Volume 25
2019

NAVBO Newsletter

At the Heart of the Vascular Biology Community

Special Points of Interest

- Photos from VB 2018
- 2019 Meritorious Award Recipients
- Vascular Biology 2019
- 25th Anniversary Time Line

NAVBO
North American Vascular Biology Organization

I am honored and thrilled to begin my term as your NAVBO president. It is particularly humbling to be a part of NAVBO's 25th year as a society. How much we have grown in that time! I am grateful to have been part of it for nearly 20 years, as I have watched it evolve along with the field of vascular biology. From national and international meetings, to cutting-edge boot camps and workshops, to trainee support and webinars, to education and outreach, NAVBO strives to serve its members and place them at the forefront of the discipline. With almost a thousand members, of which almost half are trainees, we are ideally positioned to shape the future. Together, we can use our combined enthusiasm and expertise to leverage our basic scientific insights in vascular biology into developing groundbreaking new approaches to regenerative therapies, bioengineering and the treatment of disease. The vasculature is truly what connects all tissues in the body and is therefore of incontrovertible importance in science and medicine. As a society of scientists united by our common interests, it is our privilege to study and understand it!

A society is a sum of its members and its leadership. Therefore, I want to start by thanking and acknowledging the work of past NAVBO Presidents, such as Michelle Bendeck, Cecilia Giachelli, Joyce Bischoff, Victoria Bautch and Jan Kitajewski, who have all been instrumental in charting the course of NAVBO. As President-Elect over the last year, I have had the privilege of watching their tireless advocacy and planning. For all their hard work and support, I am deeply grateful to my predecessors. Thank you especially to President 2018-2019 Michelle Bendeck who I have worked closely with for a year, for showing me how it's done. And of course, thank you to Bernadette Englert, who is truly the heart of the society and who never (ever) stops. Thank you for the opportunity to work alongside you fantastic people, who care deeply about the society and about vascular biology.

Looking forward to the year ahead, we have many exciting events coming up. First and foremost, NAVBO's 25th Anniversary meeting at Asilomar Conference Grounds in Monterey CA (October 27-31, 2019). This will really be an event not to miss! Hal Dietz from Hopkins will deliver the Keynote lecture, ahead of concurrent workshops Developmental Vascular Biology and Genetics VIII and Vascular Matrix Biology and Bioengineering VII. We hope you will join us and bring your labs. Your participation is really what makes our meetings unique and what helps propel our science.

We have begun planning for Vasculata 2020, which is our vascular biology 3 to 4-day summer course. If you have interest in serving as a Vasculata host

Continued on page 9

Inside this issue:

NAVBO gratefully acknowledges unrestricted educational grants from the following organizations for Vascular Biology 2018:

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Michael A. Gimbrone, Jr., M.D.
Elsie T. Friedman Professor of Pathology

Director, Center for Excellence in Vascular Biology
Department of Pathology

August 17, 2019

Ondine Cleaver, Ph.D.
President
North American Vascular Biology Organization
c/o Bernadette M. Englert
Executive Officer
18501 Kingshill Road
Germantown, MD 20874

Dear Ondine,

This brief note is meant to convey my enthusiastic greetings to you and the entire membership of NAVBO on the occasion of its 25th Anniversary. Unfortunately, an overseas commitment will prevent my joining in the celebratory activities planned for the meeting in Monterey in October, but I certainly will be there in spirit!

Since its inception in 1994, NAVBO has been intended to provide an organizational home base for the burgeoning field of Vascular Biology. Born of a collaborative effort by basic scientists, clinician investigators and translational innovators, its success-- now 25 years later, is reflected in the geographic breadth, scientific diversity and enthusiastic participation of its vibrant membership. NAVBO represents a nurturing platform for the interaction of established investigators, more junior faculty and trainees alike—each bringing their personal areas of expertise, and eager to explore common interests and potential collaborative opportunities.

Our respective tenures as the 1st and now the 25th President of NAVBO encompass a remarkable *quarter century of scientific progress*—hopefully the foundation for an even more prosperous and productive future for the modern field of Vascular Biology.

My warmest best wishes and celebratory greetings to all, and special thanks to Bernadette Englert whose personal commitment has helped make it all possible!

Sincerely,

Michael Gimbrone, Jr.

77 Avenue Louis Pasteur, NRB-752, Boston, MA 02115-6110 Tel: (617) 525-4325 Fax: (617) 525-4326
Email: mgimbrone@partners.org

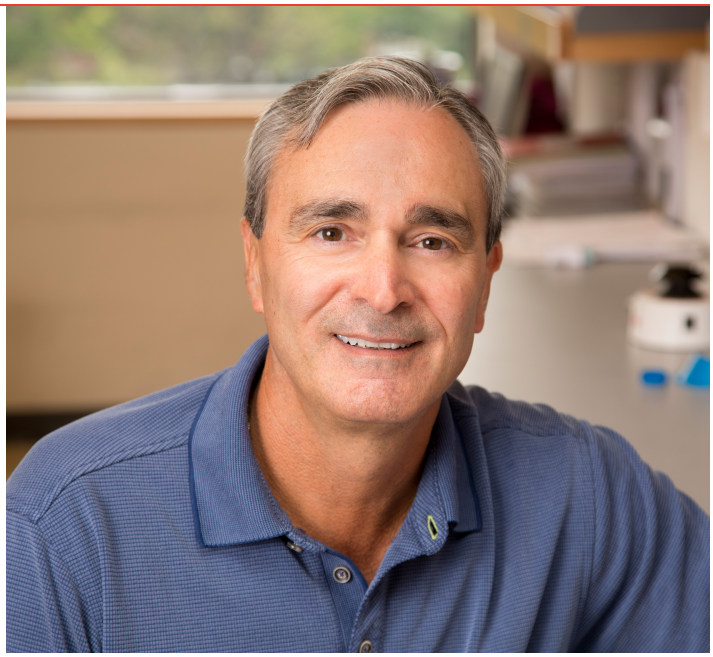
William Sessa is the 2019 Earl P. Benditt Award Recipient

Compiled by William R. Huckle, Editor

The NAVBO Meritorious Awards Committee and Council are pleased to announce the selection of William Sessa, PhD, as the 2019 recipient of the Earl P. Benditt Award, in recognition of his numerous contributions to our understanding of mechanisms regulating nitric oxide production in the vascular endothelium. Dr. Sessa is currently the Alfred Gilman Professor of Pharmacology and Professor of Medicine at Yale University, where he also serves as Vice Chairman of Pharmacology and Director of the Vascular Biology & Therapeutics Program. He will present the Benditt Lecture and receive the award, one of NAVBO's highest honors, at Vascular Biology 2019 in Pacific Grove, California (October 27, 2019).

Following undergraduate studies at the Philadelphia College of Pharmacy and Sciences, Dr. Sessa completed M.S. and Ph.D. studies in Pharmacology at the University of Rhode Island and New York Medical College. He conducted post-doctoral research at the William Harvey Research Institute in London and the University of Virginia, after which he joined the faculty of Yale's School of Medicine, rising to the rank of Professor of Pharmacology in 1999. His scholarly contributions, reported in well over 300 peer-reviewed publications, book chapters, and reviews, have earned Dr. Sessa numerous awards and honors in the U.S. and internationally, including the 2000 John Jacob Abel Medal in Pharmacology from the American Society of Pharmacology and Experimental Therapeutics and the 2010 William Harvey Medal. In 2017, he was awarded an Outstanding Investigator Award (R35) from NHLBI, in strong support of his ongoing investigations of endothelial function.

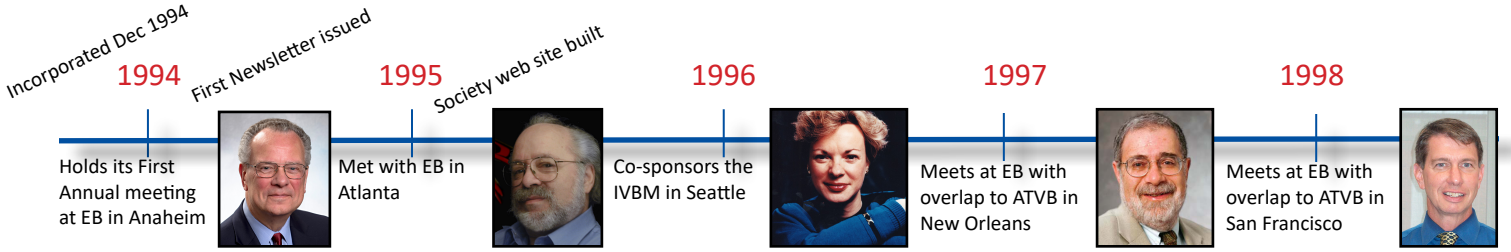
As noted in his bio, Dr. Sessa's principal contributions to science revolve around the molecular aspects of endothelial nitric oxide synthase activation and how eNOS regulates angiogenesis, vascular permeability, atherosclerosis and vascular remodeling. As a post-doctoral fellow at UVa, his was one of the three labs to clone eNOS. Across his career as a faculty member, his lab has probed eNOS subcellular trafficking, post-translational lipidation, characterized major sites of eNOS phosphorylation, and showed that growth factors and shear stress regulate eNOS protein-protein interactions and NO release from the endothelium. He was the first to demonstrate that eNOS derived NO regulates angiogenic behaviors of endothelial cells in an autocrine manner in response to VEGF, and it is now appreciated that NO contributes to several of the biological actions of VEGF. Although eNOS was considered a "constitutive gene," his lab demonstrated that eNOS mRNA and protein levels were induced by exercise training, consistent with a critical adaptive response to changes in shear, pressure and flow.



Dr. Sessa will give his talk, "*Integration of Endothelial Function and Lipid Metabolism*" on October 27, 2019 at Vascular Biology 2019.

Dr. Sessa has served his institution and profession in a number of capacities, chairing study sections at the NIH and American Heart Association and serving as President of NAVBO and editor for major cardiovascular journals. As a research mentor, he has trained dozens of post-doctoral fellows and doctoral students, the latter group including NAVBO's 2017 Judah Folkman Awardee, Guillermo García-Cardeña, PhD and the 2011 Springer Junior Investigator Awardee, Carlos Fernández-Hernando, PhD. Please join us for VB2019 at Asilomar this October to honor Dr. Sessa as he receives this well-deserved award.

Dr. Sessa will give his talk entitled, "Integration of Endothelial Function and Lipid Metabolism," on Sunday, October 27, 2019 at 8:15pm in Merrill Hall at the Asilomar Conference Grounds in Pacific Grove, CA.



EB - Experimental Biology
IVBM - International Vascular Biology Meeting
ATVB - Atherosclerosis, Thrombosis and Vascular Biology Council of the American Heart Association

VASCULAR BIOLOGY 2019

featuring the **Developmental Vascular Biology & Genetics Workshop VIII**

and the **Vascular Matrix Biology and Bioengineerg Workshop VII**

The meeting will have two concurrent themes, which will highlight important intersections between developmental biology, genetics, matrix biology, and bioengineering with major implications for vascular disease, stem cell biology, vascular differentiation, and regeneration. Additionally, we welcome the Microcirculatory Society, who have integrated their focus on vascular physiology and integrative function into both workshops. This joint conference will bring together scientists with common interests in understanding developmental blood vessel formation, how this information pertains to normal physiology and disease, and how it can be exploited for regeneration. The program was developed to include the latest unpublished information in these fields and to integrate novel, emerging themes in each area and at the intersection of these fields.

What to expect:

- Over 40 international experts presenting their most recent work
- Sixteen break-out sessions on workshop-specific topics
- Joint sessions
  - Vascular Therapeutics
  - Emerging Technologies and Imaging
- 49 short talks from selected abstracts integrated into sessions
- Award lectures by William Sessa *(Yale School of Medicine)* and Anne Eichmann *(Yale School of Medicine)*
- Travel awards and reduced registration for trainees
- Pre-Conference Meeting for Trainees
- Tissue Clarity and Light Sheet Imaging Boot Camp
- Poster sessions
- Exhibit program
- Networking opportunities during meals and receptions
- Beautiful location - Monterey, California

Register online through October 25

October 27-31

Asilomar Conference Grounds, Monterey, CA

Keynote Lecture:

Leveraging Nature's Success: Lessons from Modifiers of Cardiovascular Disease

Hal Dietz
Johns Hopkins Medical Center

Organizers:

Victoria Bautch, *University of North Carolina at Chapel Hill*
Kayla Bayless, *Texas A&M University*
Christopher Breuer, *Nationwide Children's Hospital*
Linda Demer, *University of California, Los Angeles*
Courtney Griffin, *Oklahoma Medical Research Foundation*
Marlene Rabinovitch, *Stanford University*

Contact: (301) 760-7745
or *bernadette@navbo.org*

www.navbo.org/vb2019

This meeting is supported in part by educational grants from:

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MACS Miltenyi Biotec
UNC MCALLISTER HEART INSTITUTE
BWH CICS Center for Interdisciplinary Cardiovascular Sciences Brigham and Women's Hospital Harvard Medical School
LSU Health Shreveport CENTER FOR CARDIOVASCULAR DISEASES AND SCIENCES

Anne Eichmann is the Judah M. Folkman Award in Vascular Biology Recipient

Compiled by William R. Huckle, Editor

Dr. Eichamann will give her talk, "*Guidance of Vascular Barrier Formation*," on October 30 at Vascular Biology 2019.

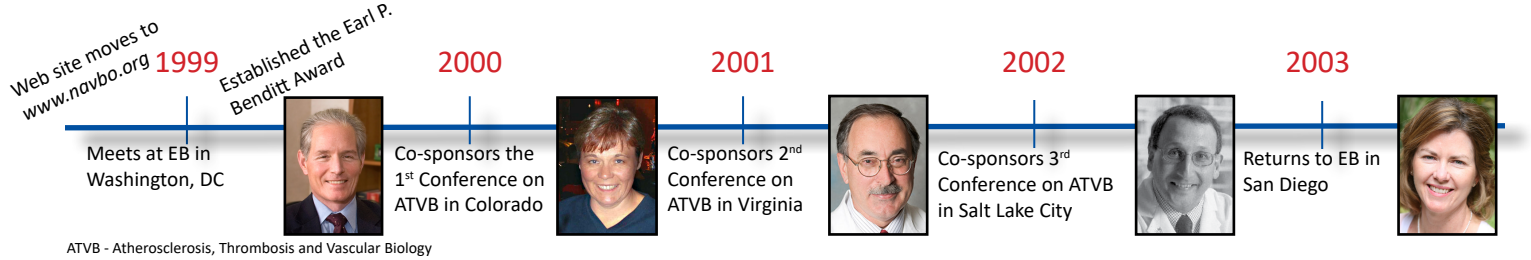
The NAVBO Meritorious Awards Committee, the Scientific Advisory Board, and the NAVBO Council announce with pleasure the selection of Anne Eichmann, Ph.D., as the recipient of the 2019 Judah Folkman Award in Vascular Biology. This award recognizes outstanding contributions from vascular biologists who are at mid-career (within fifteen years of their first faculty appointment). Dr. Eichmann will present her Folkman Award Lecture, titled "Guidance of Vascular Barrier Formation" and receive the award at Vascular Biology 2019 in Pacific Grove, California (October 30, 2019).

Dr. Eichmann completed undergraduate studies in Veterinary Medicine at the Freie Universität, in Berlin and an MSc at the Weizmann Institute in Israel, earning her PhD in Molecular and Cell Biology at the Universite Paris XI, Orsay (1994). Following stints as Research Fellow in the CNRS Institut d'Embryologie in Nogent-sur-Marne, France and Research Director at the Collège de France, she joined the faculty of Medicine at Yale University in 2010. She is currently the Ensign Professor of Medicine (Cardiology), Professor of Cellular and Molecular Physiology, and a member of the Yale Cardiovascular Research Center.

Dr. Eichmann's laboratory studies the mechanisms that govern cellular guidance and tissue patterning during vascular and lymphatic development, with a focus on "tip cells," specialized endothelial cells located on the leading edge of growing capillary sprouts. These slowly-proliferating cells appear to serve as guides to vascular patterning, by extending filopodia that explore the tip environment. The endothelial cells that follow behind, termed "stalk cells," proliferate more rapidly and actively form a capillary lumen capable of sustaining blood flow. Her research findings have been published in top-tier journals, and her lab has earned significant and sustained funding from the NIH. Her list of honors includes an INSERM young investigator award (2002), the Jean Bernard Award from the Medical Research Foundation FRM (2006), and election as a member of EMBO (2013).

Colleagues writing in support of Dr. Eichmann's nomination for the Folkman Award noted that her work is "…always of the highest quality possible, is highly innovative, contains extraordinary mechanistic depth and breadth, and continually pushes the frontiers of the vascular biology field." Others offered that Dr. Eichmann "…is a superb colleague and mentor. She has trained a number of young scientists who have gone on to make significant contributions as independent scientists, such as Ferdinand LeNoble, Liz Jones and Bruno L'Arrivee. She is a generous colleague always ready to provide reagents and ideas to other labs. As service to the vascular biology community, she has done more than her share of meeting organization, served on NAVBO Council, and is a frequent reviewer of manuscripts and grants."

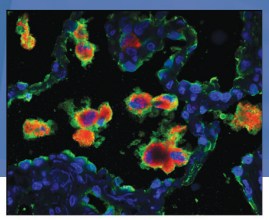
Please join us for VB2019 at Asilomar this October to honor Dr. Eichmann as she receives the Folkman Award in recognition of her accomplishments and bright future as a vascular biologist.

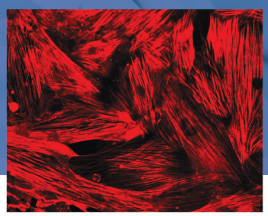


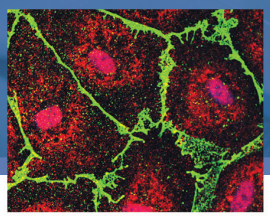
ATVB - Atherosclerosis, Thrombosis and Vascular Biology

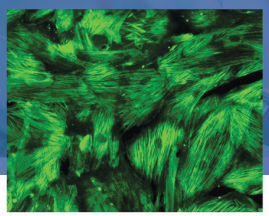
CellBiologics

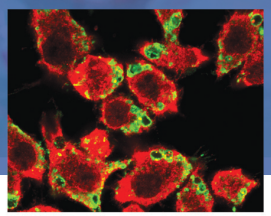
A CELL ABOVE THE REST











PRIMARY CELLS

HUMAN MOUSE RAT MONKEY PORCINE

Endothelial Cells

Epithelial Cells

Bone Marrow Cells

Diseased Cells

Tumor Cells

Stem Cells

CUSTOM CELL ISOLATION

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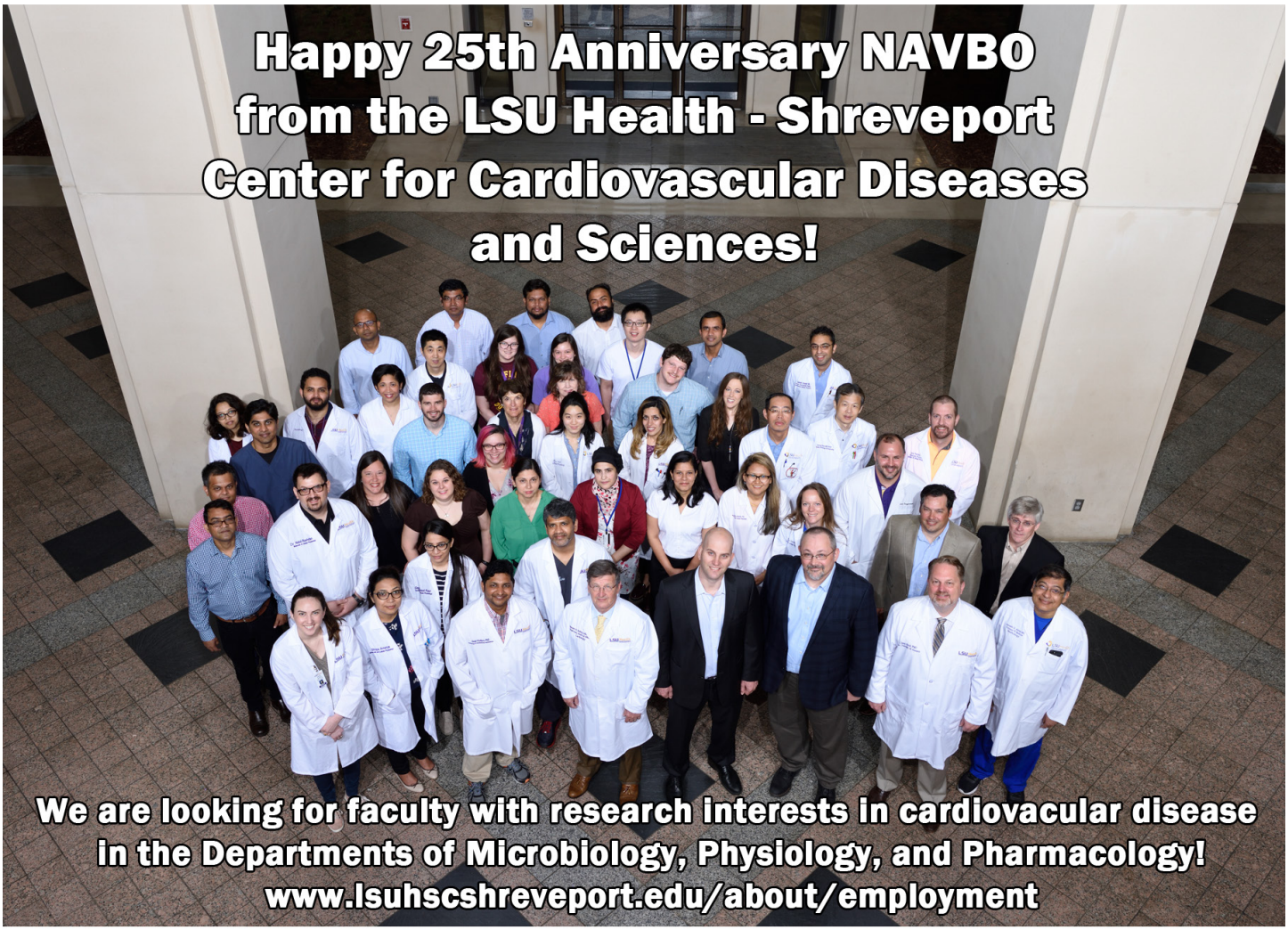
President's Message, continued from page 1

institution, please visit *http://www.navbo.org/vasculata-host* and let us know. Near the end of the summer, the 21st International Vascular Biology Meeting will take place in Seoul, Korea (September 9-12, 2020). This will be held in conjunction with the 9th International Congress on Lipid & Atherosclerosis (ICoLA) and the 5th International Conference of the Korean society for Vascular Biology and Medicine (IcKVBM). Capping off our 26th year, we will again meet in beautiful Gurney's Newport & Marina in Rhode Island for the second time (*www.navbo.org/vb2020*). We hope you will join us for some (or all) of these fantastic meetings!

Finally, a call to arms! The strength of NAVBO lies in the active participation of its members and its volunteers. Whether you are faculty or trainee, we need your help and involvement, at all levels. First, renew your membership, or join NAVBO if you aren't a member already (*http://www.navbo.org/membership/join-navbo*; *www.navbo.org/membership/benefits*). Second, we need your advocacy and partnership, in and outside academia. Be it serving on committees (see opportunities here *http://www.navbo.org/about-us/officers-and-committees*), judging posters at meetings, contributing webinars or 'Lessons Learned' or advocating for science (see opportunities here *http://www.navbo.org/resources/advocate*). Be audacious and help us innovate. Every great advance in science has issued from a new audacity of imagination and bravery. Please take a chance and get involved with us. Share your ideas. NAVBO is your society. We want you as a contributor. We want you as a member.

On behalf of the NAVBO council, I wish you all a successful and exciting academic year ahead.

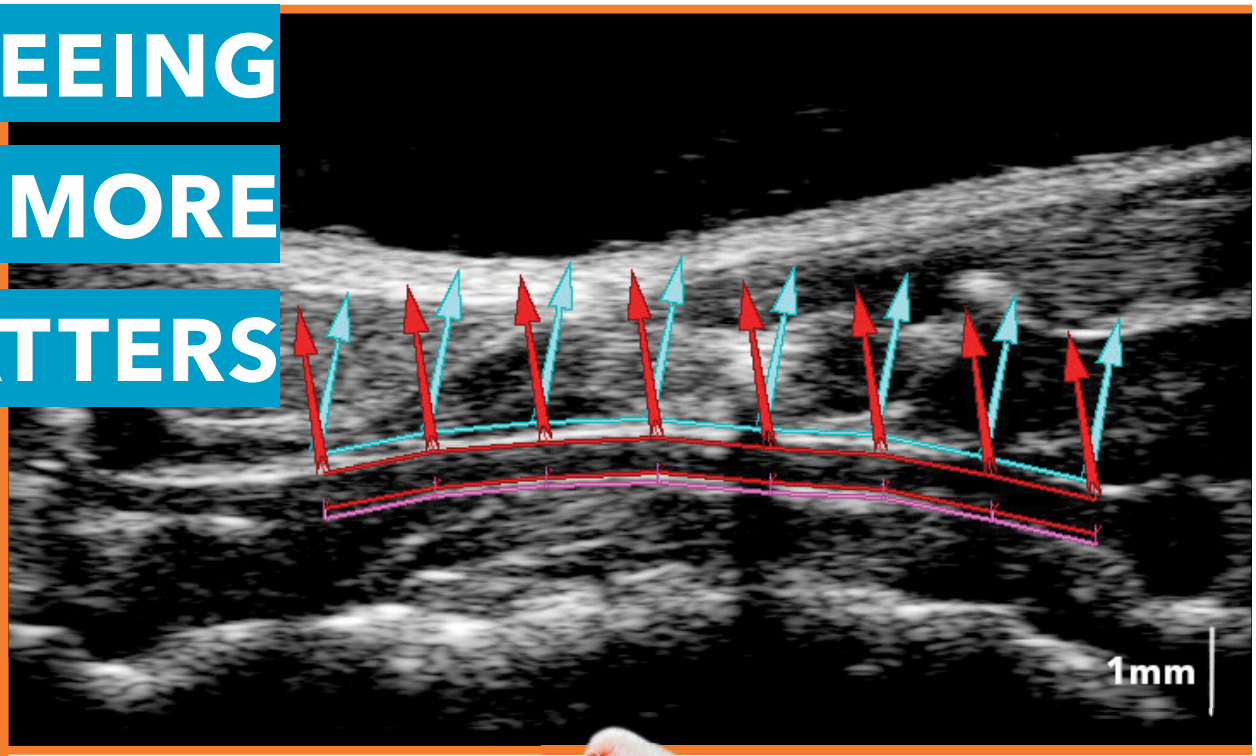
Sincerely,
Ondine Cleaver



FUJIFILM | VISUALSONICS

In Vascular Biology,

SEEING MORE MATTERS



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Vascular Biology 2018

William R. Huckle, Editor

Dr. Rakesh Jain presented the Earl P. Benditt Award Lecture, "Reengineering the Tumor Microenvironment to Improve Cancer Treatment: Bench to Bedside," at Vascular Biology 2018. A feature of the tumor microenvironment of particular interest to Dr. Jain and his collaborators has been elevated hydrostatic pressure in the tumor interstitium, promoted by tendencies toward aberrant vessel architecture and VEGF-driven vascular leakiness upstream and insufficient lymphatic drainage downstream of solid tumors. This combination of inefficient vascular supply and reduced gradients of luminal versus interstitial hydrostatic pressures affects treatment responses, as the reductions in blood flow impair delivery of both conventional chemotherapeutics and novel cellular anti-tumor agents. In 2001, Dr. Jain advanced the idea that the anti-tumor benefit derived from chemotherapeutics could be enhanced when accompanied by anti-angiogenic agents, such as the anti-VEGF monoclonal Avastin, for treatment of human cancers, owing to a process of "vascular normalization" that restores perfusion efficiency and drug delivery. Dr. Jain highlighted several subsequent trials that have provided support for the vascular normalization hypothesis, for example from studies of human glioblastoma treated by chemoradiation therapy supplemented with VEGFR2 tyrosine kinase inhibition. He pointed out further that vascular normalization could in principle improve therapies that target immune checkpoint molecules, by improving vascular access of host immune cells to tumor tissue. Moreover, leukocyte infiltration into tumor requires ICAM-1 and VCAM-1, which he postulated as new functional markers for normalized tumor vessels. Accordingly, Dr. Jain's most recent published work includes development of modified T cells that home with enhanced efficiency to brain tumor vascular endothelium.

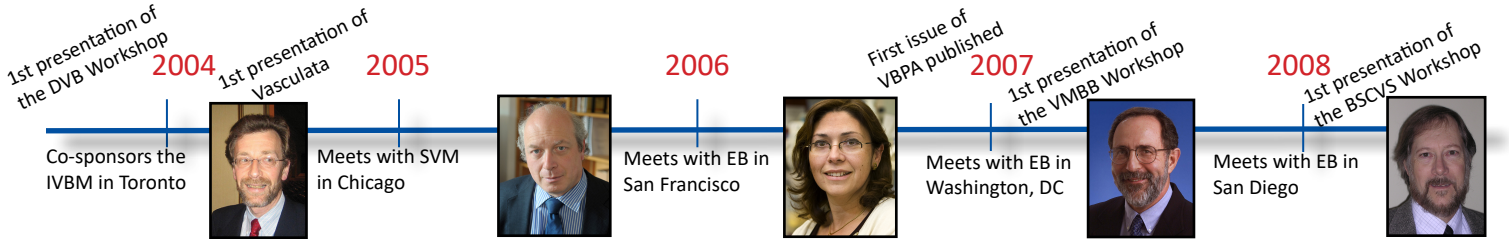
Dr. William Muller presents the Earl P. Benditt Award to Dr. Rakesh Jain at VB2018.

Dr. Jain went on to describe other mechanistic approaches by which physical properties of tumors could be modified therapeutically to increase tumor blood flow. One promising avenue is the inhibition of collagen synthesis by the Angiotensin II receptor antagonist Losartan, a widely-used, well-tolerated, and inexpensive antihypertensive drug. The rationale underlying this strategy is that dense networks of collagen in tumors can impair chemotherapeutic penetration. Relief of physical stress imposed by these fibrous deposits on tumor vessels may then potentiate efficacy of chemotherapy, an idea being tested in pancreatic cancer.

In depth discussions with Drs. Griffin and Vlahos, among others, took place at the Pre-Conference Meeting for Trainees.

Dr. Christiana Ruhrberg, recipient of NAVBO's 2018 Judah Folkman Award, presented the annual Folkman Lecture at Vascular Biology 2018. Dr. Ruhrberg's remarks, introduced by Jan Kitajewski of the University of Illinois-Chicago and titled "Molecular and Cellular Mechanisms of Blood Vessel Growth," covered the highlights of her scientific journey, from pioneering post-doctoral studies of motor neuron development and vascular growth in developing hindbrain to her current research, as Professor in the Institute of Ophthalmology at University College London, on recruitment of erythro-myeloid progenitors into vascular endothelium.

Dr. Jan Kitajewski presented the 2019 Judah Folkman Award to Dr. Christiana Ruhrberg.



DVB - Developmental Vascular Biology
VMBB - Vascular Matrix Biology and Bioengineering
SVM - Society for Vascular Medicine

VBPA - Vascular Biology Publications Alert
BSCVS - Biology of Signaling in the Cardiovascular System

Dr. Ruhrberg recounted her early studies, performed in collaboration with Holger Gerhardt and Christer Betsholtz, that provided landmark evidence that VEGF A isoforms, with differential solubility and tissue distribution characteristics, form concentration gradients crucial for guiding blood vessel growth in developing organs. Her work demonstrated that endothelial Neuropilin 1, acting as a receptor for VEGF A, has a major role in the vascularization of the retina, in part by regulating vessel sprouting. This work has led more recently to the report that reconnection of severed peripheral nerves can occur across a "bridge" of neovessels, formed in response to VEGF A released by macrophages in response to local hypoxia.

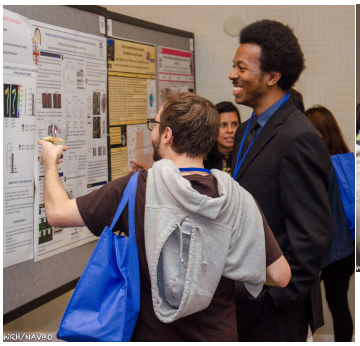
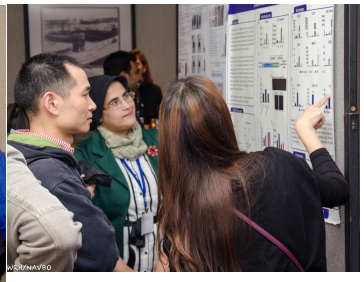
She concluded her talk with an account of the research, published in *Nature* last year, that used a lineage-tracing approach in mice to follow the fate of CSF1r-positive cells, thus targeting early erythro-myeloid progenitors, microglia and other differentiated myeloid cells. This work revealed a sub-population of myeloid lineage cells with the potential to contribute to cells to the endothelium of multiple embryonic organs, where they may persist in the adult. Identification of embryonic myeloid endothelial precursors, Dr. Ruhrberg suggested, raises the prospect for cell-based therapies to promote vascular expansion in a variety of ischemic diseases.

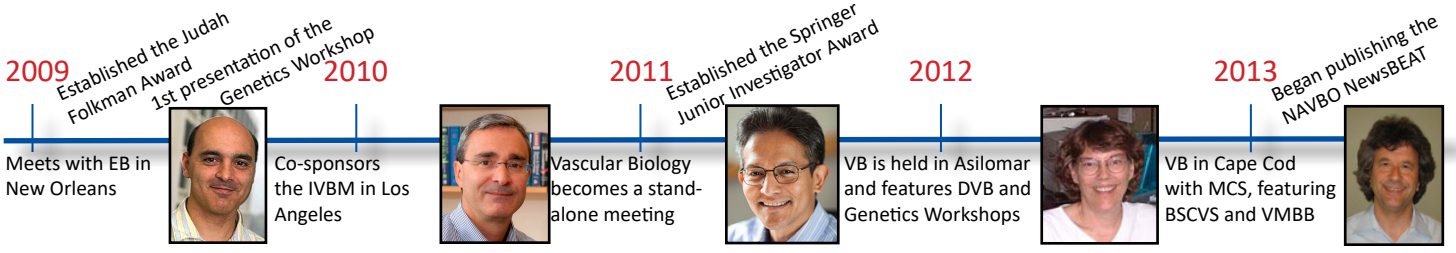
Dr. Paul Kubes gave the Keynote Lecture, "Imaging Sterile Inflammation and Repair," sponsored by the Microcirculatory Society.


Dr. Yi Fan, Assistant Professor of Radiation Oncology at the University of Pennsylvania's Perelman School of Medicine and recipient of NAVBO's 2018 Springer Junior Investigator Award, presented the annual Springer Lecture at VB 2018.

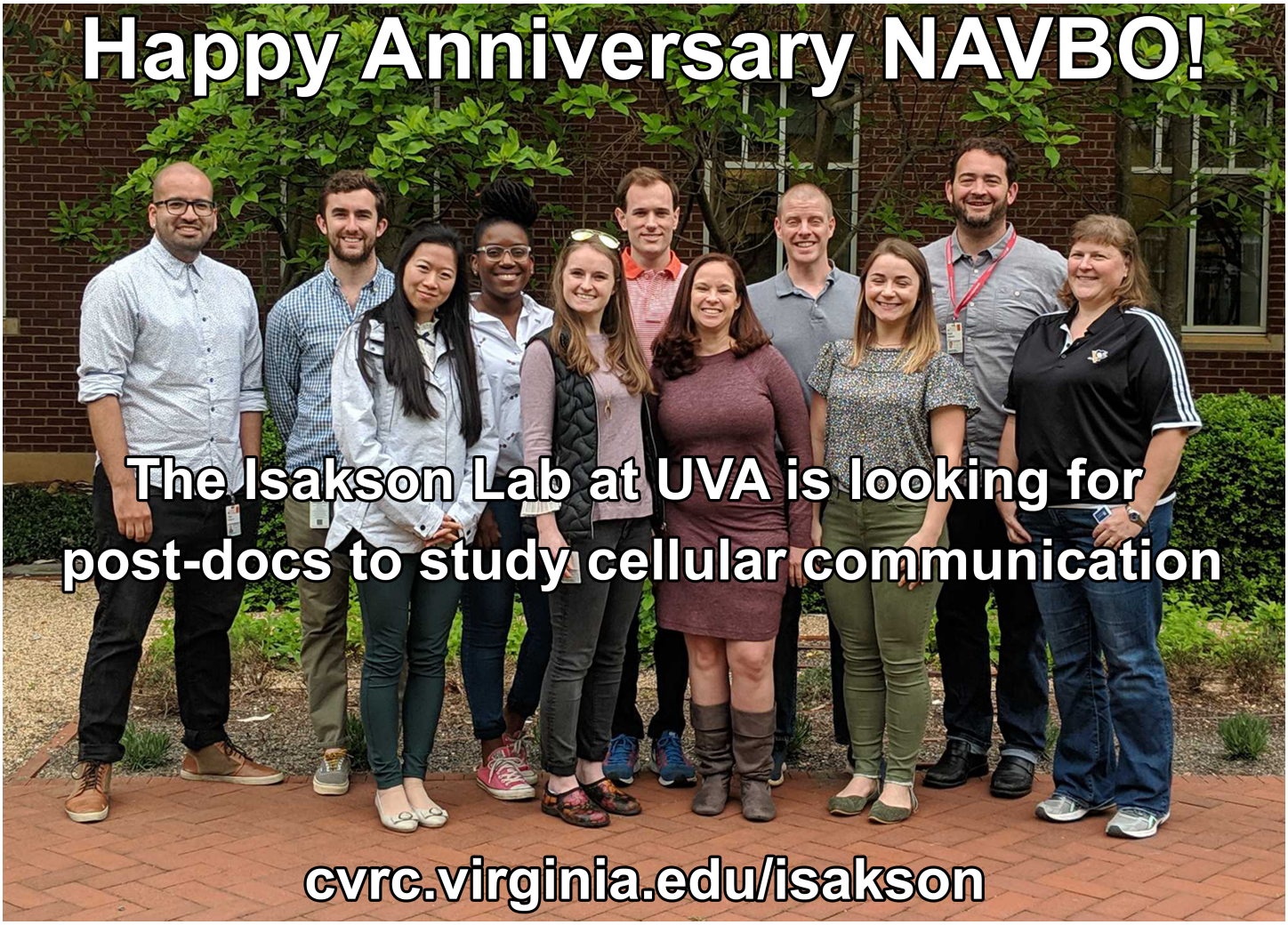
Dr. Fan's remarks, introduced by Michelle Bendeck of the University of Toronto and titled "Wnt-mediated Endothelial Transformation into Mesenchymal Stem Cell-like Cells Induces Chemoresistance in Glioblastoma," recounted his laboratory's investigation of the limitations of anti-angiogenic therapies in the treatment of cancers. Dr. Fan's work suggests that an endothelial-to-mesenchymal transition, driven by hepatocyte growth factor, may occur in the tumor endothelium, resulting in a population of cells relatively resistant to anti-VEGF or anti-KDR agents but potentially sensitive to those that target the PDGF-beta receptor.

His presentation went on to explore the role of macrophages in cancer cell killing or persistence. In studies published last year in *Nature Communications*, endothelial-selective knockout of IL-6 was shown to inhibit macrophage alternative activation and improve survival in a genetic glioblastoma mouse model, suggesting this interleukin as a possible new target in GBM. Taken together, Dr. Fan's promising work links endothelial transformation to several tumor characteristics that stand as barriers to more effective therapies: aberrant vasculature, immune suppression, resistance to genotoxicity, and insensitivity to conventional anti-angiogenic agents.



Poster sessions are always well attended!



Happy Anniversary NAVBO!



HAPPY ANNIVERSARY NAVBO!

The St. Hilaire Lab is looking for a postdoc to study the mechanisms regulating cell phenotype transitions in cardiovascular calcification. Come join our team!

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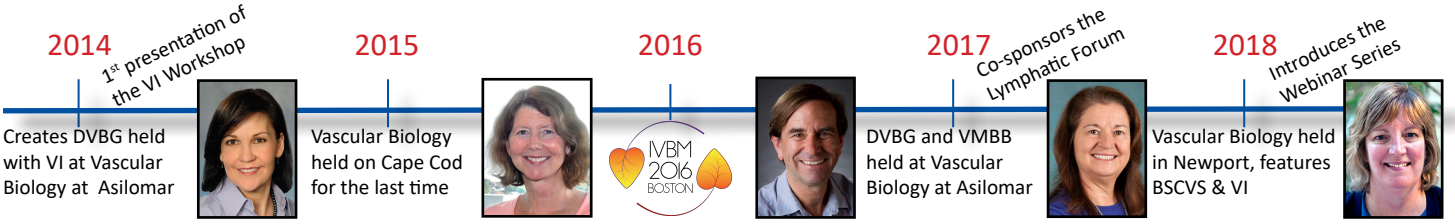

DVBG - Developmental Vascular Biology and Genetics Workshop (combined the two workshops into one)
VI - Vascular Inflammation Workshop

25 Years! Thanks for the Memories!

Bernadette Englert

I would like to express my appreciation to those that have served NAVBO over these past 25 years, it's not only Presidents that need to be recognized! They had a lot of help, support and advice from NAVBO Councilors. I have had the privilege of working closely with each and every one and it has been a very rewarding experience. In addition to the Council, where would we be without dedicated meeting organizers, so I would like to thank and acknowledge them as well. I can't list them all here, but I also want to thank every NAVBO member who has served on a committee. You are the reason for NAVBO's success! And finally, over this 25-year span, we have had only three Newsletter Editors - thank you to Mary Gerritsen who got the ball rolling back in 1994 and served until 2000; William Schnaper, 2000 to 2004 and a very special thank you to William Huckle, our Editor-in-Chief since 2004!

Secretary-Treasurers

Linda L. Demer, 1998-2002
Mary Gerritsen, 1995-1998
Timothy Hla, 2007-2010
Klaus Ley, 2011-2012
Mark Majesky, 2005-2007
William Muller, 2012-2020
Elizabeth G. Nabel, 1994-1995
Martin Schwartz, 2010-2011
Michael Simons, 2002-2004
J. Anthony Ware, 2004-2005

Councilors

Rosemary Akhurst, 2016-2019
Victoria Bautch, 2003-2006
Kayla Bayless, 2017-2020
Michelle Bendeck, 2006-2009
Joyce Bischoff, 2005-2008
Tatiana Byzova, 2010-2012
Martha K. Cathcart, 2005-2008
Guy M. Chisolm, 1998-2001
Ondine Cleaver, 2011-2014
Alexander W. Clowes, 1997-2000
Tucker Collins, 1999-2002
John P. Cooke, 2002-2005
Myron I. Cybulsky, 2002-2005
Patricia D'Amore, 1995-1998
Peter F. Davies, 2000-2003
George Davis, 2008-2011
Mary Dickinson, 2014-2017
Anne Eichmann, 2012-2015
Jason Fish, 2016-2019
Alan Fogelman, 1996-1999
Zorina Galis, 2018-2021
Cecilia M. Giachelli, 1999-2002, 2007-2010
Courtney Griffin, 2015-2018
Karen K. Hirschi, 2004-2007
Timothy Hla, 2004-2007
Christopher Hughes, 2015-2018
Luisa Iruela-Arispe, 2001-2004
Mukesh Jain, 2011-2014
Jan Kitajewski 2013-2016
Klaus Ley, 2010-2011
Peter Libby, 1995-1994, 2015-2012
Francis W. Luscinskas, 2003-2006
Mark W. Majesky, 1997-2000
Tanya Mayadas, 2010-2013
William Muller, 2009-2012
Mary Jo Mulligan-Kehoe, 2011-2013
Guillermo Oliver, 2015-2016
A. Wayne Orr, 2017-2020
Elaine Raines, 2007-2010
Kristy Red-Horse, 2018-2021
Michael Reidy, 2001-2004
Martin Schwartz, 2008-2012
William C. Sessa, 2000-2003
Linda Shapiro, 2019-2022
Cynthia St. Hilaire, 2019-2022
Radu Stan, 2013-2016
Heidi Stuhlmann, 2008-2011
Denisa Wagner, 1996-1999
Rong Wang, 2014-2017
Brant M. Weinstein, 2006-2009

Annual Meeting and IVBM Organizers

1994: Paul DiCorleto in Anaheim, CA
1995: Paul DiCorleto in Atlanta, GA
1996 IVBM in Seattle: Russel Ross and Stephen Schwartz
1997: Brad Berk in New Orleans, LA
1998: Peter Libby in San Francisco, CA
1999: Mark Majesky in Washington, DC
2000: Paul DiCorleto in Broomfield, CO
2001: Paul DiCorleto and Gary Owens in Washington, DC
2002: Linda Demer in Salt Lake City, UT
2003: William Muller in San Diego, CA
2004 IVBM in Toronto: Avrum Gotlieb
2005: Martha Cathcart in Chicago, IL
2006: Martha Cathcart in San Francisco, CA
2007: Michael Simons in Washington, DC
2008: Joyce Bischoff in San Diego, CA
2009: Karen Hirschi in New Orleans, LA
2010 IVBM in Los Angeles: Luisa Iruela-Arispe, Mark Ginsberg, Klaus Ley and Alan Fogelman
2016 IVBM in Boston: William C. Aird

Workshop Organizers

2004 Developmental Vascular Biology (DVB)
Luisa Iruela-Arispe and Brant Weinstein
2006 DVB: Brant Weinstein and Gary Owens
2007 Vascular Matrix Biology & Bioengineering (VMBB)
Michelle Bendeck and Cecilia Giachelli
2008 DVB: Brant Weinstein and Janet Roussant
2008 Biology of Signaling in the Cardiovascular System (BSCVS), Tim Hla and Michael Simons
2009 VMBB: Michelle Bendeck and Cecilia Giachelli
2009 Genetics and Genomics of Vascular Disease (GGVD)
Douglas Marchuk and Miikka Vikkula
2010 DVB: Brant Weinstein and Richard Hynes

Vascular Biology

2011 -
VMBB: Elaine Davis and Themis Kyriakides
BSCS: Tim Hla and Michael Simons
2012 -
GGVD: Douglas Marchuk and Miikka Vikkula
DVB: Brant Weinstein and Kari Alitalo
2013 -
VMBB: Hiromi Yanigisawa and Ny
BSCS: Mark Kahn and Martin Schwartz
2014 -
DVBG: Brant Weinstein and Brian Black
Vascular Inflammation (VI) (introduced in 2014)
Klaus Ley and Tanya Mayadas
2015 -
VMBB: Marsha Rolle and Monzur Murshed
BSCS: Ondine Cleaver and Martin Schwartz
2017 -
DVBG: Brian Black and Victoria Bautch
VMBB: Craig Simmons and Jessica Wagenseil
2018 -
BSCVS: Ondine Cleaver and William Sessa
VI: Masanori Aikawa and William Muller

VB Publications Alert Editors

Rolf Brekken
Susana Cavallero
Qiong Gan
Monica Hinds
Luisa Iruela-Arispe*
Jeff Isenberg
Timothy Lane
Shye (Jeff) Lee*
Susan Majka*
Akiko Mammoto
Michael May
Juan Melero-Martin
Francis Miller
Wang Min
Monzur Murshed
H. Anne Pereira
Elaine Raines*
Liudmila Romanova
Somanath PR Shenoy
Mei Speer
Radu Stan*
Rebecca Stockton
Kishore Wary

* *Senior Editors*

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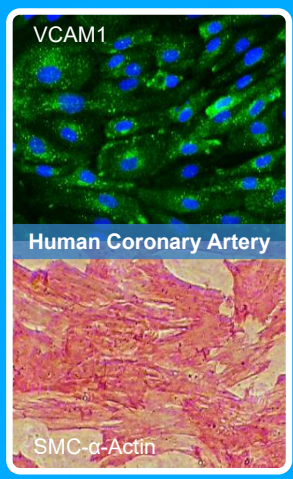
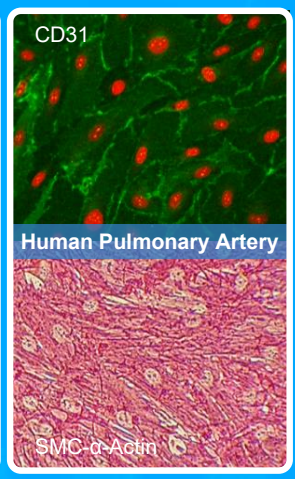
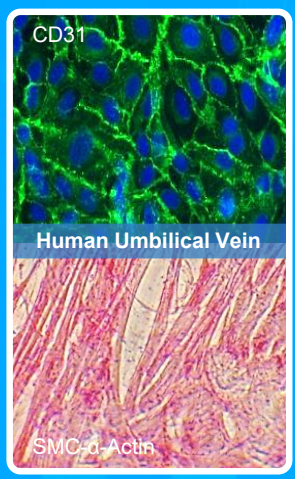
Endothelial Cells







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Past President's Message

Michelle Bendeck

Dr. Bendeck presented Yi Fan with the 2018 Springer Junior Investigator Award.

I want to thank the NAVBO membership for electing me and giving me the opportunity to participate in this thriving society. It has been a busy year, as NAVBO ran a full slate of activities.

Vasculata 2018 in St. Louis was organized by Gwen Randolph and offered a record number of 13 useful hands-on workshops. This year's Vasculata, held at the Medical College of Wisconsin and lead by Ramani Ramchandran, added a new mentoring program to enhance the Vasculata experience even more. Stay tuned for information about next year's Vasculata to be held in Boston under the leadership of Guillermo García-Cardena.

NAVBO held a very successful annual meeting in October 2018, covering the two concurrent workshops on Biology of Signaling in the Cardiovascular System and Vascular Inflammation. We had a new venue for this meeting, Gurney's Newport Resort and Marina in scenic Newport, Rhode Island. The meeting was great, and the hotel was the perfect space for interactions and discussions between scientists. I was especially pleased to meet many young and enthusiastic trainee members, and I encourage them to continue their great research and their participation in NAVBO. Bernadette Englert worked very hard to make arrangements, and has brokered a good deal with the hotel so we will be meeting there again in 2020.

Another new activity for NAVBO was working with *Frontiers In Cardiovascular Medicine* to publish collections of topics of special interest to Vascular Biologists. The first issue, Vascular Calcification, included 12 articles published from November 2018 through April 2019. Check it out (*https://www.frontiersin.org/research-topics/7775/vascular-calcification*). Special thanks to the editors Dwight Towler and Yabing Chen for pulling this together, and to Masanori Aikawa for spearheading this initiative. And importantly, some of the revenue generated from the open access publications returns to NAVBO in support of our activities. Next off the block is Single Cell Analysis: Advancing Vascular Biology lead by editors, Zorina Galis and Kristy Red-Horse. For an overview of the topic or to submit a manuscript, go to *https://www.frontiersin.org/research-topics/10234*.

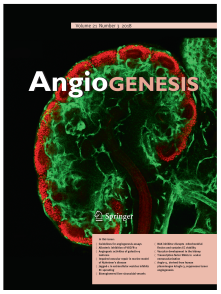
NAVBO continues to successfully engage members from around the world with a total of 183 international members. This is important in allowing us all to collaborate and develop ideas with the best scientists in the world. Participation in the International Vascular Biology Meetings every other year is a popular activity for many NAVBO members. To this end, NAVBO will support travel awards to the IVBM 2020 in Korea. Furthermore, plans are well underway for IVBM 2022 which will be held in the San Francisco Bay Area at the Oakland Marriott City Center. This meeting is being capably organized by Rong Wang of the University of California, San Francisco. Please join us.

I want to thank all the members of the NAVBO council during the past year: Cecilia Giachelli, Ondine Cleaver, Bill Muller, Rosemary Akhurst, Jason Fish, Kayla Bayless, Wayne Orr, Zorina Galis, Kristy Red-Horse and Jan Kitajewski. It has been a real pleasure working with you and hearing all your great ideas.

And finally, remember to register for Vascular Biology 2019 in October at beautiful Asilomar in Pacific Grove, California.

Thank you,
Michelle Bendeck

Springer Junior Investigator Award



This is a junior faculty (or equivalent) award and is based on the abstract submitted to VB2019. Watch for the announcement of the 2019 Recipient in an upcoming NewsBEAT

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Member News

William R. Huckle, Editor

Cynthia St. Hilaire, faculty member in the Division of Cardiology and Vascular Medicine Institute at the University of Pittsburgh, is hosting Discover CircRes, a monthly podcast that delivers a quick update on key highlights and expert insights from the current issue of *Circulation Research* and features an interview with the first and last author of a select paper. The new editorial leadership of *Circ Research*, headed by Dr. Jane Freedman from UMass Medical School, is formulating a vision that promotes inclusivity, quality, and integrity. Please tune in to Cindy's podcast at *https://www.ahajournals.org/res/podcast* and also check out Twitter, Instagram, and Facebook to join the discussions.

New York orthopedic surgeon, **David Hootnick**, and his colleagues at the SUNY Upstate Medical University in Syracuse have named a new syndrome of human congenital long bone deficiencies, based on embryonic arterial dysgenesis. The boney distributions of loss correspond to the timings of the different flawed arterial arteriogenesis from the original axis artery formed by vasculogenesis. Read more about their contribution in *Birth Defects Research* (PMID:30152124).

Thomas C. Resta, Professor Cell Biology and Physiology and Director of the Cardiovascular Research Training Program at the University of New Mexico Health Sciences Center, has been elected Fellow of the American Physiological Society (FAPS). The rank of Fellow of the APS is an elite member status reserved to honor distinguished leaders who have demonstrated excellence in science, have made significant contributions to physiological sciences and related disciplines, and have served the Society. The designation of Fellow, which remains valid for the duration of the honoree's APS membership, is a path to becoming more active in APS affairs and leadership.

Miikka Vikkula, professor in the de Duve Institute at the University of Louvain, has received the First Belgian Generet Award for Rare disease research. Dr. Vikkula's project, titled "Treat Vascular Anomalies," will mine his research group's unique biobank containing hundreds of tissue samples collected from patients during surgical treatments. Using the latest techniques of whole genome sequencing,

From left to right : Mrs. Maggie De Block, Minister of Social Affairs and Public Health; HRH Princess Astrid; Prof. Miikka Vikkula

bioinformatics, and in situ analysis, the group will seek to identify, localize, and characterize the pathophysiology of novel mutated genes that cause vascular anomalies. The award, totaling 1M Euros over four years, aims to give a strong boost to research on rare diseases in Belgium and to increase the profile of Belgium as an international center of research on rare diseases.

As of August 3, **Rita Alevriadou** has joined the University at Buffalo--The State University of New York as the SUNY Empire Innovation Professor in Biomedical Engineering, moving from her former post at Ohio State's Davis Heart and Lung Research Institute. Her research focuses on the molecular basis of atherosclerosis, ischemia/reperfusion injury and diabetes, with emphasis on the role of hemodynamic shear stress on vascular endothelial cell redox status, calcium signaling, mitochondrial function, and survival. The Empire Innovation Program is a state-funded grant program dedicated to recruiting and retaining world-class faculty at the State University of New York.

Charter member of NAVBO, **Thomas N. Wight**, was recently honored at the International Society of Hyaluronan Sciences Meeting held in Cardiff, Wales, for his work on the "Role of Hyaluronan and Proteoglycans in Atherosclerosis Research." Dr. Wight is a past Established Investigator of the AHA and has served on

study sections for both the National Institutes of Health and the American Heart Association, as well as on several editorial boards. He is currently Director of the Matrix Biology Program at the Benaroya Research Institute in Seattle, WA, and an Affiliate Professor of Pathology at the University of Washington School of Medicine.

Luis Hortells, Research Fellow in the Division of Molecular Cardiovascular Biology at Cincinnati Children's Medical Center, has had a good year. For starters, Dr. Hortells received the Cincinnati Children's Hospital Postdoctoral Strauss Award, which funds junior investigators to progressively gain independence as a researcher. In addition, he was awarded a two-year American Heart Association Postdoctoral Scholarship, received the Best Postdoctoral Abstract at 2018 Valve Day in Cleveland, and earned a Young Investigator Travel Award to attend the AHA's Basic Cardiovascular Sciences Scientific Sessions in Boston earlier this summer.

Riaj Mahamud, a PhD candidate in the Sathish Srinivasan lab in Cell Biology at the OMRF/ University of Oklahoma Health Sciences Center, recently received the Lymphatic Education & Research Network Travel Award, in support of his attendance at the 2019 Lymphatic Forum in Austin, Texas. Mr. Mahamud's research is focused on lymphatic vascular development, using a mouse model of lymphedema occurring in Emberger syndrome patients. His studies suggest that the generation of normal lymphatic capillaries may involve GATA2 regulation of miR-126 during development of lymphatic and lymphovenous valves.

Zhiyu Dai has joined the faculty of the Department of Internal Medicine at the University of Arizona College of Medicine-Phoenix. Most recently a postdoctoral trainee and Research Assistant Professor at the University of Illinois at Chicago and Northwestern University, Dr. Dai studies the molecular mechanisms of pulmonary arterial hypertension and has developed the first mouse model of this disorder, a Tie2Cre-mediated deletion of Egln1. Egln1Tie2Cre mice experience obliterative vascular remodeling and vascular occlusion that recapitulates clinical PAH. Dr. Dai has been awarded an NIH NHLBI K99/R00 Award as well as an American Thoracic Society Aldrighetti Research Award for Young Investigators.

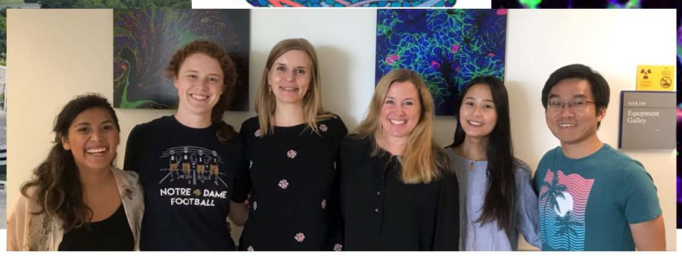
In April 2019, the American Heart Association awarded a Career Development Award to **Dario F. Riascos-Bernal**, Instructor in the Department of Medicine and the Wilf Family Cardiovascular Research Institute at Albert Einstein College of Medicine. Dr. Riascos-Bernal's research under AHA support will examine smooth muscle cell mitochondrial mechanisms that contribute to vascular remodeling. The Career Development Award program support highly promising healthcare and academic professionals, in the early years of one's first professional appointment, to explore innovative questions or pilot studies that will provide preliminary data and training necessary to assure the applicant's future success as a research scientist.

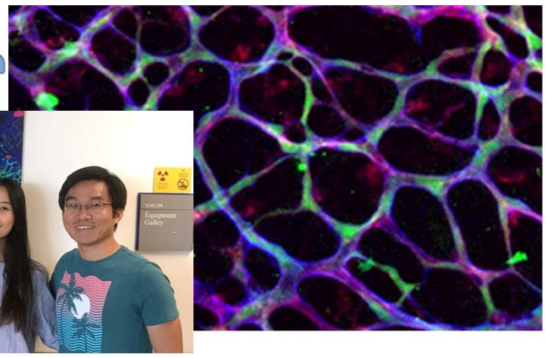
Mary Wallingford, Assistant Professor of Reproductive Sciences in the Sackler School of Graduate Biomedical Sciences at Tufts University, also has earned a prestigious Career Development Award from the AHA. Dr. Wallingford's research is designed to advance fundamental knowledge of placental vascular development and pathophysiology through an innovative approach that combines classic embryology techniques with bioengineering methodologies. In the long term, her laboratory aims to use this knowledge to advance obstetric cardiovascular care by developing diagnostic tools and treatment options for placental dysfunction, a major component of pregnancy complications worldwide.

Jennifer Esser, principal investigator in the Vascular Remodeling laboratory at the Universität Freiburg, Germany, has achieved the qualification of "Habilitation" as of June 2019. To be considered for the Habilitation, a candidate needs a solid publication record, contributions to university teaching, and to write and defend a thesis. The institutional faculty deliberates in a process that takes about a year. In Germany, the Habilitation is one way to professorship – which means that Dr. Esser is now qualified to apply for open positions.

Haley Barlow, graduate student in Ondine Cleaver's laboratory in Molecular Biology at the UT Southwestern Medical Center, is the recipient of a highly-competitive National Science Foundation Graduate Research Fellowship. The NSF Graduate Research Fellowship Program recognizes and supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines who are pursuing research-based graduate degrees at accredited United States institutions. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant research achievements in STEM or STEM education.

The Cleaver Lab is looking for a postdoc to study blood vessel formation in embryos, and growing and engineered organs.





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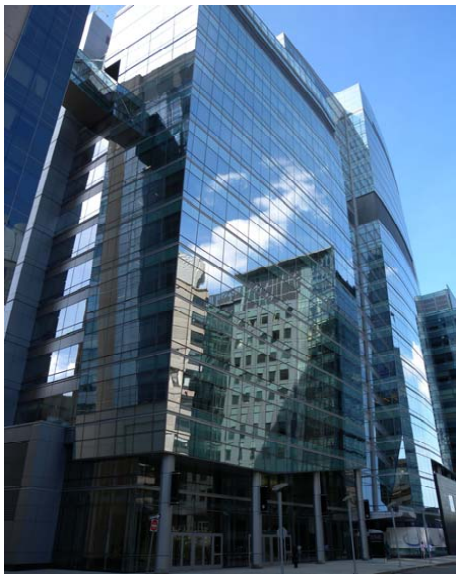
UTSouthwestern Medical Center

BWH CICS

Center for Interdisciplinary Cardiovascular Sciences

Brigham and Women's Hospital, Harvard Medical School



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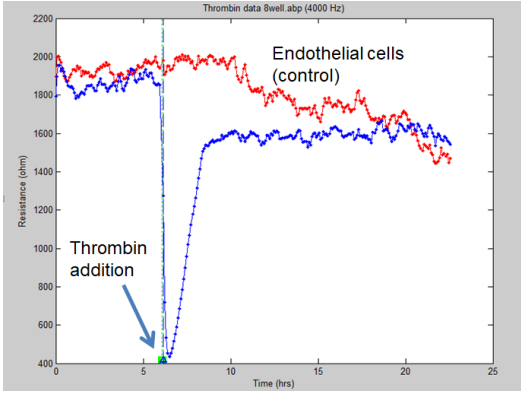
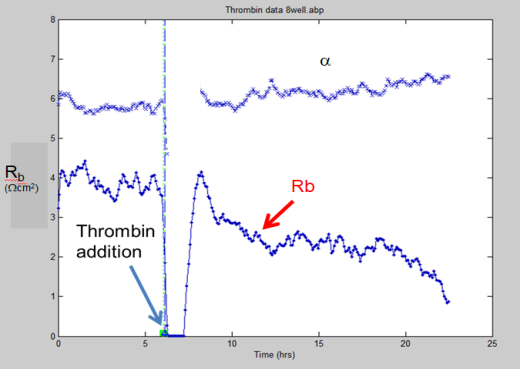
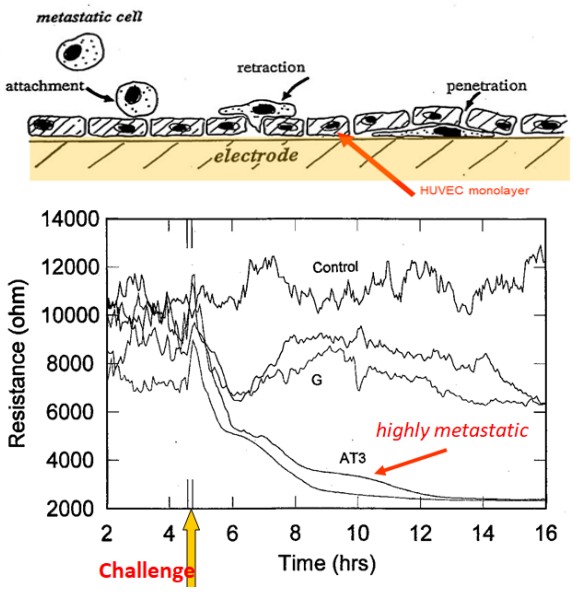




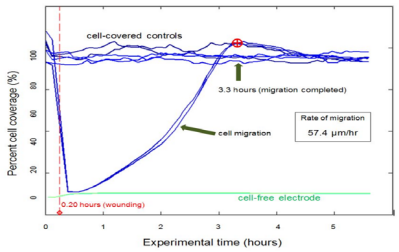
Epithelial and endothelial cells regulate the passage of molecules across cell layers. Disease, expecially vascular disease, occur when regulation is impaired. ECIS measurements are highly sensitive to changes in the barrier function and, with modeling, these changes can be further refined. ECIS has been used to demonstrate the effects of many regulating molecules incluing thrombin, VEGF, TNFalpha and sphingosine-1-phosphate.

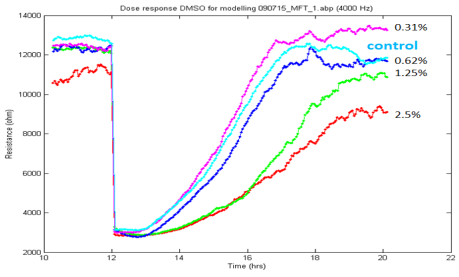
Invasion



By quantifying cell behavior, ECIS can give new insight into how invasive cells cross endothelial and epithelial monolayers. Published examples include metastatic cells and leukocyte trans-endothelial migration as well as the migration of pathogenic organisms.

Cell Migration





Operating in an elevated field mode causing electroporation, a high electric field is appled for several seconds resulting in cell death. The ECIS wound is precisely defined, as it includes only those cells upon the electrode. Subsequent migration to "heal" the wound is detected electrically and returns a migration rate – all accomplished without opening the door of the cell incubator.

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