

***Bashir Bietar, Christian Lehmann**

Dalhousie University

S13-5 Experimental Cannabinoid Receptor 2 Modulation for the Treatment of Interstitial Cystitis

***Geraint Christopher Berger¹, Juan Zhou¹, Melanie Kelly^{2,1,4}, Christian Lehmann^{1,2,3,5}**

¹Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University, ²Department of Pharmacology, Dalhousie University, ³Department of Microbiology & Immunology, Dalhousie University, ⁴Department of Ophthalmology & Visual Sciences, Dalhousie University, ⁵Department of Physiology and Biophysics, Dalhousie University

SYMPOSIUM S14: Biorheology and COVID-19 Thrombosis

Chairs: **Barbara Zieger, Shinya Goto**

S14-1 Acquired von Willebrand syndrome and platelet function defects during VAD and ECMO support (and in patients with COVID19 infection and ECMO)

Barbara Zieger¹, Geisen U², Brehm K³, Trummer G³, Berchtold-Herz M³, Heilmann C^{3,4}, Schlagenhauf A^{1,5}, Kalbhenn J⁶, Beyersdorf F³

¹Department of Pediatrics and Adolescent Medicine, Division of Pediatric Hematology and Oncology, Medical Center – University of Freiburg, Faculty of Medicine, University of Freiburg, Germany, ²Institute for Clinical Chemistry and Laboratory Medicine, University Medical Center Freiburg, Freiburg, Germany, ³Department of Cardiovascular Surgery, University Heart Center Freiburg – Bad Krozingen, Freiburg, Germany, ⁴Saxon University of Cooperative Education, Plauen, ⁵Department of Pediatrics and Adolescent Medicine, Medical University of Graz, Graz, Austria, ⁶Department of Anesthesiology and Critical Care, Faculty of Medicine, University of Freiburg, Freiburg, Germany

S14-2 Retrospective study of COVID-19-associated coagulopathy in hospitalized patients at Tokai University Hospital.

***Masayuki Oki¹, Hideki Yanagi¹, Masahiro Kamono¹, Saki Manabe¹, Akiko Taoda¹, Ayumi Tsuda¹, Satoshi Abe¹, Takako Kobayashi¹, Koichiro Asano², Yoshihide Nakagawa¹, Yasuhiro Kanatani³, Hideki Ozawa¹, Shinya Goto²**

¹Department of General Medicine, Tokai University School of Medicine, ²Department of Internal Medicine, ³Department of Pharmacology

S14-3 COVID-19 and thrombosis: the importance of endothelial function.

***Shinichi Goto^{1,2,3}, Shinya Goto³**

¹Brigham and Women's Hospital, Harvard Medical School, ²Keio University School of Medicine, ³Tokai University School of Medicine

SYMPOSIUM S15: New useful techniques in disease

Chairs: **Özlem Yalçın, Philippe Connes**

S15-1 A noble integrated biomarker for screening diabetic kidney diseases: critical shear stress of RBCs

***Sehyun Shin¹, Junsung Moon², Jimi Choi³, Sin-Gon Kim³, Kyu Jang Won²**

¹Korea University, ²Yeungnam University Hospital, ³Korea University Anam Hospital

S15-2 Clinical microfluidic biomarker assays for red cell health and blood rheology

***Umut Gurkan**

Case Western Reserve University

S15-3 Concurrent assessment of deformability and adhesiveness of sickle red blood cells by measuring perfusion of an adhesive artificial microvascular network

Madeleine Lu¹, Celeste Kanne^{2,3}, Riley Reddington¹, Dalia Lezzar¹, Vivien Sheehan^{2,3}, *Sergey Shevkopyas¹

¹Department of Biomedical Engineering, University of Houston, Houston, TX, USA, ²Aflac Cancer and Blood Disorders Center, Children's Healthcare of Atlanta, Atlanta, GA, USA, ³Department of Pediatrics, Emory University School of Medicine, Atlanta, GA, USA

S15-4 Usefulness of oxygen gradient ektacytometry in sickle cell disease

***Philippe Connes^{1,2}, Camille Boisson^{1,2,3}, Minke Rab^{4,5}, Elie Nader^{1,2}, Céline Renoux^{1,2,3}, Philippe Joly^{1,2,3}, Romain Fort^{1,2,6}, Alexandra Gauthier^{1,2,7}, Yves Bertrand⁷, Richard van Wijk⁴, Vivien Sheehan⁸, Eduard van Beers⁵**

¹Laboratoire Interuniversitaire de Biologie de la Motricité (LIBM) EA7424, Team Vascular Biology and Red Blood Cell, Université Claude Bernard Lyon 1, Université de Lyon, France, ²Laboratoire d'Excellence du Globule Rouge (Labex GR-Ex), PRES Sorbonne, Paris, France, ³Laboratoire de Biochimie et de Biologie Moléculaire, Lyon, ⁴Central Diagnostic Laboratory - Research, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands, ⁵Van Creveldkliniek, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands, ⁶Département de Médecine Interne, Hôpital Edouard Herriot, Hospices Civils de Lyon, ⁷Institut d'Hématologie et d'Oncologie Pédiatrique, Hospices Civils de Lyon, Lyon, ⁸Department of Pediatrics, Division of Hematology/Oncology, Baylor College of Medicine; Houston Texas, USA

S15-5 A novel microfluidics-based point of care technique for viscoelastic hemostatic assay

***Ozlem Yalcin¹, Ahmet Can Erten², Berfin Irmak Torun³, Fatma Oz³**

¹Koc University, School of Medicine, Koç University, Research Center for Translational Medicine (KUTTAM), Istanbul, Turkey, ²Department of Electronics and Communication Engineering, Istanbul Technical University, Istanbul, Turkey, ³Koç University, Graduate School of Biomedical Sciences and Engineering, Istanbul, Turkey