Curriculum Vitae

JOHN PETER WIKSWO, JR.

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Vanderbilt Institute for Integrative Biosystems Research and Education
6301 Stevenson Center
Vanderbilt University
Nashville, TN USA 37235
Phone: (615) 343-4124 Fax: (615) 322-4977
Email: john.wikswo@vanderbilt.edu
https://www.vanderbilt.edu/viibre/wikswo.php
ORCID: 0000-0003-2790-1530

FIELDS OF SPECIALIZATION: Biosystems science and engineering. Biological physics, systems biology, biomedical engineering, cellular instrumentation and control, microfabrication, organs-on-chips, automated biology, cardiac electrophysiology, electromagnetism, and SQUID magnetometry.

DEGREES:
B.A. - Physics, University of Virginia, Charlottesville, VA, 1970
M.S. - Physics, Stanford University, Stanford, CA, 1973
Ph.D. - Physics, Stanford University, Stanford, CA, 1975

APPOINTMENTS:

Research Fellow in Cardiology, Stanford University	1975-1977
Assistant Professor of Physics, Vanderbilt University	1977-1982
Associate Professor of Physics, Vanderbilt University	1982-1988
Professor of Physics, with tenure, Vanderbilt University	1988-2022
A. B. Learned Professor of Living State Physics, Vanderbilt University	1991-2001
Gordon A. Cain University Professor, Vanderbilt University	2001-2022
Professor of Biomedical Engineering, with tenure, Vanderbilt University	2001-2022
Professor of Molecular Physiology and Biophysics, with tenure, Vanderbilt University School of Medicine	2001-2022
Founding Director, Vanderbilt Institute for Integrative Biosystems Research and Education	2001-present
A. B. Learned Professor of Living State Physics, Vanderbilt University	2005-present
Member, Vanderbilt Ingram Cancer Center	2006-present
Visiting Member, Institute for Advanced Study, Princeton University	2007
University Distinguished Professor of Biomedical Engineering, Molecular Physiology & Biophysics, and Physics, Vanderbilt University	2022-present
Chief Technology Officer, Regemus Technologies, LLC, Nashville, TN	2022-present
Adjunct Professor, Department of Graduate Education, College of Graduate Health Sciences, The University of Tennessee Health Science Center	7/1/2022-6/30/2025

HONORS:
Echols Scholar, University of Virginia, 1966-1970
Phi Beta Kappa, 1968
Junior Fellow, University of Virginia Society of Fellows, 1969-1970
B.A. with Highest Distinction, 1970
Woodrow Wilson Fellow, 1970
Woodrow Wilson Independent Study Award, 1970
NSF Predoctoral Fellow 1971-1974
Student Member, Institute for Electrical and Electronic Engineers, 1975
Member, Institute for Electrical and Electronic Engineers, 1975-2004

HONORS (continued):

Bay Area Heart Research Committee Fellow, 1975-1977
Finalist, Deborah Heart and Lung Foundation Young Investigator Competition, 1980
Alfred P. Sloan Research Fellow, 1980-1982
IR-100 Award for Neuromagnetic Current Probe, 1984
Fellow, American Physical Society, 1990
John Simon Guggenheim Fellow, 1992-1993
Thomas Jefferson Award, Vanderbilt University, 1997
Fellow, American Institute for Medical and Biological Engineering, 1999
Fellow of the American Heart Association, Fellow of the Council on Basic Cardiovascular Sciences of the American Heart Association, 2001
Fellow, Biomedical Engineering Society (BMES), 2005
Senior Member, Institute for Electrical and Electronic Engineers, 2005-2007
Fellow, Heart Rhythm Society, 2006
The Nightingale Prize 2006 for the best paper published in Medical and Biological Engineering and Computing in 2005
Fellow, Institute for Electrical and Electronic Engineers, 2008
Fellow, American Association for the Advancement of Science (AAAS), 2010
Full Member, Society of Toxicology (SOT), 2016
R&D 100 Award for MultiWell MicroFormulator, 2017
Experimental Biology and Medicine (EBM) Outstanding Reviewer Award, 2021

PROFESSIONAL SOCIETIES:

American Association for the Advancement of Science
American Heart Association
American Institute for Medical and Biological Engineering
American Physical Society: Division of Biological Physics, Division of Material Physics; Instrument and Measurement Science Topical Group
American Physiological Society
Biomedical Engineering Society (BMES)
Biophysical Society
Heart Rhythm Society
Institute for Electrical and Electronic Engineers: Engineering in Medicine and Biology Society; Magnetics Society (S'75–M'75–SM'05–F'08)
Sigma Xi (– 2020)
Society for Experimental Biology and Medicine (2006-2024)
Society for Mathematical Biology
Society of Toxicology
Tennessee Academy of Science
Union of Concerned Scientists

EXTERNAL ACTIVITIES:

Technician, Department of Physics, University of Virginia, 1967-1970
Vice-President, Dexmach, Inc., Palo Alto, CA, 1975-1977
Consultant, David W. Taylor Naval Ship Research and Development Center, Annapolis, MD, 1976-1982
Consultant, Cardiology Division, Stanford University School of Medicine, 1977-1983
Consultant, Cardiac Pacemakers, Inc., Minneapolis, MN, 1985-1988
Director of Undergraduate Studies, Department of Physics and Astronomy, Vanderbilt University, 1985-1989
Advisory Board, National Vibrating Probe Facility, Marine Biological Laboratory, Woods Hole, MA 1986-88
Program Committee (North and South America), Sixth World Conference on Biomagnetism, Tokyo, 1987

EXTERNAL ACTIVITIES (continued):

International Advisory Committee on Biomagnetism, 1987-1993
Scientific Advisory Board, Hypres, Inc., 1989-present (currently inactive)
Consultant, Marion Merrell Dow, Inc., 1990-1991
Nominating Committee, Division of Biological Physics, American Physical Society, 1991-1992
Executive Board, Learning Community Design Team, Vanderbilt University, 1992-1993
Consultant, Capital Case Resource Center, Nashville, TN, 1992-1994
Consultant, E.I. du Pont de Nemours & Company, 1989-1993
Advisory Board, The Jasper Project, Peabody College for Teachers, Vanderbilt University, 1990-1996
Consultant, Law Office of the Capital Collateral Representative, Tallahassee, FL, 1997-1998
Member, NASPE Young Investigators Award Committee, 1999-2002
Editorial Board, *Journal of Applied Physics/Applied Physics Letters*, 2000-2002
Editorial Board, *Review of Scientific Instruments*, 2000-2003
Southeastern Section of the American Physical Society Jesse W. Beams Committee, 2001 (Chair)
Senior Member, Biomedical Engineering Society, 2002-2004
Program Chair, 2003 Annual Fall Meeting, Biomedical Engineering Society
Scientific Advisory Board of CardioMag Imaging, Inc., 2003- present (currently inactive)
Honorary Committee, Max Delbrück Centennial, Cold Spring Harbor, 2006
External Advisory Board, NIH Center for Bioelectric Field Modeling, Simulation, and Visualization, University of Utah, 1999-2004
Consultant, Federal Trade Commission, 2003-2007
External Advisory Board, Center for Integrative Biomedical Computing, University of Utah, 2005-2008
Scientific Advisory Committee for the Center for Nanophase Materials Science (CNMS), Oak Ridge National Laboratory (ORNL), 2005-2008
Editorial Board, *Experimental Biology and Medicine*; Associate Editor for Systems Biology, 2006-2020
Associate Editor, *Biomedical Microdevices*, 2010-2018; Advisory Editor, 2018-present
Member, External Advisory Panel, Portfolio Review, Science & Technology Directorate, Chemical and Biological Defense Division, Department of Homeland Security, Washington, DC, June 17-19, 2013
Editorial Board, *Innovation and Emerging Technologies* (formerly *Technology*), 2014-2022
Symposium Organizer, "Progress Toward Adoption of Microphysiological Systems in Biology and Medicine," Experimental Biology 2017, Society for Experimental Biology and Medicine, Chicago, IL, April 22-26, 2017
Member, External Review Committee, Department of Physics, Washington University in St. Louis, September 24-26, 2017
Inaugural Member, Scientific Advisory Board, BiOasis Technologies Inc., 2017-2023
Consultant, Cornell Death Penalty and Juvenile Justice Projects, Cornell University, 2021-2023
Plenary Speaker and Session Chair, "Organs on Chips: New Tools for Understanding the Complexities of Biology and Medicine," 8th Annual International Experimental Biology and Medicine Conference, Memphis, TN, April 29-May 1, 2022
Panel Reviewer, Chemical-Biological Basic Research External Peer Review, Defense Threat Reduction Agency, Alexanderia, VA, August 1-3, 2023
Invited Participant, Nobel-Turing Grand Challenge Workshop, Wallenberg Advanced Scientific Forum, Rånäs Castle, Stockholm, Sweden, October 3-6, 2023
Invited Participant, Novo Nordisk Conference: The Automated Scientist – the future of cell factory engineering, Copenhagen, Denmark, March 11-15, 2024

VANDERBILT UNIVERSITY SERVICE:

Honors and Individual Programs Committee, College of Arts and Science, 1977-1980
Radiation Safety Committee, 1978-1981
Graduate Program Committee, Department of Physics and Astronomy, 1978-1985
Special Awards Committee, Graduate School, 1979-1981; Chair, 1981

VANDERBILT UNIVERSITY SERVICE (continued):

Ad Hoc Committee on Grievance and Promotion, College of Arts and Science, 1980-1981
Freshman Advisor, 1981-1983
College Program Committee: Subcommittee on the Natural Sciences, 1981-1982; Chair, 1982
Ad Hoc Committee on Promotions and Tenure, College of Arts and Science, 1981-1982
Vanderbilt University Faculty Senate, 1982-1983, 1984-1985; Chair, External Affairs Committee, 1984-1985
Co-Director, College of Arts and Science Task Force on Computer-Aided Instruction, 1983-1984
Ad Hoc Committee to Assess College Computing Needs, 1983-1984
College Program Committee, 1984-1989
Ad Hoc Committee on a Special Program for Outstanding Students, College of Arts and Science, 1984-1985
Phi Beta Kappa Membership Committee, 1984-1987
College Program Committee Ad Hoc Subcommittee on the Mathematics/Foreign Language Option, 1984-1985
University Animal Care Committee, 1985-1988
Undergraduate Curriculum Committee, Department of Physics and Astronomy, 1985-1989 (Chair)
Kenan Venture Fund Committee, College of Arts and Science, 1986-1989
Operations Committee, Department of Physics and Astronomy, 1986-1988
College Faculty Council Ad Hoc Committee on the Microcomputer Store, 1987 (Chair)
Sigma Xi, Vanderbilt Chapter, Admissions Committee, 1987-1988
College Committee on Admissions, 1990-1991
Faculty Council, College of Arts and Science, 1990-1992
Ad Hoc Committee on Applied Physics, 1991-1992
Search Committee for the Chair of the Department of Physics and Astronomy, 1991-1992 (Chair)
Ad Hoc Committee for an Education Initiative in the Biological Sciences, 1991-1992
University Patent Review Committee, 1987-1993, (Chair, Writing Subcommittee, 1990-1991; Chair, 1992-1993)
Executive Committee for the Howard Hughes Undergraduate Biological Science Education Initiative, 1992-1993
Safety Committee, Department of Physics and Astronomy, 1992-1994
Advisory Committee on the Stevenson Center, College of Arts and Science, 1993-1994
Arts and Science Dean Search Committee, 1993-1994 (Chair)
Committee on Educational Programs, College of Arts and Science, 1994-1995
Committee for NSF Infrastructure Grant for Distributed Computer Facility, Department of Physics and Astronomy, 1994-1995
Faculty Council, College of Arts and Science, 1994-1996
Applied Physics Steering Committee, 1994-1997
Committee on Computational Science and Engineering, 1996-1997
Committee on Appointment, Promotion, and Tenure, 1995-1998 (Chair)
Search Committee for Assistant Professor in Living State Physics, 1998-1999 (Chair)
Center for Systems and Cognitive Neuroscience Committee, 1998-1999
Education Committee, Sigma Xi, Vanderbilt University, 1999
Safety Committee, Department of Physics and Astronomy, 1999
Strategic Academic Planning Group, Office of the Provost, 1999-2001
Medical Physics Committee, Department of Physics and Astronomy, 1996-1999
Committee on Faculty Development and Resources, Department of Physics and Astronomy, 1999-2000
Technology Review Committee, Vanderbilt University, 1999-2002
Strategic Academic Plan for the College of Arts and Science; Chair, Senior Steering Council, 2000-2001
Executive Committee and Admissions Committee, Chemical and Physical Biology Program, 2002-2007
Leadership Committee for Development of the Vanderbilt Institute for Environmental Risk and Resources Management, 2001-2005
Organizing Committee, Conference on Mathematical Models of Signaling Systems, Vanderbilt University Division of Continuing Medical Education, 2004
Executive Committee, Department of Physics and Astronomy, 1999-2001; 2002-2004

VANDERBILT UNIVERSITY SERVICE (continued):

Shop Committee, Department of Physics and Astronomy, 1985-2005; 2011-2021 (Chair, 1985-90, 2011-2021)
Ad Hoc Research Institute and Centers Council (RICC), School of Engineering, 2005-2007
Internal Advisory Board, Center for Structural Biology, 2004-2012
STOP Task Force, 2005-2008
Organizing Committee, Max Delbrück Vanderbilt Centenary Celebration, 2006 (Chair)
Life Sciences Modeling Committee, 2006-2007
School of Engineering Dean's Consultative Committee on Promotion and Tenure, 2003-2006
Executive Advisory Committee, Chemical and Physical Biology Program, 2007-2012
Biological Physics Search Committee, Department of Physics & Astronomy, 2009-2010, 2010-2011
Faculty Search Committee, Department of Biomedical Engineering, 2009-2010
Vanderbilt University Faculty Senate, Academic Policies & Services Committee, 2011-2013
Stevenson Chair Search Committee, Department of Physics & Astronomy, 2011-2021
Long Range Planning Committee, Department of Physics & Astronomy, 2012-2015; 2019-2020
Faculty Advisory Committee for the Vanderbilt Center for Technology Transfer and Commercialization, 2013-present
Member, Vanderbilt University Public Health Advisory Task Force, 2020
Safety Committee, Department of Physics and Astronomy, 2021-2022
Search Committee, High Energy Nuclear Physics, Department of Physics and Astronomy, 2021-2022
Colloquium Committee, Department of Physics and Astronomy, 2023-2024
Safety Committee, Department of Physics and Astronomy, 2023-2024
Sponsor and Organizer, Guy and Rebecca Forman Lecture in Science Education: Carl E. Wieman, "Taking a Scientific Approach to Science Education," November 14-15, 2023

PRIOR SUPPORT:

1. Vanderbilt/NIH Biomedical Support Grant, "Superconducting Differential Magnetometer," 1976, $26,200
2. Research Corporation, "Measurement of Cellular Magnetic Fields," 1977-1978, $13,100
3. Vanderbilt University Research Council, "Implementation of the Stanford Signal Processing System," 1977, $2,840
4. Vanderbilt Natural Science Committee, "Computer Terminal," 1978, $2,500
5. Vanderbilt University Research Council, "Measurement of Cellular Magnetic Fields," 1978, $2,300
6. Tennessee Heart Association, "ECG Changes Due to Infarction in Isolated Dog Hearts," 1978-1980, $15,000
7. NSF/Vanderbilt, "An Advanced Undergraduate Laboratory in Living State Physics," 1978-1980, $28,900
8. Vanderbilt Natural Science Committee, "Instrumentation," 1978, $3,020
9. Vanderbilt/NIH Biomedical Support Grant, "Computer Graphics Terminal," 1978, $4,500
10. Vanderbilt University Research Council, "Measurement and Modeling of Cellular Magnetic Fields," 1979, $1,850
11. Stanford/NIH/NASA, "Development of the OSCOPE Signal Processing System," 1979-1981, $23,030
12. Alfred P. Sloan Research Fellowship, 1980-1982, $20,000
13. Vanderbilt University Research Council, "Improvements to a SQUID Magnetometer," 1980, $3,130
14. Vanderbilt Natural Science Committee, "Fluxgate Magnetometer for the Low-Field Facility," 1980, $1,480
15. ONR, "Biomagnetic Measurements of the Squid Axon," 1980-1982, $10,750
16. Vanderbilt Natural Science Committee, "Instrumentation," 1981, $1,990
17. ONR, "Magnetic Measurements of Cardiac Action Currents: The Effects of Hypothermia and Other Interventions," 1982-1985, $256,462
18. Vanderbilt University Research Council, "Professional Development Grant for Participation in NATO Institute, Frascati," 1982, $600
19. Vanderbilt University Research Council, "Development of Instruments for Measurements of Electrical Properties of Living Cells," 1982, $3,000
20. Vanderbilt Natural Science Committee, "Electronic Test Equipment," 1982, $2,460
21. Vanderbilt University Research Council, "University Research Fellowship," 1983-1984, $7,500
22. Palo Alto Veterans Administration Medical Center, project under "Towards Better Methods of Nerve Repair and Evaluation," 1983-1984, $30,000
23. NIH, "Magnetic Measurement of Peripheral Nerve Function," 1983-1986, $423,030 total direct costs, $635,517 total costs
24. Vanderbilt Natural Science Committee, "Purchase of Computer-Aided Design Software," 1983, $1,900
25. Vanderbilt Natural Science Committee, "Purchase of Drafting Equipment," 1984, $250
26. Vanderbilt/NIH Biomedical Support Grant, "Research Associate Support," 1984-85, $9,819
27. Vanderbilt/NIH Biomedical Support Grant, "Digital Oscilloscope," 1985, $9,680
28. Cardiac Pacemakers, Inc., "Biophysical Approaches to Defibrillation," 1985-1987, $67,224
29. Vanderbilt Kenan Venture Fund, "Physics Homework Problem Software," 1985, $7,550
30. NIH, project under "*In Vivo* Actions of Anti-Arrhythmic Drugs," D.M. Roden, PI, 1986-1991, $71,180

PRIOR SUPPORT (continued):

31. Vanderbilt/NIH Biomedical Research Support Grant, "Purchase of Dynamic Signal Analyzer," 1986, $8,535
32. NIH, "Magnetic Measurement of Peripheral Nerve Function," 1986-1991, $777,041 direct costs, $1,197,729 total costs
33. ONR/Vanderbilt, "High-Resolution SQUID Magnetometer Facility," 1986-1988, $144,445
34. Vanderbilt Natural Science Committee, "Data Acquisition System," 1986, $1,750
35. NIH, "Action Currents and Skeletal Muscle Electrophysiology," 1987-1993, $760,203
36. AFOSR, "Magnetic Mapping of Current Distributions in Two-Dimensional Electronic Devices," 1987-1990, $530,282
37. Vanderbilt/NIH Biomedical Research Support Grant, "Purchase of SQUID Magnetometer for Mapping Cardiac Activation Currents," 1987, $10,000
38. Vanderbilt/NIH Small Instrumentation Program, "Purchase of 24-Channel Data Acquisition System," 1987, $13,130
39. NIH, Administrative Supplement to "Magnetic Measurement of Peripheral Nerve Function," towards purchase of High Resolution SQUID Magnetometer, 1987, $15,000
40. Vanderbilt Natural Science Committee, "Low Noise Preamplifiers," 1987, $2,500
41. Vanderbilt/NIH Biomedical Research Support Grant, "Purchase of Magnetic Shield for SQUID Magnetometer for Mapping Cellular Action Currents," 1988, $7,340
42. Vanderbilt Kenan Venture Fund, "Development of an Intermediate Physics Laboratory," (with M.S. Webster), 1988-1989, $4,010
43. W.M. Keck Foundation and Vanderbilt University, "Construction of New Living State Physics Laboratories," 1988-1989, $850,000
44. Vanderbilt Natural Science Committee, "Magnetic Shield for SQUID Magnetometer," 1988, $2,875
45. Vanderbilt/NIH Small Instrumentation Program, "Purchase of an Intraoperative Data Acquisition System," 1989, $14,460
46. Vanderbilt Natural Science Committee, "High Input Impedance Electrometer," 1989, $3,000
47. Vanderbilt Kenan Venture Fund, "Development of a Course in the Physics of Technology," 1989, $26,625
48. Electric Power Research Institute and Island Hill Research, "SQUID for NDE," 1989-1990, $50,000
49. Vanderbilt/NIH Biomedical Research Support Grant, "Small Animal Ventilator,"1990, $1,950
50. Biomagnetic Technologies, Inc. and AFOSR, "Design Studies for a High Resolution, Linear Magnetometer Array for NDE," 1990, $6,000
51. Vanderbilt Natural Science Committee, "Gaussmeter," 1990, $4,985
52. AFOSR, "High Resolution SQUID Magnetometry for Non-Destructive Evaluation," 1990-1993, $221,960 total costs
53. Vanderbilt Natural Science Committee, "System for Measuring Transmembrane Action Potentials," 1991, $1,800
54. General Electric, "Evaluation of SQUID NDE," 1991, $40,000
55. University of Maryland, "Development of NanoSQUID," 1991-1992, $50,950
56. Air Force Office of Scientific Research, "EEG/MEG Workshop," 1992, $16,952
57. Lockheed, "SQUID NDE Techniques for Aircraft Corrosion," 1992-1993, $27,363
58. Vanderbilt/NIH Small Instrumentation Program, "Purchase of a Parallel Processor for SUN Workstation," 1991, $5,419

PRIOR SUPPORT (continued):

59. E. I. duPont de Nemours & Company, "SQUID-Based Magnetic Susceptometer," 1991, $400,000
60. Sun Microsystems, Inc., "A Networked Computer Environment for Living State Physics," 1992, $63,760
61. John Simon Guggenheim Memorial Foundation, "Magnetic Imaging of Biological, Superconducting, and Structural Systems," 1992-1993, $27,000
62. Vanderbilt Natural Science Committee, "Nerve Translation Stage," 1992-1993, $2,502
63. NIH, "Magnetic Measurement of Peripheral Nerve Function," 1991-1994, $2,739,005
64. E. I. duPont de Nemours & Company, "Magnetic Field Measurements," 1990-1993, $465,000
65. Electric Power Research Institute, "SQUID for NDE II," 1991-1995, $636,934
66. Joan Porter, "Magnetically Shielded Room," 1993, $20,000
67. Vanderbilt University, "Magnetically Shielded Room," 1993, $45,000
68. AFOSR/URI, "Advanced Instrumentation and Measurements for Early Nondestructive Evaluation of Damage and Defects in Aerostructures and Aging Aircraft," 1993-1998, with James Cadzow, Thomas Cruse, George Hahn, and Barry Lichter, $990,573
69. Veterans Administration, "Biomagnetic Activity of Ischemic Alimentary Tract Smooth Muscle," William O. Richards, PI, 1994-1996, Subcontract to Physics: $59,000
70. Alcoa, "SQUID NDE of Aluminum," 1996, $15,000
71. NIH, project under "Mechanisms of Antiarrhythmic Drug Action," Program Project Grant, D.M. Roden, PI, 1992-1997, $732,580
72. Vanderbilt/Provost's Initiative on Team-Teaching, "Introduction to Applied Physics," 1993 with T. Wang, R.A. Weller, and R.F. Haglund, $20,850, $-0- to Living State Physics
73. Fishery Technology Center, University of Alaska, "SQUID Measurements," 1993, $3,000
74. Conductus/NIH, "Magnetometry for Early Detection of Intestinal Ischemia," 1994, $24,924
75. NSF/Vanderbilt University, "A Distributed Computer Facility for Physics and Education," $357,000, David J. Ernst, PI, 1994-1995, $28,000 to Living State Physics
76. AFOSR/AASERT, "High Resolution SQUID Magnetometry for Non-Destructive Testing," 1994-1997, $149,451
77. Vanderbilt Venture Fund Committee, "Demonstration Equipment for Physics of Technology Course," 1995-1996, $2,000
78. Fishery Technology Center, University of Alaska, "SQUID Magnetometers for the Detection of Fish Parasites," 1996-1997, $23,500
79. NSF, "High Resolution SQUID Magnetometer for Imaging Biological Systems," 1996-1997, $121,687
80. NIH/Hypres, Inc., "Ultra-High Resolution SQUID Magnetometers for Biological Research," 1996 1997, $40,000
81. NCI, Inc., "SQUID Magnetometer for Quantification of Aircraft Corrosion," 1996-1997, $82,530
82. NIH/Conductus, Inc., "Magnetometry for Early Detection of Intestinal Ischemia," 1996-1997, $83,768
83. EPRI/Ontario Hydro, "SQUID Magnetometers for Assessing Insulator Aging," 1996-1998, $45,000
84. Veterans Administration, "Biomagnetic Activity of Ischemic Alimentary Smooth Muscle," 1996-1998, $25,000
85. German Ministry of Research (BMBF) through KFA/Rohmann GmbH, "SQUID Measurement, Analysis and Pattern Recognition Tool," 1997-1998, $65,424
86. NIH, "Electrophysiological Implications of the Cardiac Bidomain," 1997-2008, $3,200,000
87. NSF, "High Resolution SQUID Magnetometer for Imaging Biological Systems," 1997-2000, $299,015

PRIOR SUPPORT (continued):

88. Du Pont/Physical Research, Inc., "Real-Time Magneto-Optic Non-Destructive Inspection of Tagged Composites," 1998-1999, $45,000
89. Veterans Administration, "Biomagnetic Activity of Ischemic Alimentary Smooth Muscle," 1998-2000, $50,000
90. NIH/Hypres, Inc., "Digital SQUID Fetal Magnetocardiography," 1999-2000, $84,999
91. USAF/NCI, "Corrosion Studies at Robins AFB," 1999-2000, $219,801
92. AFOSR/Tristan Technologies, Inc., "Cryocooled SQUID Magnetometer Array for Laboratory Measurement of the Rate of Hidden Corrosion in Aging Aircraft," 1999-2000, $30,000
93. Trustees of the Bowling-Pfizer Heart Valve, "Electromagnetic Detection of Outlet Strut Fracture in the Bjork-Shiley Heart Valve," 1999-2000, $394,275
94. USAF/NCI, "Corrosion Fatigue and Corrosion Predictive Modeling," 1999-2000, $131,645
95. USAF/NCI, "Corrosion Studies at Robins AFB," 2000-2000, $12,588
96. Veterans Administration, "Biomagnetic Activity of Ischemic Alimentary Smooth Muscle," 2000-2001, $50,000
97. NASA/Magnesensors, Inc., "Quantitative Non-Destructive Evaluation of Aging Aircraft Using New High-Temperature SQUID Sensors," 2000-2001, $69,813
98. AFOSR/S&K, Inc., "Corrosion Studies at Robins AFB," 2000-2001, $125,877
99. NIH/Hypres, Inc., "Ultra-High Resolution SQUID Magnetometer," 2000-2003, $224,769 (Franz Baudenbacher, PI)
100. Vanderbilt, Natural Science Committee, "Shared Portable Residual Gas Analyzer and Vacuum System," 2001, $10,281
101. NIH/Hypres, Inc., "Micromachined Biocalorimeter with Picojoule Sensitivity," 2001-2003, $66,600 (Franz Baudenbacher, PI)
102. Vanderbilt University Academic Venture Capital Fund, "The Vanderbilt Institute for Integrative Biosystems Research and Education," 2001-2009, $5,150,562
103. AFOSR/Tristan Technologies, Inc., "Cryocooled SQUID Magnetometer Arrays for Laboratory Measurement of the Rate of Hidden Corrosion in Aging Aircraft," 2001-2004, $161,773
104. DARPA, "Massively Parallel, Multi-Phasic Cellular Biological Activity Detector (MP2-CBAD)," 2001-2005, $1,934,298
105. AFRL-S&K, Inc., "SQUID Measurements to Determine the Effects of Maintenance and Environment on Intergranular Corrosion," 2002-2003, $101,064
106. NIH, "Biomagnetic Signals of Intestinal Ischemia," 2002-2006, $1,261,545 (William Richards, PI)
107. AFOSR/S&K, Inc., "Corrosion Studies at Robins AFB," 2002, $100,000
108. AFOSR, "BioMEMS, New Frontiers and Emerging Technologies," 2003, $5,000
109. Whitaker Foundation, "Instrumenting and Controlling the Single Cell: An Educational Program in Biomedical Engineering," 2003-2007, $999,948
110. DARPA, "High Resolution Multimodal Imaging of Neuronal Circuits in Hippocampal Slices," 2003-2005, $350,000 (Franz Baudenbacher, PI)
111. NIH, "Characterizing MRI Parameters of Iron-Loaded Tissues," 2003-2006, $749,390 (Mark Does, PI)
112. Pria Diagnostics, "Nanoprobes for Dynamic Clinical Diagnosis," 2004-2007, $135,000
113. AFOSR/DARPA, "Correlations Between Single-Cell Signaling Dynamics and Protein Expressions Profiles," 2004-2005, $199,842

PRIOR SUPPORT (continued):

114. VU Discovery Grant, "Development of a Planar Perfusion System for In-Vitro Tissue Microenvironments," 2004-2007, $99,988
115. NIH/NCI, "Multiscale Mathematical Modeling of Cancer Invasion," 2004-2009, $2,317,144 (Vito Quaranta, PI)
116. AFOSR/DARPA, "Nanoprobes for Sensing and Controlling Cellular Signaling," 2005-2006, $624,383
117. NIH/NIAID, "Metabolic Discrimination of Unknown Bacterial Pathogens," 2005-2010, $5,476,851
118. NSF, "MRI: Development of a Nanoparticle Trap for Student Training," 2006-2010, $546,897 (Inherited from Tobias Hertel August 1, 2008)
119. DOD/DARPA, "SPARTAN: Single-Protein Actuation by Real-Time Transduction of Affinity in Nanospace," 2007-2008, $1,308,814
120. NSF, "IDBR: EcoChip: A Microfluidic Device to Characterize Microbial Responses to Habitat Structure," 2007-2009, $398,910 + $33,125 REU (Leslie Shor, PI)
121. DOD/BCRP, "Thick Matrix Capillary-Perfused Bioreactor for Studying Angiogenesis and Metastasis in Breast Cancer," 2007-2011, $776,668
122. VU Discovery Grant, "Nanotechnology-Based Microfluidic Biomarker Sensor," 2008-2011, $100,000 (Todd Giorgio, PI)
123. NIH/NCI, "Ephrin A-1 Tumor-Endothelial Interaction During Metastasis," 2008-2014, $192,569 (Jin Chen, PI)
124. National Academies Keck Future Initiatives, "Biology on Demand: External Control of a Complex Cellular System, S. cerevisiae," 2009-2011, $50,000
125. NIH/NHLBI, "Correlative Multimodal Imaging of Cardiac Electrophysiology and Metabolism," 2009-2011, $1,106,413 (John Wikswo, Franz Baudenbacher, Veniamin Sidorov, and Richard Gray, PIs)
126. NIH/NIDA, "Elucidation of Leukocyte and Macrophage Biomarker Signatures from Drugs of Abuse," 2009-2011, $2,661,005, (Multi-PI: John McLean, John Wikswo, Hod Lipson)
127. Defense Threat Reduction Agency, "Automated Characterization of the Interaction Dynamics between Toxic Chemicals and Biological Agents and Biomolecules and Cells of Blood and Lymph," 2009-2014, $2,499,763
128. NIH, "Skin Regeneration with Stem Cells and Scaffolds," 2009-2014 (Jeffrey Davidson, PI), $419,317
129. FDA, "Develop and Build Transconductance Amplifiers for Defibrillation Research," 2010-2011, $42,110
130. NIH, "Automated Microscope for Long-Duration, Quantitative Dynamic Imaging," 2010-2012, $500,000
131. EMD Millipore Corporation, "The EMD Millipore Research Associate in Automated Systems Biology," 2011-2012, $85,565
132. Vanderbilt University Discovery Grant Program, "Molecular Effects of Maternal Immune Activation: The Story of Placental, Glial, and Neuronal Interactions," 2012-2014, $50,000
133. DARPA W911NF-12-2-0036, "Integrated Human Organ-on-Chip Microphysiological Systems," 2012-2015 (Donald Ingber, Harvard University, PI), $1,328,789 subcontract to Wikswo
134. Defense Threat Reduction Agency, "Integration of Novel Technologies for Organ Development and Rapid Assessment of Medical Countermeasures (INTO-RAM)," 2012-2014 (Rashi Iyer, Los Alamos National Laboratory, PI), $3,599,673 subcontract to Wikswo
135. NSF, "MRI: Development of Advanced Multiplexed Structural Mass Spectrometer for Research and Training,"2012-2015 (John McLean, PI), $500,822

PRIOR SUPPORT (continued):

136. NIH/NCATS UH2/UH3TR000491, "Neurovascular Unit on a Chip: Regional Chemical Communication, Drug and Toxin Responses," 2012-2017 (Multi-PI: John P. Wikswo (Lead); Chaitali Ghosh (Cleveland Clinic) and Damir Janigro (Flocel Inc.), $5,362,719; no-cost extension through 6/30/2018

    Five administrative supplements were awarded under the parent grant:

    a. "Inner Blood-Retinal Barrier-on-a-Chip: Implications for Ocular Disease," 2013-2014, $145,500
    b. "Drug-Device Interactions in Microphysiological Systems (MPS): Development of Analytical Techniques and Selection of Materials and Surface Modifications," 2015-2016, $137,051 (no-cost extension through 6/30/2018)
    c. "Oncology-on-Chip: Extending Neurovascular Unit Functionality to Study Breast-to-Brain Metastasis," 2015-2016, $235,494 (no-cost extension through 6/30/2018)
    d. "A Missing Endocrine Organ-System MicroFormulator for Coupled Organs-on-Chips," 2016-2017, $72,800; no-cost extension through 6/30/2018
    e. "Neurovascular Unit on a Chip as a Model System for Tuberous Sclerosis Complex," 2016-2017, $156,014; no-cost extension through 6/30/2018

137. NIH/NHLBI R01HL118392, "Optimal Design of Challenge-Response Experiments in Cardiac Electrophysiology," PI: Matthew Shotwell; 2013-2018, $221,069 (to Wikswo).
138. NIH/NCATS UH3TR000504, "A Tissue Engineered Human Kidney Microphysiological System," 2014-2017 (Jonathan Himmelfarb, University of Washington, PI), $182,500 (subcontract to Wikswo)
139. NIH/NCATS UH3TR000503, "A 3D Biomimetic Liver Sinusoid Construct for Predicting Physiology and Toxicity," 2014-2017 (Lansing Taylor, University of Pittsburgh, PI), $243,750 (subcontract to Wikswo); no-cost extension through 6/30/2018
140. EPA Assistance Agreement 83573601, "Vanderbilt-Pittsburgh Resource for Organotypic Models for Predictive Toxicology (VPROMPT)," PI: Shane Hutson; 2014-2019 (no-cost extension), $1,299,384 (to Wikswo).
141. DOD/DARPA W911NF-14-2-0022, "Chemical Threat Assessment by Rapid Molecular Phenotyping," PI: Richard Caprioli; 2014-2018 and 2019-2021, $1,572,157 (to Wikswo).
142. NIH/NCI U01CA202229, "Physical Dynamics of Cancer Response to Chemotherapy in 3D Microenvironments," Multi-PI: Lisa J. McCawley (Lead), Dmitry A. Markov, Katarzyna Anna Rejniak; 2015-2020, $129,960 (to Wikswo).
143. AstraZeneca Research Agreement, "Development and Application of MicroFormulators for MicroPhysiological Systems Research," 2015-2016, $100,000
144. NIH/NCATS HHSN271201700044C, "SmartPlate Technology for Advanced Cell-Based Models (STAC-M)," Phase I SBIR, 2016-2017 (Kapil Pant, CFD Research Corporation, PI), $59,000 (subcontract to Wikswo)
145. NIH/NCATS U24TR001951, "Translational Center of Tissue Chip Technologies for Quantitative Characterization of Microphysiological Systems," 2016-2017 (Murat Cirit, Massachusetts Institute of Technology, PI), $270,475 (subcontract to Wikswo)
146. NIH/NCATS, "Tissue Chip Testing Centers: Validating Microphysiological Systems," 2016-2017 (Ivan Rusyn, Texas A&M University, PI), $23,966
147. CASIS GA-2016-236, "A Microphysiological 3D Organotypic Culture System for Studying Degradation and Repair of Composite Skeletal Tissues in a Microgravity Environment," PI: Rocky Tuan (University of Pittsburgh); 2016-2019 (no-cost extension), $102,000 (subcontract to Wikswo).

PRIOR SUPPORT (continued):

148. DTRA CBMXCEL-XL1-2-001, "Assessment of Infection Induced Inflammation in the Blood", PI: Srinivas Iyer (Los Alamos National Laboratory); Subaward 468746: "Development of Neurovascular Unit," 2017-2018, $528,000 (to Wikswo).
149. IARPA 2017-17081500003, "Neural Microphysiological System for Time Dependent Phenomics of C/B Neurotoxins," PIs: David E. Cliffel, John A. McLean, John P. Wikswo; 2017-2018, $1,000,000.
150. AstraZeneca UK Ltd. Research Agreement, "Development and Application of MicroFormulators for MicroPhysiological Systems Research," PI: John P. Wikswo; 2017-2018, $100,000.
151. Eli Lilly and Company, "Applications of Microphysiological Systems for Drug Disposition, Metabolism, Pharmacodynamics, and Toxicology in Drug Development," PI: John P. Wikswo; 2017-2019, $228,200.
152. NIH/NCATS HHSN271201700044C, "SmartPlate Technology for Advanced Cell-Based Models (STAC-M)," Phase II SBIR, PI: Kapil Pant (CFD Research Corporation); 2017-2019, $600,000 (subcontract to Wikswo); no-cost extension to 2020
153. NSF CBET-1706155, "High Throughput Screening of iPSC Differentiation to Subtype-Specific Dopaminergic Neurons Using a Novel Microfluidic Platform," PIs: Ethan S. Lippmann, John P. Wikswo; 2017-2020, $300,000; no-cost extension to 2021.
154. NIH/NCATS 5UL1TR002243-05, "Vanderbilt Institute for Clinical and Translational Research (VICTR)," PI: Gordon R. Bernard (Vanderbilt University Medical Center), Padma Raghavan (Vanderbilt University); 2017-2022, $167,614 (VU subaward)
155. NIH/NCATS/NINDS/NICHD 5UH3TR002097-05, "Drug Development for Tuberous Sclerosis Complex and Other Pediatric Epileptogenic Diseases Using Neurovascular and Cardiac Microphysiological Models," Multi-PI: John P. Wikswo (Lead), Kevin C. Ess, M. Diana Neely; 2017-2023 (no-cost extension), $5,648,618 (not including supplement/revision projects listed below).
    a) NIH/NCATS 3UG3TR002097-02S1, "Drug Development for Tuberous Sclerosis Complex and Other Pediatric Epileptogenic Diseases Using Neurovascular and Cardiac Microphysiological Models," Administrative Supplement for Tissue Chip Consortium Awardees ("Development of Tissue Chips to Model Nociception, Opioid Addiction and Overdose"), PI: John P. Wikswo; 2018-2019, $261,603.
    b) NIH/NCATS 3UH3TR002097-04S1, "Drug Development for Tuberous Sclerosis Complex and Other Pediatric Epileptogenic Diseases Using Neurovascular and Cardiac Microphysiological Models," Emergency Competitive Revision to Existing NIH Grants and Cooperative Agreements for Tissue Chips Research on the 2019 Novel Coronavirus ("Fighting the Cytokine Storm of COVID-19 using MicroPhysiological Systems"), PI: John P. Wikswo, 2020-2023 (no-cost extension), $1,142,940.
156. NIH/NCI 5R01CA116021-18, "New Strategies for Treatment of NRAS Mutant Melanoma after Progression on Immune Checkpoint Inhibitors," PI: Ann Richmond; 2020-2023, $15,008 (to Wikswo).
157. Chalmers University of Technology, "Development of Prototype Well-Plate Chemostats for the Genesis Robot," PI: John P. Wikswo; 2020-2023 (no-cost extension), $100,000.
158. Eli Lilly and Company, "Development of a Microphysiological System Model of the Choroid Plexus," PI: John P. Wikswo; 2021-2022, $105,264.
159. Vanderbilt Institute for Clinical and Translational Research, Project Number: VR53727, "An Organ-on-a-Chip Investigation into Dose-Dependent, Temporal Dynamic Effects of Radiosurgery on the Blood-Brain Barrier and Its Immunological Response," PI: Adam Yock; 2021-2022, $21,622 (to Wikswo).
160. NIH/NIDA Contract No. 75N95032P00632 and NIH/NCATS Contract No. 75N95C22P00080, "Development of an autonomous holonomic robot for use in the laboratory environment," PI: John P. Wikswo, 2021-2023, $209,500.

PRIOR SUPPORT (continued):

161. NIH/NIGMS 5R35GM124685-05, "A Multi-Scale Approach to the Mammalian Circadian System and Its Role in Human Health and Disease," PI: Jacob Hughey (Vanderbilt University Medical Center); 2022-2023, $17,460 (sponsored research agreement to Wikswo).
162. NIH Contract No. 75N950-20-C-00021, "Substrate Alternatives for Organs-on-Chips," PI: Brian Watkins (Lynntech, Inc.); 2022-2023, $99,999 (sponsored research agreement to Wikswo).
163. Bill and Melinda Gates Foundation INV-001780 / VUMC 100518, "Tissue Engineering the Next Generation Endometrium-on-Chip," PI: Kevin Osteen (Vanderbilt University Medical Center); 2022-2023, $129,999 (subaward to Wikswo); additional $6,007 VUMC sponsored billing agreement for trophoblast studies.
164. NIH/NICHD 5R01HD102752-04, "Instrumenting the Fetal Membrane on a Chip," PI: David E. Cliffel; 2020-2024, $71,245 (to Wikswo).
165. NIH/NCATS 5U01TR002383-05, "Harnessing Human Brain and Liver Microphysiological Systems for Testing Therapeutics for Metastatic Melanoma," Multi-PI: John P. Wikswo (Lead), D. Lansing Taylor, William L. Murphy; 2018-2024 (no-cost extension), $7,642,688.

CURRENT SUPPORT:

1. Gift of Gideon Searle, "Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE)," PI: John P. Wikswo; 2006-2026, $11,442,522 to date. The Office of the Provost has provided $1,326,778 in additional support to date.
2. NASA 80NSSC20K0108, "An automated, instrumented evaluation platform for validating the performance of a novel, integrated microfluidic pump and valve experiment control system for tissue-chips-in-space and chemical mixing experiments in microgravity," PI: John P. Wikswo; 2019-2025 (no-cost extension), $300,000.
3. NIH/NIBIB 5R01EB030410-04, "An Integrated In Vitro 3D Model of Human Bone Marrow and Peripheral Infection," PI: Steven George and Scott Simon (University of California, Davis); 2021-2025, $522,213 (subaward to Wikswo).
4. NSF 2117782, "MRI: Development of a fully automated, 1,000-MicroChemostat microfluidic system for parallel, independent, long-duration, machine-guided experiments," PI: John P. Wikswo, 2021-2025 (no-cost extension), $999,810 (NSF), $428,691 (Vanderbilt cost-sharing).
5. Eli Lilly and Company, "Modeling PEG-related vacuolization of the CSF barrier, Phase II," PI: John P. Wikswo; 2023-2025, $199,901
6. Chalmers University of Technology, "Development of 1,000-Channel Chemostat System Comprising Twenty-One (21) Forty-Eight-Channel Genesis 2.0 Continuous Automated Perfusion Culture Analysis System (CAPCAS) Units," 2024-2026, $900,000
7. GlaxoSmithKline, "Demonstration of a Continuous Automated Perfusion Culture Analysis System for the Study of Scaling of CHO Cell Production," 2024-2025, $462,000
8. Vanderbilt Innovation Catalyst Fund, "Accelerating the development and commercialization of a robot scientist self-driving biological laboratory," 2025-2026, $59,990

PUBLICATIONS:

Peer-Reviewed Journal Articles

1. "Quantized Fluctuations in the Josephson Oscillations of a Shunted Superconducting Point Contact," R.D. Sandell, J.P. Wikswo, Jr., J.M. Pickler, and B.S. Deaver, Jr., J. Appl. Phys., 44: 3312-3318 (1973).
2. "Consistent System of Rectangular and Spherical Coordinates for Electrocardiography and Magnetocardiography," J.A.V. Malmivuo, J.P. Wikswo, Jr., W.H. Barry, D.C. Harrison, and W.M. Fairbank, Med. Biol. Eng. and Comput., 15: 413-415 (1977).
3. "A New Practical Lead System for Vector Magnetocardiography," J.A.V. Malmivuo and J.P. Wikswo, Jr., Proc. IEEE, 65: 809-811 (1977).
4. "Measurement of the Human Magnetic Heart Vector," W.H. Barry, D.C. Harrison, W.M. Fairbank, K. Lehrman, J.A.V. Malmivuo, and J.P. Wikswo, Jr., Science, 198: 1159-1162 (1977).
5. "The Calculation of the Magnetic Field from a Current Distribution: Application to Finite Element Techniques," J.P. Wikswo, Jr., IEEE Trans. Mag., MAG-14: 1076-1077 (1978).
6. "Non-Invasive Magnetic Detection of Cardiac Mechanical Activity: Theory," J.P. Wikswo, Jr., Medical Physics, 7: 297-306 (1980).
7. "Non-Invasive Magnetic Detection of Cardiac Mechanical Activity: Experiment," J.P. Wikswo, Jr., J.E. Opfer, and W.M. Fairbank, Medical Physics, 7: 307-314 (1980).
8. "Magnetic Field of a Nerve Impulse: First Measurements," J.P. Wikswo, Jr., J.P. Barach, and J.A. Freeman, Science, 208: 53-55 (1980).
9. "An Estimate of the Steady Magnetic Field Strength Required to Influence Nerve Conduction," J.P. Wikswo, Jr., and J.P. Barach, IEEE Trans. Biomed. Eng., BME-27: 722-723 (1980).
10. "Experiments on the Magnetic Field of Nerve Action Potentials," J.P. Barach, J.A. Freeman and J.P. Wikswo, Jr., J. Appl. Phys., 51: 4532-4538 (1980).
11. "A Calculation of the Magnetic Field of a Nerve Action Potential," K.R. Swinney and J.P. Wikswo, Jr., Biophys. J., 32: 719-732 (1980).
12. "Quark Chemistry," L.J. Schaad, B.A. Hess, J.P. Wikswo, Jr., and W.M. Fairbank, Phys. Rev. A, 23: 1600-1607 (1981).
13. "Sequential QRS Vector Subtractions in Acute Myocardial Infarction in Humans," J.P. Wikswo, Jr., S.C. Gundersen, W. Murphy, A.K. Dawson, and R.F. Smith, Circ. Res., 49: 1055-1062 (1981).
14. "Possible Sources of New Information in the Magnetocardiogram," J.P. Wikswo, Jr. and J.P. Barach, J. Theoretical Biol., 95: 721-729 (1982).
15. "Improved Instrumentation for Measuring the Magnetic Field of Cellular Action Currents," J.P. Wikswo, Jr., Rev. Sci. Instr., 53: 1846-1850 (1982).
16. "A Low-Noise, Low Input Impedance Amplifier for Magnetic Measurements of Nerve Action Currents," J.P. Wikswo, Jr., P.C. Samson, and R.P. Giffard, IEEE Trans. Biomed. Eng., BME-30: 215-221 (1983).
17. "Optimization of a SQUID Clip-On Current Probe," M.C. Leifer and J.P. Wikswo, Jr., Rev. Sci. Instr., 54: 1017-1022 (1983).
18. "A Comparison of Scalar Multipole Expansions," J.P. Wikswo, Jr. and K.R. Swinney, J. Appl. Phys., 56: 3039-3049 (1984).
19. "Steady Growth Cone Currents Revealed by a Novel Circularly Vibrating Probe: A Possible Mechanism Underlying Neurite Growth," J.A. Freeman, P.B. Manis, G.J. Snipes, B.N. Mayes, P.C. Samson, J.P. Wikswo, Jr., and D.B. Freeman, in Biology of the Nerve Growth Cone, S.B. Kater and P. Letourneau, Eds., J. Neuroscience Res., (Special Monograph), pp. 26-38 (1984), and J. Neuroscience Res., 13: 257-283 (1985).

PUBLICATIONS (continued):

20. "Magnetic Measurement of Action Currents in a Single Nerve Axon: A Core Conductor Model," J.P. Barach, B.J. Roth, and J.P. Wikswo, Jr., IEEE Trans. Biomed. Eng., BME-32: 136-140 (1985).
21. "Scalar Multipole Expansions and Their Dipole Equivalents," J.P. Wikswo, Jr. and K.R. Swinney, J. Appl. Phys., 57: 4301-4308 (1985).
22. "The QRS Complex During Transient Myocardial Ischemia: Studies in Patients with Variant Angina Pectoris and in a Canine Preparation," J.E. Barnhill, J.P. Wikswo, Jr., A.K. Dawson, S. Gundersen, R.M.S. Robertson, D. Robertson, R. Virmani, and R.F. Smith, Circulation, 71(5): 901-911 (1985).
23. "The Magnetic Field of a Single Axon: A Comparison of Theory and Experiment," B.J. Roth and J.P. Wikswo, Jr., Biophys. J., 48: 93-109 (1985).
24. "Optimisation of State Selection and Focusing of a Neutral Atomic Hydrogen Beam by a Hexapole Magnet," D.P. Russell and J.P. Wikswo, Jr., J. Physics E, 18: 933-940 (1985).
25. "The Magnetic Field of a Single Nerve Axon: A Volume Conductor Model," J.K. Woosley, B.J. Roth, and J.P. Wikswo, Jr., Mathematical Biosciences, 76: 1-36 (1985).
26. "The Electrical Potential and the Magnetic Field of an Axon in a Nerve Bundle," B.J. Roth and J.P. Wikswo, Jr., Mathematical Biosciences, 76: 37-57 (1985).
27. "The Effects of the Heart-Lung Boundary on the Magnetocardiogram," M.C. Leifer, J.P. Wikswo, Jr., J. Griffin, W.M. Barry, and D.C. Harrison, J. Electrocard., 19: 23-32 (1986).
28. "A Bi-Domain Model for the Extracellular Potential and Magnetic Field of Cardiac Tissue," B.J. Roth and J.P. Wikswo, Jr., IEEE Trans. Biomed. Eng., BME-33: 467-469 (1986).
29. "Capabilities of a Toroid-Amplifier System for Magnetic Measurement of Current in Biological Tissue," F.L.H. Gielen, B.J. Roth, and J.P. Wikswo, Jr., IEEE Trans. Biomed. Eng., BME-33: 910-921 (1986).
30. "Electrically-Silent Magnetic Fields," B.J. Roth and J.P. Wikswo, Jr., Biophys. J., 50: 739-745 (1986).
31. "Computer Simulation of Action Potential Propagation in Septated Nerve Fibers," J.P. Barach and J.P. Wikswo, Jr., Biophys. J., 51: 177-183 (1987).
32. "Electric and Magnetic Fields from Two-Dimensional Anisotropic Bisyncytia," N.G. Sepulveda and J.P. Wikswo, Jr., Biophys. J., 51: 557-568 (1987).
33. "Frequency- and Orientation-Dependent Effects of Mexiletine and Quinidine on Conduction in the Intact Dog Heart," A.K. Bajaj, H.A. Kopelman, J.P. Wikswo, Jr., F. Cassidy, R.L. Woosley, and D.M. Roden, Circulation, 75: 1065-1073 (1987).
34. "Magnetic Determination of the Spatial Extent of a Single Cortical Current Source: A Theoretical Analysis," J.P. Wikswo, Jr., and B.J. Roth, Electroenceph. Clin. Neurophys., 69: 266-276 (1988).
35. "Spatial and Temporal Frequency-Dependent Conductivities in Volume Conduction Calculations of Skeletal Muscle," B.J. Roth, F.L.H. Gielen, and J.P. Wikswo, Jr., Mathematical Biosciences, 88: 159-189 (1988).
36. "The Effects of Spiral Anisotropy on the Electric Potential and the Magnetic Field at the Apex of the Heart," B.J. Roth, W.-Q. Guo, and J.P. Wikswo, Jr., Mathematical Biosciences, 88: 191-221 (1988).
37. "Magnetic Measurements of Cardiac Mechanical Activity," R. Maniewski, T. Katila, T. Poutanen, P. Siltanen, T. Varpula, and J.P. Wikswo, Jr., IEEE Trans. Biomed. Eng., 35: 662-670 (1988).
38. "Using a Magnetometer to Image a Two-dimensional Current Distribution," B.J. Roth, N.G. Sepulveda, and J.P. Wikswo, Jr., J. Appl. Phys., 65: 361-372 (1989).
39. "Current Injection into a Two-Dimensional Anisotropic Bidomain," N.G. Sepulveda, B.J. Roth, and J.P. Wikswo, Jr., Biophys. J., 55: 987-999 (1989).
40. "Magnetic Field of a Single Muscle Fiber: First Measurements and a Core Conductor Model," J.M. van Egeraat, R.N. Friedman, and J.P. Wikswo, Jr., Biophys. J., 57: 663-667 (1990).

PUBLICATIONS (continued):

41. "Finite Element Analysis of Cardiac Defibrillation Current Distributions," N.G. Sepulveda, J.P. Wikswo, Jr., and D.S. Echt, IEEE Trans. Biomed. Eng., 37: 354-365 (1990).
42. "The Magnetic Field of Cortical Current Sources: The Application of a Spatial Filtering Model to the Forward and Inverse Problems," S. Tan, B.J. Roth, and J.P. Wikswo, Jr., Electroenceph. Clin. Neurophys., 76: 73-85 (1990).
43. "Apodized Pickup Coils for Improved Spatial Resolution of SQUID Magnetometers," B.J. Roth and J.P. Wikswo, Jr., Rev. Sci. Instr., 61: 2439-2448 (1990).
44. "High-Resolution Magnetic Mapping Using a SQUID Magnetometer Array," D.J. Staton, Y.P. Ma, N.G. Sepulveda, and J.P. Wikswo, Jr., IEEE Trans. Mag., MAG-27(2): 3237-3240 (1991).
45. "A Model for Compound Action Potentials and Currents in a Nerve Bundle I: The Forward Calculation," R.S. Wijesinghe, F.L.H. Gielen, and J.P. Wikswo, Jr., Annals of Biomed. Eng., 19: 43-72 (1991).
46. "A Model for Compound Action Potentials and Currents in a Nerve Bundle II: A Sensitivity Analysis of Model Parameters for the Forward and Inverse Calculations," R.S. Wijesinghe and J.P. Wikswo, Jr., Annals of Biomed. Eng., 19: 73-96 (1991).
47. "A Model for Compound Action Potentials and Currents in a Nerve Bundle III: A Comparison of the Conduction Velocity Distributions Calculated from Compound Action Currents and Potentials," R.S. Wijesinghe, F.L.H. Gielen, and J.P. Wikswo, Jr., Annals of Biomed. Eng., 19: 97-121 (1991).
48. "Virtual Cathode Effects During Stimulation of Cardiac Muscle: Two-Dimensional *In Vivo* Measurements," J.P. Wikswo, Jr., T.A. Wisialowski, W. Altemeier, J.R. Balser, H.A. Kopelman, and D.M. Roden, Circ. Res., 68: 513-530 (1991).
49. "The Effect of Action Potential Propagation on a Numerical Simulation of a Cardiac Fiber Subjected to Secondary External Stimulus," J.P. Barach and J.P. Wikswo, Jr., Comp. & Biomed. Res., 24: 435-452 (1991).
50. "Magnetic Shield for Wide-Bandwidth Magnetic Measurements for Nondestructive Testing and Biomagnetism," Y.P. Ma and J.P. Wikswo, Jr., Rev. Sci. Instr., 62(11): 2654-2661 (1991).
51. "*In Vivo* Magnetic and Electric Recordings from Nerve Bundles and Single Motor Units in Mammalian Skeletal Muscle: Correlations with Muscle Force," F.L.H. Gielen, R.N. Friedman, and J.P. Wikswo, Jr., J. Gen. Physiol., 98: 1043-1061 (1991).
52. "Cellular Magnetic Fields: Fundamental and Applied Measurements on Nerve Axons, Peripheral Nerve Bundles, and Skeletal Muscle," J.P. Wikswo, Jr. and J.M. van Egeraat, J. of Clin. Neurophysiology, 8(2): 170-188 (1991) (Invited Review).
53. "A Numerical Reconstruction of the Effects of Late Stimulation on a Cardiac Ventricular Action Potential," J.P. Barach and J.P. Wikswo, Jr., Comp. & Biomed. Res., 25: 212-217 (1992).
54. "Suppression of Longitudinal Versus Transverse Conduction by Sodium Channel Block: Effects of Sodium Bolus," J. Turgeon, T.A. Wisialowski, W. Wong, W.A. Altemeier, J.P. Wikswo, Jr., and D.M. Roden, Circulation, 85: 2221-2226 (1992).
55. "A Mathematical Analysis of the Magnetic Field Produced By Flaws in Two-Dimensional Current-Carrying Conductors," N.G. Sepulveda, D.J. Staton, and J.P. Wikswo, Jr., J. Nondestr. Eval., 11(2): 89-101 (1992).
56. "High Resolution Magnetic Susceptibility Imaging of Geological Thin Sections: Pilot Study of a Pyroclastic Sample from the Bishop Tuff," I.M. Thomas, T.C. Moyer, and J.P. Wikswo, Jr., Geophys. Res. Letters, 19(21): 2139-2142 (1992).
57. "The Future of the EEG and MEG," J.P. Wikswo, Jr., A. Gevins, and S.J. Williamson, EEG Clin. Neurophysiology, 87: 1-9 (1993) (Invited Review).

PUBLICATIONS (continued):

58. "An Improved Method for Magnetic Identification and Localization of Cracks in Conductors," J.P. Wikswo, Jr., D.B. Crum, W.P. Henry, Y.P. Ma, N.G. Sepulveda, and D.J. Staton, J. Nondestr. Eval., 12(2): 109-119 (1993).
59. "A Model for Axonal Propagation Incorporating Both Radial and Axial Ionic Transport," J.M. van Egeraat and J.P. Wikswo, Jr., Biophys. J., 64: 1287-1298 (1993).
60. "The Biomagnetic Signature of a Crushed Axon: A Comparison of Theory and Experiment," J.M. van Egeraat, R. Stasaski, J.P. Barach, R.N. Friedman, and J.P. Wikswo, Jr., Biophys. J., 64: 1299-1305 (1993).
61. "Imaging of Small Defects in Nonmagnetic Tubing Using a SQUID Magnetometer," D.C. Hurley, Y.P. Ma, S. Tan, and J.P. Wikswo, Jr., Res. Nondestr. Eval., 5: 1-29 (1993).
62. "A Distributed Quasi-Static Ionic Current Source in the 3-4 Day Old Chicken Embryo," I.M. Thomas, S.M. Freake, S.J. Swithenby, and J.P. Wikswo, Jr., Phys. Med. Biol., 38: 1311-1328 (1993).
63. "A Theoretical Model of Magneto-Acoustic Imaging of Bioelectric Currents," B.J. Roth, P.J. Basser and J.P. Wikswo, Jr., IEEE Trans. Biomed. Eng., 41(8): 723-728 (1994).
64. "Electrical Stimulation of Cardiac Tissue: A Bidomain Model with Active Membrane Properties," B.J. Roth and J.P. Wikswo, Jr., IEEE Trans. Biomed. Eng., 41(3): 232-240 (1994).
65. "Bipolar Stimulation of Cardiac Tissue Using an Anisotropic Bidomain Model," N.G. Sepulveda and J.P. Wikswo, Jr., J. Cardiovasc. Electrophys., 5(3): 258-267 (1994).
66. "Magnetic Fields from Simulated Cardiac Action Currents," J.P. Barach and J.P. Wikswo, Jr., IEEE Trans. Biomed. Eng., 41: 969-974 (1994).
67. "Diagnosing Intestinal Ischemia Using a Noncontact Superconducting Quantum Interference Device," J. Golzarian, D.J. Staton, J.P. Wikswo, Jr., R.N. Friedman, and W.O. Richards, Am. J. Surgery, 167: 586-592 (1994).
68. "Magnetic Susceptibility Tomography for Three-Dimensional Imaging of Diamagnetic and Paramagnetic Objects," N.G. Sepulveda, I.M. Thomas, and J.P. Wikswo, Jr., IEEE Trans. Mag., 30(6): 5062-5069 (1994).
69. "Noninvasive Diagnosis of Mesenteric Ischemia Using a SQUID Magnetometer," W.O. Richards, C.L. Garrard, S.H. Allos, L.A. Bradshaw, D.J. Staton, and J.P. Wikswo, Jr.," Annals of Surgery, 221(6): 696-705 (1995).
70. "Detecting In-Situ Active Corrosion by a SQUID Magnetometer," D. Li, Y.P. Ma, W.F. Flanagan, B.D. Lichter, and J.P. Wikswo, Jr., Journal of Minerals, Metals & Materials, 47(9): 36-39 (1995).
71. "A New Finite-Element Approach to Reconstruct a Bounded and Discontinuous Two-Dimensional Current Image From a Magnetic Field Map," S. Tan, N.G. Sepulveda, and J.P. Wikswo, Jr., J. Comp. Phys., 122: 150-164 (1995).
72. "Techniques for Depth-Selective, Low-Frequency Eddy Current Analysis for SQUID-Based Non-Destructive Testing," Y.P. Ma and J.P. Wikswo, Jr., J. Nondestr. Eval., 14(3): 149-167 (1995).
73. "Virtual Electrodes in Cardiac Tissue: A Common Mechanism for Anodal and Cathodal Stimulation," J.P. Wikswo, Jr., S.F. Lin, and R.A. Abbas, Biophys. J., 69: 2195-2210 (1995).
74. "Line Follower for Finite Element Post-Processing and Current Imaging," N.G. Sepulveda and J.P. Wikswo, Jr., Communications in Numerical Methods and Engineering, 11: 1025-1032 (1995).
75. "Reconstruction of Two-Dimensional Magnetization and Susceptibility Distributions from the Magnetic Field of Soft Magnetic Materials," S. Tan, Y.P. Ma, I.M. Thomas, and J.P. Wikswo, Jr., IEEE Trans. Mag., 32(1): 230-234 (1996).
76. "A Numerical Study of the Use of Magnetometers to Detect Hidden Flaws in Conducting Objects," N.G. Sepulveda and J.P. Wikswo, Jr., J. Applied Physics, 79(4): 2122-2135 (1996).

PUBLICATIONS (continued):

77. "Application of Superconducting Magnetometry in the Study of Aircraft Aluminum Alloy Corrosion," D. Li, Y.P. Ma, W.F. Flanagan, B.D. Lichter, and J.P. Wikswo, Jr., Corrosion, 52(3): 219-231 (1996).
78. "A Simple Integrated Circuit Model of Propagation Along an Excitable Axon," P.H. Bunton, W.P. Henry, and J.P. Wikswo, Jr., Am. J. Phys., 64(5): 602-606 (1996).
79. "Detection of Parasites in Fish by Superconducting Quantum Interference Device Magnetometry," W.G. Jenks, C.G. Bublitz, G.S. Choudhury, Y.P. Ma, and J.P. Wikswo, Jr., Journal of Food Science, 61(5): 865-869 (1996).
80. "Magnetoenterography (MENG): Noninvasive Measurement of Bioelectric Activity in Human Small Intestine," W.O. Richards, L.A. Bradshaw, D.J. Staton, C.L. Garrard, F. Liu, S. Buchanan, and J.P. Wikswo, Jr., Digestive Diseases and Sciences, 41(12): 2293-2301 (1996).
81. "SQUID Magnetometers for Biomagnetism and Non-Destructive Testing: Important Questions and Initial Answers," J.P. Wikswo, Jr., IEEE Transactions on Applied Superconductivity, 5(2): 74-120 (1995) (Plenary Lecture).
82. "The Effect of Externally Applied Electrical Fields on Myocardial Tissue," B.J. Roth and J.P. Wikswo, Jr., Proceedings of the IEEE: Electrical Therapy of Cardiac Arrhythmias, 84: 379-391 (1996).
83. "Superconducting Quantum Interference Device Magnetometer for Diagnosis of Ischemia Caused by Mesenteric Venous Thrombosis," S.H. Allos, D.J. Staton, L.A. Bradshaw, S. Halter, J.P. Wikswo, Jr., and W.O. Richards, World J. Surgery, 21: 173-178 (1997).
84. "High-Resolution High-Speed Synchronous Epifluorescence Imaging of Cardiac Activation," S.F. Lin, R.A. Abbas, and J.P. Wikswo, Jr., Rev. Sci. Instr., 68(1): 213-217 (1997).
85. "Detection of Hidden Corrosion of Aircraft Aluminum Alloys by Magnetometry Using a Superconducting Quantum Interference Device," D. Li, Y.P. Ma, W.F. Flanagan, B.D. Lichter, and J.P. Wikswo, Jr., Corrosion, 53(2): 93-98 (1997).
86. "Correlation and Comparison of Magnetic and Electric Detection of Small Intestinal Electrical Activity," L.A. Bradshaw, S.H. Allos, J.P. Wikswo, Jr., and W.O. Richards, Am. J. Physiol., 272: G1159-G1167 (1997).
87. "A Model of the Magnetic Fields Created by Single Motor Unit Compound Action Potentials in Skeletal Muscle," K.K. Parker and J.P. Wikswo, Jr., IEEE Trans. Biomed. Engr., 44(10): 948-957 (1997).
88. "Effects of Bath Resistance on Action Potentials in the Squid Giant Axon: Myocardial Implications," J. Wu and J.P. Wikswo, Biophys. J., 73: 2347-2358 (1997).
89. "SQUIDs for Non-Destructive Evaluation," W.G. Jenks, S.S.H. Sadeghi, and J.P. Wikswo, Jr., J. Physics D: Applied Physics, 30(3): 293-323 (1997) (Invited Review).
90. "Unipolar Stimulation of Cardiac Tissue," B.J. Roth, S.-F. Lin, and J.P. Wikswo, Jr., J. Electrocardiol., 31: 6-12 (1998) (Invited Review).
91. "Scanning SQUID Microscopy," J.R. Kirtley and J.P. Wikswo, Jr., Annu. Rev. Mater. Sci., 29: 117-148 (1999) (Invited Review).
92. "Quatrefoil Reentry in Myocardium: An Optical Imaging Study of the Induction Mechanism," S.F. Lin, B.J. Roth, and J.P. Wikswo, Jr., J. Cardiovasc. Electrophysiol., 10: 574-586 (1999).
93. "Panoramic Optical Imaging of Electrical Propagation in Isolated Heart," S.F. Lin and J.P. Wikswo, Jr., J. Biomed. Opt., 4(2): 200-207 (1999).
94. "The Human Vector Magnetogastrogram and Magnetoenterogram," L.A. Bradshaw, J.K. Ladipo, D.J. Staton, J.P. Wikswo, Jr., and W.O. Richards, IEEE Trans. BME, 46(8): 959-970 (1999).
95. "Green's Function Formulation of Laplace's Equation for Electromagnetic Crack Detection," T.A. Cruse, A.P. Ewing, and J.P. Wikswo, Jr., Computational Mechanics, 23(5/6): 420-429 (1999).

PUBLICATIONS (continued):

96. "Noninvasive Detection of Ischemic Bowel," S.A. Seidel, L.A. Bradshaw, J.K. Ladipo, J.P. Wikswo, Jr., and W.O. Richards., J. Vascular Surgery, 30(2): 309-319 (1999).
97. "A SQUID Magnetometer System for Quantitative Analysis and Imaging of Hidden Corrosion Activity in Aircraft Aluminum Structures," A. Abedi, J.J. Fellenstein, A.J. Lucas, and J.P. Wikswo, Jr., Rev. Sci. Instrum., 70(12): 4640-4651 (1999).
98. "A Simple Non-Linear Model of Electrical Activity in the Intestine," R.R. Aliev, W.O. Richards, and J.P. Wikswo, Jr., J. Theor. Biology, 204: 21-28 (2000).
99. "Three-Dimensional Surface Reconstruction and Fluorescent Visualization of Cardiac Activation," M.-A. Bray, S.-F. Lin, and J.P. Wikswo, Jr., IEEE Trans. BME, 47(10): 1382-1391 (2000).
100. "A Low-Temperature Transfer of ALH84001 from Mars to Earth," B.P. Weiss, J.L. Kirschvink F.J. Baudenbacher, H. Vali, N.T. Peters, F.A. Macdonald, and J.P. Wikswo, Jr., Science, 290(5492): 791-795 (2000).
101. "Magnetic Measurements of the Response of Corrosion Activity within Aircraft Lap Joints to Accelerated Corrosion Testing," G. Skennerton, A. Abedi, R.G. Kelly, and J.P. Wikswo, Jr., J. Corrosion Science and Engr., at http://www.cp.umist.ac.uk/jcse/vol3/paper2/v3p2.html (2000).
102. "Delayed Activation and Retrograde Propagation in Cardiac Muscle: Implication of Virtual Electrode Effects," J. Wu, D.M. Roden, and J.P. Wikswo, Jr., Annals of Biomed. Eng., 28: 1318-1325 (2000).
103. "Volume Conductor Effects on the Spatial Resolution of Magnetic Fields and Electric Potentials from Gastrointestinal Electrical Activity," L.A. Bradshaw, W.O. Richards, and J.P. Wikswo, Jr., Med. Biol. Eng. Comput., 39: 35-43 (2001).
104. "Spatial Filter Approach for Evaluation of the Surface Laplacian of the Electroencephalogram and Magnetoencephalogram," L.A. Bradshaw and J.P. Wikswo, Jr., Annals of Biomed. Eng., 29: 202-213 (2001).
105. "Spatial Filter Approach for Comparison of the Forward and Inverse Problems of Electroencephalography and Magnetoencephalography," L.A. Bradshaw, R.S. Wijesinghe, and J.P. Wikswo, Jr., Annals of Biomed. Eng., 29: 214-226 (2001).
106. "The Effects of Tubulin-Binding Agents on Stretch-Induced Ventricular Arrhythmias," K.K. Parker, L.K. Taylor, J.B. Atkinson, D.E. Hansen, and J.P. Wikswo, Jr., European Journal of Pharmacology, 417: 131-140 (2001).
107. "Experimental and Theoretical Analysis of Phase Singularity Dynamics in Cardiac Tissue," M.-A. Bray, S.-F. Lin, R.R. Aliev, B.J. Roth, and J.P. Wikswo, Jr., J. Cardiovasc. Electrophysiol., 12: 716-722 (2001).
108. "High Resolution Imaging of Biomagnetic Fields Generated by Action Currents in Cardiac Tissue Using a LTS-SQUID Microscope," F. Baudenbacher, N.T. Peters, P. Baudenbacher, and J.P. Wikswo, Physica C, 368: 24-31 (2002).
109. "High Resolution Low-Temperature Superconductivity SQUID Microscopes for Imaging Magnetic Fields of Samples at Room Temperature," F. Baudenbacher, N.T. Peters, and J.P. Wikswo, Jr., Rev. Sci. Instrum., 73(3): 1247-1254 (2002).
110. "Considerations in Phase Plane Analysis for Non-Stationary Reentrant Cardiac Behavior," M.-A. Bray and J.P. Wikswo, Phys Rev E, 65: 051902-1-051902-8 (2002).
111. "Use of Topological Charge to Determine Filament Location and Dynamics in a Numerical Model of Scroll Wave Activity," M.-A. Bray and J.P. Wikswo, Jr., IEEE Trans. BME, 49(10): 1086-1093 (2002).
112. "Three-Dimensional Visualization of Phase Singularities on the Isolated Rabbit Heart," M.-A. Bray and J.P. Wikswo, Jr., J. Cardiovas. Electrophysiol., 13(12): 1311 (2002).

PUBLICATIONS (continued):

113. "Effects of Parasite Attributes and Injected Current Parameters on Electromagnetic Detection of Parasites in Fish Muscle," G. Choudhury, W.G. Jenks, J.P. Wikswo, Jr., and C.G. Bublitz, J. Food Science: Food Engineering and Physical Properties, 67(9): 3381-3387 (2002).
114. "Magnetic Fields Induced by Electrochemical Reactions: Aluminum Alloy Corrosion Sensing by SQUID Magnetometry on a Macroscopic Scale," Y.P. Ma, J.P. Wikswo, M. Samuleviiene, K. Leinartas, and E. Juzelinas, J. Phys. Chem., 106(48): 12549-12555 (2002).
115. "Effects of Elevated Extracellular Potassium on the Stimulation Mechanism of Diastolic Cardiac Tissue," V.Y. Sidorov, M.C. Woods, and J.P. Wikswo. Biophys. J, 84: 3470-3479 (2003). PMCID: PMC1302903
116. "Interaction Dynamics of a Pair of Vortex Filament Rings," M.-A. Bray and J.P. Wikswo, Jr., Phys. Rev. Lett., 90(23): 238303-1-238303-4 (2003).
117. "A SpatioTemporal Dipole Simulation of Gastrointestinal Magnetic Fields," L.A. Bradshaw, A.G. Myers, J.P. Wikswo, Jr., and W.O. Richards, IEEE Trans. Biomed. Engr., 50(7): 836-847 (2003).
118. "Modification of the Cytosensor™ Microphysiometer to Simultaneously Measure Extracellular Acidification and Oxygen Consumption Rates," S.E. Eklund, D.E. Cliffel, E. Kozlov, A. Prokop, J. Wikswo, and F. Baudenbacher, Analytica Chimica Acta, 496: 93-101 (2003).
119. "Biomagnetic Detection of Gastric Electrical Activity in Normal and Vagotomized Rabbits," L.A. Bradshaw, A.G. Myers, A. Redmond, J.P. Wikswo, Jr., and W.O. Richards, Neurogastroenterol. Motil., 15: 475-482 (2003).
120. "Spatio-Temporal Dynamics of Damped Propagation in Excitable Cardiac Tissue," V. Sidorov, R.R. Aliev, M.C. Woods, F. Baudenbacher, P. Baudenbacher, and J.P. Wikswo, Phys. Rev. Lett., 91(20): 208104-1-208104-4 (2003).
121. "Examination of Optical Depth Effects on Fluorescent Imaging of Cardiac Propagation," M.-A. Bray and J.P. Wikswo, Jr., Biophys. J., 85: 4134-4145 (2003). PMCID: PMC1303712
122. "Histopathologic Changes During Mesenteric Ischemia and Reperfusion," J.K. Ladipo, S.A. Seidel, L.A. Bradshaw, S. Halter, J.P. Wikswo, Jr., and W.O. Richards, West Afr. J. Med., 22(1): 59-62 (2003).
123. "Remote Sensing of Aluminum Alloy Corrosion by SQUID Magnetometry," E. Juzeliũnas, Y.P. Ma, and J.P. Wikswo, J. Solid State Electrochem., 8: 435-441 (2004).
124. "A Microfluidic Device to Confine a Single Cardiac Myocyte in a Sub-Nanoliter Volume on Planar Microelectrodes for Extracellular Potential Recordings," A.A. Werdich, E.A. Lima, B. Ivanov, I. Ges, M.E. Anderson, J.P. Wikswo, and F.J. Baudenbacher, Lab Chip, 4: 357-362 (2004). DOI: 10.1039/b315648f. PMCID: PMC15269804
125. "Heat Conduction Calorimeter for Massively Parallel High Throughput Measurements with Picoliter Sample Volumes," E.B. Chancellor, J.P. Wikswo, F. Baudenbacher, M. Radparvar, and D. Osterman, Applied Physics Letters, 85(12): 2408-2410 (2004).
126. "High Resolution Magnetic Images of Planar Wave Fronts Reveal Bidomain Properties of Cardiac Tissue," J.R. Holzer, L.E. Fong, V.Y. Sidorov, J.P. Wikswo, and F. Baudenbacher, Biophys. J., 87: 4326-4332 (2004). PMCID: PMC1304939
127. "NanoLiterBioReactor: Monitoring of Long-Term Mammalian Cell Physiology at Nanofabricated Scale," A. Prokop, Z. Prokop, D. Schaffer, E. Kozlov, J.P. Wikswo, D. Cliffel, and F. Baudenbacher, Biomedical Microdevices, 6(4): 325-339 (2004).
128. "Simultaneous Monitoring of the Corrosion Activity and Moisture Inside Aircraft Lap Joints," K.R. Cooper, Y. Ma, J.P. Wikswo, and R.G. Kelly, Corrosion Engineering, Science and Technology, 39(4): 339-345 (2004).

PUBLICATIONS (continued):

129. "Rapid Stimulation Causes Electrical Remodeling in Cultured Atrial Myocytes," Z. Yang, W. Shen, J.N. Rottman, J.P. Wikswo, Jr., and K.T. Murray, J. Mol. Cell. Cardiol., 38(2): 299-308 (2005). DOI: 10.1016/j-yjmcc.2004
130. "Effects of Flow and Diffusion on Chemotaxis Studies in a Microfabricated Gradient Generator," G.M. Walker, J.G. Sai, A. Richmond, C.Y. Chung, M.A. Stremler, and J.P. Wikswo. Lab Chip, 5(6): 611-618 (2005) (Cover article). PMCID: PMC2665276
131. "Vector Projection of Biomagnetic Fields," L.A. Bradshaw, A. Myers, W.O. Richards, W. Drake, and J.P. Wikswo, Med. Biol. Eng. Comput., 43: 85-93 (2005). DOI: 10.1007/BF02345127
132. "Mobility of Protozoa Through Narrow Channels," W. Wang, L.M. Shor, E.J. LeBoeuf, J.P. Wikswo, and D.S. Kosson, Applied and Environmental Microbiology, 71(8): 4628-4637 (2005). DOI: 10.1128/AEM.71.8.4628-4637.2005. PMCID: PMC1183301
133. "Biomagnetic Detection of Injury Currents in Rabbit Ischemic Intestine," L.A. Bradshaw, O.P. Roy, G.P. O'Mahony, A.G. Myers, J.G. McDowell, J.P. Wikswo, and W.O. Richards, Dig. Dis. Sci., 50(9): 1561-1568 (2005). DOI: 10.1007/s10620-005-2898-9
134. "Multianalyte Microphysiometry as a Tool in Metabolomics and Systems Biology," S.E. Eklund, J. Wikswo, F. Baudenbacher, A. Prokop, and D.E. Cliffel, J. Electroanalytical Chemistry, 587: 333-339 (2006). DOI: 10.1016/j.jelechem.2005.11.024
135. "Voltage-Calcium State-Space Dynamics during Initiation of Reentry," R.A. Gray, A. Iyer, M.-A. Bray, and J.P. Wikswo, Heart Rhythm, 3(2): 247-248 (2006). DOI: 10.1016/j.hrthm.2005.09.003
136. "Magnetometric Corrosion Sensing Under Hydrodynamic Conditions," E. Juzeliunas, Y.P. Ma, and J.P. Wikswo, J. Solid State Electrochemistry, 10: 700-707 (2006). DOI: 10.1007/s10008-006-0114-2
137. "Virtual Electrode Effects Around An Artificial Heterogeneity During Field Stimulation of Cardiac Tissue," M.C. Woods, V.Y. Sidorov, M.R. Holcomb, D.L. Beaudoin, B.J. Roth, and J.P. Wikswo, Heart Rhythm, 3(6): 751-752 (2006). DOI: 10.1016/j.hrthm.2005.11.003
138. "Experimental Evidence of Improved Transthoracic Defibrillation with Electroporation-Type Pulses," R.A. Malkin, D.X. Guan, and J.P. Wikswo, IEEE Trans. BME, 53(10): 1901-1910 (2006). DOI: 10.1109/TBME.2006.881787
139. "The IL Sequence in the LLKIL Motif in CXCR2 is Required for Full Ligand Induced Activation of Erk, Akt and Chemotaxis in HL60 Cells," J. Sai, G. Walker, J. Wikswo, and A. Richmond, J. Biol. Chem., 281(47): 35931-35942 (2006). DOI: 10.1074/jbc.M605883200
140. "Quantum Dot Probes for Monitoring Dynamic Cellular Response: Reporters of T Cell Activation," M.R. Warnement, S.L. Faley, J.P. Wikswo, and S.J. Rosenthal, IEEE Trans. NanoBioscience, 5(4): 268-272 (2006). DOI: 10.1109/TNB.2006.886573
141. "Engineering Challenges of BioNEMS: The Integration of Microfluidics, Micro- and Nanodevices, Models, and External Control for Systems Biology," J.P. Wikswo, A. Prokop, F. Baudenbacher, D. Cliffel, B. Csukas, and M. Velkovsky, IEE Proc.-Nanobiotechnol., 153(4): 81-101 (2006) (Invited Review). DOI: 10.1049/ip-nbt:20050045
142. "Poly(Vinyl Alcohol) as a Structure Release Layer for Microfabrication of Polymer Composite Structures," K.A. Addae-Mensah, R.S. Reiserer, and J.P. Wikswo, J. Micromech. Microeng., 17: N41-N46 (2007). DOI: 10.1088/0960-1317/17/7/N01
143. "A Flexible, Quantum Dot-Labeled Cantilever Post Array for Studying Cellular Microforces," K.A. Addae-Mensah, N.J. Kassebaum, M.J. Bowers II, R.S. Reiserer, S.J. Rosenthal, P.E. Moore, and J.P. Wikswo, Sensors and Actuators A, 136: 385-397 (2007). DOI: 10.1016/j.sna.2006.12.026

PUBLICATIONS (continued):

144. "A High Voltage Cardiac Stimulator for Field Shocks of a Whole Heart in a Bath," D.N. Mashburn, S.J. Hinkson, M.C. Woods, J.M. Gilligan, M.R. Holcomb, and J.P. Wikswo, Rev. Sci. Instrum., 78: 104302 (2007). DOI:10.1063/1.2796832
145. "SiO_2-Coated Porous Anodic Alumina Membranes for High Flow Rate Electroosmotic Pumping," S.K. Vajandar, D. Xu, D.A. Markov, J.P. Wikswo, W. Hofmeister, and D. Li, Nanotechnology, 18: 275705 (2007). DOI: 10.1088/0957-4484/18/27/275705
146. "A Phased-Array Stimulator System for Studying Planar and Curved Cardiac Activation Wavefronts," R.A. Abbas, S.-F. Lin, D. Mashburn, J. Xu, and J.P. Wikswo, IEEE Trans. BME, 55(1): 222-229 (2008). DOI: 10.1109/TBME.2007.901039. PMCID: PMC2742885.
147. "Model-Controlled Hydrodynamic Focusing to Generate Multiple Overlapping Gradients of Surface-Immobilized Proteins in Microfluidic Devices," W. Georgescu, J. Jourquin, L. Estrada, A.R.A. Anderson, V. Quaranta, and J.P. Wikswo, Lab Chip, 8(2): 238-244 (2008). DOI: 10.1039/b716203k PMCID: PMC4357342
148. "Characterization of Transport in Microfluidic Gradient Generators," B.R. Gorman and J.P. Wikswo, Microfluid. Nanofluid., 4(4): 273-285 (2008). DOI: 10.1007/s10404-007-0169-0
149. "High-Resolution High-Speed Panoramic Cardiac Imaging System," D.W. Evertson, M.R. Holcomb, M. Eames, M. Bray, V.Y. Sidorov, J. Xu, H. Wingard, H.M. Dobrovolny, M.C. Woods, D.J. Gauthier, and J.P. Wikswo, IEEE Trans. BME, 55(3): 1241-1243 (2008). DOI: 10.1109/TBME.2007.912417. PMCID: PMC2561274
150. "Dimensions of Systems Biology," S. Huang and J. Wikswo, Rev. Physiol. Biochem. Pharmacol., 157: 81-104 (2007) (Invited Review). DOI:10.1007/112_0602
151. "Measurement Techniques for Cellular Biomechanics In Vitro," K.A. Addae-Mensah and J.P. Wikswo, Exper. Biol. Med., 233(7): 792-809 (2008) (Invited Review). DOI: 10.3181/0710-MR-278. PMCID: PMC4156015
152. "Protozoan Migration in Bent Microfluidic Channels," W. Wang, L.M. Shor, E.J. LeBoeuf, J.P. Wikswo, G.L. Taghon, and D.S. Kosson, Applied and Environmental Microbiology, 74(6): 1945-1949 (2008). PMCID: PMC2268297
153. "A Microfabricated Nanocalorimeter: Design, Characterization, and Chemical Calibration," J. Xu, R. Reiserer, J. Tellinghuisen, J.P. Wikswo, and F.J. Baudenbacher, Analytical Chem., 80: 2728-2733 (2008). DOI: 10.1021/ac702213d. PMCID: PMC4155943
154. "Gastrointestinal Arrhythmias Are Associated With Statistically Significant Fluctuations in Systemic Information Dimension," A. Irimia and J.P. Wikswo, Jr., Physiol. Meas., 29(5): N33-N40 (2008).
155. "Microfluidic Switching System for Analyzing Chemotaxis Responses of Wortmannin-Inhibited HL-60 Cells," Y. Liu, J. Sai, A. Richmond, and J. Wikswo, Biomed. Microdevices, 10: 499-507 (2008). PMCID: PMC2668251
156. "Microfluidic Platform for Real-Time Signaling Analysis of Multiple Single T Cells in Parallel," S. Faley, K. Seale, J. Hughey, D. Schaffer, S. VanCompernolle, B. McKinney, F. Baudenbacher, D. Unutmaz, and J.P. Wikswo, Lab Chip, 8(10): 1700-1712 (2008). PMCID: PMC4160168
157. "Migration of Isogenic Cell Lines Quantified by Dynamic Multivariate Analysis of Single-Cell Motility," M.P. Harris, E. Kim, B. Weidow, J.P. Wikswo, and V. Quaranta, Cell Adhesion & Migration, 2(2): 127-136 (2009). DOI: 10.4161/cam.2.2.6482. PMCID: PMC2634586
158. "Mirrored Pyramidal Wells for Simultaneous Multiple Vantage Point Microscopy," K.T. Seale, R.S. Reiserer, D.A. Markov, I.A. Ges, C. Wright, C. Janetopoulos, and J.P. Wikswo, J. Microscopy, 232(Pt. 1): 1-6 (2008). PMCID: PMC3789065
159. "3'-Phosphoinositides Regulate the Coordination of Speed and Accuracy during Chemotaxis," J.S. Gruver, J.P. Wikswo, and C.Y. Chung., Biophys. J., 95: 4057-4067 (2008). PMCID: PMC2553113

PUBLICATIONS (continued):

160. "Parallel PI3K-Dependent and Src-Dependent Pathways Lead toCXCL8-Mediated Rac2-Activation and Chemotaxis," J. Sai, D. Raman, Y. Liu, J. Wikswo, and A. Richmond, J. Biol. Chem., 283(39): 26538-26547 (2008). PMCID: PMC2546539
161. "Polarity Reversal Lowers Activation Time During Diastolic Field Stimulation of the Rabbit Ventricles: Insights into Mechanisms," M.M. Maleckar, M.C. Woods, V.Y. Sidorov, M.R. Holcomb, D.N. Mashburn, J.P. Wikswo, and N.A. Trayanova, Am. J. Physiol.-Heart Circ. Physiol., 295: H1626-H1633 (2008). DOI: 10.1152/ajpheart.00706.2008. PMCID: PMC2593523
162. "Effects of Unipolar Stimulation on Voltage and Calcium Distributions in the Isolated Rabbit Heart," V.Y. Sidorov, M.R. Holcomb, M.C. Woods, R.A. Gray, and J.P. Wikswo, Basic Res. Cardiol., 103: 537-551 (2008). DOI: 10.1007/s00395-008-0740-1. PMCID: PMC2742888
163. "Universal Serial Bus Powered and Controlled Isolated Constant-Current Physiological Stimulator," M.R. Holcomb, R.Y. Bekele, E.A. Lima, and J.P. Wikswo, Rev. Sci. Instrum., 79: 126103-1-126103-3 (2008). DOI: 10.1063/1.3030861. PMCID: PMC2736648
164. "Metabolic Discrimination of Select List Agents by Monitoring Cellular Responses in a Multianalyte Microphysiometer," S.E. Eklund, R.G. Thompson, R.M. Snider, C.K. Carney, D.W. Wright, J.P. Wikswo, and D.E. Cliffel, Sensors, 9(3): 2117-2133 (2009). DOI: 10.3390/s90302117. PMCID: PMC3345856
165. "Partial Independence of Bioelectric and Biomagnetic Fields and Its Implications for Encephalography and Cardiography," A. Irimia, K.R. Swinney, and J.P. Wikswo, Phys. Rev. E., 79: 051908-1-051908-13 (2009). DOI: 10.1103/PhysRevE.79.051908. PMCID: PMC3818693
166. "Microfluidic Single Cell Arrays to Interrogate Signalling Dynamics of Individual, Patient-derived Hematopoietic Stem Cells," S.L. Faley, M. Copland, D. Wlodkowic, W. Kolch, K.T. Seale, J.P. Wikswo, and J.M. Cooper, Lab Chip, 9(18): 2659-2664 (2009). DOI: 10.1039/b902083g
167. "The Potential of Dual Camera Systems for Multimodal Imaging of Cardiac Electrophysiology and Metabolism," M.R. Holcomb, M.C. Woods, I. Uzelac, J.P. Wikswo, J.M. Gilligan, and V.Y. Sidorov, Exp. Biol. Med., 234(11): 1355-1373 (2009). DOI: 10.3181/0902-RM-47. PMCID: PMC3816393
168. "Origin Choice and Petal Loss in the Flower Garden of Spiral Wave Tip Trajectories," R.A. Gray, J.P. Wikswo, and N.F. Otani, Chaos, 19(3): 033118-1-033118-8 (2009). DOI: 10.1063/1.3204256. PMCID: PMC2748696
169. "Microfluidic Single-Cell Array Cytometry for the Analysis of Tumour Apoptosis," D. Wlodkowic, S. Faley, M. Zagnoni, J.P. Wikswo, and J.M. Cooper, Anal. Chem., 81(13): 5517-5523 (2009). DOI: 10.1021/ac9008463. PMCID: PMC3816605
170. "Tape Underlayment Rotary-Node (TURN) Valves for Simple On-Chip Microfluidic Flow Control," D. Markov, S. Manuel, L. Shor, S. Opalenik, J. Wikswo, and P. Samson, Biomed. Microdevices, 12: 135-144 (2010). DOI: 10.1007/s10544-009-9368-7. PMCID: PMC3742084
171. "Cryogenic Etching of Silicon: An Alternative Method for Fabrication of Vertical Microcantilever Master Molds," K.A. Addae-Mensah, S. Retterer, S.R. Opalenik, D. Thomas, N.V. Lavrik, J.P. Wikswo, JMEMS, 19(1): 64-74 (2010). DOI: 10.1109/JMEMS.2009.2037440. PMCID: PMC3818692
172. "The Effects of Cholera Toxin on Cellular Energy Metabolism," R.M. Snider, J.R. McKenzie, L. Kraft, E. Kozlov, J.P. Wikswo, and D.E. Cliffel, Toxins, 2(4): 632-634 (2010). DOI: 10.3390/toxins2040632. PMCID: PMC3153216
173. "Macro to Nano: A Simple Method for Transporting Cultured Cells From Milliliter Scale to Nanoliter Scale," K.T. Seale, S.L. Faley, J. Chamberlain, and J. Wikswo, Exper. Biol. Med., 235: 777-783 (2010). DOI: 10.1258/ebm.2010.009379. PMCID: PMC4109816

PUBLICATIONS (continued):

174. "Window on a Microworld: Simple Microfluidic Systems for Studying Microbial Transport in Porous Media," D.A. Markov, P.C. Samson, D.K. Schaffer, A. Dhummakupt, J.P. Wikswo, and L.M. Shor, JoVE, 39: 1-4 (2010). DOI: 10.3791/1741. PMCID: PMC3152860
175. "A Mathematical Model of Bone Remodeling Dynamics for Normal Bone Cell Populations and Myeloma Bone Disease," B. Ayati, C. Edwards, G.F. Webb, and J.P. Wikswo, Biology Direct, 5: 28 (2010). DOI: 10.1186/1745-6150-5-28. PMCID: PMC2867965
176. "Increased Cell Migration and Plasticity in Nrf2 Deficient Cancer Cell Lines," G. Rachakonda, K.R. Sekhar, D. Jowhar, P.C. Samson, J.P. Wikswo, R.D. Beauchamp, P.R. Datta, and M.L. Freeman, Oncogene, 29(25): 3703-3714 (2010). DOI: 10.1038/onc.2010.118. PMCID: PMC2892014
177. "Towards Monitoring Real-Time Cellular Response Using an Integrated Microfluidics-Matrix Assisted Laser Desorption Ionisation/Nanoelectrospray Ionisation-Ion Mobility-Mass Spectrometry Platform," J.R. Enders, C.C. Marasco, A. Kole, B. Nguyen, S. Sundarapandian, K.T. Seale, J.P. Wikswo, and J.A. McLean, IET Syst. Biol., 4(6): 416-427 (2010). DOI: 10.1049/iet-syb.2010.0012. PMCID: PMC4254925
178. "Measurements of Transmembrane Potential and Magnetic Field at the Apex of the Heart," K.K. McBride, B.J. Roth, V.Y. Sidorov, J.P. Wikswo, and F.J. Baudenbacher, Biophys. J., 99: 3113-3118 (2010). DOI: 10.1016/j-bpj.2010.08.040. PMCID: PMC2980705
179. "Open Access Microfluidic Device for the Study of Cell Migration During Chemotaxis," D. Jowhar, G. Wright, P.C. Samson, J.P. Wikswo, and C. Janetopoulos, Integrative Biology, 2: 648-658 (2010). DOI: 10.1039/c0ib00110d. PMCID: PMC3806978
180. "A Metering Rotary Nanopump for Microfluidic Systems," S.G. Darby, M.R. Moore, T.A. Friedlander, D.K. Schaffer, R.S. Reiserer, J.P. Wikswo, and K.T. Seale, Lab Chip, 10: 3218-3226 (2010). DOI: 10.1039/c0lc00087f. PMCID: PMC4156019
181. "Modeling the Measurements of Cellular Fluxes in Microbioreactor Devices Using Thin Enzyme Electrodes," M. Velkovsky, R. Snider, D. Cliffel, and J.P. Wikswo, J. Math. Chem., 49: 251-275 (2011). DOI: 10.1007/s10910-010-9744-9. PMCID: PMC3768171
182. "Single-Nanocrystal Spectroscopy of White-Light-Emitting CdSe Nanocrystals," A.D. Dukes, P.C. Samson, J.D. Keene, L.M. Davis, J.P. Wikswo, and S.J. Rosenthal, J. Phys. Chem. A, 115(16): 4076-4081 (2011). DOI: 10.1021.jp1109509
183. "How Do Control-Based Approaches Enter into Biology?", P.R. LeDuc, W.C. Messner, and J.P. Wikswo, Annu. Rev. Biomed. Eng., 13: 369-396 (2011). DOI: 10.1146/annurev-bioeng-071910-124651. PMC Exempt – Invited Review
184. "Regional Increase of Extracellular Potassium Leads to Electrical Instability and Reentry Occurrence Through the Spatial Heterogeneity of APD Restitution," V.Y. Sidorov, I. Uzelac, and J.P. Wikswo, Am. J. Physiol.-Heart Circ. Physiol., 301: H209-H220 (2011). DOI: 10.1152/ajpheart.01141.2010. PMCID: PMC3129923
185. "External Control of the *GAL Network* in *S. cerevisiae*: A View from Control Theory," R. Yang, S.C. Lenaghan, J.P. Wikswo, and M. Zhang, PLoS ONE, 6(4): e19353 (2011). DOI: 10.1371/journal.pone.0019353. PMCID: PMC3084829
186. "Microfabricated Scaffold-Guided Endothelial Morphogenesis in Three-Dimensional Culture," Y. Liu, D.A. Markov, J.P. Wikswo, and L.J. McCawley, Biomed. Microdevices, 13: 837-846 (2011). DOI: 10.1007/s10544-011-9554-2
187. "Automated Refinement and Inference of Analytical Models for Metabolic Networks," M.D. Schmidt, R.R. Vallabhajosyula, J.W. Jenkins, J.E. Hood, A.S. Soni, J.P. Wikswo, and H. Lipson, Phys. Biol., 8: 055011 (2011). DOI: 10.1088/1478-3975/8/5/055011. PMCID: PMC4109817

PUBLICATIONS (continued):

188. "Advanced Structural Mass Spectrometry for Systems Biology: Pulling the Needles From Haystacks," J.R. Enders, C.R. Goodwin, C.C. Marasco, K.T. Seale, J.P. Wikswo, J.A. McLean, Spectroscopy Supp. Curr. Trends Mass Spectrometry, July 18-23, 2011 (Invited)
189. "Magnetically Attachable Stencils and the Non-Destructive Analysis of the Contribution Made by the Underlying Matrix to Cell Migration," W.J. Ashby, J.P. Wikswo, and A. Zijlstra, Biomaterials, 33(33): 8189-8203 (2012). DOI:10.1016/j.biomaterials.2012.07.018. PMCID: PMC3444626
190. "Thick-Tissue Bioreactor as a Platform for Long-Term Organotypic Culture and Drug Delivery," D.A. Markov, J.Q. Lu, P.C. Samson, J.P. Wikswo, and L.J. McCawley, Lab Chip, 12: 4560-4568 (2012). DOI: 10.1039/c2lc40304h. PMCID: PMC3826880
191. "A Dual-Column Solid Phase Extraction Strategy for Online Collection and Preparation of Continuously Flowing Effluent Streams for Mass Spectrometry," J.R. Enders, C.C. Marasco, J.P. Wikswo, and J.A. McLean, Analytical Chemistry, 84(20): 8467-8474 (2012). DOI: 10.1021/ac3021032. PMCID: PMC3518407
192. "Amino Acids as Metabolic Substrates During Cardiac Ischemia," K.J. Drake, V.Y. Sidorov, O.P. McGuinness, D.H. Wasserman, and J.P. Wikswo, Exp. Biol. Med., 237: 1369-1378 (2012) (Invited Review). DOI:10.1258/ebm.2012.012025. PMCID: PMC3816490
193. "Quantification of Transmembrane Currents during Action Potential Propagation in the Heart," R.A. Gray, D.N. Mashburn, V.Y. Sidorov, and J.P. Wikswo, Biophysical Journal, 104(1): 268-278 (2013). DOI: 10.1016/j-bpj.2012.11.007. PMCID: PMC3540262
194. "Grand Challenges in Interfacing Engineering with Life Sciences and Medicine," B. He, R. Baird, R. Butera, A. Datta, S. George, B. Hecht, A. Hero, G. Lazzi, R.C. Lee, J. Liang, M. Neuman, G. Peng, E. Perreault, M. Ramasubramanian, M. Wang, J. Wikswo, G.-Z. Yang, Y.-T. Zhang, IEEE Trans. Biomed. Eng., Special Issue on Grand Challenges in Engineering Life Sciences and Medicine, 60(3): 589-598 (2013). DOI: 10.1109/TBME.2013.2244886.
195. "Engineering Challenges for Instrumenting and Controlling Integrated Organ-on-Chip Systems, J.P. Wikswo, F.E. Block III, D.E. Cliffel, C.R. Goodwin, C.C. Marasco, D.A. Markov, D.L. McLean, J.A. McLean, J.R. McKenzie, R.S. Reiserer, P.C. Samson, D.K. Schaffer, K.T. Seale, and S.D. Sherrod, IEEE Trans. Biomed. Eng., Special Issue on Grand Challenges in Engineering Life Sciences and Medicine, 60(3): 682-690 (2013). DOI:10.1109/TBME.2013.2244891. PMCID: PMC3696887
196. "Biomolecular Signatures of Diabetic Wound Healing by Structural Mass Spectrometry," K. Hines, S. Ashfaq, J. Davidson, S. Opalenik, J. Wikswo, and J. McLean, Analytical Chemistry, 85(7): 3651-3659 (2013). DOI: 10.1021/ac303594m. PMCID: PMC3622049
197. "Mechanistic Analysis of Challenge-Response Experiments," M.S. Shotwell, K.J. Drake, V.Y. Sidorov, and J.P. Wikswo, Biometrics, 69: 741-747 (2013). DOI: 10.1111/biom.12066. PMCID: PMC4156014
198. "Automated Cell Transport in Optical Tweezers-Assisted Microfluidic Chambers," S. Chowdhury, P. Švec, C. Wang, K.T. Seale, J.P. Wikswo, W. Losert, and S.K. Gupta, IEEE Trans. Automation Science and Engineering, 10(4): 980-989 (2013). DOI: 10.1109/TASE.2013.2239287
199. "Diastolic Field Stimulation: The Role of Shock Duration in Epicardial Activation and Propagation," M.C. Woods, I. Uzelac, M.R. Holcomb, J.P. Wikswo, V.Y. Sidorov, Biophysical Journal, 105: 523-532 (2013). DOI: 10.1016/j.bpj.2013.06.009. PMCID: PMC3714876
200. "Transmembrane Current Imaging in the Heart During Pacing and Fibrillation," R.A. Gray, D.N. Mashburn, V.Y. Sidorov, B.J. Roth, P. Pathmanathan, and J.P. Wikswo, Biophysical Journal, 105: 1710-1719 (2013). DOI: 10.1016/j.bpj.2013.08.019. PMCID: PMC3791310
201. "Dynamic Dosing Assay Relating Real-Time Respiration Responses of *Staphylococcus aureus* Biofilms to Changing Micro-Chemical Conditions," J. Deng, A. Dhummakupt, P. Samson, J. Wikswo, and L. Shor, Analytical Chemistry, 85: 5411-5419 (2013). DOI: 10.1021/ac303711m

PUBLICATIONS (continued):

202. "Scaling and Systems Biology for Integrating Multiple Organs-on-a-Chip," J.P. Wikswo, E.L. Curtis, Z.E. Eagleton, B.C. Evans, A. Kole, L.H. Hofmeister, and W.J. Matloff, Lab Chip, 13: 3496-3511 (2013). DOI: 10.1039/c3lc50243k. PMCID: PMC3818688

203. "Neurovascular Unit on a Chip: Implications for Translational Applications," D.J. Alcendor, F.E. Block III, D.E. Cliffel, J.S. Daniels, K.L.J. Ellacott, C.R. Goodwin, L.H. Hofmeister, D. Li, D.A. Markov, J. May, L.J. McCawley, B.A. McLaughlin, J.A. McLean, K.D. Niswender, V. Pensabene, K.T. Seale, S.D. Sherrod, H-J. Sung, D.L. Tabb, D.J. Webb, and J.P. Wikswo, Stem Cell Research & Therapy, 4(Suppl 1): S18 (2013). PMCID: PMC4029462

204. "A Microfluidic-Enabled Mechanical Microcompressor for the Immobilization of Live Single- and Multi-Cellular Specimens," Y. Yan, L. Jiang, K.J. Aufderheide, G.A. Wright, A. Terekhov, L. Costa, K. Qin, W.T. McCleery, J.J. Fellenstein, A. Ustione, J.B. Robertson, C.H. Johnson, D.W. Piston, M.S. Hutson, J.P. Wikswo, W. Hofmeister, and C. Janetopoulos, Microscopy and Microanalysis, 20: 141-151 (2014). DOI: 10.1017/S1431927613014037. PMCID: PMC4026272

205. "Systems-Level View of Cocaine Addiction: The Interconnection of the Immune and Nervous Systems," C.C. Marasco, C.R. Goodwin, D.G. Winder, N.L. Schramm-Sapyta, J.A. McLean, and J.P. Wikswo, Exp. Biol. Med., 239: 1433-1442 (2014). DOI: 10.1177/1535370214537747. PMCID: PMC4216763

206. "The Microfluidic Multitrap Nanophysiometer for Hematologic Cancer Cell Characterization Reveals Temporal Sensitivity of the Calcein-AM Efflux Assay," T.F. Byrd, L.T. Hoang, M.E. Pfister, E.M. Werner, S.E. Arndt, J.W. Chamberlain, J.J. Hughey, B.A. Nguyen, E.J. Schneibel, L.L. Wertz, J.S. Whitfield, J.P. Wikswo, and K.T. Seale, Scientific Reports, 4: 5117 (2014). DOI: 10.1038/srep05117. PMCID: PMC4038811

207. "Techniques and Assays for the Study of Angiogenesis," M.W. Irvin, A. Zijlstra, J.P. Wikswo, and A. Pozzi, Exp. Biol. Med., 239(11): 1476-1488 (2014) (Invited Review). DOI: 10.1177/1535370214529386. PMCID: PMC4216737

208. "Phenotypic Mapping of Metabolic Profiles Using Self-Organizing Maps of High-Dimensional Mass Spectrometry Data," C.R. Goodwin, S.D. Sherrod, C.C. Marasco, B.O. Bachmann, N. Schramm-Sapyta, J.P. Wikswo, and J.A. McLean, Analytical Chemistry, 86: 6563-6571 (2014). DOI: 10.1021/ac5010794. PMCID: PMC4082383

209. "Engineered Three-Dimensional Microfluidic Device for Interrogating Cell-Cell Interactions in the Tumor Microenvironment," K. Hockemeyer, C. Janetopoulos, A. Terekhov, W. Hofmeister, A. Vilgelm, L. Costa, J.P. Wikswo, and A. Richmond, Biomicrofluidics, 8: 044105 (2014). DOI: 10.1063/1.4890330. PMCID: PMC4189212

210. "Multichamber Multipotentiostat System for Cellular Microphysiometry," E.A. Lima, R.M. Snider, R.S. Reiserer, J.R. McKenzie, D.W. Kimmel, S.E. Eklund, D.E. Cliffel, and J.P. Wikswo, Sensor. Actuat. B-Chem., 204: 536-543 (2014). DOI: 10.1016/j.snb.2014.07.126. PMCID: PMC4167374

211. "The Relevance and Potential Roles of Microphysiological Systems in Biology and Medicine," J.P. Wikswo, Exp. Biol. Med., 239: 1061-1072 (2014). DOI: 1177/1535370214542068. PMCID: PMC4330974

212. "Metabolic Consequences of Interleukin-6 Challenge in Developing Neurons and Astroglia," J.A. Brown, S.D. Sherrod, C. Goodwin, B. Brewer, L. Yang, K.A. Garbett, D. Li, J.P. Wikswo, K. Mirnics, J. Neuroinflammation, 11: 183 (2014). DOI: 10.1186/s12974-014-0183-6. PMCID: PMC4233071

213. "Real-Time Cellular Exometabolome Analysis with a Microfluidic-Mass Spectrometry Platform," C.C. Marasco, J.R. Enders, K.T. Seale, J.A. McLean, and J.P. Wikswo, PLoS One, 10(2): e0117685 (2015). DOI: 10.1371/journal.pone.011768. PMCID: PMC4344306

PUBLICATIONS (continued):

214. "Methods To Identify Saline-Contaminated Electrolyte Profiles," D. Patel, R. Naik, R. Boyer, J. Wikswo, E. Vasilevskis, Clin. Chem. Lab. Med., 53(10): 1585-1591 (2015). DOI: 10.1515/cclm-2014-0955. PMCID: PMC4544643
215. "Structuring Microbial Metabolic Responses to Multiplexed Stimuli Via Self-Organizing Metabolomics Maps," C.R. Goodwin, B.C. Covington, D.K. Derewacz, C.R. McNees, J.P. Wikswo, J.A. McLean, B.O. Bachmann, Chem. Biol., 22: 661-670 (2015). DOI: 10.1016/j.chembiol.2015.03.020. PMCID: PMC4537791
216. "Glutamine and Glutamate Limit the Shortening of Action Potential Duration in Anoxia-Challenged Rabbit Hearts," K.J. Drake, M.S. Shotwell, J.P. Wikswo, and V.Y. Sidorov, Phys. Rep., 3(9): e12535 (2015). DOI: 10.14814/phy2.12535, PMCID: PMC4600381
217. "Recreating Blood-Brain Barrier Physiology and Structure On Chip: A Novel Neurovascular Microfluidic Bioreactor," J.A. Brown, V. Pensabene, D. A. Markov, V. Allwardt, D.M. Neely, M. Shi, C.M. Britt, O.S. Hoilett, Q. Yang, B.M. Brewer, P.C. Samson, L.J. McCawley, J.M. May, D.J. Webb, D. Li, A.B. Bowman, R.S. Reiserer, and J.P. Wikswo, Biomicrofluidics, 9:054124 (2015). DOI: 10.1063/1.4934713. PMCID: PMC4627929
218. "Real-Time Monitoring of Cellular Bioenergetics with a Multianalyte Screen-Printed Electrode," J.R. McKenzie, A.C. Cognata, A.N. Davis, J.P. Wikswo, and D.E. Cliffel, Anal. Chem., 87:7857-7864 (2015). DOI: 10.1021/acs.analchem.5b01533. PMCID: PMC4770793
219. "Biology Coming Full Circle: Joining the Whole and the Parts," J. P. Wikswo and A. P. Porter, Exp. Biol. Med., 240:3-7 (2015). DOI:10.1177/1535370214564534. PMCID: PMC4391629
220. "Organs-on-Chips as Bridges for Predictive Toxicology," M.S. Hutson, P.G. Alexander, V. Allwardt, D.M. Aronoff, K.L. Bruner-Tran, D.E. Cliffel, J.M. Davidson, A. Gough, D.A. Markov, L.J. McCawley, J.R. McKenzie, J.A. McLean, K.G. Osteen, V. Pensabene, P.C. Samson, N.K. Senutovitch, S.D. Sherrod, M.S. Shotwell, D.L. Taylor, L.M. Tetz, R.S. Tuan, L.A. Vernetti, J.P. Wikswo, Appl. In Vitro Toxicol., 2: 97-102 (2016). DOI:10.1089/aivt.2016.0003
221. "Development of Novel Murine Mammary Imaging Windows to Examine Leukocyte Trafficking and Metastasis of Mammary Tumors with Intravital Imaging," T. Sobolik, Y. Su, W. Ashby, D.K. Schaffer, S. Wells, J.P. Wikswo, A. Zijlstra, and A. Richmond, IntraVital, 5:e1125562 (2016). DOI: 10.1080/21659087.2015.1125562, PMCID: PMC5226013
222. "Ultrathin Polymer Membranes with Patterned, Micrometric Pores for Organs-on-Chips," V. Pensabene, L. Costa, A.Y. Terekhov, J.S. Gnecco, J.P .Wikswo, W.H. Hofmeister, ACS Appl. Mater. Interfaces, 8:22629-22636 (2016) DOI: 10.1021/acsami.6b05754. PMCID: PMC5131702
223. "Metabolic Consequences of Inflammatory Disruption of the Blood-Brain Barrier in an Organ-on-Chip Model of the Human Neurovascular Unit," J.A. Brown, S.G. Codreanu, M. Shi, S.D. Sherrod, D.A. Markov, M.D. Neely, C.M. Britt, O.S. Hoilett, R.S. Reiserer, P.C. Samson, L.J. McCawley, D.J. Webb, A.B. Bowman, J.A. McLean, J.P. Wikswo, J. Neuroinflammation, 13:306 (2016) DOI: 10.1186/s12974-016-0760-y. PMCID: PMC5153753
224. "Fitting Tissue Chips and Microphysiological Systems into the Grand Scheme of Medicine, Biology, Pharmacology, and Toxicology," D.E. Watson, R. Hunziker, J.P. Wikswo, Exp. Biol. Med., 242:1559-1572 (2017) DOI: 10.1177/1535370217732765, PMCID: PMC5661772
225. "I-Wire Heart-on-a-Chip I: Three-Dimensional Cardiac Tissue Constructs for Physiology and Pharmacology," V.Y. Sidorov, P.C. Samson, T.N. Sidorova, J.M. Davidson, C.C. Lim, J.P. Wikswo, Acta Biomater., 48:68-78 (2017) DOI: 10.1016/j.actbio.2016.11.009. PMCID: PMC5235983
226. "I-Wire Heart-on-a-Chip II: Biomechanical Analysis of Contractile, Three-Dimensional Cardiomyocyte Tissue Constructs," A.K. Schroer, M.S. Shotwell, V.Y. Sidorov, J.P. Wikswo, W.D. Merryman, Acta Biomater., 48:79-87 (2017) DOI: 10.1016/j.actbio.2016.11.010. PMCID: PMC5235976

PUBLICATIONS (continued):

227. "Functional Coupling of Human Microphysiology Systems: Intestine, Liver, Kidney Proximal Tubule, Blood-Brain Barrier and Skeletal Muscle," L. Vernetti, A. Gough, N. Baetz, S. Blutt, J.R. Broughman, J.A. Brown, J. Foulke-Abel, N. Hasan, J. In, E. Kelly, O. Kovbasnjuk, J. Repper, N. Senutovitch, J. Stabb, C. Yeung, N.C. Zachos, M. Donowitz, M. Estes, J. Himmelfarb, G. Truskey, J. Wikswo, D.L. Taylor, Sci. Rep., 7:42296 (2017) DOI: 10.1038/srep42296. PMCID: PMC5296733

228. "Integrated, High-Throughput, Multi-Omics Platform Enables Data-Driven Construction of Cellular Responses and Reveals Global Drug Mechanisms of Action," J.L. Norris, M.A. Farrow, D.B. Gutierrez, L.D. Palmer, N. Muszynski, S.D. Sherrod, J.C. Pino, J.L. Allen, J.M. Spraggins, A.L.R. Lubbock, A. Jordan, W. Burns, J.C. Poland, C. Romer, M.L. Manier, Y. Nei, B.M. Prentice, K.L. Rose, S. Hill, R. Van de Plas, T. Tsui, N.M. Braman, M.R. Keller, S.A. Rutherford, N. Lobdell, C.F. Lopez, D.B. Lacy, J.A. McLean, J.P. Wikswo, E.P. Skaar, R.M. Caprioli, J. Proteome Res., 16:1364-1375 (2017) DOI: 10.1021/acs.jproteome.6b01004

229. "Circadian Hormone Control in a Human-on-a-Chip: *In Vitro* Biology's Ignored Component?", K.J. Cyr, O.M. Avaldi, J.P. Wikswo, Exp. Biol. Med., 242:1714-1731 (2017) DOI: 10.1177/1535370217732766, PMCID: PMC5832251

230. "Engineered Microfluidic Bioreactor for Examining the Three-Dimensional Breast Tumor Microenvironment," M. Rogers, T. Sobolik, D.K. Schaffer, P.C. Samson, A. Johnson, P. Owens, S.G. Codreanu, S.D. Sherrod, J.A. McLean, J.P. Wikswo, A. Richmond, Biomicrofluidics, 12:034102 (2018), DOI: 10.1063/1.5016433, PMCID: PMC5938175

231. "A Simplified, Fully Defined Differentiation Scheme for Producing Blood-Brain Barrier Endothelial Cells from iPSCs," E.H. Neal, N.A. Marinelli, Y. Shi, P.M. McClatchey, K.M. Balotin, D.R. Gullett, K.A. Hagerla, A.B. Bowman, K.C. Ess, J.P. Wikswo, E.S. Lippmann, Stem Cell Reports, 12:1380-1388 (2019) DOI: 10.1016/j.stemcr.2019.05.008, PMCID: PMC6565873

232. "The Microbiome and the Gut-Liver-Brain Axis for CNS Clinical Pharmacology: Challenges in Specifying and Integrating In Vitro and In Silico Models," K.G. Hawkins, C. Casolaro, J.A. Brown, D.A. Edwards, J.P. Wikswo, Clinical Pharmacology and Therapeutics, 108:929-948 (2020) DOI: 10.1002/cpt.1870, PMCID: PMC7572575 (State of the Art article)

233. "Advances in Blood-Brain Barrier Modeling in Microphysiological Systems Highlight Critical Differences in Opioid Transport Due to Cortisol Exposure," J. Brown, S. Faley, Y. Shi, K. Hillgren, G. Sawada, T. Baker, J. Wikswo, E. Lippmann, Fluids and Barriers of the CNS, 17:38 (2020) DOI: 10.1186/s12987-020-00200-9, PMCID: PMC7269003

234. "Predicting Susceptibility to SARS-CoV-2 Infection Based on Structural Differences in ACE2 Across Species," M.R. Alexander, C.T. Schoeder, J.A. Brown, C.D. Smart, C. Moth, J.P. Wikswo, J.A. Capra, J. Meiler, W. Chen, M.S. Madhur, FASEB Journal, 34:15946-15960 (2020) doi: 10.1096/fj.202001808R, PMCID: PMC7675292

235. "Quantitative Systems Pharmacology for Neuroscience Drug Discovery and Development: Current Status, Opportunities, and Challenges," H. Geerts, J. Wikswo, P.H. van der Graaf, J.P.F. Bai, C. Gaiteri, D. Bennett, S.E. Swalley, E. Schuck, R. Kaddurah-Daouk, K. Tsaioun, M.A. Pelleymounter, CPT: Pharmacometrics Syst. Pharmacol., 9:5-20 (2020) DOI: 10.1002/psp4.12478

236. "A bistable, multiport valve enables microformulators creating microclinical analyzers that reveal aberrant glutamate metabolism in astrocytes derived from a tuberous sclerosis patient," D.R. Miller, D.K. Schaffer, M.D. Neely, E.S. McLain, A.R Travis, F.E. Block III, J. McKenzie, E.M. Werner, L. Armstrong, D.A. Markov, A.B. Bowman, K.C. Ess, D.E. Cliffel, J.P. Wikswo, Sensors and Actuators B: Chemical, 341: 129972 (2021) doi: 10.1016/j.snb.2021.129972, PMCID: PMC8174775

PUBLICATIONS (continued):

237. "Rapid Prototyping of Cell Culture Microdevices Using Parylene-Coated 3D Prints," B.J. O'Grady, M.D. Geuy, H. Kim, K.M. Balotin, E.R. Allchin, D.C. Florian, N.N. Bute, T.E. Scott, G.B. Lowen, C. Fricker, M. Fitzgerald, S.A. Guelcher, J.P. Wikswo, L.M. Bellan, E.S. Lippmann, Lab on a Chip, 21:4814-4822 (2021) doi: 10.1039/D1LC00744K, PMCID: PMC8717820
238. "A microfluidic system that replicates pharmacokinetic (PK) profiles *in vitro* improves prediction of *in vivo* efficacy in preclinical models," D. Singh, S. Deosarkar, E. Cadogan, V. Flemington, A. Bray, J. Zhang, R.S. Reiserer, D.K. Schaffer, G.B. Gerken, C.M. Britt, E.M. Werner, F. Gibbons, T. Kostrzewski, C.E. Chambers, E. Davies, A. Ramos Montaya, J. Fok, D. Hughes, K. Fabre, M.P. Waggoner, J.P. Wikswo, C.W. Scott, PLoS Biology, 20: e3001624 (2022) doi.org/10.1371/journal.pbio.3001624
239. "Processes in DNA-damage response from a whole-cell multi-omics perspective," J.C. Pino, A.L.R. Lubbock, L.A. Harris, D.B. Gutierrez, M.A. Farrow, N. Muszynski, T. Tsui, S.D. Sherrod, J.L. Norris, J.A. McLean, R.M. Caprioli, J.P. Wikswo, C.F. Lopez, iScience, 25: 105341 (2022) doi: 10.1016/j.isci.2022.105341, PMCID: PMC9633746
240. "Application of a human blood brain barrier organ-on-a-chip model to evaluate small molecule effectiveness against Venezuelan Equine Encephalitis Virus," N.A. Boghdeh, K.H. Risner, M.D. Barrera, C.M. Britt, D.K. Schaffer, F. Alem, J.A. Brown, J.P. Wikswo, A. Narayanan, Viruses,14:2799 (2022) doi: 10.3390/v14122799 (Special Issue: Alphaviruses), PMCID: PMC9786295
241. "A Microfluidic Platform for Time-Resolved Interrogation of Polarized Retinal Pigment Epithelial Cells," E.C. Spivey, J. Yin, E. Chaum, J.P. Wikswo, TVST, 12:Article 28 (2023), https://doi.org/10.1167/tvst.12.11.28, PMCID: PMC10683772
242. "Anticancer pan-ErbB inhibitors reduce inflammation and tissue injury and exert broad-spectrum antiviral effects," S. Saul, M. Karim, L. Ghita, P-T. Huang, W. Chiu, V. Durán, C-W. Lo, S. Kumar, N .Bhalla, P. Leyssen, F. Alem, N. Boghdeh, D.H.N. Tran, C.A. Cohen, J.A. Brown, K. Huie, C. Tindle, M. Sibai, C. Ye, A. Magdy, K. Chiem, L. Martinez-Sobrino, J.M. Dye, B.A. Pinsky, P. Ghosh, S. Das, D.E. Solow-Cordero, J. Jin, J.P. Wikswo, D. Jochmans, J. Neyts, S. De Jonghe, A. Narayanan, S. Einav, J. Clin. Invest., 133: e169510 (2023), doi: 10.1101/2021.05.15.444128, PMCID: PMC8219101
243. "AutonoMS: Automated ion mobility metabolomic fingerprinting," G.K. Reder, E. Bjurström, D. Brunnsåker, F. Kronström, P. Lasin, I.A. Tiukova, O. Savolainen, J. Dodds, J. May, J.P. Wikswo, J. McLean, R.D. King, J. Am. Soc. Mass Spectrom., 35:542-550 (2024), https://pubs.acs.org/doi/10.1021/jasms.3c00396, PMCID: PMC10921458, NSF-PAR ID: 10489389
244. "Gravity-perfused airway-on-a-chip optimized for quantitative BSL-3 studies of SARS-CoV-2 infection: Barrier permeability, cytokine production, immunohistochemistry, and viral load assays," S.L. Faley, N. Boghdeh, D.K. Schaffer, E.C. Spivey, F. Alem, A. Narayanan, J.P. Wikswo, J.A. Brown, Lab Chip, 24:1794-1807 (2024), https://doi.org/10.1039/D3LC00894K, PMCID: PMC10929697
245. "Contractile and Genetic Characterization of Cardiac Constructs Engineered from Human Induced Pluripotent Stem Cells: Modeling of Tuberous Sclerosis Complex and the Effects of Rapamycin," V.Y. Sidorov, T.N. Sidorova, P.C. Samson, R.S. Reiserer, C.M. Britt, M.D. Neely, K.C. Ess, J.P. Wikswo, Bioengineering, 11:234 (2024), https://doi.org/10.3390/bioengineering11030234, PMCID: PMC10968530
246. "Rescue of Impaired Blood-Brain Barrier in a Tuberous Sclerosis Complex Patient Derived Neurovascular Unit," J.A. Brown, S.L. Faley, M. Judge, P. Ward, R.A. Ihrie, R. Carson, L. Armstrong, M. Sahin, J.P. Wikswo, K.C. Ess, M.D. Neely, J. Neurodev. Disord., 16, Article No. 27 (2024), https://doi.org/10.1186/s11689-024-09543-y, PMCID: PMC10760190
247. "Magnetometer Calibration Methods," R.L. Fagaly, D.N. Paulson, J.P. Wikswo, IEEE Trans. Appl. Supercond., 34. Art No. 9002319 (2024), doi: 10.1109/TASC.2024.3397738

PUBLICATIONS (continued):

Journal Article Preprint

248. "Genesis: Towards the Automation of Systems Biology Research," I.A. Tiukova, D. Brunnsåker, E.Y. Bjurström, A.H. Gower, F. Kronström, G.K. Reder, R.S. Reiserer, K. Korovin, L.V. Soldatova, J.P. Wikswo, R.D. King, arXiv:2408.10689 [cs.AI]

Book Chapters

1. "Theory and Application of Magnetocardiography," J.P. Wikswo, Jr., J.A.V. Malmivuo, W.H. Barry, M.C. Leifer, and W.M. Fairbank, in Cardiovascular Physics, D.N. Ghista, E. Van Vollenhoven, and W. Yang, Eds., (Karger, Basil) pp. 1-67 (1979).
2. "Cellular Action Currents," J.P. Wikswo, Jr., in Biomagnetism: An Interdisciplinary Approach, S.J. Williamson, G.-L. Romani, L. Kaufman, and I. Modena, Eds., (Plenum, New York), pp. 173-207 (1983).
3. "Theoretical Aspects of the ECG-MCG Relationship," J.P. Wikswo, Jr., in Biomagnetism: An Interdisciplinary Approach, S.J. Williamson, G.-L. Romani, L. Kaufman, and I. Modena, Eds., (Plenum, New York), pp. 311-326 (1983).
4. "Longitudinal Resistance in Cardiac Muscle and its Effects on Propagation," B.J. Roth and J.P. Wikswo, Jr., Cell Interactions and Gap Junctions, N. Sperelakis and W.C. Cole, Eds., (CRC Press, Boca Raton), pp. 165-178 (1989).
5. "Biomagnetic Sources and Their Models," J.P. Wikswo, Jr., Advances in Biomagnetism, S.J. Williamson, M. Hoke, G. Stroink, and M. Kotani, Eds., (Plenum, New York), pp. 1-18 (1990).
6. "Intraoperative Recording of the Magnetic Field of a Human Nerve," J.P. Wikswo, Jr., W.P. Henry, R.N. Friedman, A.W. Kilroy, R.S. Wijesinghe, J.M. van Egeraat, and M.A. Milek, Advances in Biomagnetism, S.J. Williamson, M. Hoke, G. Stroink, and M. Kotani, Eds., (Plenum, New York), pp. 137-140 (1990).
7. "MicroSQUID: A Close-Spaced Four Channel Magnetometer," D.S. Buchanan, D.B. Crum, D. Cox, and J.P. Wikswo, Jr., Advances in Biomagnetism, S.J. Williamson, M. Hoke, G. Stroink, and M. Kotani, Eds., (Plenum, New York), pp. 677-679 (1990).
8. "Preliminary Measurements with MicroSQUID," J.P. Wikswo, Jr., R.N. Friedman, A.W. Kilroy, J.M. van Egeraat, and D.S. Buchanan, Advances in Biomagnetism, S.J. Williamson, M. Hoke, G. Stroink, and M. Kotani, Eds., (Plenum, New York), pp. 681-684 (1990).
9. "Tissue Anisotropy, the Cardiac Bidomain and the Virtual Cathode Effect," J.P. Wikswo, Jr., in Cardiac Electrophysiology: From Cell to Bedside, Second Edition (W.B. Saunders, Orlando), D.P. Zipes and J. Jalife, Eds., (Invited), pp. 348-361 (1995).
10. "High-Resolution Magnetic Imaging: Cellular Action Currents and Other Applications," J.P. Wikswo, Jr., SQUID Sensors: Fundamentals, Fabrication and Applications, H. Weinstock, Ed., (Kluwer Academic Publishers, The Netherlands), pp. 307-360 (1996).
11. "The Magnetic Inverse Problem," J.P. Wikswo, Jr., SQUID Sensors: Fundamentals, Fabrication and Applications, H. Weinstock, Ed., (Kluwer Academic Publishers, The Netherlands), pp. 629-695 (1996).
12. "SQUIDs," W.G. Jenks, I.M. Thomas, and J.P. Wikswo, Jr., Encyclopedia of Applied Physics, G.L. Trigg, E.S. Vera, and W. Greulich, Eds., (VCH Publishers, Inc., New York, NY), Vol. 19, pp. 457-468 (1997).
13. "Applications of SQUID Magnetometers to Biomagnetism and Nondestructive Evaluation," J.P. Wikswo, Applications of Superconductivity, H. Weinstock, Ed., (Kluwer Academic Publishers, The Netherlands), pp. 139-228 (2000).

PUBLICATIONS (continued):

14. "New Perspectives in Electrophysiology from the Cardiac Bidomain," S.-F. Lin and J.P. Wikswo, Jr., Optical Mapping of Cardiac Excitation and Arrhythmias, D.S. Rosenbaum and J. Jalife, Eds. (Futura Publishing Co., Inc., New York), Chapter 19, pp. 335-359 (2001).
15. "The Magnetic Inverse Problem," E.A. Lima, A. Irimia, and J.P. Wikswo, Jr., The SQUID Handbook, J. Clarke and A. Braginski, Eds., (Wiley-VCH, Verlag, Berlin), Vol. 2, Chapter 10, pp. 139-267 (2006).
16. "Max at Vanderbilt," D.F. Salisbury, A. Price, R.D. Collins, and J.P. Wikswo, in Max Delbrück and the New Perception of Biology, 1906-1981: A Centenary Celebration, University of Salamanca, October 9-10, 2006, W. Shropshire, Jr., Ed. (AuthorHouse, Bloomington, IN), Chapter 22, pp. 213-235 (2007).
17. "Virtual Electrode Theory of Pacing," J.P. Wikswo and B.J. Roth, in Cardiac Bioelectric Therapy: Mechanisms and Practical Implications, I. Efimov, M. Kroll, and P. Tchou, Eds., (Springer), Chapter 4.3, pp. 283-330 (2009). DOI:10.1007/978-0-387-79403-7_12
18. "Electrochemical Monitoring of Cellular Metabolism," J.R. McKenzie, D.E. Cliffel, and J.P. Wikswo, in Encyclopedia of Applied Electrochemistry, R. Savinell, K. Ota, and G. Kreysa, Eds., (Springer Science+Business Media, New York), pp. 522-528 (2014). DOI:1007/978-1-4419-6996-5
19. "Study of Chemotaxis and Cell-Cell Interactions in Cancer with Microfluidic Devices," J. Sai, M. Rogers, K. Hockemeyer, J.P. Wikswo, and A. Richmond, in Methods in Enzymology, M.H. Tracy, Ed., (Academic Press), Vol. 570, Ch. 2, pp. 19-45 (2016). DOI: 10.1016/bs.mie.2015.09.023, PMCID: PMC5378165
20. "Virtual Electrode Theory of Pacing," J.P. Wikswo and B.J. Roth, in Cardiac Bioelectric Therapy: Mechanisms and Practical Implications, 2nd Ed., I.R. Efimov, F.S. Ng, and J.I. Laughner, Eds., (Springer, New York), Chapter 12, pp. 147-179 (2021). DOI: 10.1007/978-3-030-63355-4_12

Chapter Preprint

21. "The Use of AI-Robotic Systems for Scientific Discovery," A.H. Gower, D. Brunnsåker, F. Kronström, G. Reder, R.S. Reiserer, IA Tiukova, K Korovin, J.P. Wikswo, R.D. King, arXiv:2406.17835 [cs.LG]

Letters, Commentary, Brief Reports, Reviews

1. "Early Use of Timolol in Acute Myocardial Infarction," R.F. Smith, J.E. Barnhill, J.P. Wikswo, Jr., N. England J. Med., 310: 1667 (1984).
2. "Magnetic Measurements of Nerve Action Currents: A New Intraoperative Technique," V.R. Hentz, J.P. Wikswo, Jr., and G.S. Abraham, Peripheral Nerve Repair and Regeneration, 1: 27-36 (1986).
3. "A Review of Intermediate Physics for Medicine and Biology by R.K. Hobbie," J.P. Wikswo, Jr., Physics Today, 42: 75-76 (1989).
4. "Magnetic Source Imaging: Cell, Tissue, and Brain," J.P. Wikswo, Jr., and S.J. Williamson, in Physics News in 1991, P.F. Schewe, Ed., (American Institute of Physics, New York, 1992), pp. 21-24.
5. "Magnetic Localization of the Origins of Self-Sustained Oscillation in Squid Giant Axons," S.F. Lin, R.A. Abbas, and J.P. Wikswo, Jr., Biol. Bull., 185: 300-301 (1993).
6. "Biomagnetism," J.P. Wikswo, Jr., and S.J. Williamson, 1994 McGraw-Hill Yearbook of Science & Technology, (McGraw-Hill, Inc., New York), pp. 48-51.
7. "The Complexities of Cardiac Cables: Virtual Electrode Effects," J.P. Wikswo, Jr., Biophys. J., 66: 551-553 (1994). PMCID:PMC1275753
8. "Comments on 'Hall-Effect Imaging'," B.J. Roth and J.P. Wikswo, Jr., IEEE Trans. Biomed. Engr., 45(10): 1294-1296 (1998).
9. "Magnetic Microscopy Promises a Leap in Sensitivity and Resolution," B.P. Weiss, F.J. Baudenbacher, J.P. Wikswo, and J.L. Kirschvink, EoS, 82: 513-518 (2001).

PUBLICATIONS (continued):

10. "SQUIDs Remain Best Tools for Measuring Brain's Magnetic Field," J.P. Wikswo, Physics Today, 57(2): 15-17 (2004).
11. "Micro-Mirrors for Nanoscale Three-Dimensional Microscopy," K.T. Seale, C. Janetopoulos, and J.P. Wikswo, ACS Nano, 3(3): 493-497 (2009). DOI:10.1021/nn900188t
12. "Cardiovascular Research: Several Small Shocks Beat One Big One," R.A. Gray and J.P. Wikswo, Nature: 475:181-182 (2011). DOI: 10.1038/475181a
13. "The Biohacker: A Threat to National Security," S. Hummel, V. Quaranta, and J. Wikswo, CTC Sentinel, 7(1): 8-11 (2014).
14. "Looking to the future of organs-on-chips: interview with Professor John Wikswo," Future Science OA, 3(2), pp: FSO163 (2017). DOI: 10.4155/fsoa-2016-0085
15. John P. Wikswo, Peer Review Report for "The challenges and considerations for emerging or future entrepreneurial researchers in microphysiological systems" [version 1; peer review: 1 approved with reservations], F. Taute, A. Homs-Corbera, P. Gaudriault, Open Research Europe 2021, 1:38 (https://open-research-europe.ec.europa.eu/articles/1-38)

Methods Papers and Application Notes

1. "Rapid and Precise Determination of Cellular Amino Acid Flux Rates Using HPLC with Automated Derivatization with Absorbance Detection," J. Greene, J.W. Henderson, Jr., and J.P. Wikswo, Agilent Technologies, Inc., Application Note: Pharmaceutical, Food Industries, 8 pages, Wilmington, DE, February 6, 2009.
2. "Chips & Tips: A Method for Periodic Sterile Sample Collection During Continuous Cell Culture in Microfluidic Devices," D.A. Markov, E.M. Lillie, P.C. Samson, J.P. Wikswo, and L.J. McCawley, Lab Chip (Published online August 17, 2010).
3. "CellAnimation: An Open Source MATLAB Framework for Microscopy Assays," W. Georgescu, J.P. Wikswo, and V. Quaranta, Bioinformatics, 28(1): 138-139 (2012). DOI:10.1093/bioinformatics/btr633. PMCID: PMC3244774
4. Wikswo JP, Swaney PJ, "MultiWell MicroFormulator for Long-Term Dynamic Cell Culture and Organ-on-Chip Studies," R&D 100 Awards Winner, 2017 (Selected as One of the 100 Most Technologically Significant New Products of the Year in Analytical/Test)
5. Spivey EC, Yin J, Chaum E, Wikswo JP, A Microfluidic Platform for Time-Resolved Interrogation of Polarized Retinal Pigment Epithelial Cells, Transl. Vis. Sci. Technol., 12:Article 28 (2023), https://doi.org/10.1167/tvst.12.11.28, PMCID: PMC10683772

Thematic Issues Edited

1. Experimental Biology and Medicine, Annual Thematic Issue: The Biology and Medicine of Microphysiological Systems, John P. Wikswo, Editor, September 2014: 239(9):1061-1271
2. Experimental Biology and Medicine, Thematic Issue: Progress Toward Adoption of Microphysiological Systems in Biology and Medicine, Volume 242, Issues 16 and 17, October and November 2017, John P. Wikswo, Editor

INTELLECTUAL PROPERTY:

Issued Patents

1. "Method for Measuring Externally of the Human Body Magnetic Susceptibility Changes," J.P. Wikswo, Jr., W.M. Fairbank, and J.E. Opfer, United States Patent 3,980,076 (September 14, 1976).
2. "Apparatus for Measuring Externally of the Human Body Magnetic Susceptibility Changes," J.P. Wikswo, Jr., W.M. Fairbank, and J.E. Opfer, United States Patent 4,079,730 (March 21, 1978).
3. "Method and Apparatus for Measuring Magnetic Fields and Electrical Currents in Biological and Other Systems," J.P. Barach and J.P. Wikswo, Jr., United States Patent 4,324,255 (April 13, 1982).
4. "Magnetometer Flux Pick-up Coil with Non-uniform Interturn Spacing Optimized for Spatial Resolution," B.J. Roth and J.P. Wikswo, Jr., United States Patent 5,038,104 (August 6, 1991).
5. "Method and Apparatus for Magnetic Identification and Localization of Flaws in Conductors by Canceling the Field About the Conductor with the Field about a Flawless Conductor," J.P. Wikswo, Jr., N.G. Sepulveda, W.P. Henry, and D.B. Crum, United States Patent 5,109,196 (April 28, 1992).
6. "Apparatus and Method for Imaging the Structure of Diamagnetic and Paramagnetic Objects," J.P. Wikswo, Jr. and A. Lauder, United States Patent 5,408,178 (April 18, 1995).
7. "Magnetometer and Method of Measuring a Magnetic Field," J.P. Wikswo, Jr. W.C. Black, Jr., E.C. Hirschkoff, J.R. Marsden, and D.N. Paulson, United States Patent 5,444,372 (August 22, 1995).
8. "Apparatus and Method for On-Line Inspection of Electrically Conductive Food Products Using Liquid Electrolyte," J.P. Wikswo, Jr., Y.P. Ma, W.G. Jenks, C.G. Bublitz, and G.S. Choudhury, United States Patent 5,572,123 (November 5, 1996).
9. "Method and Apparatus for Detecting Flaws Below the Surface of an Electrically Conductive Object," Y.P. Ma and J.P. Wikswo, Jr., United States Patent 5,610,517 (March 11, 1997).
10. "Non-Invasive Identification of Intestinal Ischemia from Measurement of Basic Electrical Rhythm of Intestinal Smooth Muscle Electrical Activity Using a Magnetometer," W.O. Richards, J.P. Wikswo, Jr., D. Staton, J. Golzarian, and L.A. Bradshaw, United States Patent, 5,771,894 (June 30, 1998).
11. "Superconducting Quantum Interference Apparatus and Method for High Resolution Imaging of Samples," F.J. Baudenbacher, N.T. Peters, J.P. Wikswo, Jr., and R.L. Fagaly, United States Patent 7,002,341 (February 21, 2006).
12. "Device and Methods for Monitoring the Status of at Least One Cell," J.P. Wikswo, F.J. Baudenbacher, and O. McGuinness, United States Patent 7,435,578 (October 14, 2008).
13. "Capillary Perfused Bioreactors with Multiple Chambers," J.P. Wikswo, F.J. Baudenbacher, A. Prokop, E.J. LeBoeuf, C.Y. Chung, D. Cliffel, F.R. Haselton, W.H. Hofmeister, C.P. Lin, L.J. McCawley, R.S. Reiserer, and M.A. Stremler, United States Patent 7,534,601 (May 19, 2009).
14. "Apparatus and Methods for Monitoring the Status of a Metabolically Active Cell," F. Baudenbacher, J.P. Wikswo, R.R. Balcarcel, D. Cliffel, S. Eklund, J.M. Gilligan, O. McGuinness, T. Monroe, A. Prokop, M.A. Stremler, A.A. Werdich, United States Patent, 7,704,745 (April 27, 2010)
15. "Device and Methods for Detecting the Response of a Plurality of Cells to at Least One Analyte of Interest," D. Cliffel, F.J. Baudenbacher, J.P. Wikswo, S. Eklund, R.R. Balcarcel, J.M. Gilligan, United States Patent 7,713,733 (May 11, 2010)
16. "Bioreactors with Substance Injection Capacity," J.P. Wikswo, F.J. Baudenbacher, F. R. Haselton, W.H. Hofmeister, C.P. Lin, L.J. McCawley, M.A. Stremler, and A. Weaver, United States Patent 7,790,443 (September 7, 2010).
17. "Photolithographed Micro-Mirror Well for Tomogram Imaging of Individual Cells," K.T. Seale, R.S. Reiserer, and J.P. Wikswo, United States Patent 7,974,003 (July 5, 2011).

INTELLECTUAL PROPERTY (continued):

18. "Bioreactors with Multiple Chambers," J.P. Wikswo, F.J. Baudenbacher, D.E. Cliffel, F.R. Haselton, E.J. LeBoeuf, A. Prokop, R.S. Reiserer, and M.A. Stremler, United States Patent 7,977,089 (July 12, 2011).
19. "Device and Methods for Monitoring the Status of at Least One Cell," J.P. Wikswo, F.J. Baudenbacher, and O. McGuinness, United States Patent 7,981,649 (July 19, 2011).
20. "Capillary Perfused Bioreactors with Multiple Chambers," J.P. Wikswo, F.J. Baudenbacher, A. Prokop, E.J. LeBoeuf, C.Y. Chung, D. Cliffel, F.R. Haselton, W.H. Hofmeister, C.P. Lin, L.J. McCawley, R.S. Reiserer, M.A. Stremler, United States Patent, 8,003,378 (August 23, 2011).
21. "Bioreactors with an Array of Chambers and a Common Feed Line," J.P. Wikswo, D. Cliffel, E.J. LeBoeuf, and R.S. Reiserer, United States Patent, 8,129,179 (March 6, 2012).
22. "Photolithographed Micro-Mirror Well for 3D Tomogram Imaging of Individual Cells," K.T. Seale, R.S. Reiserer, J.P. Wikswo, S. Rosenthal, J. Chamberlain, C. Wright, D. Markov, and C. Janetopoulos, United States Patent, 8,339,704 (December 25, 2012).
23. "Normally Closed Microvalve and Applications of the Same," F.E. Block III, P.C. Samson, J.P. Wikswo, United States Patent, 9,618,129 (April 11, 2017).
24. "Integrated Human Organ-on-Chip Microphysiological Systems," J.P. Wikswo, P.C. Samson, F.E. Block III, R.S. Reiserer, K.K. Parker, J.A. McLean, L.J. McCawley, D. Markov, D. Levner, D.E. Ingber, G.A. Hamilton, J.A. Goss, R. Cunningham, D.E. Cliffel, J.R. McKenzie, A. Bahinski, C.D. Hinojosa, United States Patent, 9,725,687 (August 8, 2017).
25. "Organ on Chip Integration and Applications of the Same," F.E. Block III, P.C. Samson, E.M. Werner, D.A. Markov, R.S. Reiserer, J.R. McKenzie, D.E. Cliffel, W.J. Matloff, F.E. Block, Jr., J.R. Scherrer, W.H. Tidwell, J.P. Wikswo, United States Patent, 9,874,285 (January 23, 2018).
26. "Interconnections of Multiple Perfused Engineered Tissue Constructs and Microbioreactors, Multi-Microformulators and Applications of the Same," J.P. Wikswo, D.A. Markov, P.C. Samson, F.E. Block III, D.K. Schaffer, R.S. Reiserer, United States Patent, 10,023,832 (July 17, 2018).

    Also issued as China Patent ZL201710014601.1.
27. "Integrated Organ-on-Chip Systems and Applications of the Same," J.P. Wikswo, D.E. Cliffel, D.A. Markov, J.A. McLean, L.J. McCawley, P.C. Samson, R.S. Reiserer, F.E. Block, J.R. McKenzie, United States Patent, 10,078,075 (September 18, 2018).
28. "Organ on Chip Integration and Applications of the Same," F.E. Block III, P.C. Samson, E.M. Werner, D.A. Markov, R.S. Reiserer, J.R. McKenzie, D.E. Cliffel, W.J. Matloff, F.E. Block, Jr., J.R. Scherrer, W.H. Tidwell, J.P. Wikswo, United States Patent, 10,119,622 (November 6, 2018).
29. "Integrated Organ-on-Chip Systems and Applications of the Same," J.P. Wikswo, D.E. Cliffel, D.A. Markov, J.A. McLean, L.J. McCawley, P.C. Samson, R.S. Reiserer, F.E. Block, J.R. McKenzie, United States Patent, 10,444,223 (October 15, 2019).
30. "Multicompartment Layered and Stackable Microfluidic Bioreactors and Applications of Same," J.P. Wikswo, D.A. Markov, R.S. Reiserer, United States Patent, 10,464,064 (November 5, 2019).
31. "Peristaltic Micropump and Related Systems and Methods," P.A. Gould, L.T. Hoang, J.R. Scherrer, W.J. Matloff, K.T. Seale, E.L. Curtis, D.K Schaffer, D.J. Hall, A. Kole, R.S. Reiserer, W.H. Tidwell, P.C. Samson, J.P. Wikswo, United States Patent, 10,487,819 (November 26, 2019).
32. "Multicompartment Layered and Stackable Microfluidic Bioreactors and Applications of Same," J.P. Wikswo, D.A. Markov, R.S. Reiserer, United States Patent, 10,532,354 (January 14, 2020).

    Also issued as European Patent, EP3380240.

INTELLECTUAL PROPERTY (continued):

33. "System and Method for Microdialysis Imaging and Regional Fluidic Delivery and Control and Applications of Same," J.P. Wikswo, R.S. Reiserer, K.G. Hawkins, United States Patent, 10,538,726 (January 21, 2020).
34. "Interconnections of Multiple Perfused Engineered Tissue Constructs and Microbioreactors, Multi-Microformulators and Applications of the Same," J.P. Wikswo, F.E. Block III, P.C. Samson, United States Patent, 10,577,574 (March 3, 2020).
35. "High-Throughput, Multi-Omics Approach to Determine and Validate De Novo Global Mechanisms of Action for Drugs and Toxins," R. Caprioli, J. Wikswo, J. McLean, E. Skaar, J.L. Norris, D.B. Lacy, S. Sherrod, J. Pino, D. Gutierrez, N.D. Muszynski, M. Farrow, United States Patent, 10,607,721 (March 31, 2020).
36. "Bio-Assessment Device and Method of Making the Device," R. Iyer, J.-H. Huang, P. Nath, J. Harris, J.P. Wikswo, United States Patent, 10,634,665 (April 28, 2020).
37. "Devices and Methods for Tension Measurements and Applications of Same," J.P. Wikswo, P.C. Samson, J.M. Davidson, S.R. Koch, V.Y. Sidorov, United States Patent, 10,761,001 (September 1, 2020).
38. "Peristaltic Micropump and Related Systems and Methods," P.A. Gould, L.T. Hoang, D.K. Schaffer, R.S. Reiserer, P.C. Samson, J.P. Wikswo, United States Patent, 10,781,809 (September 22, 2020).
39. "Devices and Methods for Tension Measurements and Applications of Same," J.P. Wikswo, P.C. Samson, United States Patent, 10,876,942 (December 29, 2020).
40. "Cartridge Systems, Capacitive Pumps and Multi-Throw Valves and Pump-Valve Systems and Applications of Same," D.K. Schaffer, D.A. Markov, R.S. Reiserer, L.J. McCawley, M.D. Geuy, C.M. Britt, J.P. Wikswo, United States Patent, 11,135,582 (October 5, 2021).
41. "Multichannel Pumps and Applications of Same," J.P. Wikswo, R.S. Reiserer, D.K. Schaffer, D.A. Markov, C.M. Britt, United States Patent, 11,384,751 (July 12, 2022).
42. "Continuous Automated Perfusion Culture Analysis System (CAPCAS) and Applications of Same," R.S. Reiserer, G.B. Gerken, D.K. Schaffer, J.P. Wikswo, United States Patent, 11,447,734 B2 (September 20, 2022)
43. "Cartridge Systems, Capacitive Pumps and Multi-Throw Valves and Pump-Valve Systems and Applications of Same," D.K. Schaffer, D.A. Markov, R.S. Reiserer, L.J. McCawley, M.D. Geuy, C.M. Britt, J.P. Wikswo, United States Patent, 11,465,144 B2 (October 11, 2022)
44. "Robots and Robotic Systems for Fluid Handling and Transport of Biodevices and Applications of Same," R.S. Reiserer, J.P. Wikswo, United States Patent, 11,474,531 B2 (October 18, 2022)
45. "Microfluidic Systems, Pumps, Valves, Fluidic Chips Thereof, and Applications of Same," R.S. Reiserer, D.K. Schaffer, P.C. Samson, D.A. Markov, M. Geuy, L.J McCawley, J.P. Wikswo, United States Patent, 11,565,256 B2 (January 31, 2023)
46. "Microfluidic Systems, Pumps, Valves, Fluidic Chips Thereof, and Applications of Same," R. S. Reiserer, D.K. Schaffer, P.C. Samson, D.A. Markov, M.D. Geuy, L.J. McCawley, J.P. Wikswo, United States Patent, 11,745,180 B2 (September 5, 2023)
47. "Massively Parallel, Multiple-Organ Perfusion Control System," R.S. Reiserer, G. B. Gerken, D.K. Schaffer, J.P. Wikswo, United States Patent, 11,746,317 B2 (September 5, 2023)
48. "Continuous Automated Perfusion Culture Analysis System (CAPCAS) and Applications of Same," R.S. Reiserer, G.B. Gerken, D.K. Schaffer, J.P. Wikswo, United States Patent, 11,939,563 B2 (March 26, 2024)
49. "Microfluidic Systems for Multiple Bioreactors and Applications of Same," Reiserer RS, Wikswo, JP, United States Patent, 12,172,161 B2 (December 24, 2024)

INTELLECTUAL PROPERTY (continued):

Pending Patent Applications

1. "Multicompartment Microfluidic Bioreactors, Cylindrical Rotary Valves and Applications of Same," Wikswo JP, Spivey EC, Schaffer DK, Reiserer RS, Seale KT, Block III FE, US Serial No. 17,057,267 (May 29, 2019), Publ. No. US2021/0198607 A1 (July 1, 2021)
2. "Microfluidic Systems for Multiple Bioreactors and Applications of Same," Reiserer RS, Wikswo JP, Publ. No. EP 4182429 A1 (May 24, 2023)
3. "Microfluidic Systems for Multiple Bioreactors and Applications of Same," Schaffer DK, Reiserer RS, Geuy MD, Wikswo JP, Publ. No. EP 4182437 A1 (May 24, 2023)
4. "Massively Parallel, Multiple-Organ Perfusion Control System," Reiserer RS, Gerken GB, Schaffer DK, Wikswo JP, Serial No. US 17/984,151 (November 9, 2022), Publ. No. US 2023/0121352 A1 (April 20, 2023)
5. "Dynamically Interconnected Microbioreactors and Applications Thereof," Wikswo JP, Nehil-Puleo KD, Reiserer RS, U.S. Patent Application Serial No. 18/527,751 (December 4, 2023)
6. "Variable Volume Chemostat and Applications Thereof," Wikswo JP, Reiserer RS, Hawkins KG, U.S. Patent Application, Serial No. 18/527,801 (December 4, 2023)
7. "A Low-Cost, Self-Contained System for Active Long-Term Perfusion of Sterile Cell Cultures," Schaffer DK, Reiserer RS, Markov DA, Britt CM, Wikswo JP, U.S. Provisional Patent Application, Serial No. 63/633,263 (April 12, 2024)
8. "Microfluidic Systems for Multiple Bioreactors and Applications of Same," Schaffer DK, Reiserer RS, Geuy MD, Wikswo JP, US Serial No. 18/015,749 (July 19, 2021), Publ. No. US 2023/0271181 A1 (August 31, 2023), Notice of Allowance (August 6, 2024)
9. "Interconnections of Multiple Perfused Engineered Tissue Constructs and Microbioreactors, Multi-Microformulators and Applications of the Same," Wikswo JP, Markov DA, Samson PC, Block III FE, Schaffer DK, Reiserer RS, European Patent Application 16 207323.3 (Notice of Allowance September 12, 2024)
10. "Interconnections of Multiple Perfused Engineered Tissue Constructs and Microbioreactors, Multi-Microformulators and Applications of the Same," Wikswo JP, Markov DA, Samson PC, Block III FE, Schaffer DK, Reiserer RS, European Patent Application 18 167976.2 (Notice of Allowance September 12, 2024)
11. "Microfluidic Systems for Multiple Bioreactors and Applications of Same," Reiserer RS, Wikswo, JP, US Serial No. 18/918,488 (October 17, 2024)
12. "A System for the Sterile Transport of Well Plates and Other Bio-Objects in a Non-Sterile Environment," Reiserer RS, Wikswo JP, U.S. Provisional Patent Application, Serial No. 63/736,249 (December 19, 2024)
13. "Systems for the Stirring, Oxygenation, and Humidification of Well-Plate Bioreactors," Markov DA, Reiserer RS, Spivey EC, Wikswo JP, Schaffer DK, U.S. Provisional Patent Application, Serial No. 63/736,274 (December 19, 2024)

INTELLECTUAL PROPERTY (continued):

Software

1. "AMPERE: Automated Multi-Pump Experiment Running Environment," E. Werner, G.B. Gerken, F.E. Block III, R.S. Reiserer, L. Hoang, P.A. Gould, J.P. Wikswo, Copyright Assignment, U.S. Copyright TX 8-553-754 (Registered October 20, 2017).
2. "AMPERE Well-Plate Tool, Scheduler View, and Other Tools and Features," J.P. Wikswo, G.B. Gerken, R.S. Reiserer, C.M. Britt, Unregistered U.S. Copyright (July 26, 2018).

Licensed Technology

1. Agilent Technologies, a public research, development, and manufacturing company with headquarters in Santa Clara, CA, has a non-exclusive license to several of VIIBRE's devices to monitor the status of cells (US 7,435,578, US 7,704,745, US 7,713,733, and US 7,981,649).
2. KIYATEC Inc., a Greenville, SC company that specializes in providing advanced, three-dimensional, cell-based assays and diagnostics with superior physiologic relevance for more accurate ex vivo prediction of patient response to drugs, licensed VIIBRE's novel, miniaturized peristaltic pump and valve technologies and successfully developed and manufactured prototype pumps and associated systems based on this technology (February 2015-December 2019).
3. CN Bio Innovations has an exclusive license to two microformulator patents and an early version of our control software, and non-exclusive licenses to five organ-chip perfusion control patents. On October 5, 2021, CN Bio announced the formal product release of the PhysioMimix™, the commercial version of the VIIBRE MicroFormulator:

   https://cn-bio.com/cn-bio-expands-service-offering-to-support-oncology-drug-discovery/

CONFERENCE PROCEEDINGS:

1. "Observation of Human Cardiac Bloodflow by Non-Invasive Measurement of Magnetic Susceptibility Changes," J.P. Wikswo, Jr., J.E. Opfer, and W.M. Fairbank, Proc. of the 19th Annual Conf. on Magnetism and Magnetic Materials, AIP Conf. Proc., 18: 1335-1339 (1974).
2. "Vector Magnetocardiography--An Improved Technique for Observation of the Electrical Activity of the Human Heart," J.P. Wikswo, Jr., J.A.V. Malmivuo, G.E. Crawford, R.P. Giffard, R.H. Roy, W.M. Fairbank, W.H. Barry, and D.C. Harrison, Proc. of the San Diego Biomedical Symposium, 14: 359-367 (1975).
3. "Computer Data Acquisition and Signal Processing Techniques for Magnetocardiography," J.P. Wikswo, Jr., G.E. Crawford, W.H. Barry, W.M. Fairbank, and D.C. Harrison, Proc. of the 1976 Computers in Cardiology Conf., H.G. Ostrow and K.L. Ripley, Eds., pp. 317-321 (1976).
4. "Application of Superconducting Magnetometers to the Measurement of the Vector Magnetocardiogram," J.P. Wikswo, Jr. and W.M. Fairbank, IEEE Trans. Magnetics, MAG-13: 354-357 (1977).
5. "Optimization of SQUID Differential Magnetometers," J.P. Wikswo, Jr., AIP Conf. Proc., 44: 145-149 (1978).
6. "Clinical Magnetocardiography," J.P. Wikswo, Jr., Proc. Non-Invasive Cardiovascular Measurements Conf., H.A. Miller, E.V. Schmidt, and D.C. Harrison, Eds., (SPIE, Bellingham) (1978) (Invited).
7. "Measurement of the Magnetic Field of Isolated Nerves," J.P. Wikswo, Jr., in IEEE/ Engineering in Medicine and Biology Second Annual Conference, IEEE 1980 Frontiers of Engineering in Health Care, (IEEE, New York) pp. 141-144 (1980) (Invited).
8. "Recent Developments in the Measurement of Magnetic Fields From Isolated Nerves and Muscles," J.P. Wikswo, Jr., J. Appl. Phys., 52: 2554-2559 (1981).
9. "An Integrated Systems for Magnetic Assessment of Cardiac Function," M.C. Leifer, J.C. Griffin, E.J. Iufer, J.P. Wikswo, Jr., W.M. Fairbank, and D.C. Harrison, Biomagnetism, S.N. Erné, H.-D. Hahlbohm, and H. Lubbig, Eds., (Walter de Gruyter, Berlin) pp. 123-137 (1981).
10. "Atrial Activity During the PR Segment of the MCG," M. Leifer, N. Capos, J.P. Wikswo, Jr., and J. Griffin, Il Nuovo Cimento D, 2D: 266-279 (1983).
11. "First Magnetic Measurements of Action Currents in Isolated Cardiac Purkinje Fibers," J.P. Wikswo, Jr., J.P. Barach, S.C. Gundersen, M.J. McLean, and J.A. Freeman, Il Nuovo Cimento D, 2D: 368-378 (1983).
12. "Magnetic Measurements of Action Currents in an Isolated Lobster Axon," J.P. Wikswo, Jr., J.P. Barach, S.C. Gundersen, J.O. Palmer, and J.A. Freeman, Il Nuovo Cimento D, 2D: 512-516 (1983).
13. "Theoretical Models for Source Localization," B.N. Cuffin, T.E. Katila, M. Pelizzone, and J.P. Wikswo, Jr., in Biomagnetism: Applications and Theory, H. Weinberg, G. Stroink, and K. Katila, Eds., Pergamon Press, pp. 9-18 (1985).
14. "An Experimental and Theoretical Analysis of the Magnetic Field of a Single Axon," B.J. Roth, J.K. Woosley, and J.P. Wikswo, Jr., in Biomagnetism: Applications and Theory, H. Weinberg, G. Stroink, and K. Katila, Eds., Pergamon Press, pp. 78-82 (1985).
15. "A Current Probe System for Measuring Cellular Action Currents," J.P. Wikswo, Jr., W.P. Henry, P.C. Samson, and R.P. Giffard, in Biomagnetism: Applications and Theory, H. Weinberg, G. Stroink, and K. Katila, Eds., Pergamon Press, pp. 83-87 (1985).
16. "Magnetic Assessment of Regeneration Across a Nerve Graft," J.P. Wikswo, Jr., G.S. Abraham, and V.R. Hentz, in Biomagnetism: Applications and Theory, H. Weinberg, G. Stroink, and K. Katila, Eds., Pergamon Press, pp. 88-92 (1985).
17. "Magnetocardiography: Challenging Clinical Problems and Promising Analytic Techniques," S.N. Erné, R.R. Fenici, T.E. Katila, P. Siltanen, and J.P. Wikswo, Jr., in Biomagnetism: Applications and Theory, H. Weinberg, G. Stroink, and K. Katila, Eds., Pergamon Press, pp. 106-114 (1985).

CONFERENCE PROCEEDINGS (continued):

18. "Magnetic Measurement of Propagating Action Potentials in Isolated, One-dimensional Cardiac Tissue Preparations," J.P. Wikswo and B.J. Roth, in Biomagnetism: Applications and Theory, H. Weinberg, G. Stroink, and K. Katila, Eds., Pergamon Press, pp. 121-125 (1985).
19. "Experimental Study on Cardiac Related Magnetic Susceptibility Signals," R. Maniewski, T. Katila, T. Poutanen, T. Varpula, and J.P. Wikswo, Jr., in Biomagnetism: Applications and Theory, H. Weinberg, G. Stroink, and K. Katila, Eds., Pergamon Press, pp. 186-190 (1985).
20. "Magnetic Measurements on Single Nerve Axons and Nerve Bundles," J.P. Wikswo, Jr., Med. and Biol. Eng. and Computing, 23(Suppl. 1): 3-6 (1985) (Invited).
21. "Finite Element Analysis of Defibrillation Current Distributions," N.G. Sepulveda, D.S. Echt and J.P. Wikswo, Jr., Med. and Biol. Eng. and Computing, 23(Suppl. 1): 77-78 (1985).
22. "Microprocessor Controlled Two- and Three-Dimensional Vibrating Probes with Video Graphics: Biological and Electro-Chemical Applications," J.A. Freeman, P.B. Manis, P.C. Samson, and J.P. Wikswo, Jr., Ion Currents in Development, R. Nuccitelli, Ed., (Alan R. Liss, New York) pp. 21-35 (1986).
23. "High-Resolution Measurements of Biomagnetic Fields," J.P. Wikswo, Jr., Advances in Cryogenic Engineering, R.W. Fast, Ed., 33: 107-116 (1988) (Invited).
24. "The Magnetic Field of Nerve and Muscle Fibers," B.J. Roth and J.P. Wikswo, Jr., Biomagnetism '87, K. Atsumi, M. Kotani, S. Ueno, T. Katila, and S.J. Williamson, Eds., (Tokyo Denki Univ. Press, Tokyo), pp. 58-65 (1988).
25. "Magnetic Techniques for Evaluating Peripheral Nerve Function," J.P. Wikswo, Jr., in Proc. of a Special Symposium on Maturing Technologies and Emerging Horizons in Biomedical Engineering, J.B. Myklebust and G.F. Harris, Eds., (IEEE, Piscataway, NJ), pp. 2-9 (1988) (Invited).
26. "Finite Element Models Used for the Analysis of Cardiac Defibrillation," N.G. Sepulveda, D.S. Echt, and J.P. Wikswo, Jr., in Proc. of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, G. Harris and C. Walker, Eds., (IEEE, Piscataway, NJ), Vol. 10, Part I, pp. 198-199 (1988).
27. "Finite Element Bidomain Calculations," N.G. Sepulveda, B.J. Roth, and J.P. Wikswo, Jr., in Proc. of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, G. Harris and C. Walker, Eds., (IEEE, Piscataway, NJ), Vol. 10, Part II, pp. 950-951 (1988).
28. "Superconducting Magnetometry for Biomagnetic Measurements," J.P. Wikswo, Jr., and M.C. Leifer, in Near Zero: New Frontiers in Physics, J.D. Fairbank, B.S. Deaver, Jr., C.W.F. Everitt, and P.F. Michelson, Eds., (W.H. Freeman, New York) pp. 456-473 (1988).
29. "Monitoring of Peripheral Nerve Regeneration by Means of a Biomagnetic Sensor," F.L.H. Gielen, R. Stasaski, and J.P. Wikswo, Jr., in Proc. of the 11th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Images of the Twenty-First Century, Y. Kim and F.A. Spelman, Eds., (IEEE, Piscataway, NJ), Vol. 11, Part III, pp. 977-978 (1989).
30. "Instrumentation and Techniques for High-Resolution Magnetic Imaging," J.P. Wikswo, Jr., J.M. van Egeraat, Y.P. Ma, N.G. Sepulveda, D.J. Staton, S. Tan, and R.S. Wijesinghe, Digital Image Synthesis and Inverse Optics, A.F. Gmitro, P.S. Idell, and I.J. LaHaie, Eds., SPIE Proceedings, Vol. 1351, pp. 438-470 (1990).
31. "High-Resolution SQUIDS for Magnetic Imaging," J.P. Wikswo, Jr., in Proc. of the 12th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Biomedical Engineering Perspectives: Health Care Technologies for the 1990's and Beyond, P.C. Pedersen and B. Onaral, Eds., (IEEE, Piscataway, NJ), Vol. 12, Part III, pp. 1082-1084 (1990) (Invited).

CONFERENCE PROCEEDINGS (continued):

32. "Calculation of the Magnetic Field of a Muscle Fiber as Measured by a SQUID Magnetometer," R.S. Wijesinghe and J.P. Wikswo, Jr., in Proc. of the 12th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Biomedical Engineering Perspectives: Health Care Technologies for the 1990's and Beyond, P.C. Pedersen and B. Onaral, Eds., (IEEE, Piscataway, NJ), Vol. 12, Part III, pp. 1093-1094 (1990).
33. "Applications of Superconducting Electronics for the Superconducting Super Collider," E.E. Stebbins, H.L. Caswell, and J.P. Wikswo, Jr., Proc. Symposium on Detector Research and Development for the SSC, pp. 535-538 (1990).
34. "Imaging Flaws with a SQUID Magnetometer Array," Y.P. Ma, D.J. Staton, N.G. Sepulveda, and J.P. Wikswo, Jr., Rev. of Progress in Quantitative Nondestructive Evaluation, D.O. Thompson and D.E. Chimenti, Eds., (Plenum, New York), Vol. 10A, pp. 979-986 (1991).
35. "A Three Dimensional Finite Element Bidomain Model for Cardiac Tissue," N.G. Sepulveda, J.P. Barach, and J.P. Wikswo, Jr., in Proc. of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, New Frontiers of Biomedical Engineering - Innovations from Nuclear to Space Technology, J.H. Nagel and W.M. Smith, Eds., (IEEE, Piscataway, NJ), Vol. 13, Part II, pp. 512-514 (1991).
36. "First Magnetic Measurements of Smooth Muscle In Vitro Using a High-Resolution DC-SQUID Magnetometer," D.J. Staton, M.C. Soteriou, R.N. Friedman, W.O. Richards, and J.P. Wikswo, Jr., in Proc. of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, New Frontiers of Biomedical Engineering - Innovations from Nuclear to Space Technology, J.H. Nagel and W.M. Smith, Eds., (IEEE, Piscataway, NJ), Vol. 13, Part II, pp. 550-551 (1991).
37. "Bipolar Stimulation of Cardiac Tissue: A Bidomain Model," N.G. Sepulveda and J.P. Wikswo, Jr., in Proc. of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, New Frontiers of Biomedical Engineering - Innovations from Nuclear to Space Technology, J.H. Nagel and W.M. Smith, Eds., (IEEE, Piscataway, NJ), Vol. 13, Part II, pp. 617-618 (1991).
38. "Modeling of the Magnetic Field Produced by Peripheral Nerves," J.M. van Egeraat, R.S. Wijesinghe, and J.P. Wikswo, Jr., Biomagnetism: Clinical aspects, M. Hoke, S.N. Erné, Y.C. Okada, and G.-L. Romani, Eds., (Elsevier), pp. 357-364 (1992) (Invited).
39. "Measurement of Non-uniform Propagation in the Squid Nervous System with a Room-temperature Magnetic Current Probe," J.M. van Egeraat and J.P. Wikswo, Jr., Biomagnetism: Clinical aspects, M. Hoke, S.N. Erné, Y.C. Okada, and G.-L. Romani, Eds., (Elsevier), pp. 385-388 (1992).
40. "A Low-cost Biomagnetic Current Probe System for the Measurement of Action Currents in Biological Fibers," J.M. van Egeraat and J.P. Wikswo, Jr., Biomagnetism: Clinical aspects, M. Hoke, S.N. Erné, Y.C. Okada, and G.-L. Romani, Eds., (Elsevier), pp. 895-899 (1992).
41. "Detection of Deep Flaw Inside a Conductor Using a SQUID Magnetometer," Y.P. Ma and J.P. Wikswo, Jr., Review of Progress in QNDE, 11: 1153-1159 (1992).
42. "High Resolution SQUID Imaging of Octupolar Currents in Anisotropic Cardiac Tissue," D.J. Staton, R.N. Friedman, and J.P. Wikswo, Jr., IEEE Trans. on Applied Superconductivity, 3(1): 1934-1936 (1993).
43. "Spatial Resolution and Sensitivity of Magnetic Susceptibility Imaging," I.M. Thomas, Y.P. Ma, S. Tan, and J.P. Wikswo, Jr., IEEE Trans. on Applied Superconductivity, 3(1): 1937-1940 (1993).
44. "A High Resolution Imaging Susceptometer," Y.P. Ma, I.M. Thomas, A. Lauder, and J.P. Wikswo, Jr., IEEE Trans. on Applied Superconductivity, 3(1): 1941-1944 (1993).
45. "High Resolution SQUID Imaging of Current and Magnetization Distributions," S. Tan, Y.P. Ma, I.M. Thomas, and J.P. Wikswo, Jr., IEEE Trans. on Applied Superconductivity, 3(1): 1945-1948 (1993).

CONFERENCE PROCEEDINGS (continued):

46. "SQUID NDE: Detection of Surface Flaws by Magnetic Decoration," I.M. Thomas, Y.P. Ma, and J.P. Wikswo, Jr., IEEE Trans. on Applied Superconductivity, 3(1): 1949-1952 (1993).
47. "Magnetic Susceptibility Imaging for Nondestructive Evaluation," J.P. Wikswo, Jr., Y.P. Ma, N.G. Sepulveda, S. Tan, I.M. Thomas, and A. Lauder, IEEE Trans. on Applied Superconductivity, 3(1): 1995-2002 (1993).
48. "A Comparison of SQUID Imaging Techniques for Small Defects in Nonmagnetic Tubes," D.C. Hurley, Y.P. Ma, S. Tan, and J.P. Wikswo, Jr., Review of Progress in QNDE, 12: 633-640 (1993).
49. "Imaging Subsurface Defects Using SQUID Magnetometers," Y.P. Ma and J.P. Wikswo, Jr., Review of Progress in QNDE, 12: 1137-1143 (1993).
50. "Superconducting Magnetometry: A Possible Technique for Aircraft NDE," J.P. Wikswo, Jr., Y.P. Ma, N.G. Sepulveda, D.J. Staton, S. Tan, and I.M. Thomas, Nondestructive Inspection of Aging Aircraft, M.T. Valley, N.K. Grande, and A.S. Kobayashi, Eds., SPIE Proceedings, Vol. 2001, pp. 164-190 (1993) (Invited).
51. "Detection of Subsurface Flaws Using SQUID Eddy Current Technique," Y.P. Ma and J.P. Wikswo, Jr., Nondestructive Inspection of Aging Aircraft, M.T. Valley, N.K. Grande, and A.S. Kobayashi, Eds., SPIE Proceedings, Vol. 2001, pp. 191-199 (1993).
52. "Design Considerations for Magnetic Imaging with SQUID Microscopes and Arrays," J.P. Wikswo, Jr., Proc. of the 4th International Superconductive Electronics Conference, pp. 189-190 (1993).
53. "Magnetic Susceptibility Tomography: A New Modality for Three-Dimensional Biomedical Imaging," I.M. Thomas, N.G. Sepulveda, and J.P. Wikswo, Jr., in Proc. 15th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Engineering Solutions to Current Health Care Problems, A.Y.J. Szeto and R.M. Rangayyan, Eds., (IEEE, Piscataway, NJ), Vol. 15, Part I, pp. 94-95 (1993).
54. "Magnetic Determination of the Anisotropic Electrical Conductivities in a Two-Dimensional Cardiac Bidomain," D.J. Staton and J.P. Wikswo, Jr., in Proc. 15th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Engineering Solutions to Current Health Care Problems, A.Y.J. Szeto and R.M. Rangayyan, Eds., (IEEE, Piscataway, NJ), Vol. 15, Part II, pp. 746-747 (1993).
55. "SQUID Magnetometer Diagnosis of Experimental Small Bowel Ischemia," D.J. Staton, J. Golzarian, J.P. Wikswo, Jr., R.N. Friedman, and W.O. Richards, in Proc. of the 15th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Engineering Solutions to Current Health Care Problems, A.Y.J. Szeto and R.M. Rangayyan, Eds., (IEEE, Piscataway, NJ), Vol. 15, Part III, pp. 1521-1522 (1993).
56. "A Model of the Magnetic Fields Created by Single Motor Unit Compound Action Potentials in Skeletal Muscle," K.K. Parker and J.P. Wikswo, Jr., in Proc. of the 15th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Engineering Solutions to Current Health Care Problems, A.Y.J. Szeto and R.M. Rangayyan, Eds., (IEEE, Piscataway, NJ), Vol. 15, Part III, pp. 1523-1524 (1993).
57. "SQUID Eddy Current Techniques for Detection of Second Layer Flaws," Y.P. Ma and J.P. Wikswo, Jr., Review of Progress in QNDE, 13: 303-309 (1994).
58. "A Spatial Filtering Forward and Inverse Model of EEG and MEG," L.A. Bradshaw, R.S. Wijesinghe, and J.P. Wikswo, Jr., in Proc. of the 16th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Engineering Advances: New Opportunities for Biomedical Engineers, N.F. Sheppard, Jr., M. Eden, and G. Kantor, Eds., (IEEE, Piscataway, NJ), Vol. 16, pp. 167-168 (1994).
59. "SQUID Magnetometers Applied to Aging Aircraft NDE," J.P. Wikswo, Jr., Proc. of the Joint USAF/NASA/FAA Aging Aircraft NDI Workshop Covering Research of Enhanced Conventional NDI Technologies, Ames, IA, November 1994.

CONFERENCE PROCEEDINGS (continued):

60. "The Use of Superconducting Magnetometry to Detect Corrosion in Aircraft Alloys," D. Li, Y. Ma, W.F. Flanagan, B.D. Lichter, and J.P. Wikswo, Jr., Proc. of the Tri-Service Conference on Corrosion, Orlando, FL, pp. 335-346, June 1994.
61. "Measurements of Surface-Breaking Flaws in Ferromagnetic Plates by Means of an Imaging SQUID Susceptometer," A.C. Bruno, A.P. Ewing, and J.P. Wikswo, Jr., IEEE Trans. on Applied Superconductivity, 5(2): 2482-2485 (1995).
62. "Magnetic Imaging of Currents in Two-Dimensional Cardiac Tissue: Experimental and Theoretical Studies of Electrical Activity in Mammalian Cardiac Slices," D.J. Staton and J.P. Wikswo, Jr., Biomagnetism: Fundamental Research and Clinical Applications, C. Baumgartner, L. Deecke, G. Stroink, and S.J. Williamson, Eds., (IOS Press, Amsterdam, Netherlands), Vol. 7, pp. 647-651 (1995).
63. "Magnetic Inverse Method for Determination of Anisotropic Electrical Conductivities in a Two-Dimensional Cardiac Bidomain," D.J. Staton and J.P. Wikswo, Jr., Biomagnetism: Fundamental Research and Clinical Applications, C. Baumgartner, L. Deecke, G. Stroink, and S.J. Williamson, Eds., (IOS Press, Amsterdam, Netherlands), Vol. 7, pp. 671-675 (1995).
64. "High-Resolution Imaging of Magnetic Fields From Injected and Action Currents in Slices of Anisotropic Cardiac Tissue," D.J. Staton and J.P. Wikswo, Jr., Biomagnetism: Fundamental Research and Clinical Applications, C. Baumgartner, L. Deecke, G. Stroink, and S.J. Williamson, Eds., (IOS Press, Amsterdam, Netherlands), Vol. 7, pp. 684-687 (1995).
65. "Gastrointestinal System: Physiology, Pathology, and Possibilities for Biomagnetic Diagnosis," W.O. Richards and J.P. Wikswo, Jr., Biomagnetism: Fundamental Research and Clinical Applications, C. Baumgartner, L. Deecke, G. Stroink, and S.J. Williamson, Eds., (IOS Press, Amsterdam, Netherlands), Vol. 7, pp. 732-738 (1995).
66. "Non-Invasive SQUID Magnetometer Measurement of Human Gastric and Small Bowel Electrical Activity," W.O. Richards, D.J. Staton, J. Golzarian, R.N. Friedman, and J.P. Wikswo, Jr., Biomagnetism: Fundamental Research and Clinical Applications, C. Baumgartner, L. Deecke, G. Stroink, and S.J. Williamson, Eds., (IOS Press, Amsterdam, Netherlands), Vol. 7, pp. 743-747 (1995).
67. "Measurements of Small Bowel Electrical Activity In Vivo Using a High Resolution SQUID Magnetometer," D.J. Staton, J. Golzarian, J.P. Wikswo, Jr., R.N. Friedman, and W.O. Richards, Biomagnetism: Fundamental Research and Clinical Applications, C. Baumgartner, L. Deecke, G. Stroink, and S.J. Williamson, Eds., (IOS Press, Amsterdam, Netherlands), Vol. 7, pp. 748-752 (1995).
68. "Three-Dimensional Biomagnetic Imaging with Magnetic Susceptibility Tomography," J.P. Wikswo, Jr., N.G. Sepulveda, and I.M. Thomas, Biomagnetism: Fundamental Research and Clinical Applications, C. Baumgartner, L. Deecke, G. Stroink, and S.J. Williamson, Eds., (IOS Press, Amsterdam, Netherlands), Vol. 7, pp. 780-784 (1995).
69. "Closing Comments: Recent Developments in 5 K Cryocoolers - An Outsider's View," J.P. Wikswo, Jr., 5 K Cryocooler Workshop: Present Status, Future Prospects and Market Potential for 4-5 K Cryocoolers Proceedings, Hypres, Inc., Elmsford, NY, pp. 58-66 (1995).
70. "Optical Imaging of Activation Patterns in Rabbit Myocardium," R.A. Abbas, S.F. Lin, and J.P. Wikswo, Jr., Proc. of the 17th Annual International Conference of the IEEE EMBS, Basic and Applied Biomedical Engineering - Building Blocks for Health Care, F.A. Roberge and R.E. Keaney, Eds., (IEEE, Piscataway, NJ), vol. 17, CD-ROM (1995).
71. "Autoregressive and Eigenfrequency Spectral Analysis of Magnetoenterographic Signals," L.A. Bradshaw and J.P. Wikswo, Jr., Proc. of the 17th Annual International Conference of the IEEE EMBS, Basic and Applied Biomedical Engineering - Building Blocks for Health Care, F.A. Roberge and R.E. Keaney, Eds., (IEEE, Piscataway, NJ), vol. 17, CD-ROM (1995).

CONFERENCE PROCEEDINGS (continued):

72. "Magnetoenterography for Detection of Intestinal Ischemia in Rabbits," L.A. Bradshaw, C.L. Garrard, S.H. Allos, J.P. Wikswo, Jr., and W.O. Richards, Proc. of the 17th Annual International Conference of the IEEE EMBS, Basic and Applied Biomedical Engineering - Building Blocks for Health Care, F.A. Roberge and R.E. Keaney, Eds., (IEEE, Piscataway, NJ), vol. 17, CD-ROM (1995).
73. "SQUID Magnetometers for Electromagnetic NDE in the Electric Power Industry," W.G. Jenks and J.P. Wikswo, Jr., EPRI Topical Workshop: Electromagnetic NDE Applications in the Electric Power Industry, Session Three, 21-23 August 1995.
74. "Depth-Selective SQUID Eddy Current Techniques for Second Layer Flaw Detection," Y.P. Ma and J.P. Wikswo, Jr., Review of Progress in QNDE, 15: 401-408 (1996).
75. "Conductivity Imaging in Plates Using Current Injection Tomography," D.J. Staton, S.V. Rousakov, and J.P. Wikswo, Jr., Review of Progress in QNDE, 15: 845-851 (1996).
76. "SQUID Magnetometers for Nondestructive Testing and Biomagnetism," Y.P. Ma and J.P. Wikswo, Jr., Proceedings of 1996 Chinese American Academic and Professional Convention (CAAPCON), pp. 4.17.1-4.17.4 (1996).
77. "Recent Advances in SQUID Magnetometers for Aging Aircraft NDE," W.G. Jenks, B. Ball, J. Cadzow, T. Cruse, T. Ewing, G. Hahn, X. Li, Y.P. Ma, and J.P. Wikswo, Jr., Proceedings of the Air Force 4th Aging Aircraft Conference, p. 843-859 (1996).
78. "SQUID Magnetometers for Studying Corrosion and Corrosion Protection in Aircraft Aluminum," J.P. Wikswo, Jr., NACE International, Paper No. 293, pp. 1-17 (1997).
79. "Boundary Integral Equation Measurement Model for the Electric Current Injection Method of Nondestructive Evaluation," A.P. Ewing, C. Hall Barbosa, T.A. Cruse, A.C. Bruno, and J.P. Wikswo, Jr., COMPUMAG - The 11th Conference on the Computation of Electromagnetic Fields, PA4-6: 89-90 (1997).
80. "Probability of Detection (POD) in SQUID NDE," A.P. Ewing, J.P. Wikswo, Jr., and T.A. Cruse, Proceedings of the 1st Joint DoD/FAA/NASA Aging Aircraft Conference, Ogden, UT, 8-10 July 1997.
81. "In Vivo Detection of Normal and Pathologic Bowel Electrical Activity Using a SQUID Magnetometer," J.K. Ladipo, L.A. Bradshaw, S.S. Hegde, J.P. Wikswo, Jr., and W.O. Richards, Proceedings of the 19th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, vol. 6, pp. 2388-2389 (1997).
82. "The Vector Magnetic Field of the Human Stomach and Small Bowel," L.A. Bradshaw, J.K. Ladipo, J.P. Wikswo, Jr., and W.O. Richards, Proceedings of the 19th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, vol. 6, pp. 2390-2391 (1997).
83. "Noninvasive Measurement of Gastric Propagation Using a SQUID Magnetometer," L.A. Bradshaw, R. Wells, S. Paul, W.O. Richards, and J.P. Wikswo, Jr., Proceedings of the 19th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, vol. 6, pp. 2392-2393 (1997).
84. "Boundary Integral Equations for Modeling Arbitrary Flaw Geometries in Electric Current Injection NDE," A.P. Ewing, C. Hall Barbosa, T.A. Cruse, A.C. Bruno, and J.P. Wikswo, Jr., Review of Progress in Quantitative NDE, 17A: 1011-1015 (1998).
85. "SQUID Magnetometers for Depth-Selective, Oriented Eddy Current Imaging," Y.P. Ma and J.P. Wikswo, Jr., Review of Progress in Quantitative NDE, 17A: 1067-1074 (1998).
86. "A SQUID NDE Measurement Model Using BEM," A.P. Ewing, T.A. Cruse, and J.P. Wikswo, Jr., Review of Progress in Quantitative NDE, 17A: 1083-1090 (1998).
87. "Measurements of Surface-Breaking Flaws in Steel Pipes Using a SQUID Susceptometer in an Unshielded Environment," C. Hall Barbosa, A.C. Bruno, G.S. Kühner, J.P. Wikswo, Jr., A.P. Ewing, Y.P. Ma, and C.S. Camerini, Review of Progress in Quantitative NDE, 17A: 1091-1097 (1998).

CONFERENCE PROCEEDINGS (continued):

88. "Susceptibility Tomography versus Current Density Reconstruction: Comparing the Singular Values," E. Parente Ribeiro, J.P. Wikswo, Jr., and P. Costa Ribeiro, Recent Advances in Biomagnetism: Proceedings of the 11th International Conference on Biomagnetism, T. Yoshimoto, M. Kotani, S. Kuriki, H. Karibe, and N. Nakasato, Eds., Tohoku University Press, Sendai, Japan, pp. 286-289 (1999).
89. "Automation of SQUID Nondestructive Evaluation of Steel Plates by Neural Networks," C. Hall Barbosa, A.C. Bruno, M. Vellasco, M. Pacheco, J.P. Wikswo, Jr., and A.P. Ewing, IEEE Trans. on Applied Superconductivity, 9(2): 3475-3478 (1999).
90. "Design of High Resolution HTS-SQUID Magnetometers for Biomagnetic Imaging," A. Moya, F. Baudenbacher, J.P. Wikswo, Jr., and F.C. Wellstood, IEEE Trans. on Applied Superconductivity, 9(2): 3511-3514 (1999).
91. "Flux/Voltage Calibration of Axial SQUID Gradiometers Using an Optimization Procedure," C. Hall Barbosa, E. Andrade Lima, A.C. Bruno, A.P. Ewing, and J.P. Wikswo, Jr., IEEE Trans. on Applied Superconductivity, 9(2): 3523-3526 (1999).
92. "Panoramic Epifluorescent Visualization of Cardiac Action Potential Activity," M.-A. Bray, S.-F. Lin, and J.P. Wikswo, Jr., Proc. of SPIE - The International Society for Optical Engineering, Vol. 3658, pp. 99-107 (1999).
93. "Vector or Scalar Magnetometer Arrays?", L.A. Bradshaw and J.P. Wikswo, Jr., Proceedings of the First Joint BMES/EMBS Conference: Serving Humanity, Advancing Technology, p. 188 (1999).
94. "Magnetic Field Measurement of Rabbit Colonic Electrical Activity," L.A. Bradshaw, S.H. Allos, J.P. Wikswo, Jr., and W.O. Richards, Biomag 96: Proceedings of the 10th International Conference on Biomagnetism, C.J. Aine, Y. Okada, G. Stroink, S.J. Switenby, and C.C. Wood, Eds., Springer-Verlag, New York, Vol. II, pp. 608-611 (2000).
95. "Noninvasive Measurement of the Vector Magnetic Field from Human Gastrointestinal Sources," D.J. Staton, S.H. Allos, V.K. Henry, L.A. Bradshaw, J.K. Ladipo, W.O. Richards, and J.P. Wikswo, Jr., Biomag 96: Proceedings of the 10th International Conference on Biomagnetism, C.J. Aine, Y. Okada, G. Stroink, S.J. Switenby, and C.C. Wood, Eds., Springer-Verlag, New York, Vol. II, pp. 635-637 (2000).
96. "Magnetic Susceptibility Tomography with Nonuniform Field," E. Parente Ribeiro, J.P. Wikswo, Jr., P. Costa Ribeiro, and J. Szczupak, Biomag 96: Proceedings of the 10th International Conference on Biomagnetism, C.J. Aine, Y. Okada, G. Stroink, S.J. Switenby, and C.C. Wood, Eds., Springer-Verlag, New York, Vol. II, pp. 671-674 (2000).
97. "Inverse Imaging of Distributed Oscillatory Activity," L.A. Bradshaw and J.P. Wikswo, Biomag 96: Proceedings of the 10th International Conference on Biomagnetism, C.J. Aine, Y. Okada, G. Stroink, S.J. Switenby, and C.C. Wood, Eds., Springer-Verlag, New York, Vol. II, pp. 923-926 (2000).
98. "SQUID Measurements for Thermal Aging of Stator Windings," Y.P. Ma, J.P. Wikswo, Jr., and G. Fitzpatrick, Review of Progress in Quantitative NDE, 20: 369-376 (2001).
99. "SQUID Measurements of Magnetization for a Magnetically Tagged Composite Material," Y.P. Ma, J.P. Wikswo, Jr., and G. Fitzpatrick, Review of Progress in Quantitative NDE, 20: 1831-1836 (2001).
100. "Magnetic Measurements of the Response of Corrosion Activity Within Aircraft Lap Joints," G. Skennerton, J.P. Wikswo, Jr., R.G. Kelly, and A. Abedi, 5th Joint NASA/FAA/DoD Conference on Aging Aircraft, September 10-13, 2001, Kissimmee, FL.
101. "The NanoPhysiometer: BioMEMS for High Bandwidth Detection of Cellular Activity in Subnanoliter Volumes," F. Baudenbacher, W.T. Monroe, A. Werdich, D. Cliffel, and J.P. Wikswo, Jr., Proceedings of the Second Joint EMBS/BMES Conference, pp. 1690-1691 (2002).
102. "Vector Analysis of Gastrointestinal Biomagnetic Fields," L.A. Bradshaw, J.A. Sims, P. Jordan, J.P. Wikswo, and W.O. Richards, Proc. 25th Annual International Conference of the IEEE EMBS, pp. 3275-3278 (2003).

CONFERENCE PROCEEDINGS (continued):

103. "NanoliterBioReactor: Monitoring of Long-Term Mammalian Cell Physiology at Nanofabricated Scale," A. Prokop, Z. Prokop, D. Schaffer, E. Kozlov, J. Wikswo, D. Cliffel, and F. Baudenbacher, Mat. Res. Soc. Symp. Proc., Vol. 820, pp. O5.5.1/W9.5.1-O5.5.12-W9.5.12, 2004 Materials Research Society.
104. "Identification of Magnetic Field Injury Currents in Ischemic Small Intestine," L.A. Bradshaw, O.P. Roy, A.G. Myers, J.G. McDowell, J.P. Wikswo and W.O. Richards, BIOMAG 2004, Boston, MA.
105. "Remote Detection of Corrosion Activity by SQUID Magnetometry Across a Multiphase Medium Under Electrolyte Flow Conditions," Y.P. Ma, J.P. Wikswo, and E. Juzeliunas, Corrosion Science, 47: 621-633 (2005).
106. "Electrokinetic delivery of single fluorescent biomolecules in fluidic nanochannels," L.M. Davis, B.K. Canfield, X. Li, W.H. Hofmeister, I.P. Lescano-Mendoza, B.W. Bomar, J.P. Wikswo, D.A. Markov, P.C. Samson, C. Daniel, Z. Sikorski, and W. Robinson, in Biosensing, ed. by M. Razeghi and H. Mohseni, Proceedings of SPIE 7035", 70350A, 1-12 (2008).
107. "Differential Optical Flow for Automated Cell Motility," E.G.R. Kim, P. Sivasubramaniam, J.P. Wikswo, and K.T. Seale, MicroTAS Tech Digest '08, pp. 1831-1833 (2008).
108. "Pachinko Biology: Gambling on Single Cells," S.L. Faley, M. Copland, D. Wlodkovic, W. Kolch, K.T. Seale, J.P. Wikswo, and J.M. Cooper, IEEE 35th Annual Northeast Bioengineering Conference, Cambridge, MA, pp. 15-17 (2009).
109. "Four-Focus Single-Particle Position Determination in a Confocal Microscope," L.M. Davis, B.K. Canfield, J.A. Germann, J.K. King, W.N. Robinson, A.D. Dukes, III, S.J. Rosenthal, P.C. Samson, and J.P. Wikswo, in Single Molecule Spectroscopy and Imaging III, J. Enderlein, Z.K. Gryczynski, and R. Erdmann, Eds., Proceedings of the SPIE, Vol. 7571, pp. 757112-1-757112-10 (2010). DOI: 10.1117/12.842572
110. "Investigation of Automated Cell Manipulation in Optical Tweezers-Assisted Microfluidic Chamber Using Simulations," S. Chowdhury, P. Svec, C. Wang, K.T. Seale, J.P. Wikswo, W. Losert, and S.K. Gupta, ASME 2011 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE2011), August 28-31, 2011, Washington, D.C., Volume 7: 5th International Conference on Micro- and Nanosystems; 8th International Conference on Design and Design Education; 21st Reliability, Stress Analysis, and Failure Prevention Conference, Paper no. DETC2011-48005 pp. 51-62. http://dx.doi.org/10.1115/DETC2011-48005.
111. "High-Power Current Source with Real-Time Arbitrary Waveform for *In Vivo* and *In Vitro* Studies of Defibrillation," I. Uzelac, M. Holcomb, R.S. Reiserer, F.H. Fenton, and J.P. Wikswo, Computing in Cardiology, 40: 667-670 (2013).

INVITED TALKS AND COLLOQUIA:

1. "Clinical Magnetocardiography," Non-Invasive Cardiovascular Measurements Conference, Stanford University, 1978.
2. "Magnetocardiography," Bio-Engineering Seminar, University of Minnesota, 1978.
3. "The Meaning of the Magnetocardiogram," Southeast Section of the American Physical Society, Blacksburg, 1978.
4. "The Measurement and Meaning of Biomagnetic Fields," Sigma Xi, United States Naval Academy, 1979.
5. "The Measurement of the Magnetic Field of Nerves," Dept. of Physics, University of Alabama, Birmingham, 1979.
6. "Measurement of the Magnetic Field of Isolated Nerves," Conference of the Engineering in Medicine and Biology Society, Washington, 1980.
7. "Recent Developments in the Measurement of Magnetic Fields from Isolated Nerves and Muscles," Magnetism and Magnetic Materials Conference, Dallas, 1980.
8. "The Magnetic Field of Nerves," AAPT Summer Meeting, Stevens Point, Wisconsin, 1981.
9. "Forward and Inverse Problems in Electrocardiography and Magnetocardiography," 34th Annual Conference for Engineering in Medicine and Biology, Houston, 1981 (Session Chair).
10. "The Magnetic Field of Nerves," Dept. of Physics, Illinois Institute of Technology, Chicago, 1981.
11. "An Advanced Undergraduate Laboratory in Living State Physics," Southeast Section of the American Physical Society, New Orleans, 1981.
12. "The Magnetic Field of Nerves," Dept. of Technical Physics, Helsinki University of Technology, Helsinki, Finland, August 1982.
13. Opponent, Doctoral Thesis Disputation by Timo Varpula, Dept. of Technical Physics, Helsinki University Technology, Helsinki, Finland, August 1982.
14. "Progress in Biomagnetism," Dept. of Electrical Engineering, Tampere University of Technology, Tampere, Finland, August 1982.
15. Three Lectures on "Cellular Action Currents," NATO Advanced Study Institute on Biomagnetism, Frascati, Italy, September 1982.
16. "The ECG-MCG Relationship," NATO Advanced Study Institute on Biomagnetism, Frascati, Italy, September 1982.
17. "The Measurement and Modeling of the Magnetic Field of an Isolated Nerve Axon," Spring Meeting of the American Physical Society, Baltimore, April 1983.
18. "Cellular Magnetism: Theory, Experiment and Applications," Symposium on Frontiers in Electrophysiology, 5th Annual Engineering in Medicine and Biology Society, Columbus, September 1983.
19. "Magnetic Field of Nerves and Cardiac Muscle," Department of Physics, Loyola University, New Orleans, November 1983.
20. "Neuromagnetism: A Possible Technique for Surgeons," Neurosurgical Grand Rounds, LSU Medical Center, New Orleans, November 1983.
21. "Magnetic Measurements of Peripheral Nerve Function," Dept. of Biomedical Engineering, Tulane University, New Orleans, November 1983.
22. "Magnetocardiography: Challenging Clinical Problems and Promising Analytic Techniques," Panel Moderator, Fifth World Conference on Biomagnetism, Vancouver, August 1984.
23. "Theoretical Models for Source Localization," Panelist, Fifth World Conference on Biomagnetism, Vancouver, August 1984.

INVITED TALKS AND COLLOQUIA (continued):

24. "Modelling of Bioelectric Sources," "Neuroelectric Phenomena," and "Neuromagnetism," Three invited lectures at a preconference short-course at Tampere University of Technology, Tampere, Finland, XIV International Conference on Medical and Biological Engineering and VII International Conference on Medical Physics, August 1985.
25. "Magnetic Measurements on Single Nerve Axons and Nerve Bundles," Invited Tutorial, XIV International Conference on Medical and Biological Engineering and VII International Conference on Medical Physics, Espoo, Finland, August 1985.
26. "Measurements and Modeling of Neuromagnetic Fields," 38th Annual Conference on Engineering in Medicine and Biology, Chicago, September 1985.
27. "Cellular Biomagnetism: Nerves and Hearts, Measurements and Models," Department of Physics, New York University, October 1985.
28. "Magnetic Measurements of Single Axons and Nerve Bundles," FASEB Symposium on the Use of Neuromagnetism to Evaluate Normal and Abnormal Nerve Function, St. Louis," April 1986 (Session Chair).
29. "Magnetic Measurements of Cellular Action Currents," Department of Anatomy and Cellular Biology, Emory University, June 1986.
30. "Multicellular Systems: Action Currents and Magnetic Fields," 39th Annual Conference on Engineering in Medicine and Biology, Baltimore, September 1986.
31. "Magnetic Fields of Multicellular Systems: Ohm's Law Revisited," Department of Physics, Western Kentucky University, November 1986.
32. "High-Resolution Measurements of Biomagnetic Fields," 1987 Cryogenic Engineering Conference, St. Charles, Illinois, June 1987.
33. "The Biophysics of Neuromagnetism," The Beckman Institute, University of Illinois, Champaign-Urbana, July 1987.
34. "Finite Element Models for Cardiac Defibrillation," Fortieth Annual Conference on Engineering in Medicine and Biology, Niagara Falls, September 1987.
35. "Magnetic Fields From Action Currents: Instrumentation, Measurements, and Models," Department of Chemical, Bio, and Materials Engineering," Arizona State University, Tempe, September 1987.
36. "The Information Content of Biomagnetic Measurements," Department of Chemistry and Physics, Middle Tennessee State University, Murfreesboro, November 1987.
37. "High-Resolution SQUID Magnetometers for NDE: Sensitivity, Spatial Resolution, and Data Analysis," Office of Naval Research SQUID/Non-Destructive Evaluation Workshop, Harper's Ferry," April 1988.
38. "Applications of SQUIDS to Biomagnetism and Non-Destructive Testing," Hypres, Inc., Elmsford, NY, June 1988.
39. "High Resolution SQUID Magnetometry for Current Imaging: Applications to Biophysics and Non-Destructive Testing," Thomas J. Watson Research Center, IBM, Yorktown Heights, June 1988.
40. "Magnetic Measurements of Action Currents in Bundled Nerves," World Congress on Medical Physics and Biomedical Engineering, San Antonio, August 1988.
41. "Current Distributions in Bisyncytial Tissue," World Congress on Medical Physics and Biomedical Engineering, San Antonio, August 1988.
42. "Virtual Cathode Effects and the Cardiac Bidomain," Basic Arrhythmia Laboratory, Duke University, September 1988.
43. "Magnetic Techniques for Evaluating Peripheral Nerve Function," Special Symposium on Maturing Technologies and Emerging Horizons in Biomedical Engineering, Tenth Annual International Conference of IEEE/EMBS, New Orleans, November 1988.

INVITED TALKS AND COLLOQUIA (continued):

44. Tract Chair for the Biopotentials Tract; Session Chair for "Multicellular and Bidomain Systems," "Nerves and Electric Stimulation," and "Steady Currents," Tenth Annual International Conference of IEEE/EMBS, New Orleans, November 1988.
45. "Applications of SQUIDS to Biomagnetism and Non-Destructive Testing," Texas Instruments, Dallas, July 1989.
46. "Biomagnetic Sources and Their Models," Tutorial Lecture, 7th International Biomagnetism Conference, New York, August 1989.
47. "SQUIDS for NDE," Gordon Conference on Non-Destructive Testing, Ventura, March 1990.
48. "Bioelectricity and Biomagnetism in the Cardiovascular System," Workshop on Bioelectricity and Biomagnetism in Clinical Medicine, Little Company of Mary Hospital, Torrence, April 1990.
49. "Action Currents and Tissue Anisotropy," XVII International Congress on Electrocardiology and the 31st International Symposium on Vectorcardiography, Florence, Italy, September 1990.
50. "High-Resolution SQUIDS for Magnetic Imaging," 12th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Philadelphia, November 1990.
51. "The Vanderbilt University Living State Physics Group: A Case Study in Building a State-of-the-Art Research Program," Leadership Nashville, December 1990.
52. "Non-Destructive Evaluation with SQUIDS," and "High-Resolution Magnetic Imaging for Non-Destructive Testing," E.I. Dupont DeNemours, Wilmington, December 1990.
53. "High-Resolution SQUIDS for Non-Destructive Evaluation," Electric Power Research Institute, Palo Alto, January 1991.
54. "Teaching of Physics to Humanists: A Recent Experiment in Raising Students' Awareness About How They Think and Learn," University Series on Teaching, Vanderbilt, February 1991.
55. "Magnetic Measurements of Cellular Action Currents," and "Magnetic Fields from Steady Bioelectric Currents," Ninth International Symposium on Man and His Environment in Health and Disease, Dallas, TX, March 1991.
56. "A Close View of Patterns of Electrical Current and Nerve in Cortex," American Physical Society, Cincinnati, OH, March 1991.
57. "The Virtual Cathode and Tissue Anisotropy: Current Flow in the Cardiac Bidomain," and "Capabilities and Limitations of Magnetic Measurements of Bioelectric Activity in Nerve and Muscle," Mayo Clinic, Rochester, MN, May 1991.
58. "Biomagnetic Fields: Information and Disinformation," A.B. Learned Professorship in Living State Physics Inaugural Lecture, Vanderbilt University, October 1991.
59. "Fundamental Factors That Affect the EEG and MEG: Introductory Talk on the Relationship of the Electroencephalogram and the Magnetoencephalogram," EEG/MEG Workshop, Virginia Beach, VA, May 1992.
60. "Magnetic Susceptibility Imaging for Non-Destructive Evaluation," Applied Superconductivity Conference, Chicago, IL, August 1992.
61. "Electric and Magnetic Imaging of the Cardiac Bidomain: The New Information," Special Symposium on Cardiac Electrophysiology, Computers in Cardiology Conference, Durham, NC, October 1992.
62. "Magnetic Imaging of Current and Magnetization Distributions," North American BioMagnetism Action Group (NABMAG), Albuquerque, New Mexico, January 1993.
63. "SQUID Magnetometry for Non-Destructive Evaluation," Superconductivity Technical Action Group (STAG) and Contractors Meeting, Wright-Patterson Air Force Base, OH, March 1993.

INVITED TALKS AND COLLOQUIA (continued):

64. "Superconducting Magnetometry: A Possible Technique for Aircraft NDE," Society of Photo-Optical Instrumentation Engineers Conference on Nondestructive Inspection of Aging Aircraft, San Diego, CA, July 1993.
65. "How Do Ventricular Arrhythmias Start: Triggers," Invited Panelist, Cardiac Electrophysiology: From Cell to Bedside – A Symposium, Keystone Resort, CO, August 1993.
66. "The Cardiac Bidomain: A Macroscopic, Anisotropic Cable Model for Activation and Propagation," Duke-North Carolina National Science Foundation/Engineering Research Center for Emerging Cardiovascular Technologies Defibrillation Workshop, Durham, NC, April 1994.
67. "Advanced Instrumentation and Measurements for Early Nondestructive Evaluation of Damage and Defects in Aerostructures and Aging Aircraft," Second USAF Aging Aircraft Conference, Oklahoma City, OK, May 1994.
68. "Applications of Superconducting Magnetometry to Aircraft Corrosion," Tri-Service Conference on Corrosion, Orlando, FL, June 1994.
69. "SQUID Magnetometers for Biomagnetism and Non-Destructive Testing: Important Questions and Initial Answers," Plenary Lecture, Applied Superconductivity Conference, Boston, MA, October 1994.
70. "SQUID Magnetometers Applied to Aging Aircraft NDE," FAA/USAF/NASA Aging Aircraft Inspection Workshop on Enhanced Conventional Technologies, Ames, IA, November 1994.
71. "The Theoretical Basis of Biomagnetism," NIH Workshop on Developments in Magnetoence-phalography as a Functional Imaging Tool, Washington, DC, February 1995.
72. "Magnetometry," North American BioMagnetism Action Group (NABMAG), Washington, DC, February 1995.
73. "Imaging of Electric and Magnetic Sources," NATO Advanced Study Institute on SQUID Sensors: Fundamentals, Fabrication and Applications, Villa del mare, Maretea, Italy, June 1995.
74. "Magnetic Imaging of Cellular Action Currents," NATO Advanced Study Institute on SQUID Sensors: Fundamentals, Fabrication and Applications, Villa del mare, Maretea, Italy, June 1995.
75. "The Two-Dimensional Magnetic Inverse Problem," NATO Advanced Study Institute on SQUID Sensors: Fundamentals, Fabrication and Applications, Villa del mare, Maretea, Italy, June 1995.
76. "Recent Developments in 5K Cryocoolers - An Outsider's View," Closing Summary, 5K Cryocooler Workshop, Hypres, Inc., Elmsford, NY, July 1995.
77. "Advanced Instrumentation and Measurements for Early Nondestructive Evaluation of Damage and Defects in Aerostructures and Aging Aircraft," Air Force 3rd Aging Aircraft Conference, Wright-Patterson AFB, OH, September 1995.
78. "NDE with SQUIDs," Alcoa Technical Center, Alcoa Center, PA, October 1995.
79. "Experimental and Mathematical Linkages Between Microscopic and Macroscopic Descriptions of Cardiac Electrical Activity: Too Many Powers of Ten and the Need for Mesoscopic Models," Department of Physics and Astronomy, Vanderbilt University, November 1995.
80. "Biomagnetism and Non-Destructive Testing: Shared Problems and Solutions," Plenary Lecture, 1996 Biomagnetism Conference, Santa Fe, NM, February 1996.
81. "Tissue Anisotropy and Re-entry in the Heart," Cardiology Grand Rounds, Vanderbilt University Medical Center, Nashville, TN, December 1996.
82. "Magnetic Imaging with SQUIDs," Department of Physics and Astronomy, Vanderbilt University, January 1997.
83. "Cardiac Activation: From Uniform Double-Layers to the Bidomain," Ventritex, Sunnyvale, CA, February 1997.

INVITED TALKS AND COLLOQUIA (continued):

84. "Imaging and Modeling Cardiac Electrical Activity – The Need for Multiple Spatial Scales," 1997 International Conference on Mathematical Models in Medical and Health Sciences, Vanderbilt University, Nashville, TN, May 1997.
85. "SQUIDs for Biomagnetism – Sources, Measurements, and Models," NATO Advanced Study Institute on SQUID Sensors: Fundamentals, Fabrication and Applications, Hotel Alexandra, Loen, Norway, June 1997.
86. "SQUIDs for NDE – Methods and Applications," NATO Advanced Study Institute on SQUID Sensors: Fundamentals, Fabrication and Applications, Hotel Alexandra, Loen, Norway, June 1997.
87. "SQUID Magnetometers for Phase-Sensitive, Depth-Selective, Oriented Eddy Current Imaging," Quantitative NonDestructive Evaluation (QNDE 97), San Diego, July 27-August 1, 1997.
88. "SQUID Measurements of the Rate of Hidden Corrosion," Technical Interchange Meeting - Corrosion Fatigue and Corrosion Predictive Modeling, NCI/USAF, Tinker Air Force Base, Oklahoma City, OK, December 17-19, 1997.
89. "Bioelectric/Biomagnetic Phenomena: Ion Channels to Organ Function," NIH Bioengineering Consortium (BECON), National Institutes of Health, Bethesda, MD, February 28, 1998.
90. "High Speed Fluorescence Imaging of Cardiac Action Potentials: Confirmation of the Doubly Anisotropic Bidomain Model," Biomedical Engineering Seminar, University of Minnesota, Minneapolis, MN, April 7, 1998.
91. "Cardiac Electrodynamics: Just How Does Your Heart Work, and Why Not?" Physics Colloquium, University of Minnesota, Minneapolis, MN, April 8, 1998.
92. "Symmetry, Silent Sources, and Magnetic Imaging with SQUIDs," Condensed Matter Seminar, University of Minnesota, Minneapolis, MN, April 9, 1998.
93. "Biomedical Applications of SQUIDs," Hypres, Inc., Elmsford, NY, April 15, 1998.
94. "Novel Insights on the Virtual Electrode Response," Optical Mapping of Cardiac Excitation & Arrhythmias, Scottsdale, AZ, April 26, 1998.
95. "Tissue Anisotropy and Reentry in the Cardiac Bidomain," Clinical Tutorial on The Mathematics of Electrophysiology, 19th Annual Meeting of the North American Society of Pacing and Electrophysiology (NASPE), San Diego, CA, May 7, 1998.
96. "The Drug-Independent Roles of Cardiac Geometry and Tissue Anisotropy in Defibrillation and Reentry," 11th International Congress, Cardiostim 98, Nice, France, June 18, 1998.
97. "Magnetic Imaging of Cellular Action Currents: The Source-Field Relationships," Electric and Magnetic Fields in Biology and Medicine: Sensory Perception, Self-Organization, and Therapeutic Applications, Gordon Research Conference on Bioelectrochemistry, New England College, Henniker, NH, July 21, 1998.
98. "The Physics of the Heart," Plenary Lecture, 1998 Summer Meeting of the American Association of Physics Teachers, University of Nebraska, Lincoln, NB, August 6, 1998.
99. "Cardiac Electrodynamics - The Good, The Bad and The Non-Linear," Institute for Theoretical Physics, University of California, Santa Barbara, CA, April 28, 1999.
100. "The Role of Tissue Structure and the Extracellular Space in Propagation," North American Society for Pacing and Electrophysiology (NASPE) Clinical Tutorial on Fundamental Mechanisms of Impulse Propagation: From Gap Junctions to Anisotropy, Toronto, Canada, May 13, 1999.
101. "A Brief Introduction to DNA and Quantum Computers," Hypres, Inc., Elmsford, NY, May 27, 1999.
102. "Potential New Acoustical Techniques for Detecting Single-Leg Separation in the Björk-Shiley Heart Valve," Bowling-Pfizer Trust Supervisory Panel, Cincinnati, OH, June 3, 1999.

INVITED TALKS AND COLLOQUIA (continued):

103. "An Introduction to DNA and Quantum Computers," Department of Physics and Astronomy, Vanderbilt University, Nashville, TN, September 2, 1999.
104. "SQUID Microscopes for Magnetic Imaging of Biological Systems," Tutorial on Magnetism and Living Systems, 44th Annual Conference on Magnetism and Magnetic Materials, San Jose, CA, November 15, 1999.
105. "Voltage, Calcium, and Magnetic Field Imaging: Fundamental Studies in Cardiac Excitation, Reentry, and Defibrillation," Vanderbilt Cardiology Group Meeting, January 10, 2000.
106. "Recent Results in Electromagnetic and Acoustic Techniques for Non-Invasive Detection and Catheter-Based Confirmation of Outlet Strut Fracture in the Björk-Shiley Heart Valve," Bowling Pfizer Supervisory Panel, Cincinnati, OH, January 19, 2000.
107. "The Physics of the Heart," focus session on Measuring and Controlling Cardiac Electrophysiology, March meeting of the American Physical Society Meeting in Minneapolis, MN, March 23, 2000; abstract in "The Physics of the Heart," J. Wikswo, Bull. Am. Phys. Soc., 45(1): 833 (2000) (Invited).
108. "Cardiac Planning Session," Vanderbilt University, June 26, 2000.
109. "Magnetic Imaging with SQUIDs: Biomagnetism, NDE, and Corrosion," Neocera, Beltsville, MD, June 28, 2000.
110. "Cardiac Fibrillation: A Challenging Example of Multi-Scale, Non-Linear, Biological Modeling," Panel on Computational Modeling & Simulation of the Dynamic Behavior of Complex Biological Systems and Bio-Engineered Systems, DARPA FOCUS 2000 Workshop, Chantilly, Virginia, June 28-30, 2000.
111. "The Challenges of Spatial Scales in Modeling and Understanding Cardiac Fibrillation," Chicago World Congress on Medical Physics and Biomedical Engineering, and the 22nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, July 23-28, 2000.
112. "Review of Iowa/Vanderbilt Research on Detection of Outlet Strut Fracture in the Björk-Shiley Heart Valve," Bowling Pfizer Supervisory Panel, Pasadena, CA, October 27, 2000.
113. "Instrumenting and Controlling the Single Cell: Patch Clamp to Silicon and Talking to Cells with Light," DARPA Workshop on Nanotechnology for Biodetection/Bioassay and Delivery of Therapeutics to Individual Cells, Scottsdale, AZ, December 13-14, 2000.
114. "Discussion Group A: Biodetection/Bioassay of Individual Cells," (Co-Chair), DARPA Workshop on Nanotechnology for Biodetection/Bioassay and Delivery of Therapeutics to Individual Cells, Scottsdale, AZ, December 13-14, 2000.
115. "Phase and Wave Vector Dynamics During Cardiac Reentry," Dynamics Days 2001, Chapel Hill, NC, hosted by the Duke University Physics Department and the Center for Nonlinear and Complex Systems, January 3-6, 2001.
116. "Cardiac Physics: How Your Heart Works, or Doesn't," Nashville Rotary Club, Nashville, TN, February 26, 2001.
117. "Cardiac Phase Plane Dynamics During Stimulation and Reentry," American Physical Society, Seattle, March 15, 2001.
118. "A Multiscale View of Cardiac Electrodynamics," The A.C. Suhren Jr. Lecture Series, Tulane University, New Orleans, LA, March 29, 2001.
119. "The Physics of the Heart: Optical and Magnetic Imaging of Cardiac Activity," Theoretical Biophysics Seminar, Beckman Institute, University of Illinois,15-20 minute overview of the heart, then the bidomain, then reentry, April 30, 2001.

INVITED TALKS AND COLLOQUIA (continued):

120. "The Magnetocardiogram, Tissue Anisotropy, and the Cardiac Bidomain," co-authored with Franz Baudenbacher at "The Integrated Heart: Cardiac structure and function" a satellite meeting of the 34th World Congress of the International Union of Physiological Sciences in Queenstown, New Zealand, August 20, 2001.
121. "Multiphasic, Dynamic, High Throughput Measurements and Modeling for Postgenomic Cellular Biophysics," and panel discussion on Automating Physiological Data Collection: A Link to High-Throughput Modelling at the Scientific Advisory Board Meeting, Physiome, Inc., Princeton, NJ, November 10, 2001.
122. "SQUID Imaging of Exfoliation and Intergranular Corrosion," coauthored with Yu Pei Ma of Vanderbilt, Kevin Cooper of Luna Innovations, Inc., James Suzel of S&K Technologies, and Robert Kelly of the University of Virginia. Air Force Corrosion Program Office/S&K Technologies Working Group Meeting, Dayton, OH, November 14, 2001.
123. "High-Content Toxicology Screening Using Massively Parallel, Multi-Phasic Cellular Biological Activity Detectors," coauthored with Franz Baudenbacher, Robert Balcarcel, David Cliffel, Sven Eklund, Jonathan Gilligan, Owen McGuinness, Todd Monroe, Mark Stremler, Roy Thompson, Ales Prokop, and Andreas Werdich, DARPA PI Meeting, Miami, FL, February 21, 2002.
124. "Models and Measurements of the Anisotropic Cardiac Bidomain," Instituto de Matemática Pura e Aplicada, Rio de Janeiro, Brazil, May 6, 2002.
125. "The Physics of the Heart," XXV Encontro Nacional de Fisica de Matéria Condensada, Caxambu, Brazil, May 9, 2002. (Plenary)
126. "Virtual Electrodes," coauthored with Rubin Aliev, Mark-Anthony Bray, Franz Baudenbacher, Petra Baudenbacher, Veniamin Sidorov, Marcella Woods of Vanderbilt University, and Brad Roth of Oakland University, Cardiostim 2002, Nice, France, June 20, 2002.
127. "Imaging Hidden Corrosion with SQUID Magnetometers," Gordon Conference on Aqueous Corrosion, New London, NH, July 14-18, 2002.
128. "Vacuum Pair Production/Annihilation and Cardiac String Dynamics," Aspen Center for Physics," Aspen, CO, August 22, 2002.
129. "The Physics of the Heart," Heinz R. Pagels Memorial Lecture," Aspen Center for Physics, Aspen, CO, August 28, 2002.
130. "Experimental and Computational Requirements for Post-Genomic Integrative Cellular Physiology," Intel Workshop on Early Detection, San Francisco, CA, September 24, 2002.
131. "VIIBRE: The Vanderbilt Institute for Integrative Biosystems Research and Engineering," Vanderbilt University Committee of Visitors Meeting, November 15, 2002.
132. "The Physics of the Heart," Department of Physics and Applied Physics Joint Colloquium, Stanford University, November 19, 2002.
133. "The Physics of the Heart," Vanderbilt Houston Alumni Club Fall Alumni Luncheon Series, December 4, 2002.
134. "Cardiac Phase, in the Spatial or Phase Domains, for Identifying Reentrant Behavior and Examining the Response of Cardiac Tissue to Electrical Stimulation," John Wikswo and Mark-Anthony Bray, Gordon Conference on Cardiac Arrhythmia Mechanisms, New London, NH, August 11, 2003.
135. "BioMEMS and the Measurements Needed to Drive Physiological Models," Biomedical Engineering Conference, Nashville, TN, October 2, 2003.
136. "An Overview of the Vanderbilt Institute for Integrative Biosystems Research and Education (VIIBRE)," Industrial/Practitioner Advisory Board for the Department of Biomedical Engineering, October 21, 2003.

INVITED TALKS AND COLLOQUIA (continued):

137. "Correlations Between Single Cell Signaling Dynamics and Protein Expression Profiles," DARPA Meeting on Real Time Monitoring of Signaling Pathways in Biological Cells, Arlington, VA, April 22, 2004.
138. "From Physics to Medicine: Cardiac Complexity and the Challenges of Modeling Multiscale Causality," International Conference on Complex Systems (ICCS2004), Boston, MA, May 16, 2004.
139. "Measurements versus models in cardiac strong-shock response," John Wikswo and Marcella Woods, 2004 SIAM Conference on the Life Sciences, Portland, Oregon, July 12, 2004.
140. "BioMEMS for Instrumenting and Controlling the Single Cell," Workshop on Microanalytical Devices for Bioprocessing, 2004 IEEE EMBS Conference, San Francisco, CA, September 1, 2004.
141. "The Need for Cellular and Molecular Sensors and Actuators," Mini-Symposium: Biomolecular Processors through Micro- and Nanotechnology, 2004 EMBS IEEE Conference, San Francisco, CA, September 2, 2004.
142. "Correlations Between Single Cell Signaling Dynamics and Protein Expression Profiles," DARPA SIMBIOSIS Meeting, Vail, Colorado, October 14, 2004.
143. "Instrumentation Challenges for Systems Biology," Keynote Lecture, Third IEEE Sensors Conference, Vienna, Austria, October 26, 2004.
144. "The Need for Dynamic Sensing and Control of Cells to Specify and Validate Systems Biology Models," Systems Biology Lecture Series, University of Michigan, Ann Arbor, MI, November 16, 2004.
145. "Systems Biology - The Next New Biology?" Vanderbilt Alumni Club, Nashville, TN, December 2, 2004.
146. "Integrative Systems for Biotechnology and Bioinformatics A Workshop on Challenges and Opportunities in Integrative Macro- Micro- and Nano-Systems," Sponsored by the National Science Foundation, Arlington, VA., March 7-8, 2005.
147. "The Technical and Computation Challenges of Merging NanoScience and Systems Biology," UT Dallas, May 4, 2005.
148. "Back to the Future: Systems Biology as the New Physiology," UCSD Center for Theoretical Biological Physics, San Diego, April 22, 2005.
149. "Cellular Metabolic and Signaling Dynamics for Toxin Classification, Therapy, and Prophylaxis," DARPA Cell Signaling Workshop, Arlington, September 27, 2005.
150. "Cellular and Synthetic Signaling Pathways for Detecting and Classifying Unknown Toxins and Emerging Pathogens," UES Kickoff Meeting, Dayton, October 13, 2005.
151. "An Update on the Vanderbilt Institute for Integrative Biosystems Research and Education (VIIBRE)," Industrial/Practitioner Advisory Board for the Department of Biomedical Engineering, Vanderbilt University, October 25, 2005.
152. "Metabolic and Signaling Dynamics for Cell Biology, Toxin ID, and Drug Discovery," Systems Biology Department, Harvard University, Boston, October 26, 2005.
153. "Systems Biology - The Next New Biology?" Houston Vanderbilt Alumni Club, Houston, December 1, 2005.
154. "VIIBRE: Dynamic Cellular Instrumentation and Control for Quantitative, Experimental Systems Biology, Biodefense, and Toxicology," Oak Ridge Area Director Briefing, Vanderbilt University, December 12, 2005.
155. "The Systems Engineering Problems of Systems Biology," Plenary Lecture, 38th IEEE Southeastern Symposium on Systems Theory, Cookeville, TN, March 6, 2006.

INVITED TALKS AND COLLOQUIA (continued):

156. "The Promise and Challenges of Multianalyte Metabolic Dynamics," John Wikswo, Franz Baudenbacher, David Cliffel, Ales Prokop, Momchil Velkovsky (Vanderbilt University); Bela Csukas (Kaposvar University, Hungary); Jerry Jenkins, Shankar Sundaram (CFD Research Corporation), BioLSI-2; Kavli Nanoscience Institute, Caltech, April 11, 2006.
157. "Dynamic Cellular Instrumentation and Control for Quantitative, Experimental Systems Biology, Biodefense, and Toxicology," Department of Biomedical Sciences, Meharry Medical College, April 17, 2006.
158. "The Five Dimensions of Systems Biology," Microscale Life Sciences Center at University of Washington, April 21, 2006.
159. "Where Should We Look for Our Keys?" Keck Roundtable Discussion on the Future of Sciences, Los Angeles, CA, May 5-6, 2006.
160. "Max Delbrück at Vanderbilt – 1940-1947," The Max Delbrück Vanderbilt Centenary Celebration, Vanderbilt University, September 14, 2006.
161. "SyBBURE: Systems Biology and Bioengineering Undergraduate Research Experience," Vanderbilt Parents Leadership Council, Vanderbilt University, September 29, 2006.
162. "Between the Street Lamps: Looking for Missing Keys to Cancer Using a BioMEMS Flashlight," Cancer Biology Retreat, Lake Barkley, Cadiz, KY, November 17-18, 2006.
163. "BioMEMS Approaches to the Missing-Data Problem in Systems Biology," Program in Biomedical Engineering, University of Memphis, February 16, 2007.
164. "BioMEMS and Symbolic Regression for Automated Inference of Metabolic Network Dynamics," Institute for Advanced Study, May 9, 2007.
165. "Systematic Extraction of Minimal Network Models from Model Cellular Systems for the Design of Robust Abiotic Signaling Networks," CB Defense Conference, Timmonium, MD, November 13, 2007, Coauthors: John P. Wikswo, Michael Schmidt, Jerry Jenkins, David Cliffel, Roy Thompson, and Hod Lipson.
166. "BioMEMS Instrumentation and Control for Autocrine, Paracrine, Juxtacrine and Mechanical Signaling," Mathematical Biosciences Institute, Columbus, Ohio, November 14, 2007.
167. "Microdevices and Models for Cellular Metabolic Dynamics," IBM Thomas Watson Research Center, Yorktown Heights, New York, May 21, 2008.
168. "The Possibility of Automated Experiments for Inference of Metabolic Models," CNLS q-bio Seminar, Center for Nonlinear Studies, Los Alamos National Laboratory, September 16, 2008.
169. "Microdevices for Studying Cell-Cell Communication, Chemotaxis, and Haptotaxis." Symposium on Microelectromechanical Systems in Cell Biology, Experimental Biology 2009, New Orleans, April 19, 2009.
170. "Avoiding Biology's Epistemological Crisis," Millipore Future Foresight Forum, Boston, MA, September 1-2, 2009.
171. "The Challenges of Controlling Living Cells," Belmont University Sixth Annual Undergraduate Research Symposium, December 3, 2009.
172. "Avoiding the Problem of Seven: Can Computers Design and Conduct Experiments for Automated Inference of Models of Cellular Metabolic and Signaling Networks?" Physics Colloquium, Emory University, April 23, 2010.
173. "Can We Comprehend the Full Complexity of Our Own Biology?" Biomedical Engineering Distinguished Lecturer Series, University of California - Irvine, April 30, 2010.
174. "BioMEMS and IM-MS: Towards the automated inference of metabolic and signaling pathways in health and disease," John Wikswo, Institut Curie, Paris, 23 June 2010

INVITED TALKS AND COLLOQUIA (continued):

175. “The Robot Scientist or: How I learned to stop worrying and love automated model inference.” Q-Bio, Santa Fe, August 14, 2010
176. “A Biophysics and Bioengineering Perspective: What makes breast cancer a hard problem, and where are the keys to control, cure, and prevention?” 2010 NSF Advances in Breast Cancer Research Workshop, October 28, 2010, University of Arkansas
177. “The Challenges of Characterizing and Controlling Emergent Behavior in Complex Neural Systems,” New Tools for Neuroscience: Workshop I – Defining the White Space Opportunities. Defense Science Research Council, Arlington, VA, November 4, 2010.
178. “Challenges in Characterizing and Controlling Complex Cellular Systems,” American Physical Society March Meeting, Dallas, March 24, 2011.
179. “Systems Biology: Opportunities at the Intersection of Medicine, Biology, Chemistry, Engineering, Mathematics, and Physics,” Biology Seminar, David Lipscomb University, April 2011.
180. “New tools and techniques for connecting cardiac electrophysiology and metabolism,” Third Annual Cardiovascular Research Day, Vanderbilt University, April 20, 2011
181. “Case Study: Dynamic Omni-Omic Biosignatures -- Rapid Presymptomatic Diagnosis in 10,000 and 1 dimensions?” Bioinformatics and Knowledge Management Workshop, JSTO/DTRA, Falls Church, VA, September 22-23, 2011
182. “Microfluidics for High Content Imaging of Cellular Dynamics,” John P. Wikswo, Vanessa Allwardt, Dawit Jowhar, Dmitry Markov, Christopher Janetopoulos, and Philip Samson, Joint BBSRC UK and Vanderbilt University Workshop on Cell signaling and cytoskeleton in directed cell migration: Imaging and quantitative approaches, Vanderbilt University, March 4 – 6, 2012 (Organizers: Andrew B. Goryachev and Christopher Janetopoulos)
183. “Beyond pathogen genomics and the host immune memory response: Can dynamic omni-omic challenge/response experiments inform exposure status?” John P. Wikswo and John A. McLean, JASON 2012 Exposure Status Summer Study, Mitre Corporation, La Jolla, CA, June 19-20, 2012.
184. “Scaling and systems biology for integrating multiple organs-on-a-chip,” John P. Wikswo, Erica L. Curtis, Zachary E. Eagleton, Brian C. Evans, Ayeeshik Kole, Lucas H. Hofmeister, and William J. Matloff, Poster Spotlight, Q-Bio, Santa Fe, NM, August 8-11, 2012.
185. “What do we do if the human body is too complex for humans to understand?” BioInformatics Seminar, Vanderbilt University, September 5, 2012.
186. “Advanced Instrumentation for Automated Quantitative Biology,” CFD Research Corporation, 21 September 2012.
187. “Neurovascular unit on a chip: Chemical communication, drug and toxin responses,” NIH Microphysiological Systems Program: First Investigators’ Meeting, NIH, Bethesda, Maryland, October 1-2, 2012.
188. “Working Group Report on Cardiovascular Systems Engineering,” John P. Wikswo and Steven C. George, IEEE Life Sciences Grand Challenges Conference, Washington, DC, Oct 4-5, 2012.
189. "Why automated biology, robot scientists, and organs on a chip?" Agilent, Santa Clara, CA 6 November 2012.
190. “New approaches to microfluidic pumps and valves for Organs on Chips,” LabSmith, Livermore, CA, 5 November 2012.
191. “Instrumentation for Strong Automated Biology,” EMD Millipore LabASIC, Fremont, CA, 5 November 2012.
192. “A top-down approach to cellular sensing: Platforms and Microfluidics,” Cellular Sensing Systems Workshop, Applied Physics Laboratory, Johns Hopkins University, Scottsdale, AZ December 3–4, 2012.

INVITED TALKS AND COLLOQUIA (continued):

193. "Engineering Challenges for Instrumenting and Controlling Integrated Organ-on-Chip Systems, John P. Wikswo, Vanessa Allwardt, Frank E. Block, David E. Cliffel, Jeffrey R. Enders, Cody R. Goodwin, Christina C. Marasco, Dmitry A. Markov, David L. McLean, John A. McLean, Jennifer R. McKenzie, Ronald S. Reiserer, Philip C. Samson, David K. Schaffer, Kevin T. Seale, and Stacy D. Sherrod, 2012 IEEE-EMBS Micro- and Nanoengineering in Medicine Conference of the IEEE Engineering in Medicine and Biology Society, Ka'anapali, Hawaii, December 3-7, 2012.
194. "The Homunculi and I: Lessons from Building Organs on Chips," TEDx Nashville, April 6, 2013.
195. "Addressing Engineering and Scaling Challenges for Organs on a Chip," Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Shriners Hospitals for Children, Boston. April 12, 2013
196. "Replacing Silos with Phase Space: Teaching, Research, and Ourselves," College of Health Sciences and Nursing, Belmont University, May 6, 2013
197. "Engineering In Vitro Human Organ Platforms," in INTO-RAM ATHENA: Multi-organ Platform for Rapid Assessment of Medical Countermeasures - DTRA Special Session, TechConnect World 2013, May 13, 2013, Washington, DC.
198. "Engineering Challenges in Scaling, Sensing, and Control for Organs-on-Chips, iPSCs, and Systems Biology," Applied Mechanics Colloquium, Harvard University, 2 October 2013
199. "Transdisciplinary perspectives on instrumentation architecture: A case study in how Organ-on-Chip engineering may provide new tools to biology, medicine, and physiology." Scoping meeting on Enabling Architecture for the Next Generation of Life Sciences Research, Board on Life Sciences, The National Academies, Washington, DC, 30 October 2013.
200. "Biological complexity, systems biology, and organs on a chip," Physics and Astronomy Faculty, 8 November 2013
201. "The Neurovascular-Unit-on-a-Chip 'Microbrain' to improve drug testing and advance systems biology." 2013 American Association of Pharmaceutical Scientists (AAPS) Roundtable on "Of Organs and Chips: Innovative Tools for Disease Modeling and Drug Development in Barrier Epithelia", Annual meeting of the AAPS, San Antonio, TX, Wednesday, November 13, 2013.
202. "What are the QSP bottlenecks?" Jeremy Berg, Pittsburgh; Ashley Dombrowski, Bay City Capital; Ron Krall, GSK; Andrew Plump, Sanofi; James Stevens, Eli Lilly; Lans Taylor, Pittsburgh; John Wikswo, Vanderbilt, Pittsburgh Workshop on Quantitative Systems Pharmacology (QSP) in Personalized Medicine (PM), Pittsburgh, PA, 20 November 2013
203. "A physicist's perspective on the complexity of biology," Physics Colloquium, Department of Physics, Ohio University, 28 February 2014
204. "Challenges of Developing an Integrated Human on a Chip System," Society of Toxicology Annual Meeting, Phoenix, AZ from March 26, 2014.
205. "Omni-Omics to study and control immune cells on a chip," Sanofi Pasteur VaxDesign, Orlando, FL, May 6, 2014. "Homunculi and Hermeneutics - How organs on a chip can close the circle of biology," Hopkins NIH Digestive Diseases Basic & Translational Research Core Center, Johns Hopkins University, Baltimore, September 30, 2014
206. "Can Homunculi change the way we develop new drugs and tests for environmental toxins?" Life Science Tennessee Annual Conference, Nashville, TN, October 22, 2014
207. "Scaling and Systems Biology for Integrating Multiple Organs-on-a-Chip," Closing Keynote Address, Engineering Functional 3D Models Conference and Organotypic Culture Models for Toxicology Conference, Functional Analysis & Screening Technologies (FAST) Congress, November 18, 2014.
208. "Biology coming full circle: Joining the whole and the parts," Quantitative & Computational Biology Seminar, Lewis-Sigler Institute for Integrative Genomics, Princeton University, December 1, 2014.

INVITED TALKS AND COLLOQUIA (continued):

209. "Systems biology, organs-on-chips, metabolomics, and closing the hermeneutic circle of biology," CQS Systems Biology Program Retreat, January 22, 2015.
210. "Integrating multiple organs on chips: What might we learn, what do we need, and how might we do it?" 3D Cellular Models Conference, World Pharma Conference, Boston, MA, June 11-12, 2015.
211. "Characterizing and Validating Biological and Physiological Relevance of an In Vitro Microphysiological System," Society of Toxicology, San Diego, CA, March 24, 2015.
212. "In Vitro Microphysiological Systems for Drug Development, Systems Biology, and Neuroscience," AstraZeneca Webinar, April 29, 2015.
213. "Connecting the Whole and the Parts: Organs on Chips and Cytometry," Frontier Lecture, CYTO2015, Glasgow, Scotland, June 28, 2015.
214. "Application of Organ on a Chip Models to Toxicity Testing," Keynote Session: Organ-Chip and 3D Microtissue Models as the New Frontier in Toxicity Testing, Gordon Research Seminar on Cellular & Molecular Mechanisms of Toxicity, Andover, NH, August 8, 2015.
215. "Nanoscience and Biology: Connecting Nano to Micro and Milli for in Vitro Interrogation and Control," NSF-sponsored annual Nanoscale Science and Engineering Grantees Conference, Arlington, VA, December 9-10, 2015.
216. "Organs on Chips: An in vitro platform for quantitative human systems pharmacology," Vanderbilt Pharmacology Graduate Student Association Seminar, December 16, 2015.
217. "Tool to close the hermeneutic circle of biology: Tissue chips, pumps, valves, and automated model inference," Quantitative Systems Biology Center, Vanderbilt University, February 12, 2016
218. "Organs on Chips: Bioreactors, Sensors, Controls, and Interconnects to Support Constructionist Biology," Department of Biomedical Engineering, Northwestern University, Evanston, IL, April 28, 2016.
219. "Human Neurovascular Unit On-A-Chip: Microscale Systems for Tissue-Level Response," 2016 Teratology Society annual joint meeting with the Developmental Neurotoxicology Society, San Antonio, TX, June 25-29, 2016.
220. "Modular architectures and control strategies for coupled microphysiological systems," Drug Safety Gordon Research Conference: Improving Drug Safety: From Innovation in the Lab to Application in the Clinic, Stonehill College, Easton, MA, June 26-July 1, 2016.
221. "Organs on Chips for drug development, toxicology, and systems biology: A distributed yet interconnected modular approach," Organ-on-a-Chip World Congress 2016, Boston, MA, July 7-8, 2016.
222. "Organ-on-Chip Blood-Brain Barriers/Neurovascular Units and Supporting Hardware to Study Neuroinflammation," John P. Wikswo and Jacquelyn A Brown, 2016 Alphavirus Science and Technology Review, Defense Threat Reduction Agency (DTRA, JSTO-CBD) and the Joint Vaccine Acquisition Program (JVAP,JPEO-CBD), Springfield, VA, August 22-24, 2016.
223. "In Vitro Modeling of the Blood Brain Barrier Using Complex 3D Models," and "Hands on with Organ-on-a-chip Workshop," 3D Tissue Models: Drug Discovery & Development, San Diego, CA, August 29-31, 2016.
224. "Probing the complexities of biology and medicine: Closing the hermeneutic circle with in vitro models to study nerve pain and neural responses to pain medication," TMJ Association's Eighth Scientific Meeting, Can Precision Medicine Inform the Etiology and Treatment of TMD and Chronic Overlapping Pain Conditions, Bethesda, MD, September 11-13, 2016.
225. "Human neurovascular unit on a chip: metabolic consequences of inflammatory disruption of the blood-brain barrier and the possibility of diurnal, in vitro humoral modulation of neuronal activity," 3D CNS Disease Modeling Workshop, Society for Neuroscience Satellite Symposium, San Diego, CA, November 11, 2016.

INVITED TALKS AND COLLOQUIA (continued):

226. "Cutting-Edge Safety – Pre-Clinical In Vitro Models," Pre-Meeting Course on Chemical Biology: A New Tool for Parasite Biology and Drug Development, Annual Meeting of the American Committee of Molecular, Cellular and Immunoparasitology of the American Society of Tropical Medicine and Hygiene, Atlanta, GA, November 13, 2016.
227. "Tissue Chips Research and Education at Vanderbilt," Briefing for Christopher P. Austin, M.D., Director, NIH National Center for Advancing Translational Sciences, Vanderbilt University, Nashville, TN, December 14, 2016.
228. "Organs-on-chips, metabolomics, systems biology, and closing the hermeneutic circle of biology," VCR Distinguished Lecture, The University of Tennessee Health Science Center, Memphis, TN, December 15, 2016.
229. "Modular Architectures and Control Strategies for Coupled Microphysiological Systems," Eli Lilly, Indianapolis, IN, January 4, 2017.
230. "Multichannel Microformulators Suitable for Massively Parallel Automated Design of Biological Experiments," American Physical Society, New Orleans, LA, March 13-17, 2017.
231. "Organs on Chips for Drug Discovery and Development" Eli Lilly Grand Rounds, Indianapolis, IN, March 22, 2017.
232. "Organs-on-Chips and the VIIBRE NeuroVascular Unit," Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, April 10, 2017.
233. "Progress toward adoption of microphysiological systems in biology and medicine," Introduction to a symposium sponsored by the Society for Experimental Biology and Medicine at Experimental Biology 2017, Chicago, IL, April 24, 2017.
234. "Learning without boxes," College Scholars Senior Recognition Dinner, Vanderbilt University, Nashville, TN, April 28, 2017.
235. "Vanderbilt Microphysiological Systems NeuroVascular Unit," John Wikswo and Jacquelyn Brown, NIH-NCATS Tissue Chips for Drug Screening Close-Out Meeting, Rockville, MD, May 10, 2017.
236. "Topologies, Analytics, and Automation for Microphysiological Systems," Select Biosciences Organ-on-a-Chip Europe 2017 track of the Lab-on-a-Chip & Microfluidics 2017 conference, Munich, Germany, May 10-11, 2017.
237. "Organs on Chips: Tissues, Support Hardware, and Analytics" Fraunhofer Institute for Interfacial Engineering and Biotechnology, Stuttgart, Germany, May 12, 2017.
238. "NeuroVascular Unit V2.0: Perfusion Control and Bioreactors," Eli Lilly Neuroscience Briefing, Indianapolis, IN, May 23, 2017.
239. "Analytical Chemistry for Understanding the Physiology and Pathology of 3D Cellular Models: Examples from the Neurovascular Unit/Blood-Brain Barrier," 3D Cellular Models track at the World Preclinical Congress, Boston, MA, June 14-15, 2017.
240. "Identify the requirements that would determine quantitatively whether an MPS is superior to existing in vitro and animal assays," Moderator for interactive breakout discussion, 3D Cellular Models track at the World Preclinical Congress, Boston, MA, June 14-15, 2017.
241. "Fitting iPSCs, 3D cell culture, tissue chips and microphysiological systems into the grand scheme of biology, medicine, pharmacology, and toxicology," Select Biosciences Organ-on-a-Chip World Congress and 3D-Culture 2017 Conference, Boston, MA, July 10, 2017.
242. "Scientific and technical strengths and limitations of MPS for drug toxicity testing," Session on "When Will Microphysiological Systems (Organ-On-Chip Technologies) Be Ready to Replace Animals in Nonclinical Safety Assessments to Support Phase 1 Clinical Pharmacology Studies?" The Toxicology Forum: 43rd Annual Summer Meeting, Annapolis, MD, July 12, 2017.

INVITED TALKS AND COLLOQUIA (continued):

243. "Organs-on-chips and microphysiological systems as models for quantitative systems pharmacology and the development of neurotherapeutics," NIH Workshop: Quantitative Systems Pharmacology and Drug Discovery: Filling the Gaps in Current Models of the R&D Process for Neurotherapeutics, Bethesda, MD, July 26-27, 2017.
244. "Hormonal Modulation of Organs-on-Chips to Recapitulate In Vivo ADME Tox Profiles In Vitro," 3D Tissue Models Summit, Boston, MA, August 29-30, 2017.
245. "Organs-on-Chips: A Developer's Masterclass," 3D Tissue Models Summit, Boston, MA, August 29-30, 2017.
246. "Panel Discussion: Development of Complex In Vitro Models for Preclinical Efficacy Testing," 3D Tissue Models Summit, Boston, MA, August 29-30, 2017.
247. "Functional coupling of human microphysiological systems," Advancing Disease Modeling in Animal-Based Research in Support of Precision Medicine: A Workshop of the Roundtable on Science and Welfare in Laboratory Animal Use," Institute for Laboratory Animal Research, supported by the Office of Research Infrastructure Programs of the NIH; National Academies of Sciences Building, Washington, DC, October 5-6, 2017.
248. "The opportunities and challenges of engineered models of cancer: cells, hardware, analytics, and interpretation," Physical Sciences-Oncology Network Annual Investigators Meeting, Koch Institute, Massachusetts Institute of Technology, Cambridge, MA, October 17-19, 2017.
249. "Strengths, Limitations and Applications of Microphysiological Systems for Drug Development," Food and Drug Administration Toxicology Working Group, White Oak, MD, October 26, 2017.
250. "Microphysiological model systems in toxicology," Biochemistry 8336 Guest Lecture, Vanderbilt University, Nashville, TN, October 30, 2017.
251. "Blood-Brain Barrier Microphysiological Systems in Toxicology," Vanderbilt University Training Grant Open House, Nashville, TN, November 4, 2017.
252. "Organs-on-Chips: A review of immune and skin models," Elizabeth Phillips Research Group, Department of Pathology, Microbiology, and Immunology, Vanderbilt University, Nashville, TN 37235, December 4, 2017.
253. "The union of organs-on-chips and mass spectrometry multi-omics: a technological convergence that will advance drug discovery and toxicology," Leaders in Chemical and Physical Biology Seminar, Vanderbilt University, Nashville, TN, February 26, 2018.
254. "MicroPhysiological Systems: Organs on Chips, Tissue Chips, Hardware, and Analytics," Biomedical Engineering Seminar, University of California-Irvine, Irvine, CA, March 9, 2018.
255. "Drug development for tuberous sclerosis complex and other pediatric epileptogenic diseases using neurovascular and cardiac microphysiological models," John P. Wikswo, Aaron B. Bowman, Kevin C. Ess, Jacquelyn A. Brown, Robert Carson, Young Wook Chun, Charles C. Hong, Rebecca Ihrie, Ethan S. Lippmann, M. Diana Neely, Matthew S. Shotwell, Veniamin Y. Sidorov, Chaitali Ghosh, Damir Janigro, and Mustafa Sahin, Tissue Chip Consortium Meeting, Bethesda, MD, March 26, 2018.
256. "What can pumps and valves do for MicroPhysiological Systems?" CN Bio Innovations, Ltd., Welwyn Garden City, UK, May 21, 2018.
257. "The union of organs-on-chips and mass spectrometric multi-omics: a technological convergence that will advance drug discovery," European Laboratory Research and Innovation Group (ELRIG) Conference, Discovery Technologies 2018, Alderley Park, Cheshire, UK, May 23, 2018.
258. "MicroPhysiological Systems: Organoids, Organs-on-Chips, Analytical Systems, and Control," Keynote Address, EUROoC, Stuttgart, Germany, May 24, 2018.

INVITED TALKS AND COLLOQUIA (continued):

259. "Openable Organ-in-a-Puck and MultiOmics for In Vitro Investigation of Host-Pathogen Interactions in the Gut and Brain," John P. Wikswo, Nicole Muszynski, Melissa Farrow, and Danielle Gutierrez, CB Technology Watch, Defense Threat Reduction Agency, Springfield, VA, July 31, 2018.
260. "Advancing Drug Discovery Through the Technological Convergence of Organs-on-Chips and Mass Spectrometric Multi-Omics," Predict: 3D Models Conference, Boston, MA, August 21-23, 2018 (Hanson Wade).
261. "Tissue Chips and Organs-on-Chips: Emerging Models for In Vitro Studies of the Cellular Microenvironment, Organ-Organ Communication, and Host-Tumor Interactions," Host Tumor Interactions Research Program Retreat, Vanderbilt University, Nashville, TN, September 17, 2018.
262. "Organ-on-a-Chip 101," Pre-meeting workshop on "Organ-on-a-Chip: What Is It and How Can It Advance the Role of Clinical Pharmacology in Drug Discovery and Development," American College of Clinical Pharmacology Annual Meeting, Bethesda, MD, September 23, 2018.
263. "Scientific, Engineering, and Translational Intersections and Trajectories: Organs-on-chips, organoids, stem cells, microfluidics, well plates, acoustics, and multi-omics," Organ-on-a-Chip World congress and 3D-Bioprinting 2018, San Diego, CA, October 4-5, 2018 (SelectBio).
264. "Microphysiological Model Systems in Toxicology," Biochemistry 8336, Vanderbilt University, October 26, 2018.
265. "Cell-Based Models for Drug Discovery and Development: Control Instrumentation, In Vitro Systems, and In Silico Modeling," Kapil Pant and John Wikswo, NIH/NCATS, November 9, 2018.
266. "Design and Analysis of Microfluidic Tissue Equivalents," Wound Healing: Innovation and Discovery Symposium, Innovations in Wound Healing, Key West, FL, December 6-9, 2018.
267. "Complexity, Microphysiological Systems, and Closing the Hermeneutic Circle of Biology," International Organ-on-Chip Workshop: From Systems Biology to Societal Issues, Milan, Italy, February 14-15, 2019.
268. "Can a massively parallel multi-omics system for controlling iPSC differentiation be run backwards to control cancer?" Tumor Microenvironment & Immunology meeting, Vanderbilt University, April 1, 2019.
269. "Tissue chips for accelerating the development of diagnostics and medical countermeasures for CBRN threats," Biomedical Advanced Research and Development Authority (BARDA) TechWatch, Washington DC, April 29, 2019.
270. "Microphysiological Systems, Mechanisms of Action, and Chronotoxicology," Gordon Conference on Cellular and Molecular Mechanisms of Toxicology (CMMT), Andover, NH, August 11-16, 2019.
271. "Organ-on-Chip Masterclass," Preconference Workshop, 4th PREDiCT 3D Tissue Models Summit, Boston, MA, September 4-6, 2019.
272. "Utilizing 3D Cultures in the Blood-Brain Barrier to Clarify Translational Endpoints," 4th PREDiCT 3D Tissue Models Summit, Boston, MA, September 4-6, 2019.
273. "VIIBRE's Microphysiological Systems Technologies," Briefing for the U.S. Army Combat Capabilities Development Command Chemical Biological Center (CCDC-CBC), Vanderbilt University, September 17, 2019.
274. "Pumps, Valves, and Fluidic Connectors for Automating and Integrating Microphysiological Systems," SelectBIO Organ-on-a-Chip World Congress, Coronado Island, CA, October 14-15, 2019
275. "Of and About Biomaterials: Tissue Chip Bioreactors and Perfusion Control Systems," NIH Workshop on Tissue Chip Platforms as Tools for Testing Biocompatibility and Biotoxicity of Biomaterials, National Institutes of Health, Washington, D.C., October 24-25, 2019.

INVITED TALKS AND COLLOQUIA (continued):

276. "Microphysiological Model Systems in Toxicology," Biochemistry 8336, Vanderbilt University, October 30, 2019.
277. "Bridging the Gap Between Organs-on-Chips and Multi-Omic Analysis for In Vitro Investigation of Incapacitating Agents and Medical Countermeasures," John Wikswo (presenting), Jeremy Norris, Melissa Farrow, Danielle Gutierrez, Nicole Muszynski, Stacy Sherrod, Dana Borden Lacy, John McLean, Eric Skaar, Aarthi Narayanan, Richard Caprioli, 2019 Chemical and Biological Defense Science & Technology (CBD S&T) Conference, Cincinnati, OH, November 18-21, 2019.
278. "MicroPhysiological Systems: Can Modular Microbioreactors, Automated Perfusion Control, and On-Line Analytics Increase High-Content MPS Study Throughput from Low to Medium?", FDA Internal MPS and Stem Cell User Group, December 12, 2019.
279. "Multi-Omics and Automated Microfluidic Pumps and Valves for Controlling and Reverse Engineering of Biological Systems," Symposium on Engineering of Biological Systems, Biophysical Society Annual Meeting, San Diego, CA, February 15, 2020.
280. "Synergistic Engineering of an Ex Vivo Type 2 Diabetes Model – Organoids and Organs on a Chip," American Diabetes Association's 80th Scientific Sessions Meeting Planning, June 13, 2020.
281. "The Biological and Technical Challenges of MicroPhysiological Systems: Past, Present, and Future," SelectBio Organ-on-a-Chip World Congress 2020, Virtual Conference, September 28-30, 2020.
282. "Microphysiological model systems in toxicology," Biochemistry 8336 course, Vanderbilt University, October 30, 2020.
283. "Automated microfluidic pumps and valves for interfacing miniature bioreactors to analytical instruments: organ-on-chip and microphysiological systems perfusion controllers, microclinical analyzers, well plate microformulators, and robot-scientist microchemostats," Illumina, Inc. Research and Technology Development Scientific Seminar, December 3, 2020.
284. "Introduction to Organs-on-Chips," Department of Pathology Microbiology and Immunology modular course on Selected Topics in Molecular Pathogenesis, Vanderbilt University School of Medicine, Spring Semester, 2021.
285. "Microphysiological model systems in pharmacology and toxicology," Safety and Environmental Assurances Centre at Unilever, UK, February 3, 2021.
286. "What do we need to make microphysiological systems drug assays massively parallel?", SelectBio 3D-Culture, Organoids and Organs-on-Chips 2021 Conference, Boston, MA (and virtual), March 22-23, 2021.
287. "COVID-19 Long Hauler and Other Post-Infection Syndromes as Problems in Systems Biology and Regulatory Plasticity," DTRA DOMANE Long Hauler Syndrome / Long COVID Workshop, April 13, 2021 (Nicole Muszynski, co-author).
288. "Knowledge Graphs for COVID-19 Long Hauler and Other Post-Infection Syndromes: Contemporary Challenges in Systems Biology and Regulatory Plasticity," Guest Lecture, Institute for Systems Biology, May 18, 2021 (Nicole Muszynski, co-author).
289. "Brain-on-a-Chip, NeuroVascular Unit, and Automated Microphysiological Systems," Defense Threat Reduction Agency (DTRA) Briefing, June 9, 2021.
290. "MultiWell MicroFormulators: A new tool for parallel exposure-response pharmacokinetics, continuous media change, and control of cell state," Webinar for CN Bio Innovations, June 22, 2021.
291. John Wikswo and Jacquelyn Brown (presenting), NCATS-VA Investigator's Workshop Panel Discussion on "Interpreting MPS results across species," November 5, 2021.
292. "The imposter syndrome, stupidity, and antedisciplinary and mad science: a career analysis," Vanderbilt University Imaging Institute Seminar, November 12, 2021.

INVITED TALKS AND COLLOQUIA (continued):

293. "Fighting COVID-19 with Microphysiological Systems," Jacquelyn Brown and John Wikswo, Omicron Variant Emergency Meeting, MPS for COVID Research (MPSCoRe) working group organized by the US National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM) and the UK National Centre for the 3Rs (NC3Rs), December 1, 2021.
294. "Overengineering in the life sciences: Microfluidics and microphysiological systems meet artificial intelligence," SelectBio 2021, San Diego, December 13, 2021.
295. "Closing the hermeneutic circle of biology, organ-on-chips, mass spectrometry, and synthetic biology" (plenary lecture), "Organs on Chips: New Tools for Understanding the Complexities of Biology and Medicine" (session chair), 8th Annual International Experimental Biology and Medicine Conference, Memphis, TN, April 29-May 1, 2022.
296. "Capitalizing on Technology," Pre-Conference Workshop, 7th Annual 3D Tissue Models Summit, Boston, MA, May 10-12, 2022.
297. "A continuous, automated perfusion culture and analysis system (CAPCAS) to enable massive parallelization of organs-on-chips, chemostats, and other miniature bioreactors," Ronald S. Reiserer, David K. Schaffer, Gregory B. Gerken, Dmitry A. Markov, Philip C. Samson, Clayton M. Britt, Eric C. Spivey, Lisa J. McCawley, John P. Wikswo (presenting), MPS World Summit, New Orleans, LA, May 30-June 3, 2022.
298. "The Genesis Project: Continuous Automated Perfusion Culture Analysis System (CAPCAS)," Guest lecture for EECE 3891-03: Special Topics - Nanoscale Innovation & Making, Vanderbilt University, September 29, 2022.
299. "How might we accelerate the differentiation of iPSCs and MSCs?" TennIRM Science Update, Tennessee Institute of Regenerative Medicine (TennIRM) Board Meeting, September 29, 2022.
300. "A continuous, automated perfusion culture and analysis system (CAPCAS) to enable massive parallelization and automation of microphysiological systems assays," MPSCoRe Webinar, September 30, 2022.
301. "Advanced technologies for new physiological insights," Department of Molecular Physiology and Biophysics Faculty Meeting, Vanderbilt University, October 11, 2022.
302. "Microphysiological model systems in toxicology," Biochemistry 8336 course, Vanderbilt University, October 26, 2022.
303. "Overengineering or the future? An inside look at The Genesis Project," Future Labs Live 2022 Conference, Raleigh, NC, November 15-16, 2022.
304. "Illuminating Cellular Interactions with Toxic Substances Becomes CRISTAL Clear," DTRA Chemical and Biological Defense Science and Technology (CBD S&T) Conference Session on" The Pivotal Role of Basic Research in Fostering Innovation," San Francisco, CA, December 6-9, 2022.
305. "Microfluidic control technologies for massively parallel robot scientists driven by artificial intelligence and machine learning for automated systems biology and biotech process optimization in microbial and mammalian cells," Society for Laboratory Automation and Screening (SLAS2023), San Diego, CA, February 25-March 1, 2023.
306. "Why We Need Safety Assessment for Cellular and Cell-Derived Therapies," Workshop Session, Society of Toxicology 62nd Annual Meeting and ToxExpo, Nashville, TN, March 19-23, 2023.
307. "The Future of Biology: Artificial Intelligence, Machine Learning, Robot Scientists, and Self-Driving Laboratories?" Hot Topics in Research Lecture, The University of Tennessee Health Science Center, Memphis, TN, April 25, 2023

INVITED TALKS AND COLLOQUIA (continued):

308. "Genesis - A Massively Parallel Robot Scientist Operating as a Self-Driving Biological Laboratory to Accelerate Clonal Selection, Deconvolve Bioreactor Zonation, and Optimize iPSC Differentiation," Session on Process Modeling, Simulation and Scale-Up/Out, Advanced Cell and Tissue Biomanufacturing Gordon Research Conference, Newry, ME, June 25-30, 2023.
309. "Novel microfluidic perfusion technology to model and compare the rat and human blood-brain barrier," Jacquelyn A. Brown (presenting), Shannon L. Faley, Clayton M. Britt, David K. Schaffer, Eric C. Spivey, Michael Bubser, Carrie K. Jones, John P. Wikswo, Defense Threat Reduction Agency Launch Meeting for "Comparing Animal Models to Tissue Organ Equivalents" (CAMO), Lorton, VA, July 24-26, 2023.
310. "Automation for biological processes and self-driving labs," John P. Wikswo (presenting), Ronald S. Reiserer, et al., Quantitative Metabolic Modeling Group (QMM), Lawrence Berkeley National Laboratory, Berkeley, CA, Zoom presentation, October 23, 2023.
311. "Accelerating fermentation science with massively parallel miniature bioreactors driven by integrated sensing, control, digital twins, and machine learning/artificial intelligence," John P. Wikswo (presenting), Ronald S. Reiserer, RAFT 15®: Recent Advances in Fermentation Technology, Session: PAT for process insight, improvement, and automation, Society for Industrial Microbiology and Biotechnology, Naples, FL, October 28-November 1, 2023.
312. "Creating the Good Life: Can We Imagine a Perfect World? A Scientist and an Artist Discuss," John Hendrix and John Wikswo, A Veritas Forum at Vanderbilt, February 21, 2024.
313. "Accelerating cell factory engineering with massively parallel, miniature bioreactors with integrated sensing, control and digital twins, all driven autonomously by machine learning/artificial intelligence robot scientist algorithms," John P. Wikswo (presenting poster), Ronald S. Reiserer, et al., at the Nordisk Foundation Science Cluster Conference: The Automated Scientist – the future of cell factory engineering, Favrholm, Hillerød, Denmark, March 11-15, 2024.
314. "Self-Driving, Massively Parallel, Multi-Omic Bioreactor System to Accelerate Biopharmaceutical Development," John Wikswo (presenting poster), Ronald S. Reiserer, et al., BioCentury Grand Rounds, Nashville, TN, September 9, 2024.

INVITED TALKS AND COLLOQUIA AVAILABLE ON THE WEB

"The Homunculi and I: Lessons from Building Organs on Chips," TEDx Nashville, April 6, 2013: https://www.youtube.com/watch?v=4ht3m6p8iZ0

"Organs-on-chips, metabolomics, systems biology, and closing the hermeneutic circle of biology," VCR Distinguished Lecture, The University of Tennessee Health Science Center, Memphis, TN, December 15, 2016: https://mediaserver.uthsc.edu/uthscms/Play/e06b3582a2154ce3ba4ae626a2edd8e91d

TEACHING ACTIVITIES:

Courses, Materials, and Training Programs Developed

- New demonstrations for pre-med introductory courses, 1977 through 1990s
- Course materials for Advanced Undergraduate Laboratory in Living State Physics (with NSF and Vanderbilt University support) through the 1980s
- Multiple undergraduate seminars for Vanderbilt's College Scholars Honors Seminars Program since its inception in 1986, on topics such as *Scientific Revolutions*, *Physics of Technology*, *What is Life?*, *Why is Biology Complex?*, and *Murmurations and Emergence*.
- "Instrumenting and Controlling the Single Cell: An Education Program in Biomedical Engineering" (supported by a Whitaker Special Opportunity Award, 2003)
- Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE), 2006-present (supported by gift of Gideon Searle, pledged through 2026, and the Office of the Provost, Vanderbilt University). SyBBURE is an intensively mentored, multi-year, year-round program that guides students in their professional and personal development as scientists and engineers who participate effectively in both independent and collaborative interdisciplinary research. To date, SyBBURE has mentored more than 450 students.
- Graduate Special Topics courses each semester, cross-listed in Physics and Biomedical Engineering, such as *Theoretical and Experimental Systems Biology; Physical Measurements on Biological Systems; Automated Biology: Sensors, Controls, Scaling and Topology; Systems Biology of Organs on a Chip; Instrumentation for Automated Biology; Biomolecular Physics; Systems Biology of the Gut-Brain Axis*; *Physical Measurements on Biological Systems: NASA challenge to identify microbes in water; Automated Biology: Sensors, Controls, and Networks for Optimizing Stem Cell Differentiation; Physical Measurements on Biological Systems: Closed-Loop Automated Inference of Biological Models; Systems Biology and iPSC Differentiation; Physical Measurements on Biological Systems: Single-Cell Measurements; Systems Biology and COVID-19; Physical Measurements on Biological Systems: Automated Yeast Biology; Systems Biology: Artificial intelligence and machine learning for self-driving biological laboratories; Physical Measurements on Biological Systems: Extracellular Vesicles*; and *Systems Biology: MSCs and Manufactured Cellular Products; Physical Measurements on Biological Systems: Robot Scientists and Self-Driving Laboratories.* Each of these courses is taught as a Socratic-dialog seminar that draws undergraduate and graduate students from Arts & Science, Engineering, and Medicine, addresses a scientific topic of current interest, and typically produces a review article, patent application, or grant proposal.

Guest Lectures

- Biochemistry 8336 (Biochemical and Molecular Toxicology): "Microphysiological Systems for Toxicology," 2017-present

GRADUATE DEGREES SUPERVISED:

1. Kenneth R. Swinney, "Techniques for Multipole Expansion of the Electrical Potential of a Heart in a Conducting Sphere and Calculation of the Magnetic Field of a Nerve Axon," M.S., 1979.
2. James K. Woosley, "A Theoretical Study of the Magnetic Field due to the Action Potential of a Single Nerve Axon," M.S., 1983.
3. Mark E. Riecken, "Magnetic Stimulation of Nerves," M.S., 1983.
4. Mary E. Hartson, "The Effect of Thermotolerance on the Radiosensitivity and Thermosensitization of Mammalian Cells," Ph.D., 1984 (With George M. Hahn, Stanford).
5. Bradley J. Roth, Non-Thesis Master of Science, 1985, on "The Magnetic Field of a Single Axon: A Comparison of Theory and Experiment," B.J. Roth and J.P. Wikswo, Jr., Biophys. J., 48: 93-109 (1985).

GRADUATE DEGREES SUPERVISED (continued):

6. Dwight P. Russell, Non-Thesis Master of Science, 1985, on "Optimization of State Selection and Focusing of a Neutral Atomic Hydrogen Beam by a Hexapole Magnet," D.P. Russell and J.P. Wikswo, Jr., J. Physics E, 18: 933-940 (1985).
7. Peng Zhang, "Electrodeless Impedance Measurement," M.S., 1986.
8. Ranjith S. Wijesinghe, Non-Thesis Master of Science, 1987.
9. Bradley J. Roth, "Longitudinal Resistance in Strands of Cardiac Muscle," Ph.D., 1987.
10. Wei-Qiang Guo, Non-Thesis Master of Science, 1987, on "The Effects of Spiral Anisotropy on the Electric Potential and the Magnetic Field Recorded at the Apex of the Heart," B.J. Roth, W.-Q. Guo, and J.P. Wikswo, Jr., Mathematical Biosciences, 88: 191-221 (1988).
11. Ranjith S. Wijesinghe, "Comparison of Electric and Magnetic Techniques for the Determination of Conduction Velocity Distributions of Nerve Bundles," Ph.D., 1988.
12. Julia S. Charles, "Bioelectric Measurements of Bone Using a Magnetic Current Probe," M.S., Electrical Engineering, 1988.
13. Renea G. Stasaski, "The Electrophysiological Effects and Biomagnetic Signature of a Crushed Nerve Axon: A Comparison of Theory and Experiment," M.S., Biomedical Engineering, 1989.
14. Jan M. van Egeraat, "Magnetic Aspects of Non-uniform Propagation of Action Signals in Biological Fibers," Ph.D., 1991.
15. Shaofen Tan, "Linear System Imaging and its Applications to Magnetic Measurements by SQUID Magnetometers," Ph.D., 1992.
16. Kevin Kit Parker, "Forward and Inverse Modeling of the Magnetic Fields from Single Motor Unit Compound Action Potentials in Skeletal Muscle," M.S., Mechanical Engineering, 1993.
17. Daniel J. Staton, "Magnetic Imaging of Applied and Propagating Action Current in Cardiac Tissue Slices: Determination of Anisotropic Electrical Conductivities in a Two Dimensional Bidomain," Ph.D., 1994.
18. Leonard Alan Bradshaw, "Measurement and Modeling of Gastrointestinal Bioelectric and Biomagnetic Fields," Ph.D., 1995.
19. Eduardo Parente Ribeiro, "Magnetic Susceptibility Tomography with Superconducting Magnetometer SQUID," Ph.D., Electrical Engineering, PUC-Rio, Rio de Janeiro, 1996 (Academic Advisor: Paulo Costa Ribeiro, Co-advisors: Jacquez Szczupak and John P. Wikswo).
20. Anthony Ewing, "SQUID NDE and POD Using a BEM Measurement Model," Ph.D., Mechanical Engineering, 1997 (with Professor Thomas A. Cruse).
21. Matthew E. Kieron, Jr., "A Spherical Electrode Array for the Detection of Stretch Induced Arrhythmias," M.S., Biomedical Engineering, 1998 (with Professor Robert J. Roselli).
22. Kevin Kit Parker, "Cardiac Bioelectroelastics," Ph.D., Biological and Applied Physics, 1998.
23. Mark-Anthony P. Bray, "Three-Dimensional Visualization of Epifluorescent Cardiac Action Potential Activity," M.S., Biomedical Engineering, 1999.
24. Afshin Abedi, "Magnetic Field Associated with Active Electrochemical Corrosion," Ph.D., 2000.
25. Mark-Anthony Bray, "Visualization and Analysis of Electrodynamic Behavior During Cardiac Arrhythmias," Ph.D., Biomedical Engineering, 2003 (with Marc Lin).
26. Robert Palmer, "BME Signal Processing for Gastromagnetic Fields," Ph.D., Biomedical Engineering, 2005 (with Alan Bradshaw).
27. Marcella Woods, "The Response of the Cardiac Bidomain to Electrical Stimulation," Ph.D., Biomedical Engineering, 2005.
28. Davis Soans, "Biphasic Phased-Array Stimulator," M.S., Biomedical Engineering, 2005.

GRADUATE DEGREES SUPERVISED (continued):

29. Shawn W. Forrest, "Pacing and the Dynamic Measurement of Potassium Concentration in Whole Rabbit Hearts", M.S., Biomedical Engineering, 2006.
30. Bryan R. Gorman, "Characterization of Transport in Microfluidic Gradient Generators," M.S., Biomedical Engineering, 2007.
31. Shannon L. Faley, "Development of a Novel Microfluidic Platform to Study T Cell Signaling," Ph.D., Biomedical Engineering, 2007.
32. Mark R. Holcomb, "Measurement and Analysis of Cardiac Tissue During Electrical Stimulation," Ph.D., Physics, 2007.
33. Ipshita Chakraborty, "Characterization of a Passive Diffusion Microdevice for Assays of Chemotaxis and Morphogenesis," M.S., Biomedical Engineering, 2007.
34. Junkai Xu, "Nanocalorimetric Sensor for Ultra-Low Volume Biological Measurement and Calibration by Chemical Method," Ph.D., Physics, 2007.
35. Andrei Irimia, "Multivariate Signal Analysis and Theoretical Modeling for the Study of Gastrointestinal Bioelectromagnetism," Ph.D., Physics, 2007 (with Alan Bradshaw).
36. David Mashburn, "Phased Array Stimulation of Cardiac Tissue," M.S., Physics, 2007.
37. Raghav Venkataraman, "A Hollow Fiber Embedded Microfluidic Bioreactor for Recreating *In-Vivo* Nutrient Delivery to Cells," M.S., Biomedical Engineering, 2008.
38. Kweku Addae-Mensah, "A Microfabricated Microcantilever Array: A Platform for Investigation of Cellular Biomechanics and Microforces In Vitro," Ph.D., Biomedical Engineering, 2008.
39. Jason Greene, "Rapid Online Measurement of Amino Acid Fluxes of Continuously Perifused Cells," Ph.D., Interdisciplinary Studies: Biological and Applied Chemistry, 2009.
40. Jenny Lu, "Designing an In-Line Fluorometer for Detection of Cell Polarization," Master of Engineering in Biomedical Engineering, 2010
41. Michael W. Irvin, "Angiogenic Outgrowth from a Perfused Vascular Explant: Design and Implementation of a Perfused Vascular Explant Bioreactor," M.S., Biomedical Engineering, 2012.
42. Walter Georgescu, "Quantifying Cancer Cell Motility in an In Vitro System," Ph.D., Biomedical Engineering, 2012.
43. Christina Marasco, "Technology Platforms for Transforming Complex Biological Studies," Ph.D., Biomedical Engineering, 2012.
44. Ilija Uzelac, "Cardiac Non-Linear Dynamics and Chaos Control in the Cardiac Electrical Activity with Practical Applications," Ph.D., Physics, 2012.
45. Kenneth Drake, "Quantitative Analysis of Cell Signaling and Metabolism," Ph.D., Molecular Physiology & Biophysics, 2015.

PRIOR POSTDOCTORAL TRAINEES:

1. Steven C. Gundersen, Ph.D., Research Associate, "Sequential QRS Vector Subtractions in Acute Myocardial Infarction," 1979-1981.
2. James E. Barnhill, M.D., Cardiology Fellow, "The QRS Complex During Transient Myocardial Ischemia," 1983-1985.
3. Frans L. H. Gielen, Ph.D., Research Associate, "Magnetic Recordings of Action Currents in Nerves and Skeletal Muscle," 1983-1986.
4. Bradley J. Roth, Ph.D., Research Associate, "Magnetic Measurements of Cardiac Action Currents," 1987-1988.
5. Ranjith S. Wijesinghe, Ph.D., Research Associate, "Measurement and Modeling of Compound Action Signals in Nerve and Muscle," 1988-1991.

PRIOR POSTDOCTORAL TRAINEES (continued):

6. Jan M. van Egeraat, Ph.D., Research Associate, "Magnetic Aspects of Non-uniform Propagation of Action Signals in Biological Fibers," 1991-1992.
7. Yu-Pei Ma, Ph.D., Research Associate, "High-Resolution SQUID Magnetometry for Non-Destructive Testing," 1988-1993.
8. Shaofen Tan, Ph.D., Research Associate, "Mathematical Techniques for Magnetic Imaging," 1992-1993.
9. Ian M. Thomas, Ph.D., Research Associate, "Magnetic Imaging," 1990-1994.
10. Shien-Fong Lin, Ph.D., Research Associate, "Magnetic and Laser/Dye Studies of Propagation of Action Signals in Nerve and Muscle Tissue," 1992-1997.
11. William G. Jenks, Ph.D., Research Associate, "Advanced SQUID Systems for Nondestructive Testing and Biomagnetism," 1993-1997.
12. Jiashin Wu, Ph.D., Research Associate, "Mechanisms of Antiarrhythmic Drug Action," 1993-1997.
13. Daniel J. Staton, Ph.D., Research Associate, "Magnetic and Electric Imaging of Cardiac Action Currents: Anisotropic Conductivities and Tests of the Bidomain Model," 1994-1996.
14. Leonard Alan Bradshaw, Ph.D., Research Associate, "Magnetic Fields from Intestinal Electrical Activity," 1996-1998.
15. Anthony P. Ewing, Ph.D., Research Associate, "Non-Destructive Evaluation with SQUIDs," 1997-1999.
16. Petra Baudenbacher, DDS, Ph.D., Research Associate, "Non-Uniform Propagation in Cardiac Tissue," 1999-1999.
17. Grant Skennerton, Ph.D., Research Associate, "Magnetic Imaging of Corrosion Currents," 1998-2001.
18. Veniamin Sidorov, Ph.D., Research Associate, "Cardiac Biophysics," 2001-2004.
19. Mark-Anthony Bray, Ph.D., Research Associate, "A Model of Cardiac Defibrillation," Biomedical Engineering, 2003-2004.
20. Glenn S. Walker, Ph.D., Research Fellow, "Microfluidics for Cellular Studies," 2002-2004 (with Owen McGuinness).
21. Kevin Seale, Ph.D., Research Associate, "Signaling Dynamics in Single Cells and Small Cell Clusters," Biomedical Engineering, 2006-2008.
22. Marcella Woods, Ph.D., Research Associate, "The Role of Heterogeneities in Stimulation of the Cardiac Bidomain," Biomedical Engineering, 2005-2008.
23. Yuxin Liu, Ph.D., Research Associate, "BioMEMs for Systems Biology," 2004-2009.
24. Dmitry Markov, Ph.D., Research Associate, "Advanced Biosensors and Bioreactors," Biomedical Engineering, 2006-2011.
25. Eduardo Andrade Lima, Ph.D., Research Associate, "Instrumentation and Models for High-Speed Measurements of Cellular Electrophysiological and Metabolic Responses," Biomedical Engineering, 2006-2011. (Part-Time)
26. Stacy D. Sherrod, Ph.D., Postdoctoral Research Scholar, "Mass Spectrometry Based Systems Biology," Department of Physics and Astronomy, 2012-2015.
27. Frank E. Block III, Ph.D., Postdoctoral Research Scholar, "Instrumentation for Organs-on-a-Chip," Department of Biomedical Engineering, 2012-2015.
28. Jacquelyn A. Brown, Ph.D., Postdoctoral Research Scholar, Department of Biomedical Engineering, 2014-2015.
29. Jonathan D. Ehrman, Ph.D., Postdoctoral Research Scholar, Department of Physics and Astronomy, Systems Biology and Bioengineering Undergraduate Research Experience, 2017-2019.

CURRENT GRADUATE STUDENTS:

1. Kyle G. Hawkins, Department of Physics and Astronomy
2. Nicole Muszynski, Department of Biomedical Engineering

CURRENT PH.D. COMMITTEES:

1. Mia Grace Cantrell (Physics)
2. Nathaniel Hermann (Physics)
3. William B. Livingston (Biomedical Engineering)
4. Kira K. (Gemini) Simpson (Physics)
5. Logan B. Smith (Biomedical Engineering)

PRIOR RESEARCH AND TEACHING FACULTY MEMBERS AND STAFF:

1. Hesam Sadeghi, Ph.D., Research Assistant Professor, "SQUIDs for Non-Destructive Evaluation," 1992-1992.
2. Richard N. Friedman, Ph.D., Research Assistant Professor, "Magnetic Measurements of Nerves and Muscles," 1988-1993.
3. Nestor G. Sepulveda, Ph.D., Research Assistant Professor, "Finite Element Calculations of Bioelectric Potentials, Currents, and Magnetic Fields," 1984-1994.
4. Shien-Fong Lin, Ph.D., Research Assistant Professor, "Magnetic and Laser/Dye Studies of Propagation of Action Signals in Nerve and Muscle Tissue," 1997-2001.
5. Rubin Aliev, Ph.D., Research Assistant Professor, "Computational Bioelectrodynamics," 1997-2002.
6. Franz J. Baudenbacher, Ph.D., Research Assistant Professor, "High-Resolution SQUID Magnetometers and Cardiac Imaging," 1997-2003.
7. Yu-Pei Ma, Ph.D., Research Assistant Professor, "High-Resolution SQUID Magnetometry for Non-Destructive Testing," 1993-2003.
8. Leonard Alan Bradshaw, Ph.D., Research Assistant Professor, "Magnetic Fields from Intestinal Electrical Activity," 1998-1999.
9. Momchil Velkovsky, Ph.D., Research Assistant Professor of Physics, "Metabolic Dynamics," 2004- 2008
10. Yuxin Liu, Ph.D., Research Assistant Professor, "BioMEMs for Systems Biology," 2009-2009.
11. Kevin T. Seale, Ph.D., Assistant Professor of the Practice of Biomedical Engineering and Director of the Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE), 2011-2014.
12. Christina Marasco, Ph.D., Associate Professor of the Practice of Biomedical Engineering and Director of the Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE), 2014-2022.
13. Shannon L. Faley, Ph.D., Research Assistant Professor of Biomedical Engineering, "Cellular Bioengineering and the Vascularization of Organs-on-Chips," 2018-2023.
14. Philip C. Samson, Research and Development Engineer, 2004-2008; Senior Research and Development Engineer, 2008-2012; Chief Research and Development Engineer, 2012-2023 (part-time 2018-2023).
15. Patricia Ward, B.S., M.S., Research Assistant, 2019-2023.
16. Jacquelyn A. Brown, Ph.D., Staff Scientist, 2015-2016; Senior Staff Scientist, 2017-2023; Director, VIIBRE Automated Micro-Organ Systems (AMOS) Resource, 2016-2023

CURRENT RESEARCH AND TEACHING FACULTY MEMBERS:

1. Veniamin Y. Sidorov, Ph.D., Research Assistant Professor of Biomedical Engineering, 2004-present.
2. Eric C. Spivey, Ph.D., Research Assistant Professor of Biomedical Engineering, 2016-2024 (appointment shared with Department of Biochemistry); Assistant Professor of the Practice of Biomedical Engineering, 2024-present.
3. Jonathan D. Ehrman, Ph.D., Assistant Professor of the Practice of Biomedical Engineering and Director, Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE), 2022-present.

CURRENT VIIBRE SCIENCE AND ENGINEERING STAFF:

1. Clayton M. Britt, B.S., Research Assistant, 2014-2016; Research and Development Engineer, 2016-present.
2. Monika Judge, Research Assistant, 2015-2018; Laboratory Manager, VIIBRE Automated Micro-Organ Systems (AMOS) Resource, 2018-present.
3. Gregory B. Gerken, B.S., M.S., M.B.A., Research and Development Engineer (Software), 2014-present.
4. Ronald S. Reiserer, VIIBRE Laboratory Manager, 2002-2021; Senior Research and Development Engineer, 2021-present.
5. David K. Schaffer, B.E., M.S., Research and Development Engineer, 2005-present; Manager, Vanderbilt Microfabrication Core (VMFC), 2011-2018; Director, VMFC, 2018-2021; Director, Vanderbilt Microfabricated Technologies Resource (VMTR), 2021-present.

REPORTS:

1. Magnetic Shielding and the Adjustment of Remanence, J.P. Wikswo, Jr., Stanford Low Temperature Physics Group Report, SLTP-1972-2 (1972).
2. Non-Invasive Magnetic Measurement of the Electrical and Mechanical Activity of the Human Heart, J.P. Wikswo, Jr., Ph.D. Dissertation, Dept. of Physics, Stanford University (1975).
3. A Guide to Scalar Multipole Expansions, J.P. Wikswo, Jr., Report PAS-78-36, David W. Taylor Naval Ship Research and Development Center, Bethesda (1978).
4. Application of Sensitivity Vectors to the Measurement and Modeling of Magnetostatic Fields, J.P. Wikswo, Jr., Report PAS-79-1, David W. Taylor Naval Ship Research and Development Center, Bethesda (1979).
5. An Advanced Undergraduate Laboratory in Living State Physics, J.P. Wikswo, Jr., B. Vickrey, and J.H. Venable, Jr., Department of Physics and Astronomy, Vanderbilt University (1980), 265 pages.
6. Application of Adaptive Filters to Enhancement of Geomagnetic Data, M.C. Leifer, J.P. Wikswo, Jr., and E.J. Iufer, Department of Physics, Stanford University, and the NASA Ames Research Interchange (1981).
7. An Intermediate Physics Laboratory, J.P. Wikswo, Jr. and M.S. Webster, Eds., Department of Physics and Astronomy, Vanderbilt University (1988).
8. Report of the College Ad Hoc Committee on the Microcomputer Store, J.P. Wikswo, Department of Physics and Astronomy, Vanderbilt University (1988).
9. The Physics of Technology: A Hypercard Approach, J.P. Wikswo, Jr. and C.T. Black, Eds., Department of Physics and Astronomy, Vanderbilt University (1990).
10. Imaging of Small Defects in Nonmagnetic Tubing Using a SQUID Magnetometer, D.C. Hurley, Y.P. Ma, S. Tan, and J.P. Wikswo, Jr., Manufacturing Technologies Laboratory, 92CRD072, G.E. Research & Development Center (1992).
11. Reintroducing Introductory Physics, C. Kurtz, G. Ray, J. Wells, and J.P. Wikswo, Jr., Department of Physics and Astronomy, Vanderbilt University (1992).
12. An In-depth Review of the Vanderbilt University Patent Policy and Recommendations for its Replacement by a Policy on Technology and Literary and Artistic Works, Vanderbilt University Patent Committee (1993), 63 pages.
13. SQUID Detection of Deep Flaws in Aluminum Plates, Y.P. Ma and J.P. Wikswo, Jr., Report VEL1996-2, Alcoa Technical Center (1996).
14. High Resolution Superconducting Magnetometry for Nondestructive Evaluation, W.G. Jenks, Y.P. Ma, and J.P. Wikswo, Jr., EPRI TR-108649, Final Report, Electric Power Research Institute (1997).
15. Appointments, Promotion, and Tenure - 1997, A Report to the Provost by the Committee on Appointments, Promotion, and Tenure (CAPT), 200 pages.
16. Testing of Stator Windings for Thermal Aging, Y.P. Ma and J.P. Wikswo, Jr., EPRI 1000376, Final Technical Report, Electric Power Research Institute (2000).
17. A Strategic Academic Plan for the College of Arts and Science - 2001, A Report to Dean John H. Venable by the Senior Steering Council for the Strategic Academic Plan, College of Arts and Science (SAP-CAS), 225 pages, http://www.vanderbilt.edu/AnS/strategic/.
18. Life Sciences Modeling Strategic Planning Final Report, Vanderbilt University, January 7, 2007, http://dbmichair.mc.vanderbilt.edu/lsm/ (Peter Cummings and Daniel Masys (co-chairs), Vito Quaranta, Glenn Webb, Thomas Weiler, and John Wikswo)
19. Chemical-Biological Basic Research External Peer Review Report to the Defense Threat Reduction Agency, October 6, 2023 (Scott D. Pegan, William E. Bentley, Esther H. Chang, Joseph T. Hupp, John R. Morris, Harshini Mukundan, John P. Wikswo)