ESCHM-ISCH-ISB

The 2nd Joint Meeting of
The European Society for Clinical Hemorheology and Microcirculation,
The International Society for Clinical Hemorheology, and
The International Society of Biorheology

2021 FUKUOKA

July 4 [Sun] - 7 [Wed], 2021

Fukuoka, JAPAN

ONLINE with live streaming demonstration (4th-7th July)
and on demand archives distribution (until 30th November)

Organized by

ESCHM ISCH ISB BR KYUSHU UNIVERSITY

Hojoki: Visions of a Torn World

The flowing river never stops
and yet the water never stays the same.
Foam floats upon the pools,
scattering, re-forming,
never lingering long.
So it is with man
and all his dwelling places
here on earth.

Author: **Chomei Kamo-no**
Translation: **Yasuhiko Moriguchi & David Jenkins**

Chomei Kamo-no (1155-1216), a Japanese poet and essayist, lived in 12th to 13th Century and described The Visions of a Torn World after witnessing of big fire, earthquake and famine. He is known as a Japanese Thoreau of the 12th Century. (http://www.zuikouji01.sakura.ne.jp/)

Welcome to the Joint Meeting

It is our great pleasure to welcome you to the 2nd Joint Meeting of three societies: the European Society for Clinical Hemorheology and Microcirculation (ESCHM), the International Society for Clinical Hemorheology (ISCH) and the International Society of Biorheology (ISB). This meeting is held on 4th to 7th, July 2021 by live-streaming online distribution and until the end of November as an on-demand archive.

This online meeting aims to cover a wide range of topics in biorheology, hemorheology and microcirculation from basic experiments to computation flow visualization and clinical investigations. Holding such an invaluable academic and scientific meeting provides a good opportunity to share ideas and experiences with many international scientists without oversea travelling.

This online meeting program contains virtual tour of Fukuoka, where key station of this online meeting is settled. Fukuoka is a gate way city open to Asia, and traditional Japanese summer festival of Hakata Gion Yamakasa is held partly in this joint meeting period. We believe that this unique and challenging joint meeting proposes a new model and future standard of the international online meeting taking global time zones into account. We are looking forward to seeing you in this complete online meeting.

Toru Maruyama, MD., PhD.
On behalf of The Japanese Society of Biorheology,
President of the 2nd Joint Meeting of ESCHM-ISCH-ISB 2021 Fukuoka
Secretary office of this joint meeting at eschm-isch-isb2021@congre.co.jp

Presidents of three societies:

**The European Society for Clinical Hemorheology and Microcirculation (ESCHM),
The International Society for Clinical Hemorheology (ISCH) and
The International Society of Biorheology (SB)**

**Jean-Frédéric Brun,
ESCHM president**

**Brian Cooke,
ISCH president**

**Peter Butler,
ISB president**

International Program Committee

Toru Maruyama	Kyushu University, Japan
Peter Butler	Penn State University, USA
Herbert Lipowsky	Penn State University, USA
Brian Cooke	Monash University, Australia
Jean-Frédéric Brun	Montpellier University, France
Michael Simmonds	Griffith University, Australia
Tamas Alexy	University of Minnesota, USA
Sehyun Shin	Korea University, South Korea
Byoung Kwon Lee	Yonsei University, South Korea
Kalman Toth	University of Pecs, Hungary
Nerbert Nemeth	University of Debrecen, Hungary
Ursula Windberger	Medical University Vienna, Austria
Shinya Goto	Tokai University, Japan
Masako Seki	Kansai University, Japan
Toshiro Ohashi	Hokkaido University, Japan
Taiji Adachi	Kyoto University, Japan
Kenjiro Shimano	Tokyo City University, Japan
Özlem Yalçin	Koc University, Turkey
Fulong Liao	Professor Emeritus, China
Mian Long	Chinese Academy of Sciences, China
Philippe Connes	University of Lyon, France
Maria Fornal	Jagiellonian University, Poland
Keefe Manning	Penn State University, USA
Christoph Bode	University of Freiburg, Germany
Edgar O'Rear	University of Oklahoma, USA
Markos Klonizakis	Sheffield Hallam University, UK
Friedrich Jung	Saarland University, Germany
Lukas Prantl	University of Regensburg, Germany
Nadia Antonova	Bulgarian Academy of Sciences, Bulgaria
Alexei Muravyov	Yaroslavl State Pedagogical University, Russia

Local Organizing Committee

Chair:

Toru Maruyama	Kyushu University

Vice Chairs:

Shinya Goto	Tokai University
Toshiro Ohashi	Hokkaido University
Isamu Kanada	Rakuno Gakuen University

Committee Members:

Susumu Kudo	Kyushu University
Masahito Hitosugi	Shiga University of Medical Science
Hiroshi Yamada	Kyushu Institute of Technology
Masayuki Yoshida	Tokyo Medical and Dental University
Seiichi Mochizuki	Kawasaki University of Medical Welfare
Masako Seki	Kansai University
Kimiko Yamamoto	The University of Tokyo
Masahiro Nishida	National Institute of Advanced Industrial Science and Technology
Tsutomu Tajikawa	Kansai University
Masaaki Shojima	Saitama Medical Center
Kenjiro Shimano	Tokyo City University
Mari Oshima	The University of Tokyo
Kiyotaka Iwasaki	Waseda University
Taiji Adachi	Kyoto University
Takeo Matsumoto	Nagoya University
Masanori Nakamura	Nagoya Institute of Technology
Noriyuki Kataoka	Nihon University
Michinari Hieda	Kyushu University

Program at a Glance

(JST)	4-Jul Sun Room 1	4-Jul Sun Room 2	4-Jul Sun Room 3	5-Jul Mon Room 1	5-Jul Mon Room 2	5-Jul Mon Room 3
9.00	The 44th Annual Scientific Meeting of the Japanese Society of Biorheology (2nd day)			Daily Announcement (Live)		
.30				Keynote Lecture 1	Keynote Lecture 2	Symposium S4
10.00						
.30				Symposium S5	Symposium S6	
11.00						
.30						
12.00				President-Invited Plenary Lecture - 1		
.30						
13.00				intermission		
.30						
14.00						
.30	Opening Ceremony			Symposium S7	Symposium S8	Symposium S9
15.00						
.30	Opening Plenary Lecture					
16.00				Symposium S10	Symposium S11	Symposium S12
.30						
17.00	Plenary Lecture for ESCHM					
.30						
18.00				President-Invited Plenary Lecture - 2		
.30	Rising Star Award Session - 1					
19.00				Plenary Lecture for ISCH		
.30	Free Communication (Video Presentation 1)					
20.00						
.30				Symposium S13	Symposium S14	Symposium S15
21.00	Symposium S1	Symposium S2	Symposium S3			
.30						
22.00						

6-Jul Tue			7-Jul Wed		
Room 1	Room 2	Room 3	Room 1	Room 2	Room 3
Daily Announcement (Live)			Daily Announcement (Live)		
Rising Star Award Session - 2			Symposium S24	Symposium S25	Symposium S26
Free Communication (Video Presentation 2)				Symposium S27	Joint Sympo. with CMEJ S28
Plenary Lecture for ISB			Plenary Lecture in Tribute to Prof. Akira Kamiya		
intermission			intermission		
Keynote Lecture 3	Keynote Lecture 4	Keynote Lecture 5	Closing Plenary Lecture for ISB		
Symposium S16	Symposium S17	Free Communication (Live) O1	Closing Ceremony		
Free Communication (ePoster)	Symposium S19	Symposium S20	Seminar Open for Citizens		
	ESCHM-ISCH-ISB Combined Business Meeting				
Symposium S21	Symposium S22	Symposium S23			

*Cancellation : Symposium S18

Live-streaming Program

July 4

14:30-15:30

Opening Ceremony

15:40-16:40

Opening Plenary Lecture

Chair: **Shinya Goto**

Coagulopathy and Anticoagulation in Covid-19 - what can we learn for future challenges

Danial Dürschmied

Cardiology and Intensive Care Medicine, Heart Center, University of Freiburg, Germany

16:50-17:50

Plenary Lecture for ESCHM

Chair: **Jean-Frederic Brun**

Lessons learnt from comparative hemorheology

Ursula Windberger

Medizinische Universitaet Wien, Center for Biomedical Research

18:00-19:00

RSA1

Rising Star Award Session - 1

Chairs: **Maria Fornal, Ursula Windberger**

RSA1-1 Towards elimination of sublethal blood trauma in mechanical circulatory support

***Michael J Simmonds[1,2]**

[1]Menzies Health Institute Queensland, [2]Griffith University, Australia

RSA1-2 Hemorheological changes caused by pituitary adenylate cyclase-activating polypeptide administration during vessel anastomosis regeneration in the rat

***Balazs Szabo[1], Laszlo Adam Fazekas[1], Adam Varga[1], Barbara Barath[1], Vince Szegeczki[2], Tamas Juhasz[2], Dora Reglodi[3], Norbert Nemeth[1]**

[1]Department of Operative Techniques and Surgical Research, University of Debrecen, Faculty of Medicine, Debrecen, Hungary, [2]Department of Anatomy, Histology and Embryology, Faculty of Medicine, University of Debrecen, Debrecen Hungary, [3]Department of Anatomy, Faculty of Medicine, University of Pecs, Pecs, Hungary

19:00-20:20

Free Communication (Video Presentation 1)

20:20-21:50

SYMPOSIUM **S1: Microperfusion of different inner organs examined by contrast enhanced ultrsound technology or PET/CT**

S1

Chairs: **Dong Yi, Ernst Michael Jung**

S1-1 Potential application of dynamic contrast enhanced ultrasound in predicting microvascular invasion of hepatocellular carcinoma
***Yi Dong[1], Yijie Qiu[1], Daohui Yang[1], Dan Zuo[1], Qi Zhang[1], Wen-Ping Wang[1], Ernst Michael Jung[2]**
[1]Zhongshan Hospital, Fudan University, [2]Department of Radiology, University Medical Center Regensburg, Germany

S1-2 [withdraw] New possibilities of contrast enhanced perfusion imaging CEUS for dynamic evaluation of microvascularization
EM Jung, I Wiesinger
Interdisciplinary Department for Ultrasound, University Medical Center, Regensburg, Germany

S1-3 [withdraw] Hybrid imaging of ultrasound and PET/CT: a new opportunity?
Janine Rennert[1], Jirka Grosse[2], Ernst Michael Jung[1]
[1]University Hospital Regensburg, Department of Radiology, Regensburg, Germany, [2]University Hospital Regensburg, Department of Nuclear Medicine, Regensburg, Germany

SYMPOSIUM **S2: Clinical hemorheology in critically ill patients**

S2

Chairs: **Shohei Moriyama, Michinari Hieda**

S2-1 Vascular toxicity in Cardio-Oncology
***Shohei Moriyama, Michinari Hieda**
Department of Hematology, Oncology and Cardiovascular Medicine, Kyushu University Hospital

S2-2 Catheter treatment of the leg arterial atherosclerosis ~Endovascular treatment for peripheral arterial disease~
***Eiji Karashima**
Shimonoseki City Hospital

S2-3 Advances in Diagnosis and Treatment of Pulmonary Hypertension
***Kohtaro Abe**
Department of Cardiovascular Medicine, Kyushu University Hospital

S2-4 Myocardial pathological changes in patients with epilepsy and psychiatric disorders
***Marin Takaso, Misa Tojo, Masahito Hitosugi**
Department of Legal Medicine, Shiga University of Medical Science

SYMPOSIUM **S3: Intracellular signaling in RBC: roles and consequences**

S3

Chairs: **Özlem Yalçın, Philippe Connes**

S3-1 Calcium signaling in red cells induced by mechanical stress and flow
***Lars Kaestner**
Saarland University

S3-2 Shear conditioning attenuates the effects of superoxide in red blood cells: Role of generation and signaling of nitrogen species in different cell subpopulations
***Marijke Grau[1], Lennart Kuck[2], Thomas Dietz[1], Michael J Simmonds[2]**
[1]German Sport University Cologne, Institute of Cardiovascular Research and Sports Medicine, [2]Griffith University Mechanobiology Research Laboratory

S3-3 Signaling in erythroid cells: role in physiology and contribution to pathological manifestations

***Wassim El Nemer**
EFS

S3-4 Impact of oxidative stress and decreased NO bioavailability on eryptosis and red blood cells microparticles in SCA: Consequences on endothelial cells and vascular function

***Elie Nader[1,2], Marc Romana[3,4], Nicolas Guillot[1,2], Romain Fort[5], Emeric Stauffer[1,2,6], Nathalie Lemonne[7], Yohann Garnier[3,4], Sarah Skinner[1,2], Maryse Etienne-Julan[7], Mélanie Robert[1,2,8], Alexandra Gauthier[1,2,9], Giovanna Cannas[5], Sophie Antoine-Jonville[3], Benoit Tressières[10], Marie-Dominique Hardy-Dessources[3,4], Yves Bertrand[9], Céline Renoux[1,2,11], Philippe Joly[1,2,11], Marijke Grau[12], Philippe Connes[1,2]**
[1]Laboratoire Interuniversitaire de Biologie de la Motricité (LIBM) EA7424, Team «Vascular Biology and Red Blood Cell», Université Claude Bernard Lyon, Université de Lyon, Lyon, France, [2]Laboratoire d'Excellence du Globule Rouge (Labex GR-Ex), PRES Sorbonne, Paris, France, [3]Université des Antilles, Pointe-à-Pitre, France, [4]Université de Paris, Paris, France, [5]Département de Médecine Interne, Hôpital Edouard Herriot, Hospices Civils de Lyon, Lyon, France, [6]Centre de Médecine du Sommeil et des Maladies Respiratoires, Hospices Civils de Lyon, Hôpital de la Croix Rousse, Lyon, France, [7]Unité Transversale de la Drépanocytose, Hôpital de Pointe-à-Pitre, Hôpital Ricou, Guadeloupe, France, [8]Erytech Pharma, Lyon, France, [9]Institut d'Hématologie et d'Oncologie Pédiatrique, Hospices Civils de Lyon, Lyon, France, [10]Centre Investigation Clinique Antilles Guyane, 1424 Inserm, Academic Hospital of Pointe-à -Pitre, Guadeloupe, France, [11] Laboratoire de Biochimie et de Biologie Moléculaire, UF de Biochimie des Pathologies érythrocytaires, Centre de Biologie et de Pathologie Est, Hospices Civils de Lyon, Lyon, France, [12]Molecular and Cellular Sport Medicine, Deutsche Sporthochschule Köln, Köln, Germany

S3-5 Phosphoproteomic Changes in Red Blood Cell Membrane by Adenyly cyclase/Protein kinase A Signaling Pathway and Their Roles on the Mechanical Stress Responses of Red Blood Cells

***Elif Ugurel[1,2], Neslihan Cilek[1,2], Evrim Goksel[1,2], Ozlem Yalcin[1,2]**
[1]Koc University School of Medicine Department of Physiology, [2]Koc University Research Center for Translational Medicine

July 5

9:10-10:10

KEYNOTE LECTURE 1

Chair: **Toshiaki Dobashi**

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

9:10-10:40

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-dervied 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

S5

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 Chowdhury[1], Valmiki Maharaj[2], Arianne Agdamag[2], Blair Edmiston[3], Bellony Nzemenoh[3], Victoria Charpentier[4], Tamas Alexy[2]**

[1]North Central Heart, Sioux Falls, SD, USA, [2]Department of Medicine, Division of Cardiology, University of Minnesota, MN, USA, [3]Department of Medicine, University of Minnesota, MN, USA, [4]University 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 Maharaj[1], Mohammed Chowdhury[2], Arianne Agdamag[1], Blair Edmiston[3], Bellony Nzemenoh[3], Victoria Charpentier[4], Tamas Alexy[1]**

[1]Department of Medicine, Division of Cardiology, University of Minnesota, MN, USA, [2]North Central Heart, Sioux Falls, SD, USA, [3]Department of Medicine, University of Minnesota, MN, USA, [4]University 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 Seah[2], Clayton Semenzin[2], Martin Mapley[2]**

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

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

***Michael J Simmonds[1,2]**

[1]Menzies Health Institute Queensland, [2]Griffith University, Australia

S6

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 Furukawa[1], Souichi Saeki[2]**

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

S6-2 Three-dimensional detection of hemodynamic changes in skin microcirculation by optical coherence tomography-angiography

***Yu Nakamichi**

Sanyo-Onoda City University

S6-3 Investigation the extensional effects on the viscosity distribution of bile in the cystic duct

***Ngoc Minh Nguyen[1], Hiromichi Obara[2]**

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

S6-4 Quantitative evaluation of flowing blood with the electrical parameters based on Hanai mixture equation

***Yusuke Nakajima[1], Daisuke Kawashima[1], Ryubu Shoji[1], Katsuhiro Matsuura[2], Masahiro Takei[1]**

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

S6-5 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 Sekido[1], Yasuhide Nakayama[2], Tsutomu Tajikawa[3]**

[1]Kansai University, Graduate School of Science and Engineering, [2]Biotube Co., Ltd, [3]Kansai 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 Kapnisis[2], Efstathios Kaliviotis[1], Andreas Anayiotos[2]**
[1]Biorheology Laboratory, Dept. of Mechanical Engineering and Material Science ad Engineering, Cyprus University of Technology, Cyprus, [2]BioLISYS Laboratory, Dept. of Mechanical Engineering and Material Science ad Engineering, Cyprus University of Technology, Cyprus

S7-2 Estimation of whole blood coagulation using image processing techniques
***Marinos Louka[1], Antonios Inglezakis[2], Constantinos Loizou[2], Savvas Psarelis[3], Elena Nikiphorou[4], Efstathios Kaliviotis[1]**
[1]Cyprus University of Technology, [2]EMBIO Diagnostics Ltd, Nicosia, Cyprus, [3]Ministry of Health Cyprus, Nicosia, Cyprus, [4]King'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 Pasias 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 Passos[1], Antonis Nikolaidis[1], Charalampos Vryonidis[1], Konstantinos Loizou[2], Antonis Inglezakis[2], Efstathios Kaliviotis[1]**
[1]Dept. of Mechanical Engineering and Material Science and Engineering, Cyprus University of Technology, Cyprus, [2]EMBIO Diagnostics Ltd, Nicosia, Cyprus

S7-5 Influence of hemorheological parameters on the local velocity characteristics of blood in a superehydrophylic channel
***Efstathios Kaliviotis[1], Dimitris Pasias[1], Andreas Passos[1], Loukas Koutsokeras[1], Georgios Constantinides[1], Stavroula Balabani[2]**
[1]Cyprus University of Technology, [2]University 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 Hatem[4], Robin Bertot[1], Philippe Joly[1,2,3], Camille Boisson[1,2,3], Guillaume Bouyer[4], Nicolas Guillot[1,2,3], Alexandra Gauthier[1,2,3], Solène Poutrel[1,2,3], Céline Renoux[1,2,3], Nicola Conran[5], Flavia Costa[5], Yves Bertrand[3], Stéphane Égée[4], Philippe Connes[1,2,3]**
[1]Laboratoire 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, [2]Laboratoire d'Excellence du Globule Rouge (Labex GR-Ex), PRES Sorbonne, Paris, France, [3]Reference Center in Sickle cell disease, Thalassemia and rare red blood cell and erythropoiesis diseases, Hospices Civils de Lyon, Lyon, France., [4]UMR 8227 CNRS-Sorbonne Université, Station Biologique, Place Georges Teissier, BP 74, 29682 Roscoff Cedex, France., [5]Hematology 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 Suriany[1], Honglei Liu[1], Pinar Ulker[3], G Esteban Fernandez[1], Matthew Borzage[1], Rosalinda Wenby[2], Herbert J Meiselman[2], Henry J Forman[4], Thomas D Coates[1]**

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

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

***Pinar Ulker[1], Ibrahim Basarici[2], Nur Özen[1], Ece Kilavuz[1], Fatih Kisak[1], Filiz Basrali[1], Nazmi Yaras[3], Sadi Koksoy[4], Mukadder Levent Celik[5], Leyla Abueid[1], Ahmet Yildirim[1]**

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

S8-4 Impaired mechanotransduction in diamide-treated erythrocytes

***Lennart Kuck[1], Jason N. Peart[2], Michael J. Simmonds[1]**

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

S9

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 Kang[1], Sami Serhrouchni[2], Anna Bogdanova[2], Sung-Sik Lee[3]**

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

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

***Cheong-Ah Lee[1], Dong-Guk Paeng[1,2]**

[1]Jeju National University, [2]University of Virginia

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

***Jinmu Jung[1], Ui Yun Lee[1], Hyosung Kwak[2], Dongwhan Lee[1]**

[1]Division of Mechanical Design Engineering, College of Engineering, Jeonbuk National University, Jeonju, South Korea, [2]Department 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 Shin[1], SeonYoung Kim[2], ByoungKwon Lee[3], ChaeSeung Lim[4]**

[1]Korea University, [2]Rheomeditech. Inc., [3]Gangnam Severance Hospital, Yeonsei University, [4]Guro Hospital, Korea University

16:00-17:30

S10

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 Kenyeres[1], Kinga Totsimon[1], Alexandra Nagy[3], Barbara Sandor[1], Katalin Biro[1], Laszlo Szapary[2], Kalman Toth[1], Zsolt Marton[1]**

[1]1st Department of Medicine, University of Pecs, Medical School, Pecs, Hungary, [2]Department of Neurology, University of Pecs, Medical School, Pecs, Hungary, [3]Department of Behavioral Sciences, University of Pecs, Medical School, Pecs, Hungary

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

***Diana Schrick[1], Erzsebet Ezer[1], Margit Tokes-Fuzesi[2], Tihamer Molnar[1]**
[1]Department of Anaesthesiology and Intensive Therapy, University of Pecs, Medical School, Pecs, Hungary, [2]Department of Laboratory Medicine, University of Pecs, Medical School, Pecs, Hungary

S10-3 Hemorheological investigations in critically ill patients

***Zsolt Marton, Zsofia 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]**
[1]1st Department of Medicine, University of Pecs, Medical School, Pecs, Hungary, [2]Szentagothai Research Centre, Pécs, Hungary

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

***Andras Toth[1,2], Barbara Sandor[2], Judit Papp[2,3], Miklos Rabai[2], Peter Kenyeres[2], Istvan Juricskay[2], Kalman Toth[2]**
[1]Department of Medical Imaging, University of Pecs, Medical School, Pecs, Hungary, [2]1st Department of Medicine,University of Pecs, Medical School, Pecs, Hungary, [3]Hungarian 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 Szabo[1], Adam Varga[1], Barbara Barath[1], Souleiman Ghanem[1], Orsolya Matolay[2], GyorgyTrencseny[3], Levente Kiss-Papai[5], Balazs Gasz[5], Lajos Daroczi[4], Norbert Nemeth[1]**
[1]Department of Operative Techniques and Surgical Research, University of Debrecen, Faculty of Medicine, Debrecen, Hungary, [2]Department of Pathology, Faculty of medicine, University of Debrecen, Debrecen, Hungary, [3]Division of Nuclear Medicine, Department of Medical Imaging, Faculty of medicine, University of Debrecen, Debrecen, Hungary, [4]Institute of Physics, Department of Solid State Physics, Faculty of Physics, University of Debrecen, Debrecen, Hungary, [5]Department 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 Fornal[1], Janusz Lekki[2], Jarosław Krolczyk[1], Barbara Wizner[1], Tomasz Grodzicki[1]**
[1]Jagiellonian University Medical College, Krakow, Poland, [2]Institute 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 Dabrowski[1], Aneta Teleglow[1], Anna Marchewka[1], Maria Fornal[2]**
[1]Academy of the Physical Education in Cracow, POLAND, [2]Collegium Medicum, Jagiellonian University, Krakow, Poland

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

***Joanna Fiedor[1], Mateusz Przetocki[1], Aleksander Siniarski[2,3], Grzegorz Gajos[2,3], Nika Spiridis[4], Kinga Freindl[4], Kvetoslava Burda[1]**
[1]AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Krakow, Poland, [2]Jagiellonian University Medical College, Krakow, Poland, [3]The John Paul II Hospital, Krakow, Poland, [4]Polish 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 Burda[1], Joanna Fiedor[1], Magdalena Peter[1], Mateusz Przetocki[1], Jaroslaw Kiecana[2,3], Aleksander Siniarski[2,3], Grzegorz Gajos[2,3], Nika Spiridis[4]**
[1]AGH-University of Science and Technology, Krakow, Poland, [2]The John Paul II Hospital, Krakow, Poland, [3]Jagiellonian University, Medical College, Krakow, Poland, [4]Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Krakow, Poland

S12

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 Darras[1], Anil Kumar Dasanna[2], Thomas John[1], Gerhard Gompper[2], Lars Kaestner[1], Dmitry A. Fedosov[2], Christian Wagner[1]**
[1]Experimental Physics, Saarland University, 66123 Saarbruecken, Germany, [2]Theoretical 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 Darras[1], Kevin Peikert[2,3], Antonia Rabe[1,4], François Yaya[1,5], Greta Simionato[1,6], Thomas John[1], Anil Kumar Dasanna[7], Semen Bavalyy[7], Jürgen Geisel[8], Andreas Hermann[2,3,9,10], Dmitry A. Fedosov[7], Adrian Danek[11], Christian Wagner[1,12], *Lars Kaestner[1,4]
[1]Experimental Physics, Saarland University, 66123 Saarbruecken, Germany, [2]Translational Neurodegeneration Section "Albrecht-Kossel", Department of Neurology, University Medical Center Rostock, University of Rostock, Rostock, Germany, [3]Neurodegenerative Diseases, Department of Neurology, Technische Universität Dresden, Dresden, Germany, [4]Theoretical Medicine and Biosciences, Saarland University, 66424 Homburg, Germany, [5]Laboratoire Interdisciplinaire de Physique, UMR 5588, 38402 Saint Martin d'Hères, France, [6]Institute for Clinical and Experimental Surgery, Saarland University, 66424 Homburg, Germany, [7]Institute of Biological Information Processing and Institute for Advanced Simulation, Forschungszentrum Jülich, 52425 Jülich, Germany, [8]Central Clinical Laboratory, Saarland University, 66424 Homburg, Germany, [9]DZNE, German Center for Neurodegenerative Diseases, Research Site Rostock/ Greifswald, Rostock, Germany, [10]Center for Transdisciplinary Neurosciences Rostock (CTNR), University Medical Center Rostock, University of Rostock, Rostock, Germany, [11]Neurologische Klinik und Poliklinik, Ludwig-Maximilians-Universität, 81366 Munich, Germany, [12]Physics 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 Wagner[1], Kisung Lee[5]**
[1]Experimental Physics, University of Saarland, Saarbrücken, Germany, [2]Laboratoire Interdisciplinaire de Physique (LIPhy), CNRS and University of Grenoble, Grenoble, France, [3]Biomacromolecular Systems and Processes (IBI-4), Forschungszentrum Jülich GmbH, Jülich, Germany, [4]Laboratory for Soft Matter and Biophysics, KU Leuven, Leuven, Belgium, [5]Center 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 Yedgar[1], Neta Goldschmjdt[2], Gregory Barshtein[1]**
[1]The Hebrew University Medical School, Jeruslaem, Israel, [2]Hadasah Hospital, Jerusalem, Israel

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 Behl[1], Andreas Lendlein[1,2,3]**

[1]Institute of Active Polymers, Helmholtz-Zentrum Hereon, Teltow, Germany, [2]Berlin-Brandenburg Center for Regenerative Therapies (BCRT), Berlin, Germany, [3]Institute 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 WAN[1], Jack Chun Hin CHEN[2], Qinru XIAO[2], Christy Wingtung WONG[1], Yi-Ping Megan HO[2], Roger D. KAMM[3], Sebastian BEYER[2], Anna Maria BLOCKI[1]

[1]Institute for Tissue Engineering and Regenerative Medicine, The Chinese University of Hong Kong, [2]Department of Biomedical Engineering, Faculty of Engineering, The Chinese University of Hong Kong, [3]Department 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 Berger[1], Juan Zhou[1], Melanie Kelly[2,1,4], Christian Lehmann[1,2,3,5]**

[1]Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University, [2]Department of Pharmacology, Dalhousie University, [3]Department of Microbiology & Immunology, Dalhousie University, [4]Department of Ophthalmology & Visual Sciences, Dalhousie University, [5]Department 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 Zieger[1], Geisen U[2], Brehm K[3], Trummer G[3], Berchtold-Herz M[3], Heilmann C[3,4], Schlagenhauf A[1,5], Kalbhenn J[6], Beyersdorf F[3]

[1]Department of Pediatrics and Adolescent Medicine, Division of Pediatric Hematology and Oncology, Medical Center – University of Freiburg, Faculty of Medicine, University of Freiburg, Germany, [2]Institute for Clinical Chemistry and Laboratory Medicine, University Medical Center Freiburg, Freiburg, Germany, [3]Department of Cardiovascular Surgery, University Heart Center Freiburg – Bad Krozingen, Freiburg, Germany, [4]Saxon University of Cooperative Education, Plauen, [5]Department of Pediatrics and Adolescent Medicine, Medical University of Graz, Graz, Austria, [6]Department 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 Oki[1], Hideki Yanagi[1], Masahiro Kamono[1], Saki Manabe[1], Akiko Taoda[1], Ayumi Tsuda[1], Satoshi Abe[1], Takako Kobayashi[1], Koichiro Asano[2], Yoshihide Nakagawa[1], Yasuhiro Kanatani[3],Hideki Ozawa[1], Shinya Goto[2]**

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

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

***Shinichi Goto[1,2,3], Shinya Goto[3]**

[1]Brigham and Women's Hospital, Harvard Medical School, [2]Keio University School of Medicine, [3]Tokai 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 Shin[1], Junsung Moon[2], Jimi Choi[3], Sin-Gon Kim[3], Kyu Jang Won[2]**
[1]Korea University, [2]Yeungnam University Hospital, [3]Korea 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 Lu[1], Celeste Kanne[2,3], Riley Reddington[1], Dalia Lezzar[1], Vivien Sheehan[2,3], *Sergey Shevkoplyas[1]
[1]Department of Biomedical Engineering, University of Houston, Houston, TX, USA, [2]Aflac Cancer and Blood Disorders Center, Children's Healthcare of Atlanta, Atlanta, GA, USA, [3]Department 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 Bertrand[7], Richard van Wijk[4], Vivien Sheehan[8], Eduard van Beers[5]**
[1]Laboratoire Interuniversitaire de Biologie de la Motricite (LIBM) EA7424, Team Vascular Biology and Red Blood Cell, Universite Claude Bernard Lyon 1, Universite de Lyon, France, [2]Laboratoire d'Excellence du Globule Rouge (Labex GR-Ex), PRES Sorbonne, Paris, France, [3]Laboratoire de Biochimie et de Biologie Moleculaire, Lyon, [4]Central Diagnostic Laboratory - Research, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands, [5]Van Creveldkliniek, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands, [6]Departement de Meedecine Interne, Hopital Edouard Herriot, Hospices Civils de Lyon, [7]Institut d'Hematologie et d'Oncologie Pediatrique, Hospices Civils de Lyon, Lyon, [8]Department 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 Yalcin[1], Ahmet Can Erten[2], Berfin Irmak Torun[3], Fatma Oz[3]**
[1]Koc University, School of Medicine, Koç University, Research Center for Translational Medicine (KUTTAM), Istanbul, Turkey, [2]Department of Electronics and Communication Engineering, Istanbul Technical University, Istanbul, Turkey, [3]Koç University, Graduate School of Biomedical Sciences and Engineering, Istanbul, Turkey

July 6

9:10 - 10:10

Rising Star Award Session - 2

Chair: **Edgar O'Rear, Tamas Alexy**

RSA2-1 Blood flow thrombosis simulation to understand complex phenomenon of thrombosis under blood flow condition.
***Shinichi Goto[1], Noriko Tamura[3], Masamitsu Nakayama[2], Shu Takagi[4], Shinya Goto[2]**
[1]Brigham and Women's Hospital, Harvard Medical School, [2]Tokai University School of Medicine, [3]Niigata University of Health and Welfare, [4]Graduate School of Engineering, The University of Tokyo

RSA2-2 Suspension rheology of red blood cells under oscillatory shear flow
***Naoki Takeishi[1], Marco E Rosti[2], Naoto Yokoyama[3], Shigeo Wada[1], Luca Brandt[4]**
[1]Osaka University, [2]OIST, [3]Tokyo Denki University, [4]KTH

10:20-11:20

Free Communication (Video Presentation 2)

11:30-12:30

Plenary Lecture for ISB

Chair: **Peter Butler**

Lessons from Red Blood Cell Mechanics to Endothelial Cell Mechanobiology
Kris N. Dahl
Carnegie Mellon University

13:50-14:50

Keynote Lecture 3

Chair: **Toshiaki Dobashi**

Coagulation of blood: a possible triggering mechanism of the intrinsic coagulation pathway, and assessment of anticoagulant effect of DOACs using a seesaw-type device
***Makoto Kaibara[1], Hiroshi Ujiie[2]**
[1]Past affiliation: RIKEN (The Inst. Phys. Chem. Res.), [2]Ujiie Neurosurgical & Medical Clinic

Keynote Lecture 4

Chair: **Nobuo Watanabe**

CFD analysis to optimize the design of rotary blood pumps

Masahiro Nishida
National Institute of Advanced Industrial Science and Technology

Keynote Lecture 5

Chair: **Toru Maruyama**

Dynamics of blood fluidity under the various pathologic conditions. The roles of endothelial anticoagulant activities and their pathophysiologic conditions

Ikuro Maruyama
Department of Systems Biology in Thromboregulation, Kagoshima University Graduate School of Medical and Dental Sciences

15:00-16:30

S16

SYMPOSIUM **S16: Hemorheological and metabolic properties of red blood cells**

Chairs: **Bjoern Neu, Olivera Korculanin**

S16-1 Competition between red blood cell aggregation and breakup: Depletion force due to filamentous viruses vs. shear flow

***Olivera Korculanin[1,2], Tatiana Kochetkova[1], Pavlik Minne Paul Lettinga[1,2]**
[1]Biomacromolecular Systems and Processes (IBI-4), Forschungszentrum Juelich GmbH, Germany, [2]Laboratory for Soft Matter and Biophysics, KU Leuven, Belgium

S16-2 Sphingosine-1-phosphate and Adenosine affects the oxygen dependence of erythrocyte metabolism

***Francesco Misiti**
Cassino and Lazio Meridionale University

S16-3 The role of macromolecular depletion on the adhesion of red blood cells with a reduced sialic acid content

***Bjoern Neu[1], Huimin Teo[2], Zhengwen Zhang[2]**
[1]Rhine-Waal University of Applied Sciences, [2]Nanyang Technological University

S16-4 The Mizar®: a novel, fully-automated aggregometer

***Lennart Kuck[1], Francesco A. Frappa[2], Michael J. Simmonds[1]**
[1]Biorheology Research Laboratory, Menzies Health Institute Queensland, Australia, [2]Alcor Scientific Inc., Rhode Island, USA

S17

SYMPOSIUM **S17: Microrheological responses of blood cells under normal and pathological conditions**

Chairs: **Alexei Muravyov, Nadia Antonova**

S17-1 Development of experimental microfluidic device and methodology for assessing microrheological properties of blood

***Nadia Mladenova Antonova[1], Khristo Khristov[2], Anika Svilenova Alexandrova[3], Alexei Vasilievich Muravyov[4]**
[1]Dept. Biomechanics, Institute of Mechanics at the Bulgarian Academy of Sciences, Sofia, Bulgaria, [2]Institute of Physical Chemistry at the Bulgarian Academy of Sciences, Sofia, Bulgaria, [3]Institute of Mechanics at the Bulgarian Academy of Sciences, Sofia, Bulgaria, [4]Yaroslavl State Pedagogical University Ushinskii, Yaroslavl, Russia

S17-2 Comparative study of the microrheological properties of the blood in patients with type 2 diabetes mellitus, using viscosimetry and microfluidic flow analysis

***Anika Svilenova Aleksandrova-Watanabe[1], Nadia Mladenova Antonova[1], Alexey Vasilievich Muravyov[2], Khristo Ivanov Khistov[3], Irena Vasileva Velcheva[4]**
[1]Dept. of Biomechanics, Institute of Mechanics, Bulgarian Academy of Sciences, Sofia, Bulgaria, [2]Dept. of Medical and Biological Foundations of Sports, Yaroslavl State Pedagogical University named after K. D. Ushinsky, Yaroslavl, Russia, [3]Dept. of Interfaces and Colloids, Institute of Physical Chemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria, [4]Clinic of Nervous Diseases, Uni Hospital, Panagyurishte, Bulgaria

S17-3 Microrheological responses of red blood cells (RBCs) to gasotransmitters in persons with different levels of oxygen supply to the body
***Alexei Vasilievich Muravyov[1], Pavel Valentinovich Mikhailov[1], Irina Alexandrovna Tikhomirova[1], Roman Sergeevich Ostroumov[1], Victor Vasilievich Zinchuk [2]**
[1]State pedagogical university, Yaroslavl, [2]State Medical University, Grodno, Belarus

S17-4 Effect of gasotransmitters (NO and H2S) on hemorheology and blood clotting
***Irina Alexandrovna Tikhomirova[1], Elena Petrovna Petrochenko[1], Yulia Viktorovna Malysheva[1], Alexei Vasiljevich Muravyov[1], Alexander Sergeevich Petrochenko[2]**
[1]Yaroslavl State Pedagogical University, [2]Yaroslavl State Medical University

S17-5 Forces of pair interaction of RBCs and their relation to aggregation parameters under normal and pathological conditions.
***Alexander V. Priezzhev[1], Andrei E. Lugovtsov[1], Alexey N. Semenov[1], Larissa I. Dyachuk[2], Petr B. Ermolinskiy[1]**
[1]Physics Department of Lomonosov Moscow State University, [2]Medical Research and Education Centre of Lomonosov Moscow State University

S17-6 Microrheological responses of RBCs after age (density) separation
***Petr Ermolinskiy[1], Andrei Lugovtsov[1], François Yaya[2,5], Lars Kaestner[2,3], Christian Wagner[2,4], Alexander Priezzhev[1]**
[1]Physics Department, Lomonosov Moscow State University, 119991 Moscow, Russia, [2]Experimental Physics, Saarland University, 66123 Saarbrücken, Germany, [3]Theoretical Medicine and Biosciences, Saarland University, 66123 Saarbrücken, Germany, [4]Physics and Materials Science Research Unit, University of Luxembourg, L-1511 Luxembourg, Luxembourg, [5]Laboratoire Interdisciplinaire de Physique, UMR 5588 CNRS and University Grenoble–Alpes, 38058 Grenoble, France

Free Communication (Live Presentation) **O1: Advance in CFD, biotissue and food science**

O1

Chairs: **Isamu Kaneda, Hiroshi Yamada, Masanori Nakamura**

O1-1 Effects of Mixed Starches from Different Origins on the Rheological Properties of Starch gels and Gomatofu
***Emiko Sato[1], Yuta Yokoyama[2]**
[1]University of Niigata Prefecture, [2]University of Tohto

O1-2 Comparisons of indices of low-stress stiffness and contents of elastin and collagen for human arteries with fibrous caps and aortic dissection
***Hiroshi Yamada[1], Subraya Krishna Bhat[2]**
[1]Kyushu Institute of Technology, [2]National Institute of Technology Karnataka

O1-3 Comparison of the passive mechanical property and structure of ventricles in aquatic, semiaquatic, and terrestrial Anura
***Megumi Ito, Shukei Sugita, Masanori Nakamura, Yoshihiro Ujihara**
Nagoya Institute of Technology

O1-4 Estimating CFD–based CT FFR using lattice Boltzmann method – 3D geometry auto segmentation and novel patient specific computation
***Hyeong Jun Lee, Young Woo Kim, Jun Hong Kim, Joon Sang Lee**
School of Mechanical Engineering, College of Engineering, Yonsei University

16:40-18:10

Canceled

SYMPOSIUM **S18: Multidisciplinary Rheology in Poliprofil Medicine**

S18

Chair: **Maka Mantskava, Nana Momtselidze**

S19

SYMPOSIUM **S19: Microcirculation disturbances, blood microrheological properties and functional states of leukocytes**

Chairs: **Nadia Mladenova Antonova**

S19-1 Disturbances in the skin temperature oscillations and blood rheological and electrical properties in patients with Diabetes mellitus type 2

***Nadia Mladenova Antonova[1], Vasilka Krumova Paskova[2], Irena Vasileva Velcheva[3], Sergey Yurievich Podtaev[4]**

[1]Dept. Biomechanics, Institute of Mechanics at the Bulgarian Academy of Sciences, Sofia, Bulgaria, [2]Institute of Mechanics at the Bulgarian Academy of Sciences, Sofia, Bulgaria, [3]Uni Hospital, Panagyurishte, Bulgaria, [4]Institute of Continuous Media Mechanics, RAS, Perm, Russia

S19-2 Functional states of PMN in pregnant women with hypertension assessed with chemiluminescent method - preliminary data

***B. Bechev[1], M. Magrisso[2], S. Stoeff[1], Sv. Jovtchev[1], S. Miteva[1], S. Alexandrov[1], J. Ivanov[1], M. Pencheva[3], D. Koleva[4], I. Buteva[4], M. Vretenarska[5], N. Nikolova[6], V. Iliev[6,7]**

[1]Dept Medical Physics and Biophysics and 3Dept Biology of Medical University Sofia, Bulgaria, [2]Omrad Electronics LTD, Beer Sheva, Israel, [4]OGW/MHAT "Nadezhda" Sofia, [5]2nd MHAT Sofia, Nephrology Ward, [6]MC Vitclinic, [7]Military Medical Academy of Sofia

S19-3 Participation of the polymorphonuclear leukocytes in initiation and evolvement of pathologies induced by SARS-Cov-2 virus

***B. Bechev[1], S. Stoeff[1], K. Kavaldzhieva[2]**

[1]Dept Medical Physics and Biophysics, [2]Dept Biology of Medical University Sofia, Bulgaria

S20

SYMPOSIUM **S20: Nanomechanical and nanorheological assessments of various diseases**

Chairs: **Malgorzata Lekka, Joanna Zemla**

S20-1 Search for efficient diagnosis and therapy of resistant BRAF mutated melanoma using biophysical methods

***Tomasz Kobiela[1], Anna Sobiepanek[1], Swamy Kasarla[1], Weronika Prorok[1], Tomasz Gambin[2]**

[1]Warsaw University of Technology, Faculty of Chemistry, [2]Warsaw University of Technology, Faculty of Electronics and Information Technology

S20-2 Rheological properties of biological materials

***Joanna Zemla[1], Claude Verdier[2], Malgorzata Lekka[1]**

[1]Institute of Nuclear Physics Polish Academy of Sciences, PL-31342 Krakow, Poland, [2]Laboratoire Interdisciplinaire de Physique, Université Grenoble Alpes, CNRS, Grenoble, F-38000, France

S20-3 Nanomechanical assessment of cancer cells and solid tumors as a mechanical biomarker

***Andreas Stylianou[1,2]**

[1]European University Cyprus, [2]University of Cyprus

16:40-18:30

Free Communication (ePoster)

19:20-20:00

ESCHM-ISCH-ISB Combined Business online Meeting

20:10-22:00

SYMPOSIUM **S21: Shear Stress and Red Cell Rheology**

Chairs: **Edgar O'Rear, Ozlem Yalcin**

S21-1 Cell age sensitivity of red cells to mechanical stresses and calcium load
Lennart Kuck[1], Jason N. Peart[2], Oliver Todd[1], *Michael J. Simmonds[1]
[1]Biorheology Research Laboratory, Menzies Health Institute, Griffith University Gold Coast, Queensland, Australia, [2]School of Medical Science, Griffith University Gold Coast, Queensland, Australia

S21-2 Senescence and Red Cell Rheology
***Edgar O'Rear[1], James Buerck[1], Phillip Coghill[2], Ahmed El Banayosy[3], Hendra Setiadi[3]**
[1]University of Oklahoma, [2]VADovations, Inc., [3]INTEGRIS Baptist Medical Center

S21-3 Asymmetrical erythrocyte morphology to detect sublethal damage
***Nobuo Watanabe[1,2], Antony P. McNamee[3], Jarod T. Horibin[3,4], John F. Fraser[5], Masataka Inoue[2], Masaya Hakozaki[2], Fukuta Matsuzawa[2], Michael J. Simmonds[3]**
[1]Biofluid Science and Engineering Laboratory, Dept. of Bio-Science and Engineering, College of Systems Engineering and Science, Shibaura Institute of Technology, Saitama, Japan, [2]Biofluid Science and Engineering Laboratory, Systems Engineering and Science, Graduate School of Engineering and Science, Shibaura Institute of Technology, Saitama, Japan, [3]Biorheology Research Laboratory, Menzies Health Institute Queensland, Griffith University, Gold Coast, Australia, [4]Perth Blood Institute, West Perth, Perth, Australia, [5]Critical Care Research Group, University of Queensland & The Prince Charles Hospital, Brisbane, Australia

S21-4 Effects of mechanical heart valves on circulating blood in patients with valvular heart diseases
***Toru Maruyama[1], Michinari Hieda[1], Aya Sato[2], Takehiko Fujino[2]**
[1]Kyushu University, [2]Institute of Rheological Function of Foods, Co. Ltd.

S21-5 A structured mechanical risk sensitivity assessment system using red cell deformability and fragmentation parameters
***Ozlem Yalcin[1,2], Elif Ugurel[2], Polat Goktas[1], Evrim Goksel[1,3], Neslihan Cilek[1,3], Dila Atar[1]**
[1]Koç University, School of Medicine, Istanbul, Turkey, [2]Koç University, Research Center for Translational Medicine (KUTTAM), Istanbul, Turkey, [3]Koç University, Graduate School of Biomedical Sciences and Engineering, Istanbul, Turkey

S21-6 Measurements of erythrocyte deformation in shear and extensional flows
***M Keith Sharp[1], Mohammad M Faghih[2]**
[1]University of Louisville, [2]US Food and Drug Administration

S21-7 In silico simulation of hemodynamics and blood cell mechanics inside human vasculature
***Senol Piskin[1], Aya Ahmed Faeek Elgebaly[2]**
[1]Department of Mechanical Engineering, College of Engineering, Istinye University, Istanbul, Turkey, [2]Department of Biomedical Engineering, Faculty of Electrical and Electronics Engineering, Yildiz Technical university, Istanbul, Turkey

20:30-22:00

SYMPOSIUM **S22: Microbiorheology from molecules to tissues**

Chairs: **Daisuke Mizuno, Kengo Nishi**

S22-1 Motion of molecular motors reflecting rheological properties in cells
***Takayuki Ariga**
Yamaguchi University

S22-2 Glassy cytoplasm driven by non-thermal forces
***Kenji Nishizawa[1,2], Daisuke Mizuno[3]**
[1]IBDM, [2]CNRS, [3]Department of Physics, Kyushu University

S22-3 Metabolism-Dependent Active Diffusion in Living Cells
***Yujiro Sugino[1], Kenji Nishizawa[2], Daisuke Mizuno[1]**
[1]Department of Physics, Kyushu University, [2]IBDM-CNRS

S22-4 Microrheology of concentrated emulsion as a model cytoplasm.
***Shono Inokuchi, Ryosuke Matsuoka, Daisuke Mizuno**
Kyushu University

S22-5 Non-equilibrium fluctuations in cells report on driving forces and organelle mechanics
***Kengo Nishi[1,2], Sufi Raja[1], An Pham[1], Fred C MacKintosh[3], Christoph F Schmidt[1]**
[1]Duke University, [2]UNC Chapel Hill, [3]Rice University

SYMPOSIUM **S23: Clinical studies using various assays for platelets and hemostasis**

Chairs: **Paul Gurbel, Young-Hoon Jeong**

S23-1 Global Thrombosis Test
***Diana Adrienne Gorog**
University of Hertfordshire & Imperial College, London

S23-2 Thromboelastography: Viscoelastic properties of clot formation and their clinical impact in ASCVD patients
***Young-Hoon Jeong**
Gyeongsang National University Changwon Hospital

S23-3 Clinical Trial with Microfluidic Platelet Function Assays(Anysis-200): Comparison with Turbidity-based Drug Response Assay(Verify-NOW
***Byoung Kwon Lee[1], Miney Cho[1], Sehyun Shin[2]**
[1]Cardiology, Department of Internal Medicine, Gangnam severance Hospital, Yonsei University, Seoul, Korea, [2]Department of Mechanical Engineering, Korea University, Seoul, Korea

S23-4 T-TAS 01: A Novel Flow-Based System for Hemostasis Monitoring
***Jeffrey Dahlen**
Fujimori Kogyo Co., Ltd.

July 7

9:00-10:30

SYMPOSIUM **S24: Cell mechanics and cell mechanobiology**

Chairs: **Toshiro Ohashi, Taiji Adachi, Susumu Kudo**

S24-1 Identification of leader cells in cell migration by filopodia using computer vision
***Baasansuren Otgon[1], Ganbat Danaa[2], Toshiro Ohashi[3]**
[1]Graduate School of Engineering, Hokkaido University, Japan, [2]Open Education Center, Mongolian University of Science and Technology, Mongolia, [3]Faculty of Engineering, Hokkaido University, Japan

S24-2 Intracellular tension of osteoblast in collagen gel elicits osteocyte alignment under uniaxially-fixed boundary condition
***Jeonghyun Kim[1], Keiichi Ishikawa[2], Junko Sunaga[2], Taiji Adachi[2]**
[1]Nagoya University, [2]Kyoto University

S24-3 Emulating endothelial dysfunction by mimicking the microenvironment of early atherosclerotic lesions within a microfluidic chip
***Bomi Gweon[1], Yujin Shin[2]**
[1]Sejong University, [2]Hanyang University

S24-4 Enhancement and Stabilization of Sprouting Angiogenesis by Curvature-Oriented Behaviors of Mesenchymal Stem Cells
***Takanori Sano[1], Jun-Ichi Kawabe[2], Yukiko T. Matsunaga[1]**
[1]Institute of Industrial Science, The University of Tokyo, [2]Asahikawa Medical University

S24-5 Mechanism driving hydrostatic pressure-induced endothelial tube formation
***Daisuke Yoshino**
Tokyo University of Agriculture and Technology

SYMPOSIUM **S25: Microparticle and cell behavior in confined fluid flows - 1**

Chairs: **Masako Sugihara-Seki, Naoki Takeishi, Ryoko Otomo**

S25-1 Numerical analysis of the inertial migration of the red blood cell in a channel
***Naoki Takeishi[1], Hiroshi Yamashita[1,2], Naoto Yokoyama[3], Seki Masako[1,2], Shigeo Wada[1]**
[1]Osaka University, [2]Kansai University, [3]Tokyo Denki University

S25-2 Droplet breakup limits in simple shear flows
***Mohamed Shoieb Abdelgawad, Marco Edoardo Rosti**
Okinawa Institute of Science and Technology

S25-3 Swelling and hemolytic behavior of human red blood cells in hypotonic fluid
***Ryoko Otomo, Ryuta Minami, Kiyoshi Bando**
Kansai University

S25-4 Spectral change of stress-responsive fluorescent molecule caused by the hydrodynamic stress field of microchannel flow
***Reiko Kuriyama[1], Waka Yamamoto[1], Hidetsugu Kitakado[2], Shohei Saito[2], Kazuya Tatsumi[1], Kazuyoshi Nakabe[1]**
[1]Department of Mechanical Engineering and Science, Kyoto University, [2]Graduate School of Science, Kyoto University

S25-5 Segregation in shear-thickening materials
***Alessandro Monti, Marco Edoardo Rosti**
Okinawa Institute of Science and Technology (OIST)

S26

SYMPOSIUM **S26: Contributing Role of Erythrocytes for Platelet Adhesion and Thrombus Formation**

Chairs: **Shinya Goto**

S26-1 Important Physical Regulatory Roles of Erythrocytes on Platelet Adhesion Under Blood Flow Conditions.
***Noriko Tamura[1,2], Kazuya Shimizu[3], Seiji Shiozaki[2], Kazuyasu Sugiyama[4], Masamitsu Nakayama[2], Shinichi Goto[2], Shu Takagi[3], Shinya Goto[2]**
[1]Department of Health and Nutrition, Niigata University of Health and Welfare, [2]Department of Medicine (Cardiology), Research Center for Metabolic Disease, Tokai University School of Medicine and Tokai University Graduate School of Medicine, [3]Graduate School of Engineering, The University of Tokyo, [4]Department of Mechanical Science and Bioengineering, Osaka University School of Engineering Science

S26-2 Physical interaction between platelet and erythrocytes plays important role for initial platelet adhesion mediated by the interaction of glycoprotein 1b with von Willebrand factor.
***Shinichi Goto[1,2,3], Noriko Tamura[4], Kazuya Shimizu[5], Masamitsu Nakayama[3], Shu Takagi[5], Shinya Goto[3]**
[1]Brigham and Women's Hospital, Harvard Medical School, [2]Keio University School of Medicine, [3]Tokai University School of Medicine, [4]Niigata University of Health and Welfare, [5]The University of Tokyo

S26-3 Water-Ethanol Separation with Tip Charged Carbon Nanotubes
***Yuui Ono, Eiji Yamamoto, Kenji Yasuoka**
Keio University

S26-4 Numerical Study on the Platelet Margination in a Capillary Vessel
Dongig Oh, *Shu Takagi
The University of Tokyo

10:40-12:10

S27

SYMPOSIUM **S27: Microparticle and cell behavior in confined fluid flows - 2**

Chairs: **Masako Sugihara-Seki, Naoki Takeishi, Ryoko Otomo**

S27-1 Inertial focusing of red blood cells suspended in blood plasma flowing through square tubes
***Masako Sugihara-Seki[1,2], Saori Tanaka[1]**
[1]Kansai University, [2]Osaka University

S27-2 Role of fluid dynamics in optical trapping
***Tetsuro Tsuji**
Kyoto University

S27-3 Deformable particle suspensions
***Marco Edoardo Rosti**
Okinawa Institute of Science and Technology

S27-4 On-chip manipulation for revealing novel aspects of red blood cell mechanics
***Hiroaki Ito**
Chiba University

S27-5 Measurement of near-wall microparticles motion under the influence of radiation pressure of evanescent field
***Miyu Inoue, Reiko Kuriyama, Kazuya Tatsumi, Kazuyoshi Nakabe**
Kyoto University

SYMPOSIUM **S28: Joint Symposium with Commons for Medicine and Engineering Japan: Application of High Performance Computer for Biorheology.**

Chairs: **Shinya Goto, Kazuo Tanishita**

S28-1 Protein disintegration as a possible mode of protein dissociation between GP1bα and VWF in blood flow condition: insights from steered molecular dynamic simulation.
***Shinichi Goto[1,2,3], Masamitsu Nakayama[2], Shu Takagi[4], Shinya Goto[2]**
[1]Brigham and Women's Hospital, Harvard Medical School, [2]Tokai University School of Medicine, [3]Keio University School of Medicine, [4]Graduate School of Engineering, The University of Tokyo

S28-2 Salt Bridge Formation Between A1 Domain of von Willebrand Factor and Platelet Glycoprotein (GP) Ibα by Molecular Dynamics Simulations
***Masamitsu Nakayama, Shinichi Goto, Shinya Goto**
Tokai University School of Medicine

S28-3 Finite element analysis of blood clots through visco-hyperelastic constitutive theories
***Koichiro Tashiro[1,2], Yasuhiro Shobayashi[2], Iku Ota[1], Atsushi Hotta[1]**
[1]Department of Mechanical Engineering, Keio University, [2]Biomedical Solutions Inc.

S28-4 Newly developed drug-eluting stent (DES) system for cardiovascular diseases: Hybrid nano-coating technology
***Terumitsu Hasebe[1,2], Shunto Maegawa[1,3], Kenta Bito[1,3], Yutaka Okamoto[3], Shunsuke Kamei[1], Shota Yamamoto[1,3], Kosuke Tomita[1], Satoshi Suda[1], Kazunobu Hashida[1], Tomohiro Matsumoto[1], Yoko Usami[4,1], Yasutaka Baba[4,1], Yutaka Imai[1], Atsushi Hotta[3]**
[1]Tokai University Hachioji Hospital, Tokai University School of Medicine, [2]Keio University Hospital Clinical & Translational Research Center, [3]Keio University Faculty of Science and Technology, [4]Saitama Medical University International Medical Center

12:10-13:10

Plenary Lecture in Tribute to Prof. Akira Kamiya

Chair: **Joji Ando**

Emerging roles of membrane lipids and mitochondria in endothelial cell mechanosensing
Kimiko Yamamoto
The University of Tokyo

14:00-15:00

Closing Plenary Lecture for ISB

Chair: **Peter Butler**

The mechanotransduction of cancer and blood cells exposed to circulatory levels of fluid shear stress
Michael R. King
Vanderbilt University

15:00-15:50

Closing Ceremony

On-demand Program

O2 Free Communication (Video presentation) **O2: Hemorheology in health and diseases-1**

O2-1 Effects of L-arginine on blood fluidity impaired after high-intensity exercise: an in vitro evaluation

***Haruchi Namba[1], Tatsushi Kimura[2], Hironobu Hamada[1], Kiyokazu Sekikawa[1], Hatsumi Ishio-Ueoka[1], Teruki Kajiwara[1], Yoshinobu M Sato[1], Fumiya Aizawa[1], Takamasa Yoshida[1], Naoto Kanda[1], Aoi Takagi[1]**

[1]Department of Physical Analysis and Therapeutic Sciences, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan, [2]Faculty of Early Childhood Education and Care, Ohkagakuen University, Aichi, Japan

O2-2 Hematological and hemorheological changes in a model of atherosclerotic disease in rabbits

***Bence Tanczos[1], Viktoria Somogyi[1], Mariann Bombicz[2], Bela Juhasz[2], Norbert Nemeth[1], Adam Deak[1]**

[1]Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary, [2]Department of Pharmacology and Pharmacotherapy, Faculty of Medicine, University of Debrecen, Hungary

O2-3 Examination of the hemorheological changes in a rat model of polycystic ovary syndrome

***Barbara Barath[1], Adam Varga[1], Adam Attila Matrai[1], Pathan Afrin Javed[1], Krisztina Deak-Pocsai[2], Norbert Nemeth[1], Adam Deak[1]**

[1]Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary, [2]Department of Physiology, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

O2-4 The hazard of PLGA nanoparticles on intima hyperplasia of vascular restenosis in ApoE-/- mice.

***Tieying Yin[1], Wen Shi[1], Atik Rohmana Maftuhatul Fuad[1], Yanhong Li[1], Yang Wang[1], Junyang Huang[1], Ruolin Du[1], Guixue Wang[1], Yazhou Wang[2]**

[1]Key Laboratory for Biorheological Science and Technology of Ministry of Education, State and Local Joint Engineering Laboratory for Vascular Implants, Bioengineering College of Chongqing University, [2]School of medicine, Chongqing University, Chongqing, 400030, China

O3 Free Communication (Video presentation) **O3: Hemorheology in health and diseases-2**

O3-1 Is leptin an significant regulator of erythrocyte rheology?

***Jean-Frederic Brun[1], Emmanuelle Varlet-Marie[2], Laurent Vachoud[3], Bénédicte Marion[2], Céline Roques[2], Eric Raynaud de Mauverger[1], Jacques Mercier[1]**

[1]PhyMedExp, CNRS UMR 9214, INSERM U1046, University of Montpellier, and Department of Clinical Physiology, [2]Institut des Biomolécules Max Mousseron (IBMM) UMR CNRS 5247, Université de Montpellier, Ecole Nationale Supé rieure de Chimie de Montpellier, France, [3]Laboratoire de Biophysique & Bio-Analyses, Faculté de Pharmacie, Université de Montpellier, France

O3-2 Which sub-compartments of fat mass and fat-free mass are related to blood viscosity factors?

Jean-Frederic Brun[1], Emmanuelle Varlet-Marie[2], Laurent Vachoud[3], Bénédicte Marion[2], Céline Roques[2], Eric Raynaud de Mauverger[1], Jacques Mercier[1]

[1]PhyMedExp, CNRS UMR 9214, INSERM U1046, University of Montpellier, and Department of Clinical Physiology, [2]Institut des Biomolécules Max Mousseron (IBMM) UMR CNRS 5247, Université de Montpellier, Ecole Nationale Supérieure de Chimie de Montpellier, France, [3]Laboratoire de Biophysique & Bio-Analyses, Faculté de Pharmacie, Université de Montpellier, France

O3-3 A link between storage-related sequence of nanoscale changes in RBC membranes and their biochemical and morphological properties

***Ewa Szczesny-Malysiak[1], Magdalena Kaczmarska[1], Katarzyna Bulat[1], Anna Zimna[1,2], Fatih Celal Alcicek[1], Jakub Dybas[1], Katarzyna Maria Marzec[1]**

[1]Jagiellonian Centre for Experimental Therapeutics, Jagiellonian University, Krakow, Poland, [2]Faculty of Pharmacy, Jagiellonian University Medical College, Krakow, Poland

O3-4 Investigation of effect of measurement time for transmitted light through blood on relationship between erythrocytes' sedimentation velocity and aggregation parameters

***Makoto Higuchi[1,2], Nobuo Watanabe[1]**

[1]Biofluid Science and Engineering Laboratory, Functional Control Systems, Graduate School of Engineering and Science, Shibaura Institute of Technology, Saitama, Japan, [2]Ogino Memorial Laboratory, Nihon Kohden Corporation, Saitama, Japan

Free Communication (Video presentation) **O4: Red cell deformability in human and mammalians**

O4-1 3-D analysis of the deformation of RBCs in a doublet while tuning the interaction

***Mehrnaz Babaki[1,2], Pavlik Lettinga[1,2]**

[1]Biomacromolecular Systems and Processes (IBI-4), Forschungszentrum Jülich GmbH, Jülich, Germany, [2]Laboratory for Soft Matter and Biophysics, KU Leuven, Leuven, Belgium

O4-2 Osmotic gradient ektacytometric parameters in human and seven mammalian species

***Adam Varga, Barbara Barath, Adam Attila Matrai, Viktoria Somogyi, Adam Deak, Norbert Nemeth**

Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

O4-3 Effect of heat stress on macro- and micro-rheological parameters in an experimental model

***Barbara Barath[1], Xenia Ozsvath[2], Viktoria Somogyi[1], Adam Varga[1], Laszlo Babinszky[3], Norbert Nemeth[1], Adam Deak[1]**

[1]Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary, [2]Department of Animal Husbandry, Institute of Animal Health, Biotechnology and Nature, Faculty of Agricultural and Food Sciences and Environmental Management, University of Debrecen, Debrecen, Hungary, [3]Non-independent Division of Animal Nutrition, Faculty of Agricultural and Food Sciences and Environmental Sciences, University of Debrecen, Debrecen, Hungary

O4-4 In vitro effects of heat-treatment on red blood cell micro-rheology in human and various vertebrate species

***Adam Attila Matrai[1], Gabor Varga[1], Bence Tanczos[1], Barbara Barath[1], Adam Varga[1], Laszlo Horvath[2], Zsuzsanna Bereczky[3], Adam Deak[1], Norbert Nemeth[1]**

[1]Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary, [2]Department of Pharmaceutical Surveillance and Economics, Faculty of Pharmacy, University of Debrecen, Debrecen, Hungary, [3]Division of Clinical Laboratory Science, Department of Laboratory Medicine, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

O4-5 Activation of Protein kinase A cascade increases deformability of sickle red blood cells

***Evrim Goksel[1,2], Philippe Connes[4,5,6], Camille Boisson[4,5,7], Céline Renoux[4,5,7], Alexandra Gauthier[4,5,8], Romain Fort[4,5,9], Elie Nader[4,5], Solène Poutrel[4,5,9], Ozlem Yalcin[1,2,3]**

[1]Research Center for Translational Medicine (KUTTAM), Koç University, Istanbul, Turkey, [2]Department of Physiology, Koc University School of Medicine, Istanbul, Turkey, [3]School of Medicine, Koç University, Istanbul, Turkey, [4]Laboratoire Interuniversitaire de Biologie de la Motricité (LIBM) EA7424, Equipe "Biologie Vasculaire et du Globule Rouge", UCBL1, Villeurbanne, France, [5]Laboratoire d'Excellence (Labex) GR-Ex, Paris, France, [6]Institut Universitaire de France, Paris, France, [7]Laboratoire de Biochimie et de Biologie Moléculaire, UF de Biochimie des Pathologies Érythrocytaires, Centre de Biologie et de Pathologie Est, Hospices Civils de Lyon, 69500 Bron, France., [8]Institut d'Hématologie et d'Oncologie Pédiatrique, Hospices Civils de Lyon, 69008 Lyon, France., [9]Département de Médecine Interne, Hôpital Edouard Herriot, Hospices Civils de Lyon, 69008 Lyon, France.

ePoster

P-1 *Impaired Deformability and Association with Density Distribution of Erythrocytes in Patients with Type 2 Diabetes Mellitus under Treatment*
***Toru Maruyama[1], Michinari Hieda[1], Takeshi Arita[2], Taku Yokoyama[1], Mitsuhiro Fukata[1], Takehiko Fujino[3], Koichi Akashi[1]**
[1]Kyushu University, [2]Fukuoka Wajiro Hospital , [3]BOOCS Clinic

P-2 *Prognostic Significance of Red Cell Distribution Width in Hospitalized Old Patients with Bacterial Infection*
***Toru Maruyama[1], Keitaro Nakashima[2], Eiichi Ohgami[2], Kazuhiko Katoh[2], Souichi Yoshitomi[2], Mine Harada[2]**
[1]Kyushu University, [2]Karatsu Higashimatsuura Medical Center

P-3 *Results of blood research relating to: rheology, morphology and biochemistry of blood - man living 50 days in extremely low temperatures*
***Aneta Teleglow[1], Anna Marchewka[1], Maria Fornal[2], Zbigniew Dąbrowski[1], Jakub Marchewka[1], Bartłomiej Ptaszek[1], Mateusz Mardyła[1], Dariusz Mucha[1], Łukasz Tota[1], Marcin Maciejczyk[1]**
[1]University of Physical Education, Krakow, Poland, [2]Jagiellonian University Medical College, Krakow, Poland

P-4 *Activation of K ATP channels is involved additively in NO-induced vasodilation*
***Noriko Iida**
ex-Department of Neurophysiology, Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan

P-5 *Stiffening of the human keratinocytes in response to the cyclic temperature changes*
***Yan Nie[1,2], Weiwei Wang[1], Xun Xu[1], Nan Ma[1,3], Andreas Lendlein[1,2,3]**
[1]Institute of Active Polymers and Berlin-Brandenburg Centre for Regenerative Therapies, Helmholtz-Zentrum Hereon, [2]Institute for Biochemistry and Biology, University of Potsdam, [3]Institute of Chemistry and Biochemistry, Free University of Berlin

P-6 *Extensional Rheology of Semidilute Entangled Solutions of Polyelectrolytes in a Cross-Slot Microchannel*
***Arisa Yokokoji[1], Tadashi Inoue[1], Atsushi Matsumoto[2], Simon J Haward[3], Amy Q Shen[3]**
[1]Department of Macromolecular Science, Graduate school of Science, Osaka University, Toyonaka, Osaka 560-0043, Japan, [2]Department of Applied Chemistry and Biotechnology, University of Fukui, Fukui-shi, Fukui 910-8507, Japan, [3]Micro/Bio/Nanofluidics Unit, Okinawa Institute of Science and Technology Graduate University (OIST), Onna, Okinawa 904-0495, Japan

P-7 *Entrapment Dynamics of Micro-particles in a Pulmonary Capillary Network (PCN) Microfluidic Device*
***Merav Belenkovich, Josué Sznitman, Netanel Korin**
Faculty of Biomedical Engineering, Technion- Israel Institute of Technology

P-8 *Time-series snapshots of the entire circumferential wall of arteries under pulsatile pressure condition captured by grating-based phase-contrast CT*
***Takeshi Matsumoto[1], Hiroyuki Tachibana[2], Masato Hoshino[3]**
[1]Tokushima University, [2]Kawasaki University of Medical Welfare, [3]SPring-8

P-9 *Hemorheology and blood coagulation in COVID-19 patients*
***Irina Alexandrovna Tikhomirova[1], Mihail Mihajlovich Ryabov[2]**
[1]Yaroslavl State Pedagogical University, [2]Yaroslavl State Medical University

P-10 *Extended Fibrinolysis Times In Vitro of Clots Containing Erythrocyte Microparticles Formed by Supraphysiologic Shear Stress*
***Kylie Foster[1,2], James Buerck[1], Edgar O'Rear[1]**
[1]University of Oklahoma, [2]VADovations Inc.

P-11 *[withdraw] Mechanical Analysis of VCAM-1/VLA-4 Interaction and Elasticity of Jurkat Cells Revealed by Atomic Force Microscopy*
Leqian Zhao, Xingliang Fu, Guixue Wang, *Zhiyi Ye
Key Laboratory of Biorheological Science and Technology (Chongqing University), Ministry of Education, State and Local Joint Engineering Laboratory for Vascular Implants, College of Bioengineering

P-12 *[withdraw] Oxidative Stress-Mediated Extracellular Vesicles Uptake by Endothelial Cells under Low and Oscillatory Shear Stress*
Guixue Wang, *Hui Ju Qiu
Bioengineering College of Chongqing University

P-13 *[withdraw] Shear-stress-responsive genes in endothelial cells based on the zebrafish sequencing data*
Guixue Wang, *Hui Ju Qiu
Bioengineering College of Chongqing University

P-14 *Change in oxygen transport by erythocytes treated with TiO2 nanoparticles and functionalized carbon nanotubes*
Magdalena Peter

P-15 *Sourcing of blood-derived angiogenic cells (BDACs) in xeno- and serum-free condition*

***Christy Wong Wing Tung[1], Dorsa Dehghanbaniani[1], Shuai Deng[1,2], Hon Fai Chan[1,2,3], Anna Blocki[1,2,3]**

[1]Institute for Tissue Engineering and Regenerative, Chinese University of Hong Kong, Hong Kong SAR, [2]School of Biomedical Sciences, Faculty of Medicine, Chinese University of Hong Kong, Hong Kong SAR, [3]Department of Orthopaedics and Traumatology, Faculty of Medicine, Chinese University of Hong Kong, Hong Kong SAR

P-16 *Hemodynamic characteristics of fully polymer bioresorbable scaffolds of rats in different ages*

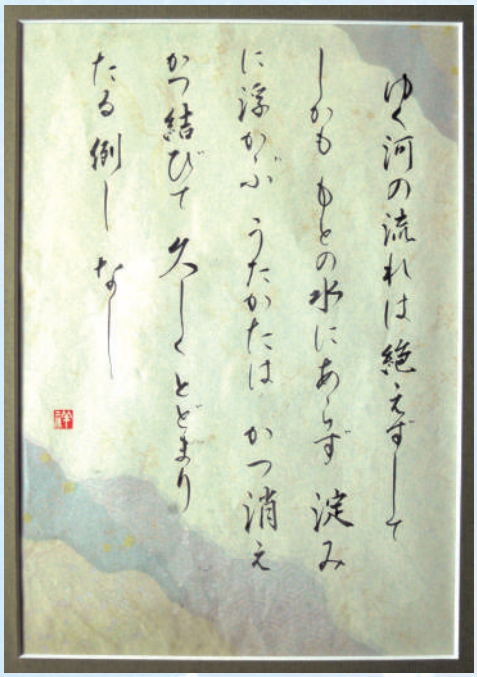
***Tieying Yin[1], Wen Shi[1], Atik Rohmana Maftuhatul Fuad[1], Yanhong Li[1], Yang Wang[1], Junyang Huang[1], Ruolin Du[1], Guixue Wang[1], Yazhou Wang[2]**

[1]Key Laboratory for Biorheological Science and Technology of Ministry of Education, State and Local Joint Engineering Laboratory for Vascular Implants, Bioengineering College of Chongqing University, [2]School of medicine, Chongqing University, Chongqing, 400030, China

Original text of Hojoki

方丈記（冒頭部分より）

ゆく河の流れは絶えずして、
しかも、もとの水にあらず。
淀みに浮かぶうたかたは
かつ消えかつ結びて、
久しくとどまりたるためしなし。
世の中にある人と
栖とまたかくのごとし。



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鴨 長明（1155－1216）

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