



The Microcirculatory Society

NEWSLETTER

Greetings (and not Farewell)!



Dr. Molly Frame passes the Presidential Gavel to Dr. Rolando Rumbaut at the 2015 MCS Business Meeting.

Experimental Biology 2015 in Boston The MCS footprint at EB shifted a bit this year to create the feel of a smaller meeting. Key features were the three theme-based symposia on Saturday [that included both

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the *March of the Penguins, and scenes from Frozen*], and the addition of a Poster Discussion on Sunday evening to highlight our Young Investigators. The Landis Award given by Professor Dai Fukumura, and the Joint APS/MCS Kaley Lecture given by Professor Mark Nelson were equally outstanding. I look forward to EB in San Diego next spring.

Changes for MCS Over the past year, MCS has hired an Executive Director, created a new Web Site, assisted more than two dozen Young Investigators with travel money to attend workshops and meetings, and pledged support for the World Congress for Microcirculation in Kyoto this September. We have sought ways to save money by changing our online dues paying vendor and sought ways to spend money on our graduate students and postdoctoral fellows. However, the MCS leadership cannot do this alone – we are you, and you are us.

Changes yet to come for MCS To continue and secure our solvency as a non-profit society dedicated to the education of science specific to the microcirculation, it is essential that we all focus on our greatest resource – our membership. Our members bring their great science to our meetings and their energy and ideas to our society. It is essential for each to recognize that only with each member as an individual is our society strong. I look forward to the changes that will continue over the next year, under the watchful eye of our new President Rolando Rumbaut.

Respectfully,
Molly Frame
MCS Past President

(See page 3 for Dr. Rumbaut's message)

Visit us at microcirc.org

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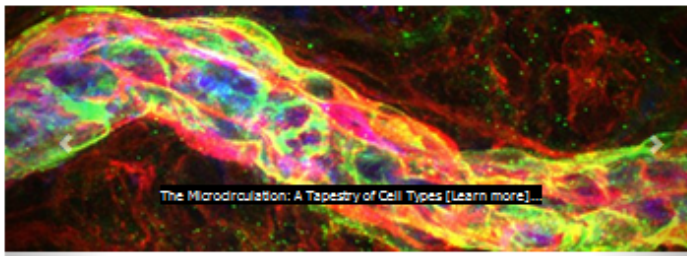


The Microcirculatory Society

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Welcome, Guest | [Sign In](#)

Encouraging the exchange and dissemination of information on the microcirculation



The Microcirculation: A Tapestry of Cell Types [\[Learn more\]](#)

Featured Members



Kwangseok Hong



Kerri-Ann Norton



Evandro Neves

Upcoming Events

10th World Congress for Microcirculation
September 25-27, 2015
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News and Announcements

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Welcome New Members

Natascha Alves
University of South Florida

Eric Schmidt
University of Colorado Denver

Ranjay Pradhan
University of Michigan

Nathan Tykocki
University of Vermont



Official Journal of the
Microcirculatory Society
Subscription included with membership

Journal News

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President's Message

It is a privilege and honor to serve as MCS President and to try to help build upon the enhancements to our Society implemented under the great leadership of our outgoing President, Molly Frame. I am delighted to work closely with Molly, our President-Elect, Bill Chilian, MCS Executive Director, Council, and Committees in building upon these enhancements.

We need your help! Please share your thoughts about the 2015 Annual meeting; tell

us what you liked and/or what changes you suggest. I encourage you to complete our [online survey of only four questions](#). Similarly, we welcome your suggestions on how to improve the MCS website and the Society in general.

Please email me directly at president@microcirc.org. I look forward to hearing from you!

Best regards,
Rolando E. Rumbaut
MCS President

MCS Annual Meeting Reflections

As a doctoral student in 2005 I was honored to receive the Benjamin Zweifach Student Award, and 10 years later, now a Tulane University faculty member, I was excited to see two of my graduate students awarded with the same honor. While the student awards were a definite highlight, I do believe that much of my enthusiasm in attending this year's meeting was the venue – Boston, a city I grew to love as part of my undergraduate experience (oh, and yes the snow). I was a touch nostalgic this year, and it added to my sentiment that our society is special and that I was lucky to be a part of it. I particularly enjoyed the themed sessions focused on oxygen/blood flow, inflammation and signaling. I thought the common cellular mechanisms across the seemingly different areas of microvascular research emphasized the value of bringing together our different perspectives and a big strength of the MCS moving forward. These connections were also highlighted for me by overlaps in the Landis Award lecture

given by Dr. Dai Fukumura focused on tumor angiogenesis and the Kaley Award lecture presented by Dr. Mark Nelson on neurovascular coupling. Indeed, the MCS 2015 meeting was again a success. And my reflection on this year's meeting would be remiss without mentioning the new poster discussion/reception. Interacting with the trainees and just feeling the energy of the hundred plus researchers

in the room was a great reminder of what I have heard the MCS used to be and what I have come to learn is the reason the MCS is a such an ideal fit for my laboratory's work. See everyone at the 10th World Congress for Microcirculation in September or San Diego next year.



Poster Discussion Leaders: Jonathan Song, Fong Lam, Anjelica Gonzalez and Lee Murfee

- Lee Murfee (MCS Secretary, Tulane University)

This year's Experimental Biology meeting was largely enhanced by the multiple symposia contributed by the Microcirculatory Society. Among the many highlights at this year's meeting, I appreciated the opportunity to hear research presented by experts who ranged from highly esteemed faculty to gradu-

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ate students early in their careers. As a first year member, I was amazed at the well-integrated presentation of topics across the field of microcirculatory research. I came away from the meeting motivated to increase my involvement with the Microcirculatory Society and encourage my students and colleagues to do so as well.

- Anjelica Gonzales (MCS Member, Yale University)

The MCS experience at Experimental Biology is always a good one and 2015 was no excep-

tion. Two key advantages that MCS brings are really good input on my research as well as networking opportunities. The fresh eyes, honest opinions, and guidance from professionals in this field (and I must mention the new MCS poster session) are always appreciated and make my work that much more competitive. I look forward to the next MCS meeting.

- Josh Butcher (MCS Member, University of Virginia)



Scenes from the Poster Discussion



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Outgoing President, Molly Frame, presents the 2015 Landis Award to Dr. Dai Fukumura of Harvard Medical School. Dr. Fukumura's presentation was entitled, "Targeting tumor microvasculature and microenvironment."



Dr. Fukumura with his mentor, Dr. Rakesh Jain.



Dr. Walter Cromer received the Excellence in Lymphatic Research Award at the Awards Banquet.



Dr. Hariette Kaley presents a plaque to Dr. Mark T. Nelson commemorating his Kaley Lecture. From left: Merry Lindsey, APS Cardiovascular Section Chair, Dr. Nelson, Dr. Kaley, Dr. Frame and Dr. Rumbaut.



George Em Karniadakis, Brown University, received *Microcirculation's* Wiederhielm Award



Mary Dickinson, Baylor College of Medicine, received *Microcirculation's* 2015 Gerritsen Award

10TH WORLD CONGRESS FOR MICROCIRCULATION

KYOTO, JAPAN
SEPTEMBER 25-27, 2015

Abstract Submission Deadline Extended to April 30

<http://www.congre.co.jp/wcmic2015/html/submission/submission.html>

<http://www.congre.co.jp/wcmic2015/index.html>

MCS Early Stage Investigator Travel Awards - application submission now April 30

The applicant must be member of the MCS in good standing and should be a graduate or medical student, a postdoctoral fellow or junior faculty (within six years post terminal doctoral degree by the time of application).

Applications should include:

- 1. A copy of the submitted abstract.
- 2. A letter of support from the mentor or department chair.
- 3. The applicant's CV
- 4. A brief write-up by the applicant explaining the benefits of attending the meeting.

Each awardee will receive a certificate and \$1,500 onsite at the time of the meeting. The application is due to MCS Awards Committee by April 30. [Complete the online application.](#)

Benjamin W. Zweifach Award nominations are due April 30

In 1978, the members of the Microcirculatory Society, Inc. established The Benjamin W. Zweifach Award (\$2,000, a certificate and an engraved gold medal) to be given at the World Congress for Microcirculation. The award recognizes the achievements of internationally renowned individuals whose careers have been noteworthy and who have made outstanding contributions to the advancement of our knowledge of microcirculation.

Members of the Microcirculatory Society are requested to submit nominations for the award to the MCS Awards Committee, via an email to awards@microcirc.org by April 30, 2015. The nomination packet should include a letter of nomination, letters of support, a Curriculum Vitae and list of Publications. The ten most significant publications during the ten calendar years ending about 18 months preceding the presentation of the award are the principal basis for selection. The awardee will be invited to present a brief summary of his or her research career.

Nishimaru-Tsuchiya International Award - nomination deadline extended to April 30

The Nishimaru-Tsuchiya International Award is the highest award for organ microcirculation research from the Japanese Society for Microcirculation. Dr. Yasuyoshi Nishimatsu established the Japan College of Angiology to initiate research based on the concept of body fluid circulation. He played a very influential role for microcirculation research in Japan. Dr. Tsuchiya was the pioneer of organ-microcirculation research in Japan and a founding member of the Japanese Society of Microcirculation. The award is given to the active investigator who continues to provide excellence in the field of microcirculation. The award consists of a certificate and a cash prize of ¥200,000. To nominate a colleague go to: <http://www.congre.co.jp/wcmic2015/html/nishimaru/nishimaru.html>

FEATURED YOUNG INVESTIGATORS' RECENT STUDY IN *MICROCIRCULATION**

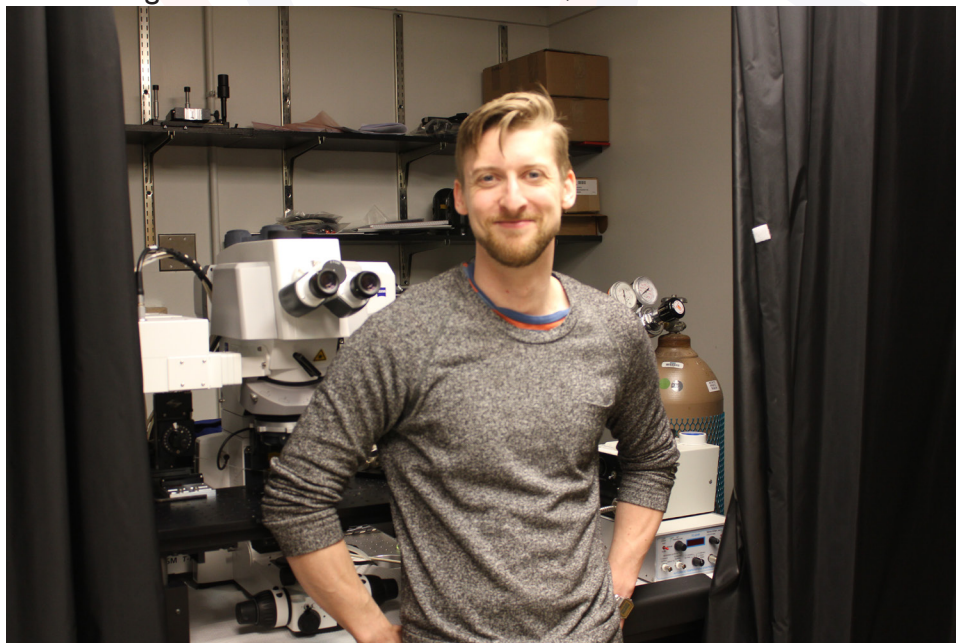
VASCULAR INWARD RECTIFIER K^+ CHANNELS AS EXTERNAL K^+ SENSORS IN THE CONTROL OF CEREBRAL BLOOD FLOW

Featuring: **Thomas A. Longden and Mark T. Nelson, University of Vermont**

from Volume 22 Issue 3 - April 2015

In 1980, Furchgott and Zawadzki first demonstrated that the presence of endothelial cells was required for relaxations of rabbit aortic strips to acetylcholine. This seminal observation spurred a field of inquiry that continues to this day, focused on identifying the endothelium-derived hyperpolarizing/relaxing factors that are capable of relaxing vascular smooth muscle.

vasculature. In particular, astrocytic endfoot processes—which completely encase the intracerebral microcirculation—are equipped with a similar complement of ion channels and enzymes to the vascular endothelium, and appear to perform an analogous role by releasing vasorelaxant factors onto the nearby parenchymal smooth muscle in response to neuronal activity. However, much like the 'EDHF' field of previous years, the



Today, nitric oxide, prostacyclin, and potassium (K^+) ions are recognized as major players in endothelial control of smooth muscle contractility.

A similar search for mediators of the 'neurovascular coupling' phenomenon in the brain has recently intensified. Here, the connection between neuronal activity and an increase in cerebral blood flow has been appreciated for a century and a quarter, but the factor or factors that link these phenomena have eluded firm identification. The current model of neurovascular coupling places the astrocyte as a signaling intermediary bridging neurons and the cerebral

proposed identities of the released substances—such as nitric oxide, prostaglandin E_2 , epoxyeicosatrienoic acids, and K^+ —have generated considerable debate.

Our review paper in *Microcirculation*¹ focuses on one potential neurovascular factor, the K^+ ion, and synergizes research from a number of laboratories spanning a period of more than half a century. We posit that K^+ , released from neurons and/or the activation of large-² and intermediate-conductance³ calcium-activated K^+ channels located in astrocytic endfeet, is a vital mediator of neurovascular coupling, capable of rapidly driving profound arteriolar smooth muscle hyperpolarization and relaxation, leading to local hyperemia. Elevation of

extracellular K^+ activates strong inward rectifier K^+ (K_{IR}) channels located in the smooth muscle and endothelial cells throughout the brain's parenchymal microcirculation. Accordingly, we explore the molecular and biophysical features of the K_{IR} channel, its distribution throughout the microcirculation, and the cellular sites of K^+ release that facilitate hyperemia to K^+ . We also draw on our recent work highlighting the exquisite sensitivity of parenchymal arteriolar smooth muscle K_{IR} channels to disruption, which we previously demonstrated using a rodent model of chronic stress.⁴ The loss of smooth muscle K_{IR} channel function can dramatically impair neurovascular coupling, which has profound implications for the control of cerebral blood flow and, ultimately, neuronal function.

To match the time course of functional hyperemia, mediators of neurovascular coupling must be rapidly generated and/or released, and must quickly evoke robust arteriolar dilation to ensure that blood is delivered in a timely man-

ner. K^+ is one mediator that fits this profile, but it cannot solely account for the full hyperemic response to neuronal activity. Firm identification of the panoply of factors that enable the neurovascular coupling cascade awaits future investigation.

1. Longden TA, Nelson MT. Vascular Inward Rectifier K^+ Channels as External K^+ Sensors in the Control of Cerebral Blood Flow. *Microcirculation*. 2015. doi: 10.1111/micc.12190.
2. Filosa JA, Bonev AD, Straub SV, Meredith AL, Wilkerson MK, Aldrich RW, Nelson MT. Local potassium signaling couples neuronal activity to vasodilation in the brain. *Nat Neurosci*. 2006. 9(11): 1397-1403.
3. Longden TA, Dunn KM, Draheim HJ, Nelson MT, Weston AH, Edwards G. Intermediate-conductance calcium-activated potassium channels participate in neurovascular coupling. *Br J Pharmacol*. 2011. 164(3): 922-33. doi: 10.1111/j.1476-5381.2011.01447.x.
4. Longden TA, Dabertrand F, Hill-Eubanks DC, Hammack SE, Nelson MT. Stress-induced glucocorticoid signaling remodels neurovascular coupling through impairment of cerebrovascular inwardly rectifying K^+ channel function. *Proc Natl Acad Sci USA*. 2014. 111(20): 7462-7. doi: 10.1073/pnas.1401811111.

Kaley Lecturer 2015: Dr. Mark T Nelson

Mark T. Nelson, Chair and University Distinguished Professor of Pharmacology at the University of Vermont, presented the Second Annual Kaley Lecture at Experimental Biology 2015. This lectureship is made possible by a generous donation from the Family of Professor Gabor Kaley, who was Professor and Chair of Physiology at the Medical College of New York, Valhalla.



Dr. Gabor Kaley

Dr. Kaley is remembered by his long-standing excellence in research, and his mentoring of students, post-doctoral fellows and young faculty, whether they

worked directly with him, or interacted with him at scientific meetings.

Dr. Nelson's excellence in research and in mentoring follows this path closely. *Pictured below:* We were fortunate to have Dr. Harriette Kaley in attendance at the Kaley Lecture, and for her to present the plaque to Dr. Nelson after his lecture.



Call for Papers 2015 - Special Issues

The Official Journal of the Microcirculatory Society, Inc., The British Microcirculation Society, the Australia & New Zealand Microcirculation Society and the Japanese Society for Microcirculation
[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1549-8719/homepage/call_for_papers_2015.htm](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1549-8719/homepage/call_for_papers_2015.htm)

Metabolism and Tumor Microcirculation/Angiogenesis

The journal Microcirculation is pleased to announce that it will be publishing a Special Issue focused on Metabolism and Tumor Microcirculation/Angiogenesis to accompany the journal sponsored symposium at the World Congress for Microcirculation to be held in Kyoto in September 2015. This Special Issue will be Guest Edited by Dai Fukumura and Rakesh Jain from the Steele Laboratory for Tumor Biology Harvard Medical School, USA. The following Invited Reviews will form part of the issue:

- Metabolic regulation of endothelial cells - Peter Carmeliet, Leuven Belgium
- EPR and others - Hiroshi Maeda, Sojo University Japan
- Metabolism and Cancer - Makoto Suematsu, Keio University Japan
- Metabolism and Anti-ang Therapy - Dai Fukumura, Harvard USA

Submit your primary research papers covering hot topics in these areas for your chance to be included. Following peer review, all papers will be published online as 'Accepted Manuscripts' as soon as they are accepted and published in the final version in the online issue in the spring of 2016.

Please send queries to: Guest Editor Dai Fukumura (dai@steele.mgh.harvard.edu) and Deputy Editor in Chief Geraldine F Clough (g.f.clough@soton.ac.uk)

Submission Deadline: 1 July 2015
Publication Date: Early 2016

Microvascular Plasticity:Angiogenesis in Health and Disease

The journal Microcirculation is pleased to announce that it will be publishing a Special Issue focused on Microvascular Plasticity:Angiogenesis in Health and Disease to tie in with the World Congress for Microcirculation to be held in Kyoto in September 2015. This Special Issue will be Guest Edited by James B. Hoying, Cardiovascular Innovation Institute University of Louisville, USA.

The following Invited Reviews will form part of the issue:

- Preface on angiogenesis and the microcirculation- Axel Pries, Charité, Berlin, Germany; Tim Secomb, University of Arizona USA
- Macrophages: an inflammatory link between angiogenesis and lymphangiogenesis - Shayn Peirce-Cottler, University of Virginia USA; W. Lee Murfee, Tulane University USA
- NG2-dependent contributions of stromal cells to tumor vascularization and progression - William Stallcup, Sanford-Burnham Medical Research Institute, USA
- Perivascular cell dynamics in the vasculatures of the eye - Tailoi Chan-Ling, University of Sydney Australia
- Adaptation of the coronary microcirculation in aging - Amanda J. LeBlanc, Cardiovascular Innovation Institute, Louisville USA
- The role of H2S/NO in ischemic vascular remodelling - Chris Kevil, LSU Health Shreveport USA
- Role and regulation of VEGF in the adult- Patricia D'Amore, Schepens Eye Research Institute, Harvard Medical School USA

Submit your primary research papers covering hot topics in these areas for your chance to be included. Following peer review, all papers will be published online as 'Accepted Manuscripts' as soon as they are accepted and published in the final version in the online issue at the start of 2016.

Please send queries to: Guest Editor James B. Hoying (jay.hoying@louisville.edu) and Deputy Editor in Chief Geraldine F Clough (g.f.clough@soton.ac.uk).

Submission Deadline: 27 July 2015
Publication Date: Early 2016

Microcirculation

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[Angiotensin and Neurovascular Coupling: Beyond Hypertension](#) (pages 159–167)
Sherri Bloch, Dima Obari and Hélène Girouard

[A Murine Toolbox for Imaging the Neurovascular Unit](#) (pages 168–182)
David A. Hartmann, Robert G. Underly, Ashley N. Watson and Andy Y. Shih

[Vascular Inward Rectifier K⁺ Channels as External K⁺ Sensors in the Control of Cerebral Blood Flow](#)
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Thomas A. Longden and Mark T. Nelson

[A Slow or Modulatory Role of Astrocytes in Neurovascular Coupling](#) (pages 197–203)
David George Rosenegger and Grant Robert Gordon

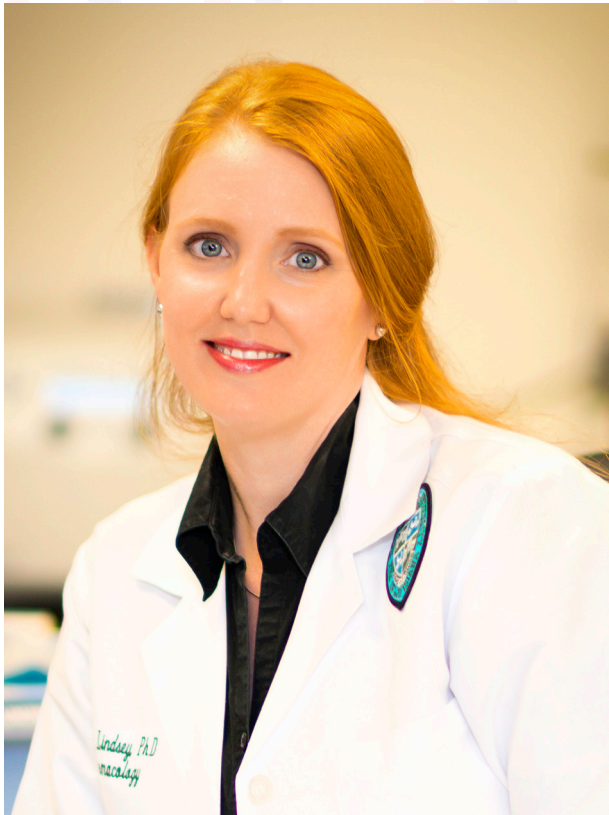
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Cam Ha T. Tran and Grant R. Gordon

[Cerebral Collaterals and Collateral Therapeutics for Acute Ischemic Stroke](#) (pages 228–236)
Ian R. Winship

MEMBERSHIP NEWS

WELCOME OUR NEWEST MEMBERS



Sarah H. Lindsey, Ph.D. is an Assistant Professor in the Department of Pharmacology at Tulane University. Her lab investigates the role of membrane-initiated estrogen signaling in cardiovascular health, its interactions with the renin-angiotensin system, and the influence of environmental estrogens.

We would also like to welcome:

Graduate Students

Natascha G. Alves, University of South Florida

Postdoctoral Fellows

Paulina M. Kowalewska, McMaster University
Bumseok Namgung, National University of Singapore
Sebastian Hayoz, Michigan State University
Nathan Tykocki, University of Vermont

Resident

Julia K. Freed, Medical College of Wisconsin

Research Scientists

Ranjan K. Pradhan, University of Michigan
Bjorn Song, Stony Brook University

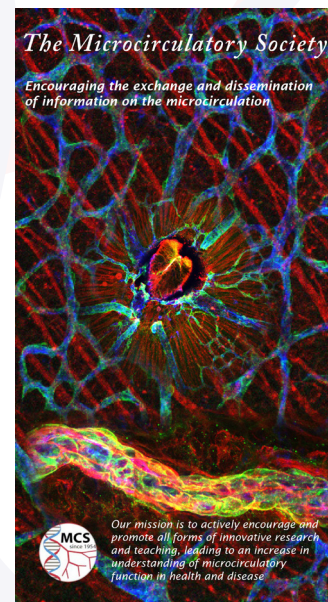
Assistant Professors

Delrae M. Eckman, Midwestern University
Jonathan W. Song, Ohio State University

Associate Professor

Eric Schmidt, University of Colorado, Denver

Download the new MCS Brochure



MCS AWARDS

2015 PAPPENHEIMER POSTDOCTORAL TRAVEL AWARDS

Congratulations to this year's Pappenheimer award recipients!

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Clockwise from the upper left: Evandro Neto-Neves, Indiana University, Hemang Patel, Wayne State, Amy Smith, University of Arizona; group photo of all Pappenheimer Postdoctoral Awards and Zweifach Student Award recipients - Kerri-Ann Norton (front center of group) and Qilong Feng (just right of Dr. Frame) were also Pappenheimer Postdoctoral Award Recipients. The final photo is of Karima Ait-Aissa recipient of a Pappenheimer Postdoctoral Award and the August Krogh Young Investigator Award; she is flanked by Drs. Rumbaut and Frame.

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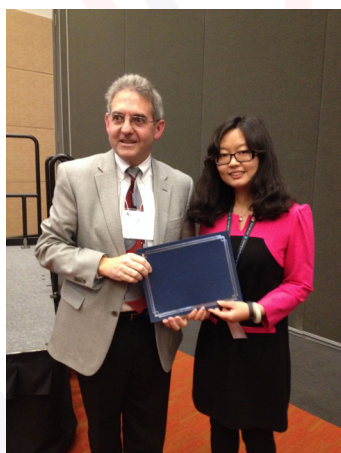


2015 ZWEIFACH STUDENT AWARDS

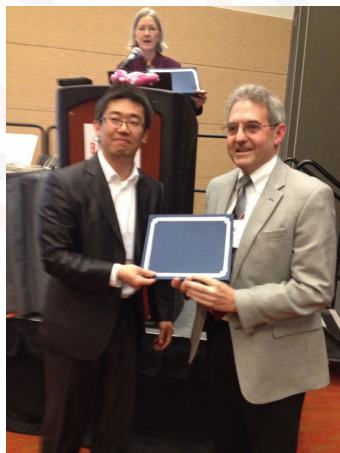
Congratulations to this year's Zweifach award recipients!



Mohammad Azimi



Huijuan Dou



Kwangseok Hong



Stephanie Mutchler



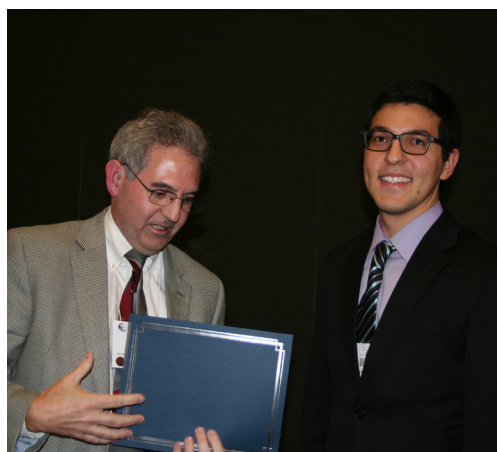
Emmanuel Nwadozi



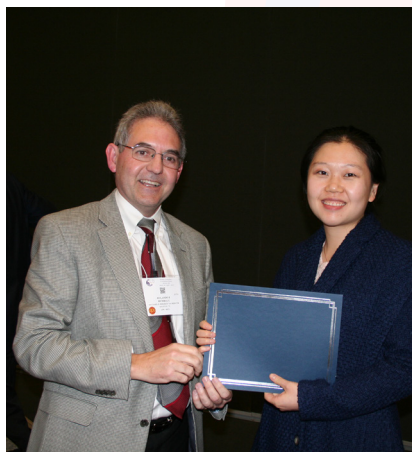
Harrison Seidner



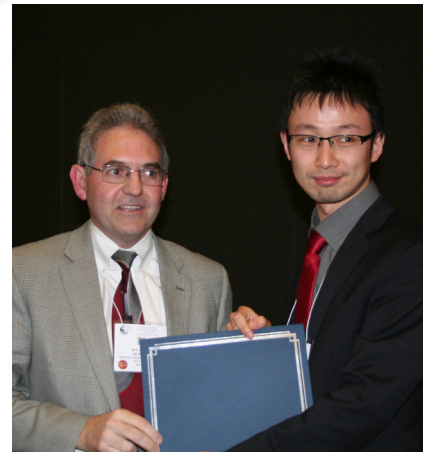
Richard Sweat



Stefano Tarantini



Sulei Xu



Xun Zhang

MEET OUR NEW COUNCIL MEMBERS

President-elect

Willaim M.Chilian, Ph.D.
Northeastern Ohio Medical
University



Secretary

Walter Lee Murfee, Ph.D.
Tulane University



Councilors



Mariappan Muthuchamy, Ph.D.
Texas A&M HSC



Karen Y. Stokes, Ph.D.
Louisiana State University HSC

CURRENT MCS OFFICERS & EXECUTIVE COUNCIL, 2015-2016

TITLE	NAME	TERM	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

The Rosters of all Committees can be found on our web site at:
<http://www.microcirc.info/Committees.html>

CALENDAR

UPCOMING MEETINGS

[Microcirculation in Acute Infections: A Symposium in honor of David H. Walker, MD](#)

Galveston, TX – April 27-29, 2015

[Arteriosclerosis, Thrombosis and Vascular Biology/Peripheral Vascular Disease 2015](#)

San Francisco, CA – May 7-9, 2015

[Basic Cardiovascular Sciences Scientific Sessions 2015](#)

New Orleans, LA – July 13-16, 2015

[Vasculata 2015 - Summer Course in Vascular Biology](#)

Charlottesville, VA – August 3-6, 2015

[The Fourteenth International Conference on Endothelin](#)

Savannah, GA – September 2-5, 2015

[Physiological Bioenergetics: From Bench to Bedside](#)

Tampa, FL – September 9-12, 2015

[Hypertension Scientific Sessions 2015](#)

San Francisco, CA – September 9-12, 2015

[10th World Congress for Microcirculation](#)

Kyoto, Japan – September 25-27, 2015

[Biomedical Engineering Society Annual Meeting](#)

Tampa, FL – October 7-10, 2015

[Vascular Biology 2015](#)

Hyannis, MA – October 18-22, 2015

[AHA Scientific Sessions](#)

Orlando, FL - November 7-11, 2015

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