MCS since 1954

The Microcirculatory Society Newsletter

Greetings!

These are stimulating times for our Society! The World Congress of Microcirculation in Kyoto offered an excellent opportunity for MCS members to interact with international microcirculation experts, learn about exciting science, and familiarize ourselves with a very rich culture. The organizing committee served as wonderful hosts, making this a memorable meeting. MCS held a membership meeting during the World Congress (see photo). The members critically reviewed recent trends in membership numbers, finances, abstract submissions to the annual meeting and manuscript submissions to the journal. The members discussed a variety of strategies to improve these trends and achieve specific objective 5-year goals. (Details of this strategic planning initiative will be provided in a separate upcoming message to the membership). I am very optimistic of the future of the Society!

MCS is actively making plans for the annual meeting at EB 2016 (see page 2); I hope to see you in San Diego! Based on feedback from the membership survey conducted after the last meeting, MCS Council plans to have the poster discussion session/reception on Saturday evening be our primary social event (i.e., MCS does not plan to have a separate lunch or dinner at the meeting); I encourage you to participate in this poster discussion/ reception. Please remember to submit your posters to the MCS topic categories numbered 1040-1054, and to indicate your membership in MCS during registration, in addition to your other Society memberships. The meeting will highlight early stage investigators, in our poster discussion session as well as in our hybrid symposia. I am delighted that our MCS Trainee Committee continues to make great progress and the MCS social media sites are thriving (see page 9). Finally, I encourage all MCS members to follow Council's lead and help incentivize colleagues to join (and/or re-join) our Society.

Rolando Rumbaut
MCS President 2015-2016

In this issue . . . .

MCS ANNUAL MEETING
AT EXPERIMENTAL BIOLOGY 2016

APRIL 2-6, 2016

SAN DIEGO CONVENTION CENTER

PRELIMINARY SCHEDULE

SESSIONS ON APRIL 2

PRESIDENT'S SYMPOSIUM: BLOOD CELL-MICROVESSEL INTERACTIONS
Chair: Rolando Rumbaut,
Baylor College of Medicine

SIGNAL INTEGRATION AND MICROCIRCULATORY BLOOD FLOW CONTROL
Chair: Dwayne Jackson,
University of Western Ontario

ADVANCES IN MICROVASCULAR PERMEABILITY/GLYCOCALYX
Chair: Jerome Breslin,
University of South Florida

SPECIAL EVENTS

RECEPTION & POSTER DISCUSSION
Saturday, April 2

LANDIS AWARD
DR. STEVEN SEGAL
University of Missouri

Sunday, April 3

MICROCIRCULATORY SOCIETY MEMBERSHIP BUSINESS MEETING
Sunday, April 3

GABOR KALEY LECTURE*
DR. SUSSAN NOURSHARGH
Barts and The London
School of Medicine

Tuesday, April 5

**Held in conjunction with the American Physiological Society*

Abstract Submission Deadline: Thursday, November 5, 2015

List of MCS Topic Categories available at: http://www.microcirc.info/AnnMtg2016.html

Experimental Biology 2016

Submit your abstract to the MCS Topic Categories

1040-APS Angiogenesis/microvascular remodeling/injury & repair
1041-APS Atherosclerosis/thrombosis/platelets
1042-APS Inflammation/leukocyte-endothelium interactions
1043-APS Instrumentation, methodology, and experimental models
1044-APS Ischemia-reperfusion/free radical biology
1045-APS Lymphatic and venular function
1046-APS Microvascular cell signaling pathways
1047-APS Microvascular development and aging
1048-APS Microvascular flow regulation/oxygen delivery/networks
1049-APS Microvascular mechanics/hemodynamics/rheology
1050-APS Microvascular pathophysiology-pharmacology, therapeutics and translational aspects
1051-APS Pericytes and Stem Cells
1052-APS Permeability/fluid & solute exchange/glycocalyx
1053-APS Tissue-microvessel interactions/extracellular matrix
1054-APS Vasomotor control: endothelium/smooth muscle/nerves

Deadline is November 5, 2015

http://submissions.mirasmart.com/EB2016/Splash.aspx

Meetings

10th World Congress in Kyoto
Reflections from MCS Members

"The world congress meeting was a wonderful experience! I find myself always challenged to make sense of the cellular dynamic interactions across systems during microvascular remodeling. Without a doubt I most valued connecting with new friends and the inspiration of ideas for my research focused on the identification of specific cellular dynamics involved in growing new blood vessels by learning about leukocyte recruitment during injury, the role of platelets involved in leukocyte trafficking, and the glycocalyx. From angiogenesis to inflammation, the scope of research reminded me of our society's long history, fundamental impacts, and potential for the future. I consider the success of a meeting to be judged by how feel with you leave it. And I left Kyoto, feeling more invigorated to make my next discovery. I look forward to seeing everyone again at EB in the spring." – **Lee Murfee, PhD (Associate Professor, Tulane University, Department of Biomedical Engineering)**

"The 10th World Congress had something for everyone — from cell to system, from movies to modeling, from classic prep to the newest technology, along with thought-provoking plenary lectures. Our gracious Japanese hosts reminded us of the "ships" that guide and carry us in our work: that despite the hardSHIP of the current funding environment, we can count on the friendSHIP of our comrades in the Microcirculatory Society, the leaderSHIP of our members in driving scientific knowledge and the importance of the scholarSHIP we generate in our labs. Congratulations to Roy Curry and Neil Granger on awards recognizing their dedicated careers to microcirculation and good luck to all of the young investigators just launching their work!" - **Cynthia Meininger, PhD (Professor, Texas A&M Health Science Center, Department of Medical Physiology)**

"I felt Kyoto was a wonderful setting for the World Congress. The organizers and Japan Microcirculation Society were perfect hosts, and assembled a broad array of stimulating symposia and talks. I really enjoyed every day." - **Mark Olfert, PhD (Associate Professor, West Virginia University School of Medicine, Division of Exercise Physiology)**

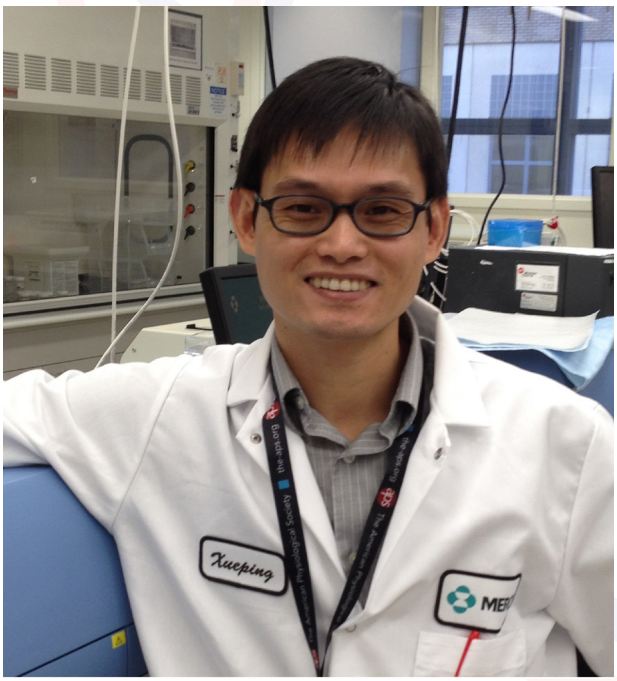
"I love attending the World Congress meetings because it gathers the best microcirculationists from around the globe and reaffirms the fact that while we may be spatially separated, we are all trying to understand the same complex vascular bed. The highlight of the meeting for me was the opening plenary session by Paul Kubes of the University of Calgary, who demonstrated some remarkable time-lapse imaging of microcirculatory infections. Honestly, it was the type of talk that makes you excited to be a vascular scientist." - **Amanda LeBlanc, PhD (Assistant Professor, University of Louisville, Department of Physiology)**

Featured Young Investigators: Recent Studies in *Microcirculation* *

from Volume 22 Issue 7 (pages 518-527)

Sex Difference in Coronary Endothelial Dysfunction in Apolipoprotein E Knockout Mouse: Role of NO and A2A Adenosine Receptor

Featuring: ***Xueping Zhou****, Bunyen Teng and S. J. Mustafa,* ***West Virginia University***



Sex plays an important role in the pathophysiology of cardiovascular diseases. While women are believed to be protected against cardiovascular diseases, partially due to the effect of estrogen, increasing clinical data reveal a higher mortality and cardiovascular event in female vs. male patients with ischemic heart disease. The mechanisms involved in the sex-related difference in cardiovascular events, particularly in those with coronary artery diseases (CAD) remains poorly understood. Our recent study (Microcirculation, 22: 518-527), using murine ApoE KO model of atherosclerosis, demonstrated an interesting finding that female ApoE KO mice presented a more severely impaired NO-dependent coronary vasodilation compared with male. Additionally, a functional up-regulation of A2A AR serves as an important mechanism to compensate the coronary endothelial dysfunction, resulting in a less comprised cardiac perfusion during ischemia in both sexes. However, while this compensatory mechanism is sufficient to maintain normal coronary ischemic vasodilation in males, the same mechanism fails to rescue the more severely impaired cardiac perfusion in females. This difference may explain the clinical evidence that female patients with ischemic heart disease, though found with less atherosclerosis in coronary vasculature, tend to have a higher mortality rate and cardiovascular events. Therefore, an improvement of cardiac perfusion by rescuing the impaired NO-dependent coronary vasodilation, predominantly in the microvasculature, should be an important therapeutic strategy in female patients with CAD. More importantly, the findings of this study highlight considerations that should be taken in experimental design and data interpretation regarding sex-related difference in the pathophysiology cardiovascular diseases.

**Note: Featured Articles by Young Investigators will appear in each MCS Newsletter and will be chosen from recent publications in* Microcirculation *our Official Journal. If you have a recent publication in* Microcirculation, *that includes young investigators as authors, and would like your study to be considered for this Featured Article, then send your study and reference to MCS Secretary, W. Lee Murfee, at secretary@microcirc.org*

From the Laboratories of MCS Members: Recent Studies in *Microcirculation*

Cerebral Cortical Microvascular Rarefaction in Metabolic Syndrome is Dependent on Insulin Resistance and Loss of Nitric Oxide Bioavailability

from Volume 22 Issue 7 (pages 435-445)

Featuring: Paul D. Chantler, Carl D. Shrader, Lawrence E. Tabone, Alexandre C. d'Audiffret, Khumara Huseynova, Steven D. Brooks, Kayla W. Branyan, Kristin A. Grogg and Jefferson C. Frisbee - West Virginia University

Not only is metabolic syndrome associated with increased cardiovascular disease events and mortality, but it is an established risk factor for cognitive decline, dementia, and stroke. In our study, we proposed that the damaging effects of metabolic syndrome on cerebral vascular integrity are, in part, dependent on the progressive decline in cortical microvessel density, thereby limiting cerebrovascular reserve capacity and compromising mass transport and exchange both prior to and following ischemic events.

In the obese Zucker rat model of the metabolic syndrome, mechanistically divergent treatments against the constituent pathologies (e.g., hypertension, impaired glycemic control, etc.) were able to not only lower risk the appropriate risk factors, but were also able to blunt the severity of rarefaction if they had the additional pleiotropic effect of improving oxidant stress/inflammatory status and chronic nitric oxide bioavailability. Interestingly, while anti-hypertensive treatments improved outcomes, treatments targeted at chronically improving glycemic control and pro-oxidant status (metformin and rosiglitazone) were superior at blunting the loss in cerebral cortical microvessel density. Speculatively, chronic maintenance of glycemic control may be an effective strategy to confer vascular protection, and aggressively pursued in individuals presenting with early warning signs of metabolic syndrome.

Modeling Perfusion Dynamics in the Skin During Iontophoresis of Vasoactive Drugs Using Single-Pulse and Multiple-Pulse Protocols

from Volume 22 Issue 7 (pages 446-453)

Featuring: Fredrik Iredahl, Veeranjaneyulu Sadda, Liam J. Ward, Johannes Hackethal, Simon Farnebo, Erik Tesselaar and Folke Sjöberg - Linköping University

Transdermal iontophoresis of vasoactive drugs has become a common experimental technique to study microvascular function in vivo. The technique somewhat resembles in vitro dose-response experiments, since drugs can be delivered into the skin in increasing doses. There are, however, a number of factors that complicate the interpretation of microvascular drug responses during iontophoresis. These are related to the complexity of the living tissue, in particular the presence of intact vasculature, blood flow, and circulating vasoactive substances.

In our current work, we are trying to unravel some of this complexity. Specifically, we intend to understand how local drug kinetics affect blood flow responses when drugs are delivered either by a single delivery, or by multiple pulses separated by current-free intervals.

Our ultimate goal is to use this knowledge to get more insight in the underlying mechanisms governing the microvascular responses to vasoactive drugs in the skin and to develop a model that more closely can examine drug effects on the microvasculature in humans *in vivo*.

Journal News

Microcirculation

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Original Articles

Invited Review

Call for Award Applications

The Awards Committee of the Microcirculatory Society is now accepting nominations and applications for the following awards:

Travel Award for an Outstanding Young Investigator

This award is presented to a young investigator from the United States or Canada to be used toward visits to laboratories outside of North America. Applicants must be within 12 years of completing their PhD or first MD residency. Applications should include (1) an itinerary including laboratories to be visited, (2) a letter describing the benefits of the award to the applicant's career and advancement of microcirculatory research, and (3) a current CV. Additional letters of support are encouraged. The awardee will receive a certificate and $5000 toward travel expenses associated with the trip. Applicants must be MCS members in good standing. Click here for additional info.

Microcirculatory Award for Excellence in Lymphatic Research

This award recognizes meritorious research in the area of lymph, lymphatics or the interstitium and is presented annually to a young investigator within 10 years of completing their PhD or MD. Applications should include (1) a letter describing the applicant's research activities, (2) a manuscript suitable for publication in Microcirculation and (3) a current CV. The awardee will receive a certificate and $750 at the annual meeting. Click here for more information.

August Krogh Young Investigator Award

This award is presented to encourage excellence in microcirculatory research by new, young investigators. Applicants must be graduate students or young investigators within 3 years of completing their PhD or first MD residency. Applications should include (1) a letter of nomination from a regular member of the Society, (2) a manuscript suitable for publication in Microcirculation and (3) a current CV. Additional letters of support are encouraged. The awardee will receive a certificate and $1000 at the annual meeting. Click here for more information.

John R. Pappenheimer Postdoctoral Travel Awards

These awards are presented to young investigators to encourage their participation in the annual meeting of the Microcirculatory Society (part of the EB2016 Meeting in San Diego). Applicants must be within five years of completing a PhD or first MD residency and have submitted a first author abstract to one of the Microcirculatory Society sessions at Experimental Biology 2016. Applicant must be a member of the Society. Applications should include (1) a copy of the submitted abstract and (2) a letter of support from their mentor. The awardee will receive a certificate and $750 at the annual meeting. Previous recipients are eligible to reapply. Click here to complete the application form.

Benjamin Zweifach Graduate Student Travel Awards

These awards are given annually to exceptional young scientists-in-training to encourage their participation in the annual meeting of the Microcirculatory Society (part of the EB2016 Meeting in San Diego). Applicants must have submitted a first author abstract to one of the Microcirculatory Society sessions at Experimental Biology 2016. Applicant must be a student member of the Society. Applications should include (1) a copy of submitted abstract and (2) a letter of support from their supervisor. The awardee will receive a certificate and $750 at the annual Awards Luncheon. Previous recipients are eligible to reapply. Click here to complete the application form.

Additional descriptions and details are available on the Society web page, go to *http://microcirc.org* and select Awards in the main menu. Follow the instructions for each award and complete the appropriate forms (Zweifach Student and Pappenheimer Postdoc Awards only). Additional materials should be sent to the Awards Committee Chair at *awards@microcirc.org*

Mathew Boegehold, Ph.D.
Chair, Awards Committee

Deadline for receipt of completed applications and nominations for all awards is December 2, 2015.

Society Business

Call for Nominations for Officers 2016-2017

MCS is currently seeking nominations for President-elect, Treasurer and Councilor. At the last Membership Business Meeting, the members voted to change the term of President from one year to two years. Therefore, someone elected to President-elect will serve one year as President-elect, two years as President and one year as Immediate Past President. The position of Treasurer is a 2.25 year term, so that there is overlap with the new Treasurer. Councilors serve three-year terms.

To nominate a colleague, please complete the form on our web site (http://microcirc.org) - since only members in good standing can make nominations, you must be logged in. Once logged in, you will see a "Council" menu item at the right, under that menu is the Nomination Form. Complete the form and submit it.

The Nominating Committee, chaired by Cynthia Meininger, will review the submissions those with the most votes will be invited to run for office. More details can be found on the web page.

Thank you for participating in the affairs of the society.

Current MCS Officers & Executive Council, 2015-2016

Title	Name	Term ends	Email
President	Rolando Rumbaut	2016	President@microcirc.org
President-elect	William Chilian	2016	PresidentElect@microcirc.org
Past-President	Mary (Molly) D. Frame	2016	PastPresident@microcirc.org
Secretary	W. Lee Murfee	2017	Secretary@microcirc.org
Treasurer	Shayn Peirce-Cottler	2016	Treasurer@microcirc.org
Councilor	Anatoliy A. Gashev	2016	gashev@tamu.edu
Councilor	Dwayne N. Jackson	2016	dwayne.jackson@schulich.uwo.ca
Councilor	Jerry Breslin	2017	jbreslin@health.usf.edu
Councilor	Kim Dora	2017	kim.dora@pharm.ox.ac.uk
Councilor	Mariappan Muthuchamy	2018	marim@tamu.edu
Councilor	Karen Stokes	2018	kstoke@lsuhsc.edu

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Calendar

Upcoming Meetings

Vascular Biology 2015
Hyannis, MA – October 18-22, 2015

AHA Scientific Sessions
Orlando, FL - November 7-11, 2015

19th International Vascular Biology Meeting
Boston, MA - October 30-November 3, 2016

American Heart Association
(See schedule of conference and deadlines)

American Physiological Society
(See schedule of conferences and deadlines)

FASEB Research Conferences
(See schedule of conferences and deadlines)

Gordon Research Conferences
(See schedule of conferences and deadlines)