

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)



Friendly People, Friendly City
UNIVERSAL FUKUOKA CITY

Organized by



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

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

Daniel 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}

¹Menzies Health Institute Queensland, ²Griffith 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

¹Department of Operative Techniques and Surgical Research, University of Debrecen, Faculty of Medicine, Debrecen, Hungary,

²Department of Anatomy, Histology and Embryology, Faculty of Medicine, University of Debrecen, Debrecen Hungary, ³Department 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 ultrasound 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
¹Zhongshan Hospital, Fudan University, ²Department 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 Rennert¹, **Jirka Grosse**², **Ernst Michael Jung**¹
¹University Hospital Regensburg, Department of Radiology, Regensburg, Germany, ²University 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
¹German Sport University Cologne, Institute of Cardiovascular Research and Sports Medicine, ²Griffith 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 Fort⁵, Emeric Stauffer^{1,2,6}, Nathalie Lemonne⁷, Yohann Garnier^{3,4}, Sarah Skinner^{1,2}, Maryse Etienne-Julan⁷, Mélanie Robert^{1,2,8}, Alexandra Gauthier^{1,2,9}, Giovanna Cannas⁵, Sophie Antoine-Jonville³, Benoit Tressières¹⁰, Marie-Dominique Hardy-Dessources^{3,4}, Yves Bertrand⁹, Céline Renoux^{1,2,11}, Philippe Joly^{1,2,11}, Marijke Grau¹², Philippe Connes^{1,2}**

¹Laboratoire Interuniversitaire de Biologie de la Motricité (LIBM) EA7424, Team «Vascular Biology and Red Blood Cell», Université Claude Bernard Lyon, Université de Lyon, Lyon, France, ²Laboratoire d'Excellence du Globule Rouge (Labex GR-Ex), PRES Sorbonne, Paris, France, ³Université des Antilles, Pointe-à-Pitre, France, ⁴Université de Paris, Paris, France, ⁵Département de Médecine Interne, Hôpital Edouard Herriot, Hospices Civils de Lyon, Lyon, France, ⁶Centre de Médecine du Sommeil et des Maladies Respiratoires, Hospices Civils de Lyon, Hôpital de la Croix Rousse, Lyon, France, ⁷Unité Transversale de la Drépanocytose, Hôpital de Pointe-à-Pitre, Hôpital Ricou, Guadeloupe, France, ⁸Erytech Pharma, Lyon, France, ⁹Institut d'Hématologie et d'Oncologie Pédiatrique, Hospices Civils de Lyon, Lyon, France, ¹⁰Centre Investigation Clinique Antilles Guyane, 1424 Inserm, Academic Hospital of Pointe-à-Pitre, Guadeloupe, France, ¹¹Laboratoire 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, ¹²Molecular and Cellular Sport Medicine, Deutsche Sporthochschule Köln, Köln, Germany

S3-5 Phosphoproteomic Changes in Red Blood Cell Membrane by Adenylyl 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}**

¹Koc University School of Medicine Department of Physiology, ²Koc 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

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

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** 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 Nguyen¹, Hiromichi Obara²**
¹Department 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
- S6-4** Quantitative evaluation of flowing blood with the electrical parameters based on Hanai mixture equation
***Yusuke Nakajima¹, Daisuke Kawashima¹, Ryubu Shoji¹, Katsuhiko Matsuura², Masahiro Takei¹**
¹Division of Mechanical Engineering, Chiba University, ²Department 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 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 - 1Chair: **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 capillaryChairs: **Andreas Passos, Efstathios Kaliviotis**

S7

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 Pasiyas Pasiyas, 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 superhydrophilic channel*****Efstathios Kaliviotis¹, Dimitris Pasiyas¹, 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

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 Kisak¹, 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

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 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

S10

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

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**¹1st Department of Medicine, University of Pecs, Medical School, Pecs, Hungary**S10-4 Maternal hemorheological changes in early-onset preeclampsia*****Beata Csizar^{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, ²Szentagotthai 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

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, Gregory Barshtein¹**

¹The Hebrew University Medical School, Jeruslaem, Israel, ²Hadasah Hospital, Jerusalem, Israel

20:10-21:40

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

S13

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**

S14

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}, Schlagenhaut 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 Shevkoplyas¹

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

***Özlem Yalçın¹, Ahmet Can Erten², Berfin Irmak Torun³, Fatma Öz³**

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

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 Goto¹, Noriko Tamura³, Masamitsu Nakayama², Shu Takagi⁴, Shinya Goto²**

¹Brigham and Women's Hospital, Harvard Medical School, ²Tokai University School of Medicine, ³Niigata University of Health and Welfare, ⁴Graduate School of Engineering, The University of Tokyo

RSA2-2 Suspension rheology of red blood cells under oscillatory shear flow

***Naoki Takeishi¹, Marco E Rosti², Naoto Yokoyama³, Shigeo Wada¹, Luca Brandt⁴**

¹Osaka University, ²OIST, ³Tokyo Denki University, ⁴KTH

RSA2

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 Kaibara¹, Hiroshi Ujiie²**

¹Past affiliation: RIKEN (The Inst. Phys. Chem. Res.), ²Ujiie 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 pathophysiological 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 Kochetkova¹, Pavlik Minne Paul Lettinga^{1,2}**

¹Biomacromolecular Systems and Processes (IBI-4), Forschungszentrum Juelich GmbH, Germany, ²Laboratory 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 Neu¹, Huimin Teo², Zhengwen Zhang²**

¹Rhine-Waal University of Applied Sciences, ²Nanyang Technological University

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

***Lennart Kuck¹, Francesco A. Frappa², Michael J. Simmonds¹**

¹Biorheology Research Laboratory, Menzies Health Institute Queensland, Australia, ²Alcor 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 Antonova¹, Khristo Khristov², Anika Svilenova Alexandrova³, Alexei Vasilievich Muravyov⁴**

¹Dept. Biomechanics, Institute of Mechanics at the Bulgarian Academy of Sciences, Sofia, Bulgaria, ²Institute of Physical Chemistry at the Bulgarian Academy of Sciences, Sofia, Bulgaria, ³Institute of Mechanics at the Bulgarian Academy of Sciences, Sofia, Bulgaria, ⁴Yaroslavl 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-Watanabe¹, Nadia Mladenova Antonova¹, Alexey Vasilievich Muravyov², Khristo Ivanov Khristov³, Irena Vasileva Velcheva⁴**

¹Dept. of Biomechanics, Institute of Mechanics, Bulgarian Academy of Sciences, Sofia, Bulgaria, ²Dept. of Medical and Biological Foundations of Sports, Yaroslavl State Pedagogical University named after K. D. Ushinsky, Yaroslavl, Russia, ³Dept. of Interfaces and Colloids, Institute of Physical Chemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria, ⁴Clinic 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 Muravyov¹, Pavel Valentinovich Mikhailov¹, Irina Alexandrovna Tikhomirova¹, Roman Sergeevich Ostroumov¹, Victor Vasilievich Zinchuk²**
¹State pedagogical university, Yaroslavl, ²State Medical University, Grodno, Belarus
- S17-4** Effect of gasotransmitters (NO and H₂S) on hemorheology and blood clotting
***Irina Alexandrovna Tikhomirova¹, Elena Petrovna Petrochenko¹, Yulia Viktorovna Malysheva¹, Alexei Vasiljevich Muravyov¹, Alexander Sergeevich Petrochenko²**
¹Yaroslavl State Pedagogical University, ²Yaroslavl State Medical University
- S17-5** Forces of pair interaction of RBCs and their relation to aggregation parameters under normal and pathological conditions.
***Alexander V. Priezzhev¹, Andrei E. Lugovtsov¹, Alexey N. Semenov¹, Larissa I. Dyachuk², Petr B. Ermolinskiy¹**
¹Physics Department of Lomonosov Moscow State University, ²Medical Research and Education Centre of Lomonosov Moscow State University
- S17-6** Microrheological responses of RBCs after age (density) separation
***Petr Ermolinskiy¹, Andrei Lugovtsov¹, François Yaya^{2,5}, Lars Kaestner^{2,3}, Christian Wagner^{2,4}, Alexander Priezzhev¹**
¹Physics Department, Lomonosov Moscow State University, 119991 Moscow, Russia, ²Experimental Physics, Saarland University, 66123 Saarbrücken, Germany, ³Theoretical Medicine and Biosciences, Saarland University, 66123 Saarbrücken, Germany, ⁴Physics and Materials Science Research Unit, University of Luxembourg, L-1511 Luxembourg, Luxembourg, ⁵Laboratoire 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

Chairs: **Isamu Kaneda, Hiroshi Yamada**

O1

- O1-1** Effects of Mixed Starches from Different Origins on the Rheological Properties of Starch gels and Gomatofu
***Emiko Sato¹, Yuta Yokoyama²**
¹University of Niigata Prefecture, ²University 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 Yamada¹, Subraya Krishna Bhat²**
¹Kyushu Institute of Technology, ²National 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

Chair: **Maka Mantskava, Nana Momtselidze**

S18

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 Antonova¹, Vasilka Krumova Paskova², Irena Vasileva Velcheva³, Sergey Yurievich Podtaev⁴**
¹Dept. Biomechanics, Institute of Mechanics at the Bulgarian Academy of Sciences, Sofia, Bulgaria, ²Institute of Mechanics at the Bulgarian Academy of Sciences, Sofia, Bulgaria, ³Uni Hospital, Panagyurishte, Bulgaria, ⁴Institute 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. Bechev¹, M. Magrisso², S. Stoeff¹, Sv. Jovtchev¹, S. Miteva¹, S. Alexandrov¹, J. Ivanov¹, M. Pencheva³, D. Koleva⁴, I. Buteva⁴, M. Vretenarska⁵, N. Nikolova⁶, V. Iliev^{6,7}**
¹Dept Medical Physics and Biophysics and ³Dept Biology of Medical University Sofia, Bulgaria, ²Omrad Electronics LTD, Beer Sheva, Israel, ⁴OGW/MHAT "Nadezhda" Sofia, ⁵2nd MHAT Sofia, Nephrology Ward, ⁶MC Vitclinic, ⁷Military Medical Academy of Sofia
- S19-3** Participation of the polymorphonuclear leukocytes in initiation and evolvement of pathologies induced by SARS-Cov-2 virus
***B. Bechev¹, S. Stoeff¹, K. Kavaldzhieva²**
¹Dept Medical Physics and Biophysics, ²Dept Biology of Medical University Sofia, Bulgaria

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 Kobiela¹, Anna Sobiepanek¹, Swamy Kasarla¹, Weronika Prorok¹, Tomasz Gambin²**
¹Warsaw University of Technology, Faculty of Chemistry, ²Warsaw University of Technology, Faculty of Electronics and Information Technology
- S20-2** Rheological properties of biological materials
***Joanna Zemla¹, Claude Verdier², Malgorzata Lekka¹**
¹Institute of Nuclear Physics Polish Academy of Sciences, PL-31342 Krakow, Poland, ²Laboratoire 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}**
¹European University Cyprus, ²University 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 RheologyChairs: **Edgar O'Rear, Ozlem Yalcin**

S21

S21-1 Cell age sensitivity of red cells to mechanical stresses and calcium load**Lennart Kuck¹, Jason N. Peart², Oliver Todd¹, *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**S21-2 Senescence and Red Cell Rheology*****Edgar O'Rear¹, James Buerck¹, Phillip Coghill², Ahmed El Banayosy³, Hendra Setiadi³**¹University of Oklahoma, ²VADovations, Inc., ³INTEGRIS Baptist Medical Center**S21-3 Asymmetrical erythrocyte morphology to detect sublethal damage*****Nobuo Watanabe^{1,2}, Antony P. McNamee³, Jarod T. Horibin^{3,4}, John F. Fraser⁵, Masataka Inoue², Masaya Hakozaiki², Fukuta Matsuzawa², Michael J. Simmonds³**¹Biofluid Science and Engineering Laboratory, Dept. of Bio-Science and Engineering, College of Systems Engineering and Science, Shibaura Institute of Technology, Saitama, Japan, ²Biofluid Science and Engineering Laboratory, Systems Engineering and Science, Graduate School of Engineering and Science, Shibaura Institute of Technology, Saitama, Japan, ³Biorheology Research Laboratory, Menzies Health Institute Queensland, Griffith University, Gold Coast, Australia, ⁴Perth Blood Institute, West Perth, Perth, Australia, ⁵Critical 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 Maruyama¹, Michinari Hieda¹, Aya Sato², Takehiko Fujino²**¹Kyushu University, ²Institute 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 Ugurel², Polat Goktas¹, Evrim Goksel^{1,3}, Neslihan Cilek^{1,3}, Dila Atar¹**¹Koç University, School of Medicine, Istanbul, Turkey, ²Koç University, Research Center for Translational Medicine (KUTTAM), Istanbul, Turkey, ³Koç University, Graduate School of Biomedical Sciences and Engineering, Istanbul, Turkey**S21-6 Measurements of erythrocyte deformation in shear and extensional flows*****M Keith Sharp¹, Mohammad M Faghih²**¹University of Louisville, ²US Food and Drug Administration**S21-7 In silico simulation of hemodynamics and blood cell mechanics inside human vasculature*****Senol Piskin¹, Aya Ahmed Faek Elgebaly²**¹Department of Mechanical Engineering, College of Engineering, Istinye University, Istanbul, Turkey, ²Department of Biomedical Engineering, Faculty of Electrical and Electronics Engineering, Yildiz Technical university, Istanbul, Turkey

20:30-22:00

SYMPOSIUM S22: Microbiorheology from molecules to tissuesChairs: **Daisuke Mizuno, Kengo Nishi**

S22

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 Mizuno³**¹IBDM, ²CNRS, ³Department of Physics, Kyushu University**S22-3 Metabolism-Dependent Active Diffusion in Living Cells*****Yujiro Sugino¹, Kenji Nishizawa², Daisuke Mizuno¹**¹Department of Physics, Kyushu University, ²IBDM-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 Raja¹, An Pham¹, Fred C MacKintosh³, Christoph F Schmidt¹**
¹Duke University, ²UNC Chapel Hill, ³Rice University

S23

| 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 Lee¹, Miney Cho¹, Sehyun Shin²**
¹Cardiology, Department of Internal Medicine, Gangnam severance Hospital, Yonsei University, Seoul, Korea, ²Department 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 mechanobiologyChairs: **Toshiro Ohashi, Taiji Adachi, Susumu Kudo**

S24

S24-1 Identification of leader cells in cell migration by filopodia using computer vision***Baasansuren Otgon¹, Ganbat Danaa², Toshiro Ohashi³**¹Graduate School of Engineering, Hokkaido University, Japan, ²Open Education Center, Mongolian University of Science and Technology, Mongolia, ³Faculty of Engineering, Hokkaido University, Japan**S24-2 Intracellular tension of osteoblast in collagen gel elicits osteocyte alignment under uniaxially-fixed boundary condition*****Jeonghyun Kim¹, Keiichi Ishikawa², Junko Sunaga², Taiji Adachi²**¹Nagoya University, ²Kyoto University**S24-3 Emulating endothelial dysfunction by mimicking the microenvironment of early atherosclerotic lesions within a microfluidic chip*****Bomi Gweon¹, Yujin Shin²**¹Sejong University, ²Hanyang University**S24-4 Enhancement and Stabilization of Sprouting Angiogenesis by Curvature-Oriented Behaviors of Mesenchymal Stem Cells*****Takanori Sano¹, Jun-Ichi Kawabe², Yukiko T. Matsunaga¹**¹Institute of Industrial Science, The University of Tokyo, ²Asahikawa 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 - 1Chairs: **Masako Sugihara-Seki, Naoki Takeishi, Ryoko Otomo**

S25

S25-1 Numerical analysis of the inertial migration of the red blood cell in a channel***Naoki Takeishi¹, Hiroshi Yamashita^{1,2}, Naoto Yokoyama³, Seki Masako^{1,2}, Shigeo Wada¹**¹Osaka University, ²Kansai University, ³Tokyo 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 Kuriyama¹, Waka Yamamoto¹, Hidetsugu Kitakado², Shohei Saito², Kazuya Tatsumi¹, Kazuyoshi Nakabe¹**¹Department of Mechanical Engineering and Science, Kyoto University, ²Graduate School of Science, Kyoto University**S25-5 Segregation in shear-thickening materials*****Alessandro Monti, Marco Edoardo Rosti**

Okinawa Institute of Science and Technology (OIST)

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 Shimizu³, Seiji Shiozaki², Kazuyasu Sugiyama⁴, Masamitsu Nakayama², Shinichi Goto², Shu Takagi³, Shinya Goto²**

¹Department of Health and Nutrition, Niigata University of Health and Welfare, ²Department of Medicine (Cardiology), Research Center for Metabolic Disease, Tokai University School of Medicine and Tokai University Graduate School of Medicine, ³Graduate School of Engineering, The University of Tokyo, ⁴Department 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 Tamura⁴, Kazuya Shimizu⁵, Masamitsu Nakayama³, Shu Takagi⁵, Shinya Goto³**

¹Brigham and Women's Hospital, Harvard Medical School, ²Keio University School of Medicine, ³Tokai University School of Medicine, ⁴Niigata University of Health and Welfare, ⁵The 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

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 Tanaka¹**

¹Kansai University, ²Osaka 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 GP1ba and VWF in blood flow condition: insights from steered molecular dynamic simulation.
***Shinichi Goto^{1,2,3}, Masamitsu Nakayama², Shu Takagi⁴, Shinya Goto²**
¹Brigham and Women's Hospital, Harvard Medical School, ²Tokai University School of Medicine, ³Keio University School of Medicine, ⁴Graduate School of Engineering, The University of Tokyo
- S28-2** Salt Bridge Formation Between A1 Domain of von Willebrand Factor and Platelet Glycoprotein (GP) Iba 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 Shobayashi², Iku Ota¹, Atsushi Hotta¹**
¹Department of Mechanical Engineering, Keio University, ²Biomedical 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 Okamoto³, Shunsuke Kamei¹, Shota Yamamoto^{1,3}, Kosuke Tomita¹, Satoshi Suda¹, Kazunobu Hashida¹, Tomohiro Matsumoto¹, Yoko Usami^{4,1}, Yasutaka Baba^{4,1}, Yutaka Imai¹, Atsushi Hotta³**
¹Tokai University Hachioji Hospital, Tokai University School of Medicine, ²Keio University Hospital Clinical & Translational Research Center, ³Keio University Faculty of Science and Technology, ⁴Saitama 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 Namba¹, Tatsushi Kimura², Hironobu Hamada¹, Kiyokazu Sekikawa¹, Hatsumi Ishio-Ueoka¹, Teruki Kajiwara¹, Yoshinobu M Sato¹, Fumiya Aizawa¹, Takamasa Yoshida¹, Naoto Kanda¹, Aoi Takagi¹**

¹Department of Physical Analysis and Therapeutic Sciences, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan, ²Faculty 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 Tanczos¹, Viktoria Somogyi¹, Mariann Bombicz², Bela Juhasz², Norbert Nemeth¹, Adam Deak¹**

¹Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary,

²Department 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 Barath¹, Adam Varga¹, Adam Attila Matrai¹, Pathan Afrin Javed¹, Krisztina Deak-Pocsai², Norbert Nemeth¹, Adam Deak¹**

¹Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary,

²Department 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 Yin¹, Wen Shi¹, Atik Rohmana Maftuhatul Fuad¹, Yanhong Li¹, Yang Wang¹, Junyang Huang¹, Ruolin Du¹, Guixue Wang¹, Yazhou Wang²**

¹Key Laboratory for Biorheological Science and Technology of Ministry of Education, State and Local Joint Engineering Laboratory for Vascular Implants, Bioengineering College of Chongqing University, ²School 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 Brun¹, Emmanuelle Varlet-Marie², Laurent Vachoud³, Bénédicte Marion², Céline Roques², Eric Raynaud de Mauverger¹, Jacques Mercier¹**

¹PhyMedExp, CNRS UMR 9214, INSERM U1046, University of Montpellier, and Department of Clinical Physiology, ²Institut des Biomolécules Max Mousseron (IBMM) UMR CNRS 5247, Université de Montpellier, Ecole Nationale Supérieure de Chimie de Montpellier, France, ³Laboratoire 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 Brun¹, Emmanuelle Varlet-Marie², Laurent Vachoud³, Bénédicte Marion², Céline Roques², Eric Raynaud de Mauverger¹, Jacques Mercier¹

¹PhyMedExp, CNRS UMR 9214, INSERM U1046, University of Montpellier, and Department of Clinical Physiology, ²Institut des Biomolécules Max Mousseron (IBMM) UMR CNRS 5247, Université de Montpellier, Ecole Nationale Supérieure de Chimie de Montpellier, France, ³Laboratoire 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-Malysiak¹, Magdalena Kaczmarek¹, Katarzyna Bulat¹, Anna Zimna^{1,2}, Fatih Celal Alcicek¹, Jakub Dybas¹, Katarzyna Maria Marzec¹**

¹Jagiellonian Centre for Experimental Therapeutics, Jagiellonian University, Krakow, Poland, ²Faculty 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 Watanabe¹**

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

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

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}**

¹Biomacromolecular Systems and Processes (IBI-4), Forschungszentrum Jülich GmbH, Jülich, Germany, ²Laboratory 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 Barath¹, Xenia Ozsvath², Viktoria Somogyi¹, Adam Varga¹, Laszlo Babinszky³, Norbert Nemeth¹, Adam Deak¹**

¹Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary,

²Department of Animal Husbandry, Institute of Animal Health, Biotechnology and Nature, Faculty of Agricultural and Food Sciences and Environmental Management, University of Debrecen, Debrecen, Hungary, ³Non-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 Matrai¹, Gabor Varga¹, Bence Tanczos¹, Barbara Barath¹, Adam Varga¹, Laszlo Horvath², Zsuzsanna Bereczky³, Adam Deak¹, Norbert Nemeth¹**

¹Department of Operative Techniques and Surgical Research, Faculty of Medicine, University of Debrecen, Debrecen, Hungary,

²Department of Pharmaceutical Surveillance and Economics, Faculty of Pharmacy, University of Debrecen, Debrecen, Hungary, ³Division 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

***Evrin 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}**

¹Research Center for Translational Medicine (KUTTAM), Koç University, Istanbul, Turkey, ²Department of Physiology, Koc University School of Medicine, Istanbul, Turkey, ³School of Medicine, Koç University, Istanbul, Turkey, ⁴Laboratoire Interuniversitaire de Biologie de la Motricité (LIBM) EA7424, Equipe "Biologie Vasculaire et du Globule Rouge", UCBL1, Villeurbanne, France, ⁵Laboratoire d'Excellence (Labex) GR-Ex, Paris, France, ⁶Institut Universitaire de France, Paris, France, ⁷Laboratoire 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, ⁸Institut d'Hématologie et d'Oncologie Pédiatrique, Hospices Civils de Lyon, 69008 Lyon, France, ⁹Département 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 Maruyama¹, Michinari Hieda¹, Takeshi Arita², Taku Yokoyama¹, Mitsuhiro Fukata¹, Takehiko Fujino³, Koichi Akashi¹**
¹Kyushu University, ²Fukuoka Wajiro Hospital, ³BOOCS Clinic
- P-2** *Prognostic Significance of Red Cell Distribution Width in Hospitalized Old Patients with Bacterial Infection*
***Toru Maruyama¹, Keitaro Nakashima², Eiichi Ohgami², Kazuhiko Katoh², Souichi Yoshitomi², Mine Harada²**
¹Kyushu University, ²Karatsu 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 Teleglow¹, Anna Marchewka¹, Maria Fornal², Zbigniew Dąbrowski¹, Jakub Marchewka¹, Bartłomiej Ptaszek¹, Mateusz Mardyla¹, Dariusz Mucha¹, Łukasz Tota¹, Marcin Maciejczyk¹**
¹University of Physical Education, Krakow, Poland, ²Jagiellonian 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 Wang¹, Xun Xu¹, Nan Ma^{1,3}, Andreas Lendlein^{1,2,3}**
¹Institute of Active Polymers and Berlin-Brandenburg Centre for Regenerative Therapies, Helmholtz-Zentrum Hereon, ²Institute for Biochemistry and Biology, University of Potsdam, ³Institute of Chemistry and Biochemistry, Free University of Berlin
- P-6** *Extensional Rheology of Semidilute Entangled Solutions of Polyelectrolytes in a Cross-Slot Microchannel*
***Arisa Yokokoji¹, Tadashi Inoue¹, Atsushi Matsumoto², Simon J Haward³, Amy Q Shen³**
¹Department of Macromolecular Science, Graduate school of Science, Osaka University, Toyonaka, Osaka 560-0043, Japan, ²Department of Applied Chemistry and Biotechnology, University of Fukui, Fukui-shi, Fukui 910-8507, Japan, ³Micro/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 Matsumoto¹, Hiroyuki Tachibana², Masato Hoshino³**
¹Tokushima University, ²Kawasaki University of Medical Welfare, ³Spring-8
- P-9** *Hemorheology and blood coagulation in COVID-19 patients*
***Irina Alexandrovna Tikhomirova¹, Mihail Mihajlovich Ryabov²**
¹Yaroslavl State Pedagogical University, ²Yaroslavl 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 Buerck¹, Edgar O'Rear¹**
¹University of Oklahoma, ²VADovations 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 erythrocytes 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 Tung¹, Dorsa Dehghanbaniani¹, Shuai Deng^{1,2}, Hon Fai Chan^{1,2,3}, Anna Blocki^{1,2,3}**

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

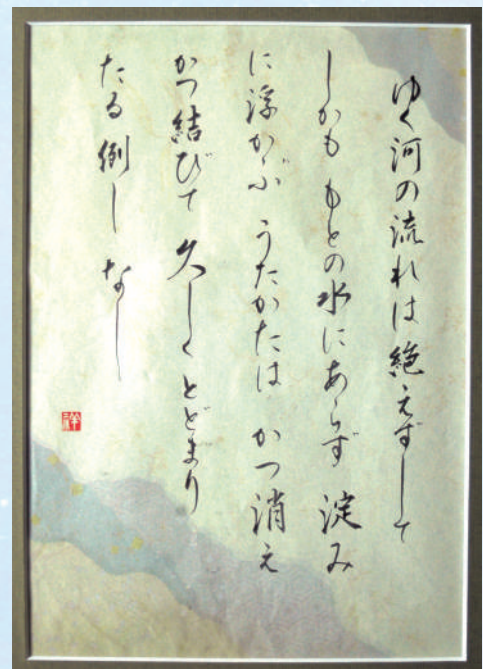
***Tieying Yin¹, Wen Shi¹, Atik Rohmana Maftuhatul Fuad¹, Yanhong Li¹, Yang Wang¹, Junyang Huang¹, Ruolin Du¹, Guixue Wang¹, Yazhou Wang²**

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



(<https://www.bing.com/images/search>)

鴨長明 (1155-1216)



The 2nd Joint Meeting of
ESCHM-ISCH-ISB 2021

<http://www.congre.co.jp/eschm-isch-isb2021/>

