

The Microcirculatory Society, Inc.

Newsletter

Volume 31, Number 4

Spring 2004

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Officers

President:	G.W. Schmid-Schönbein gwss@bioeng.ucsd.edu
President-elect:	H. Glenn Bohlen gbohlen@iupui.edu
Secretary:	Cynthia J. Meininger cjm@tamu.edu
Treasurer:	Ann Baldwin abaldwin@u.arizona.edu
Web Site:	http://microcirc.org

President's Message

Geert W. Schmid-Schönbein

I am pleased to report that the Executive Council decided to make a formal offer to the Japanese Microcirculatory Society, Professor H. Ishii President, to hold a joint Microcirculation Fall Meeting on one of the Hawaiian Islands in 2006. The Council of the Japanese Microcirculatory Society, and Professor Ishii, have accepted this proposal with enthusiasm. Professor Makoto Suematsu will serve as the international representative of the Japanese Society. Our Council has set up a Planning Committee which consists of Robert Hester (our new President-Elect), Ann Baldwin and myself. Much of the planning for this meeting will take place at the upcoming Spring Meeting. We encourage you to speak to us or to the Program Committee (Ingrid Sarelius is the new Chair) and to consult about programming and organization of special events.

The planning for the Fall Meeting 2005, together with the British Microcirculatory Society in New Hampshire, is well under way. Please join the Business Meeting of the Society on Saturday,

April 17, 2004, where further details will be discussed.

There is less than one month until our annual Spring Meeting. We will gather for the celebration of our 50th Anniversary of the Society at the Natcher Conference Center on the Campus of the NIH on Friday, April 16, 2004, and a banquet at the new National Academy of Sciences Building in Washington DC the evening of the same day. This event will be followed by our Spring Meeting with Experimental Biology, with the Landis Lecture, the President's Symposium, the Young Investiga-

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tors Symposium, as well as the poster sessions on Sunday and Monday. You will find more details at <http://microcirc.org/51stPROGRAM/Prgm2004.html>. I urge you to register and purchase tickets for the banquet since the seating at this event will be limited. You can complete this task with great ease on our Website (<http://microcirc.org/BanquetTickets2004/BanTicketsOnLine.A.html>).

This is also a time to reminisce about the achievements in the past year and think about nomination of young investigators to join the Microcirculatory Society. Please encourage your students to apply for membership and bring them to the meeting. The application process is straightforward (<http://microcirc.org/MEMBER/MemberApplication.html>).

This will be my final notice in the Newsletter as your 50th President. The baton will be handed over at the Spring meeting to President-Elect Glenn Bohlen. At this stage I should like to thank you from the bottom of my heart for the opportunity to serve you. It was and is a real privilege. The work with the Council and the Officers of the Society was nothing but a delight, the planning for the future a thrill. There are many individuals to thank, if I mention one of them I have to cite all of them. There will be opportunity to express our appreciation at the upcoming Meeting.

Finally, I would like to close with a more general observation. I recently had the privilege to join a Lymphatics Conference, one of the first ones organized by the Gordon Research Conferences. It was quite evident that many approaches will make a contribution to our understanding of conditions like congenital or post-surgical lymphedema. But it also became evident that functional studies which bridge the molecular, cellular and whole tissue approaches are a sine-qua-non for progress. Microcirculation is at the intellectual center of the problem. Complications at the level of the microcirculation are visible long before they become a global manifestation. The microvascular presenta-

tions at that meeting were fresh and inspiring. I predict the next 50 years will be even more exciting than the past 50 years.

With warmest regards and wishes -

Geert

Congratulations to our New Officers

President-Elect:	Robert Hester
Treasurer:	Mary (Molly) Frame
Councillors:	Deborah Damon Sarah Yuan

The Society thanks Steve Segal and members of the Nominations Committee for their efforts. Extra special thanks go to Bob Gore for setting up on-line voting. Great Job from the 'Web Guy' (as always)!!!



Annual Society Awards

August Krogh Young Investigator Award

Sara J. Huag
The John B. Pierce Laboratory
Yale University School of Medicine

MCS Travel Award (U.S. to Europe)

Dr. Rolando Rumbaut
Dept of Medicine and Pediatrics
Baylor College of Medicine

Christian Crone Travel Award (to U.S.)

Dr. Ronen Alon
Department of Pathology
Brigham and Women's Hospital

Excellence in Lymphatic Research

Anatoliy A. Gashev, M.D., Ph.D.
Department of Medical Physiology and
Cardiovascular Research Institute
The Texas A&M Univ. System Health Science Ctr.

Zweifach Student Awards

Zsolt Bagi
Department of Physiology
New York Medical College

Ines Drenjancevic-Peric
Department of Physiology
Medical College of Wisconsin

Marika Mihok
Dept. of Human Biology and Nutritional Sciences
University of Guelph

Shane Phillips
Department of Physiology
Medical College of Wisconsin

Jeffrey Olearczyk
Dept. of Pharmacological and Physiological Sci.
Saint Louis University

Annual Journal Awards

Gerritsen Award

Donald McDonald
Anatomy and Cardiovascular Research Institute
University of California-San Francisco

Wiederhielm Award

Allen Swei

Welcome to New MCS Members

Regular Members

Cheryl Hillary
Department of Pediatrics
Medical College of Wisconsin

Tara Haas
Dept. of Kinesiology and Health Sciences
Toronto, Ontario

Olga Glinskii
Dept. of Med. Pharmacol and Physiology
University of Missouri, Columbia

Student Members

Jarrod Collings
Department of Physiology
LSU Health Sciences Center

Rie Sasaki
Dept. of Med. Pharmacol and Physiology
University of Missouri, Columbia

Priya Jeganathan
Department of Medical Biophysics
McMaster University

Mohammed Mohiuddin
Dept. of Vet. Physiology and Pharmacol.
Texas A&M University

Meeting Information

MICROCIRCULATORY SOCIETY 50th Anniversary Symposium

Natcher Conference Center Auditorium, National Institutes of Health, Bethesda, MD:

FRIDAY APRIL 16th

8:00 AM - 9 AM

Registration

9:00AM – 12:00 PM

Session I: Established Microcirculatory Research Topics. Where Do They Stand Today?

Topics and Speakers:

- ◆ Microvascular Rheology and Hemodynamics: Herbert Lipowsky
- ◆ Microvascular Solute and Water Transport: Fitz-Roy Curry
- ◆ Microvascular Adaptation and Remodeling: Geert Schmid-Schonbein
- ◆ Regulation of Blood Flow in the Microcirculation: Steven Segal
- ◆ Angiogenesis and Vasculogenesis: Thomas Skalak
- ◆ Oxygen Transport and Exchange: Roland Pittman

1:30 PM –4:30PM

Session II: Emerging Microcirculatory Research Topics.

Topics and Speakers:

- ◆ Lymphatic Biology: David C. Zawieja
- ◆ Microvascular Endothelial Cell Biology: F. William Lusinskas
- ◆ Cell Trafficking in the Microcirculation: Paul Kubes
- ◆ Integrins and Regulation of the Microcirculation: Gerald Meininger
- ◆ Microvascular Ion Channel Biology: William F. Jackson
- ◆ Molecular Genetics in Microvascular Research: Mary Gerritsen

The symposium will be followed by a Banquet/Celebration to be held at the **New National Academies of Science Building, Washington DC. (See Banquet Ticket Information following Meeting Information for purchasing instructions)**

- ◆ 7 PM Reception and Historical Poster Viewing
- ◆ 8 PM Dinner
- ◆ Dr. Gabor Kaley: The History of the Microcirculatory Society
- ◆ Dr. Robert McCuskey: Historical Microvascular Recordings
- ◆ Past-Presidents of the Microcirculatory Society, Cake Cutting

The Microcirculatory Society, Inc., 1954-2004

Half a Century of Discovery and Innovation

Historical Poster Presentations

Diabetes Mellitus: From a Historically Rare Disease to An Epidemic Of Metabolic and Vascular Complications

H. Glenn Bohlen, Department of Cellular and Integrative Physiology, Indiana University Medical School, Indianapolis, IN

Microelectrodes in the Microcirculation

Donald G. Buerk, Department of Physiology, University of Pennsylvania School of Medicine Philadelphia, PA

The Microcirculation of the Heart: A Historical Perspective

In memory of Stephen H. Nellis, Ph.D. and Melvin L. Marcus, M.D.

William M. Chilian, Lih Kuo, Cuihua Zhang, Department of Physiology, Louisiana State University Health Sciences Center, New Orleans, LA and Department of Medical Physiology, The Texas A&M University System Health Science Center, College Station, TX

Arthur C. Guyton: The Man and His Science

Allen W. Cowley, Jr.¹, Joey P. Granger², Gabriel Navar³, Harris Granger⁴, Thomas G. Coleman², and John Hall². ¹Dept. Physiology, Medical College of Wisconsin, Milwaukee, WI; ²Dept. Physiology and Biophysics, University of Mississippi Medical Center, Jackson, MS; ³Dept. Physiology, Tulane University, New Orleans, LA; ⁴Dept. Medical Physiology, Texas A&M University, College Station, TX

Development and Use of Systems for the Study of Isolated, Pressurized Microvessels.

Michael J. Davis, Harris J. Granger and Gerald A. Meininger. Cardiovascular Research Institute and Dept. of Medical Physiology, The Texas A&M University System Health Science Center, College Station, TX

Oxygen Transport: Still Limited in our Knowledge of What's Limiting

Brian R. Duling, University of Virginia, Charlottesville, Virginia; Roland Pittman, VCU, Richmond, Virginia

Sheet Flow in Pulmonary Circulation

Yuan Cheng Bert Fung, Wei Huang, Sidney S. Sobin, Department of Bioengineering, University of California San Diego, San Diego, CA

Macroscopic and Microscopic Flow Properties of Blood

Harry Goldsmith¹, Fiona McIntosh¹ and Giles Cokelet². ¹Research Institute of the McGill University Health Centre, Montreal, QC and ²Dept. of Chemical Engineering, Montana State University, Bozeman, MT

Leukocyte-Endothelial Cell Adhesion

D. Neil Granger, Paul Kubes, and Klaus Ley, LSU Health Sciences Center-Shreveport; University of Calgary Faculty of Medicine; University of Virginia School of Medicine

Angiogenesis and Microcirculation

Olga Hudlicka and Margaret D. Brown,* Departments of Physiology & School of Sport and Exercise Science *, University of Birmingham, Birmingham, UK

The Landis Technique: Experimental Verification of Starling's Principle of Fluid Filtration

Virginia H. Huxley, C. Charles Michel and Fitz-Roy E. Curry, Department of Medical Pharmacology and Physiology, University of Missouri-Columbia, Columbia, MO; Department of Biomedical Sciences, Imperial College School of Medicine, Alderney, Guernsey, UK; Department of Human Physiology, University of California-Davis, Davis, CA

Bayliss and the Myogenic Response: The Death and Rebirth of a Scientific Concept

Paul C. Johnson, Department of Bioengineering, University of California San Diego, La Jolla, CA

History of the Discovery and Significance of Shear Stress Dependent Regulation of Vascular Resistance

Gabor Kaley and Akos Koller, Department of Physiology, New York Medical College, Valhalla, NY

***In Vivo* Rheology of Microvascular Blood Flow**

Herbert H. Lipowsky¹ and Shu Chien.² Departments of Bioengineering, Penn State University, PA¹ and University of California San Diego, La Jolla, CA.²

***In Vivo* Microscopy of Living Organs**

Robert S. McCuskey, Department of Cell Biology and Anatomy, University of Arizona, Tucson, AZ

The Role of the Microcirculation in Ischemia-Reperfusion Injury

Paul F. McDonagh and Leslie S. Ritter, The Sarver Heart Center. University of Arizona, Tucson, AZ

Microvascular Rarefaction in Hypertension

R.L. Prewitt¹, J. H. Lombard², A.S. Greene², and F.M. Hansen,³

¹Department of Physiology, Eastern Virginia Medical School, Norfolk, VA ²Department of Physiology, Medical College of Wisconsin, Milwaukee, WI ³Biological Sciences, Oakland University, Rochester, MI

The “Classical Pore Theory” of Capillary Permeability, A Historical Perspective

Eugene M. Renkin, Department of Human Physiology, University of California-Davis, Davis, CA

Brain Microcirculation Last Fifty Years – A Sampling of Important Papers

William L. Rosenblum and Hermes A. Kontos, Virginia Commonwealth University Medical Center, Medical College of Virginia, Richmond, VI

Free Radical Bioimaging in Microcirculation

Makoto Suematsu, Mayumi Kajimura*, Satoshi Kashiwagi*, Masaharu Tsuchiya, Department of Biochemistry and Integrative Medical Biology, Department of Internal Medicine, School of Medicine, Keio University

Permeability of the Alveolar-Capillary Barrier

Aubrey Taylor, T.M. Moore and P. Paisley, Department of Physiology, University of South Alabama, Mobile, AL; Department of Anesthesiology, Johns Hopkins University, Baltimore, MD

Blood Substitutes

Amy G. Tsai, Pedro Cabrales, Nanae Hangai-Hoger and Marcos Intaglietta. Department of Bioengineering, University of California, San Diego, La Jolla, CA

Understanding Lymphatic Structure and Function: Major Advances by Microcirculatory Society Members

Joseph L. Unthank¹ and David C. Zawieja,² ¹Departments of Surgery, and Integrative and Cellular Physiology, Indiana University School of Medicine, Indianapolis, IN, ²Department of Medical Physiology, Texas A&M University System Health Science Center, College Station, TX

Saturday April 17, 2004

MCS President's Symposium: 3:15-5:15 PM, Room 146C Convention Center

Molecular Genetic Approaches to Microvascular Research

Organized by Geert W. Schmid-Schöbein, Univ. Cal. San Diego

Topics and Speakers:

- ◆ Convergence of molecular genetics and proteomics in the microcirculation:
Andrew Green, Medical College of Wisconsin
- ◆ Landscaping heme oxygenase-1-mediated biological actions: Multiplicity revealed by transcriptome analyses
Makoto Suematsu and Misato Kashiba, Keio University School of Medicine
- ◆ The use of knockout mice to dissect molecular mechanisms in the microcirculation
Klaus Ley, University of Virginia
- ◆ Spatial approaches to endothelial gene expression using amplification techniques applicable to the microcirculation
Peter Davies, University of Pennsylvania

MCS General Business Meeting: 5:30-6:30 PM, Rm 146C Convention Center

Sunday, April 18, 2004

MCS Landis Award Lecture: 10:30-11:30 AM in Room 146 C Convention Center

Dr. Robert S. McCuskey — “The Hepatic Microvascular System in Health and Disease”

Congratulations!!!!

Landis Award 2004

Robert S. McCuskey

Professor of Cell Biology and Anatomy

University of Arizona

Tucson, AZ

Monday, April 19, 2004

**Microcirculatory Society Young Investigators Symposium: Microvascular Function and Disease
8:00 a.m. - 10:00 a.m., Convention Center Room 140B**

Donald G. Welsh
University of Calgary

Introductory Remarks

Sean Marrelli
Baylor College of Medicine

Endothelial Ca²⁺ and Membrane Potential:
What's Driving What?

Zsolt Bagi
New York Medical College
Hyperhomocysteinemia

Wall Shear Stress-Dependent Regulation of
Arteriolar Diameter in Diabetes Mellitus and

Geoffrey Payne
Yale University

Impaired Conduction and Post-contraction
Vasodilation in Aging Mouse Skeletal Muscle

Michael Bolon
Univ. of Western Ontario

Hypoxia/Reoxygenation-induced Reduction
in Mouse Microvascular Endothelial Coupling is Eliminated by
Knockout of Connexin 40 and Activation of PKA pathway

Erion Qamirani
Texas A&M Univ. HSC

C-Reactive Protein Inhibits Endothelium Dependent
Nitric Oxide Mediated Dilatation in Coronary Arteries:
Roles of Superoxide and NADPH Oxidase

Scott Appleton
Tulane University

Heme Oxygenase Inhibitor Restores
Endothelial Vasodilator Function in Obese Zucker Rats

The following **poster sessions** will be included as a part of the Microcirculatory Society's Annual Meeting:

Sunday, April 18

Microvascular Permeability/Exchange
Microvascular Pharmacology/Vascular Control
Angiogenesis/Microvascular Remodeling

Monday, April 19

Microvascular Cell Interactions
Ischemia/Reperfusion
Microvascular Pathophysiology
Cell-Cell Communication and Conducted Responses
Flow Regulation; Oxygen Delivery
Microvascular Mechanics and Hemodynamics



Proposed Changes to Society By-Laws

ARTICLE I. Microcirculatory Society

Section 1. The name of this organization is The Microcirculatory Society, Inc. (hereinafter known as the Society). The official abbreviation for the name is MCS.

ARTICLE II. Purposes

Section 1. The purposes of the Society are to actively encourage and promote all forms of innovative research and teaching leading to an increase in understanding of microcirculatory function in health and disease.

ARTICLE III. Membership

Section 1. The Society shall consist of regular members, student members, associate members, emeritus members, honorary members, supporting members, and sustaining members.

Section 2. Regular Members.

Any person who has contributed to the increase in knowledge of the microcirculation, and is presently engaged in such work, shall be eligible for election to regular membership in the Society. Except in unusual circumstances, a regular member shall hold a doctoral degree. A regular member may attend and participate in the business meetings of the Society and is entitled to one vote.

Section 3. Student Members.

Any person who is engaged as a full-time graduate student in a recognized University program, and is actively involved in research on the microcirculation or associated phenomena shall be eligible for election to student membership in the Society. Except in unusual circumstances, a student member shall not hold a doctoral degree. A student member may attend and participate in the business meetings of the Society, but shall not have the right to vote.

Section 4. Associate members.

Individuals who are interested in and engaged in work related to the microcirculation, but who do not meet the requirements for regular or student membership, shall be eligible for election to associate membership. Associate members may attend and participate in the business meetings of the Society but shall not have the right to vote.

Section 5. Emeritus Members.

On approval by the Council, a regular member, after 20 years of regular membership or on retirement from regular employment, may, upon his or her written request, become an emeritus member. Emeritus members may attend and participate in business meetings of the Society and shall have the right to vote.

Section 6. Honorary members.

Individuals who have distinguished themselves by outstanding contributions in the study of microcirculatory phenomena may be elected honorary members by a special act of commendation. Honorary members may attend and participate in the business meetings of the Society, but shall not have the right to vote.

Section 7. Supporting members.

Any regular member who voluntarily contributes \$250 or more annually over and above the dues of regular members shall be denoted a supporting member.

Section 8. Sustaining members.

Individuals and organizations that have an interest in the purposes of the Society and wish to contribute to its support may be invited by the President, with the approval of the Council, to become sustaining members. Any such membership may be terminated by the President with the approval of the Council. Sustaining members may not attend or participate in business meetings of the Society and shall not have the right to vote.

Section 9. Nomination and election of members.

Two regular members of the Society shall join in the proposal of the person for regular, student, or associate or honorary membership on appropriate forms provided by the Secretary through the Society's web site or other available means of communication. The Membership Committee shall receive these proposals and refer them with its recommendations to the President for approval. Those persons whose proposals are approved by the President shall be nominated for election to membership by a mail (including e-mail, fax) ballot of the Council. A two-thirds (2/3) majority positive vote by Council shall be required for election. Receipt of nominations and election to membership shall be carried out on a **rolling continuing** basis throughout the year.

ARTICLE IV. Officers

Section 1. Council.

The management of the Society shall be vested in its Council (all of whom must be regular members of the Society), with powers of direction, consisting of the President, President-Elect, immediate Past-President, Secretary, Treasurer, and six additional regular members elected by the members by vote of the membership (through available means of communication). The President and President-Elect shall not succeed themselves after having served a full term. The terms of President and President-Elect shall be for one year. The Secretary and Treasurer shall be elected to two-year terms and these officers may succeed themselves for one term. The Secretary and Treasurer shall be elected on an alternating year basis, and the terms of the six additional elected Councilors shall be three years, so elected that only two Councilors are elected each year. Councilors may not succeed themselves to serve consecutive terms. All terms of office shall begin at the close of the annual regular meeting of the Society. The Council, by majority vote of its remaining qualified members, shall fill any interim vacancy in the office of the President-Elect, the Secretary, the Treasurer, and the Clerk, and may fill a vacancy of a Councilor. The term of office of a person elected to fill an interim vacancy shall expire following the tally of a valid **regular** ballot to elect his/her successor.

Section 2. Executive Committee.

The Executive Committee of the Society shall be defined as the principal officers, namely the President, the President-Elect, the Past-President, the Secretary and the Treasurer. They shall attend to the ordinary running of the Society, making the decisions required for its smooth functioning. All major decisions shall be subject to the approval of Council or the full membership.

Section 3. President.

The President shall preside at all meetings of the Council and business meetings of the Society, and

shall be an ex-officio member of all standing committees, and shall have other duties as prescribed in the appendix of these bylaws. The President, after consultation with the Council, shall appoint members of the standing committees where called for in these bylaws.

Section 4. President-Elect.

The President-Elect shall undertake duties as may be delegated by the President. The President-Elect shall become the next regular President of the Society after completion of the regular term as the President-Elect. In the absence or during the disability of the President, the President-Elect shall have all of the powers and perform all of the duties of the President. Any service as an interim president of the Society shall not reduce the term of the President-Elect as the next regular President of the Society.

Section 5. Past President.

The immediate Past President shall chair the Long-range Planning Committee and shall review, and where needed, recommend revisions of the Society's Bylaws, as described in Article X, Section 2.

Section 6. Secretary.

The Secretary shall give bond to the Society, if required by the Council, for the faithful performance of his/her duties. The Secretary shall have custody of all documents and papers belonging to the Society (except his/her own bond which shall be kept by the President) and shall safely keep the same, and disburse the orders and rules of the Council. The Secretary shall have co-custody of a bank account to meet the day-to-day operational expenses of the Society. The Secretary shall give notice of all meetings as required by the bylaws, send out the various customary mailings to the membership, and shall inform the membership whatever the President or Council desires. The Secretary shall use the available means of communication to perform these duties. The Secretary shall also keep a directory with the complete list of the name, title and address of each member of the Society. The Secretary shall keep the minutes of the Council and of Business Meetings of the Society and shall have other duties as prescribed in the Operations Manual. In the absence of the Secretary, the President shall appoint a temporary secretary to record the minutes.

Section 7. Treasurer.

The Treasurer shall give bond to the Society, if required by the Council, for the faithful performance of his/her duties. The Treasurer shall have custody of all monies, debts, obligations, contracts, and other property belonging to the Society (except his/her own bond which shall be kept by the President) and shall safely keep the same, and shall collect all properties and all monies from time to time due and owing to the Society. The Treasurer shall also keep a directory with the complete list of the name, title and address of each member of the Society and will verify at least annually the status of each member. [Access to the directory information for individual members shall be made available on the Society's website.](#) The Treasurer shall be chair of the Finance Committee to disburse the provision of Article VI, Section 4 of these bylaws.

Section 8. Clerk.

The Clerk shall be a resident of the Commonwealth of Massachusetts, and need not be a member of the Society. (The office is required as a condition of incorporation by the Commonwealth of Massachusetts.) The duties of the Clerk of this Society shall be those required by the statutes of the Commonwealth of Massachusetts. Such duties, to the extent permitted by law, may be assigned to others by the Council. The Clerk shall be appointed annually by the President of the Society, and may serve in the Council and Business Meetings, without vote except as a member of the Society.

Section 9. Nomination and election of Officers and Councilors.

Nomination for all Officers and Council members of the Society will be obtained by mail, fax, or e-mail on or before December 1 by requesting the membership to propose nominees. The request for nominations will be made in the Society Newsletter preceding the December 1 deadline. Nominations will be sent to the Chair of the Nominating Committee. For each office, the two persons (who agree to stand for election) with the highest number of nominations will be included on the ballot. In years in which two members of the Council are to be elected, a total of not more than four nominees will be included on the ballot. Once the nominations are complete, each member will receive and return by mail, fax, or e-mail, the ballot of officers and Council members. The ballots will be returned to the Chair of the Nominating Committee for tabulation and determination of outcome. In the event that a majority vote for a given office is not obtained by regular vote, the Chair of the Nominating Committee will call immediately for a run-off election between the two candidates with the highest votes. The election will be conducted promptly by mail, fax, or e-mail.

ARTICLE V. Council

Section 1. Management of the Society.

The property and affairs of the Society shall be managed and conducted by the Council with powers of directors. The members of the Council shall serve without compensation and shall be called Councilors.

Section 2. Qualifications, Elections and Vacancies.

Specified in Article IV, Section 1 and Section 9.

Section 3. Meetings.

At least one regular meeting of the Council shall be held during each annual meeting of the Society members, and for this regular meeting no notices shall be required. Other meetings of the Council shall be held as often as the needs of the Society may require. They may be held at regular intervals determined by the Council, or they may be called by the President or any three members of the Council. The Secretary shall notify each Councilor of each meeting of the Council. Notice of any meeting may be dispensed with if each member of the Council, by writing filed with the records of the meeting, waives such notice. No notices shall be required to be given of any adjourned meeting of the Council.

Section 4. Quorum.

A majority of the Council shall constitute a quorum for the transaction of business, but a lesser number may adjourn any meeting from time to time, and a meeting may be held as adjourned without further notice. A majority vote of Councilors in attendance (unless otherwise specified elsewhere), with each entitled to one vote, shall decide any question brought before the Council, except that a majority of the qualified Councilors shall be required for temporarily filling a vacancy of an office. In the event of a tie vote, the President shall then be entitled to two votes.

ARTICLE VI. Standing Committees

Section 1. Standing Committees.

Standing committees and their Chairs shall be appointed by the President in consultation with the Council. The term of all standing committee members, except as otherwise provided elsewhere, shall be for three years. However, on adoption of these bylaws, the term shall be one, two, or three years for various committee members, as determined by the Council, so as to provide continuity of com-

mittee operation. Emeritus, Honorary, and Sustaining members may be appointed from time to time for terms up to one year. Sustaining members so appointed shall not have the right to vote. The President shall be an ex-officio member of all committees. Guidelines for committee operation shall be approved by Council. The President, in consultation with Council and upon recommendation and evidence submitted by the Committee Chair or committee members, will be empowered to terminate at any time the term of committee members failing to discharge their duties.

Section 2. Membership Committee.

A Membership Committee, composed of three or more regular members of the Society, shall receive and review proposals for nomination to membership, and shall recommend regular, associate, and student nominees for membership to the Society according to Article III, Section 9.

Section 3. Finance Committee.

A Finance Committee consisting of the Treasurer (who shall Chair the Committee) and two or more regular members appointed by the President shall receive and evaluate the impact of the various proposed budgets, shall determine the budgets and make recommendations and shall recommend a budget to the Council. This Committee shall supervise the capital investments of the Society, subject to the full authority of direction by the Council.

Section 4. Nominating Committee.

A Nominating Committee shall consist of three or more-regular members, none of whom shall simultaneously be an officer of the Society or the immediate Past-President. This Committee shall obtain nominations and conduct elections for officers and councilors as prescribed in Article IV, Section 9.

Section 5. Liaison Committee.

The Liaison Committee shall consist of the President (who shall serve as Committee Chair), the MCS representative to the US National Committee for the International Union of Physiological Sciences (USNC for IUPS), the MCS member appointed liaison to the European Societies of Micro-circulation, the MCS members appointed to the International Liaison committee, and the Secretary of the Society, and may include any other members at the pleasure of the President. This Committee shall maintain communication with scientific organizations that have interests in common with the Society, and shall officially represent the Society in the international community.

Section 6. Long-range Planning Committee. The Long-range Planning Committee shall consist of the ten (10) most recent Past-Presidents and shall be chaired by the immediate Past-President of the Society. This committee shall consider all aspects of society affairs to identify major issues of importance to the Society and to recommend future strategies, plan meetings for the Society for a minimum of 5 years in advance of the next annual meeting, and new policy directions for society function.

Section 7. Development Committee.

The Development Committee shall consist of three or more regular members of the Society. This committee shall seek new supporting and sustaining members of the Society, and shall consider and recommend fund-raising activities for Council consideration. Upon request of the President, this committee shall implement Council-approved fund-raising activities on behalf of the Society.

Section 8. Historical Committee.

The Historical Committee shall consist of three or more regular members of the Society. This com-

mittee shall seek, identify, and obtain information, documents, films, and other items which have historical significance to the Society. This committee shall maintain updated lists of past officers and recipients of Society Awards.

Section 9. Awards Committee.

An Awards Committee, composed of six regular members, shall solicit from the voting membership the names of candidates for any awards that the Council has authorized. After selection of the candidates is made by the Awards Committee, the names of the candidates shall be approved by the President and the Council prior to any announcement of the awardees. Announcements of the winners of awardees should be made known to voting members of the Society prior to the Annual Society scientific meeting.

Section 10. Programs and Meetings Committee.

The Program Committee shall be chaired by an officer appointed by the President of the Society, and will serve a three year term. Members of the Committee shall be appointed for 3 years, by the President. The Committee shall: a) follow up on the recommendations to Council and the membership from the Long Range Planning Committee for the meeting(s) proposed for at least three years in advance. b) Serve as the liaison to the program committees of other societies or associations with whom the MCS may meet, with the Program Committee Chair as the official representative. c) Make recommendations, to be approved by the Executive Committee of the MCS, with respect to: program style and format, commitments to other societies, local arrangements, appointments to the program committees of umbrella associations.

Section 11. Publications Committee.

The Publications Committee shall consist of a Chair and at least two other members of the Society, appointed by the President and responsible to the Council of the Society. The Chair of the Committee is an ex-officio member of Council, without vote. The President, Treasurer, and Secretary of the Society are ex-officio members of the Committee, without vote. The duties are to oversee the journals and other publications of the Society, particularly with respect to the scientific quality of the journals and the fiscal interests of the Society. They shall appoint Editors and editorial boards, prepare an annual summary report and an annual financial report, and in general, manage the publications of the Society under the policies determined by Council. The ownership of the title "Microcirculation" and the copyright of material published in the journal shall be held by MCS. The term of the Publications Chair will be set to provide continuity during the time that contracts with publishers are negotiated or Editors of the Journal are chosen. When these decisions are being made, the term will likely be for two consecutive years.

The Editor of the journal will be appointed by Council for a five year term and no individual will serve more than two consecutive five year terms.

The appointment of Editor will be at the recommendation to Council by a committee which will consist of the Publications Committee plus the President of the Society. The Chair of the Publications Committee will chair this committee.

The Publications Committee, plus the President of the Society and the Editor of the journal, is responsible for oversight of contractual agreements between the publisher of the journal and MCS.

The Editor will nominate the Associate Editors and the Editorial Board. These appointments will be submitted to Council for approval. The Editorial Board members will be appointed for a two year

term with one-third of the Editorial Board being ineligible for reappointment to a consecutive term. All members of the Editorial Board must be members of MCS.

Section 12. Representative of the MCS to the US National Committee of the International Union of Physiological Sciences.

This position is to be filled by an appointee of the President of the MCS. The appointment is for three years, or four, designed to fit with the time interval between IUPS Congresses. The appointee should be a senior member of the Society, suitable to represent the Society's interests in international planning not only of scientific meetings but in providing international leadership in science and education. Reappointment for a second term is allowable, in accord with IUPS committee rules.

Section 13. Representative of the MCS to the European Societies for Microcirculation (ESM).

This position is to be filled by an appointee of the President of the MCS. The appointment is for three years, or four, designed to fit with the requirement of ESM. The appointee should be a senior member of the Society, who participates in the European Microcirculatory Society meeting, suitable to represent the MCS's interests in international planning not only of scientific meetings but in providing international leadership in science and education. Reappointment for a second term is allowable, in accord with ESM rules.

Section 14. Representatives of the MCS to the International Liaison Committee.

These three positions are to be filled by appointees of the President of the MCS. The appointment is for three years, or four, designed to fit with the time interval between World Congresses. The appointees should be senior members of the Society, suitable to represent the Society's interests in international planning not only of scientific meetings but in providing international leadership in science and education.

Section 15. Communications Committee.

The Communications Committee shall consist of a Chair and at least three other members of the Society, appointed by the President of the Society for up to three year terms. This committee shall be responsible for the oversight of the Society's web page. The Society website address, microcirc.org, is the property of MCS. The committee's other primary function is to coordinate with the Program and Meetings committee, the Liaison Committee, the Publications Committee, as well as the parties who collect directory, dues, and newsletter information, to keep the membership informed of MCS activities. The Communications committee will develop an annual report and budget for review by Council.

Section 16. Other Committees.

The President may appoint temporary (ad hoc) committees as desired. The term of office of these temporary committees shall end with the next annual business meeting of the Society following such appointment, or earlier as the President desires.

ARTICLE VII. Dues

Section 1. Annual Dues.

Dues for members, in accordance with Article III, shall be proposed by the Council but shall be determined by majority vote of those voting at the annual business meeting of the Society. Dues shall be paid January 1 for the current fiscal year and shall be in arrears on April 1. Special assessments may be proposed by the Council but shall be determined by majority vote of those voting at the annual business meeting of the Society.

Section 2. Nonpayment of Dues.

Any member whose dues are one year in arrears shall become an inactive member of the Society, and will be notified by the Treasurer. An inactive member will not receive the journal, will be ineligible to vote, and may not serve on committees. If an inactive member is in arrears for an additional year, he/she may reactivate membership in the Society by payment of all outstanding dues. The Treasurer shall notify the delinquent of the right to request reinstatement of membership at least one time after dues are two years in arrears before they cease to be a member of the Society.

Section 3. Emeritus Members.

A regular member who has been granted emeritus membership will be relieved from dues payment for the current and subsequent fiscal years.

ARTICLE VIII. Meetings of Society Members

Section 1. Annual Meeting of Members.

The Society shall hold an annual meeting of members, for the transaction of business, and for presentation of scientific communications and related activities. Such annual meetings shall be held each year at a time and place designated by the Council and approved by the membership. The time and place for the annual meeting shall be chosen at least eleven months in advance at an annual business meeting. The place, day, and hour shall be specified in the notice of any meeting of the Society.

Section 2. Special Meetings of Members.

Special meetings of members shall be called by the Secretary or any other officer upon the request of the President or the Council or on the written request of one-quarter of the members entitled to vote. The current list of members with their addresses shall promptly be made available to any member entitled to vote, on request, but shall not be utilized by anyone for purposes not directly pertaining to the business of the Society without the written permission of the President.

Section 3. Notice to Members.

Notice of all a meetings of the members shall be made known to each member not less than 30 nor more than 180 days before the meeting, but no notice shall be required if every member entitled thereto, or his/her attorney thereunto, authorizes, by a writing which is filed with the records of such a meeting, a waiver of such notice.

Section 4. Quorum for Annual and Special Meetings.

At all meetings of members of the Society, 40 regular members, present in person and entitled to vote, shall constitute a quorum, but less than a quorum shall have power to adjourn from time to time until a quorum be present. No member shall cast a ballot by proxy at any meeting of the Society.

Section 5. Parliamentary Authority.

The rules contained in Robert's Rules of Order, Revised, shall govern the conduct of the business meetings of the Society in all cases to which they are applicable and in which they are not inconsistent with the bylaws or special rules of order of the Society.

ARTICLE IX. Miscellaneous

Section 1. Prohibitions.

Notwithstanding any provision of these by laws which might be susceptible to contrary interpretation:

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- a. The Society is organized and operated exclusively for scientific and educational purposes.
 - b. No part of the net earnings of the Society shall accrue to the personal benefit of any member except as provided by the Society awards (Article VI, section 9).
 - c. No substantial part of the activities of the Society shall consist of carrying on propaganda, or otherwise attempting to influence local, state, or national legislation, except with respect to science policy or to other special issues such as the obligations to perform biological experimental studies. The Society shall not participate in or intervene in any campaign of any candidate for government public office.
 - d. No substantial part of the activities of the Society shall consist of carrying on propaganda, or otherwise attempting to influence local, state or national legislation. The Society shall not participate in or intervene (including publishing or distribution of statements) in any campaign of any candidate for governmental public office.
 - e. The Society is not organized for, nor is it to be operated for profit.
 - f. The membership list of the Society shall not be supplied to anyone for any purpose except as provided under Article VIII, Section 2, or except as specifically provided by Council.

Section 2. Fiscal Year.

The fiscal year of the Society shall end with the 31st day of March of each year.

Section 3. Audit.

All statements of net assets and related statements of income, expenditures, fund capital, and liabilities shall be audited annually in accord with the statutes of the Commonwealth of Massachusetts. The audit will be made annually by the Finance Committee and every third year by an independent auditing firm.

Section 4. Term of Office.

Where a term of office is stated in years, a year is to be considered as extending from the end of one annual business meeting to the end of the following one.

Section 5. Operations Manual.

The Secretary of the Society shall maintain an operations manual providing outlines of procedures found useful by the Executive Council and Committees of the Society.

ARTICLE X. Amendments

Section 1. Amendments.

These bylaws may be amended, altered or repealed at any business meeting of the Society members by a vote of two-thirds (2/3) of the regular members in attendance or by mail (e-mail, fax) ballot of the Society members by a vote of three-quarters (3/4) of the regular members and entitled to vote, provided notice of the proposed repeal, alteration or amendment, with a statement of the substance thereof and of the Articles to be affected thereby, is given in the call for the meeting. Approved bylaw changes will be added to the published bylaws by the immediate Past-President as stipulated in Article IV, Section 5.

Section 2. The Past-President shall review the Society Bylaws, incorporate approved changes following the annual business meeting of the Society, and submit a complete copy of the Bylaws to

the President at least 3 months prior to the next annual meeting. Any proposed changes that require Council and membership approval shall be presented in a complete copy of the Bylaws, labeled with proposed revisions. All words and phrases deleted from existing approved Bylaws shall be indicated by a horizontal line through them. Continuous underlining, italics or a different color shall indicate all new words and phrases.