CURRICULUM VITAE

Bruce Jason Tromberg

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Positions Held

July 2007-present: Director, Special Campus Research Program (SRP), Beckman Institute, UC Irvine

July 2004-present: Co-Leader, Onco-Imaging and Spectroscopy Program, NCI-Chao Family Comprehensive Cancer Center

October 2003-present: Director, Beckman Laser Institute and Medical Clinic, UC Irvine

October 2003-June 2006: Chief, Beckman Division, Department of Surgery, UC Irvine

July 2002-present: Professor, Departments of Biomedical Engineering and Surgery

May 2002-June 2005: Vice Chair, Department of Biomedical Engineering, UC Irvine

October 2002-September 2003: Interim Director, Beckman Laser Institute and Medical Clinic

January 2002-June 2002: Acting Director, Beckman Laser Institute and Medical Clinic

October 2000-September 2004: Associate Director, Center for Biomedical Engineering, UC Irvine

July 1998-July 2002: Associate Professor, Electrical and Computer Engineering, UC Irvine.

Summer 1998: Visiting Professor, Institute for Applied Optics, Swiss Federal Institute of Technology, EPFL, Lausanne, Switzerland

April 1997-present: Director, Laser Microbeam and Medical Program (LAMMP), NIH-Biomedical Technology Resource Center, UC Irvine

September 1994-June 2004: Co-Director, Optical Biology Core and Photomedicine Program, NCI-Chao Family Comprehensive Cancer Center

July 1995-July 2002: Associate Professor, Departments of Surgery and Physiology and Biophysics, UC Irvine

January 1995-March 1997: Associate Director, Laser Microbeam and Medical Program, Beckman Laser Institute and Medical Clinic, UC Irvine

September 1991-June 1995: Assistant Professor, Department of Physiology and Biophysics, UC Irvine (joint appointment with Department of Surgery)

January 1990-June 1995: Assistant Professor, Department of Surgery, UC Irvine

Education

March 1988-December 1989: Hewitt Foundation Postdoctoral Fellow, Photomedicine, Beckman Laser Institute and Medical Clinic, University of California, Irvine

1986-88: Department of Energy/Oak Ridge Associated Universities Predoctoral fellow, Oak Ridge National Laboratory, Oak Ridge, Tennessee

March 1988: Ph.D., Chemistry, University of Tennessee, Knoxville. Dissertation: *Development of Antibody-Based Fiber Optic Sensors*

December 1983: M.S., Chemistry, University of Tennessee, Knoxville. Thesis: *Laser-Based Optical Fiber Fluoroprobes in Clinical Analysis*

May 1979: B.A., Chemistry and Psychology, Vanderbilt University, Nashville, Tennessee

Honors and Awards

December 2011: Sackler Lectureship, Tel Aviv University, Israel

August 2011: National Academies Panel Presentation, Harnessing Light: Capitalizing on Optical Science Trends and Challenges for Future Research, Beckman National Academy Center.

November 2010: Royal Society Lecture, Theo Murphy meeting on Biomedical Optics-The Kavli Royal Society International Center

July 2009: Director's Award, International Society for Optical Engineering (SPIE)

July 2009: Elected board member, International Society for Optical Engineering (SPIE)

April 2008: McIntire Lecture, Rice University Department of Biomedical Engineering

February 2008: Keynote Address, First International Congress on Biophotonics, Sacramento, CA

July 2007: Plenary Lecture, Association of Pathology Chairs Annual Meeting, Colorado Springs, CO

July 2007: Plenary Lecture, Asia-Pacific Rim Symposium on Biophotonics, Cairns, Australia

December 2006: Elected Fellow, International Society for Optical Engineering (SPIE)

October 2006: Founders Series Lecture, Vanderbilt University Institute of Imaging Science

March 2006: Elected Fellow, American Institute for Medical and Biological Engineers (AIMBE)

May 2005: Research Associates Athalie Clarke Award for Outstanding Health Science Researcher, University of California, Irvine

April 2005: Sigma Xi Honor Society

September 2004: Joint NSF-Egypt National Research Center, Egypt-American Workshop on Lasers in Chemistry, Materials, and Biology, Cairo, Egypt

July 2004: U.S. Chair, Gordon Research Conference, Lasers in Biology and Medicine

July 2003: Elected board member, International Society for Optical Engineering (SPIE)

April 2003: Joint NSF-Humboldt Foundation lecture, German-American Frontiers on Engineering, Ludwigsberg, Germany

January 2003: Plenary speaker, NIH/NIBIB Biomedical Imaging Research Opportunities Workshop

December 2002: Member, NIH/NIBIB Workshop on Future Research Directions

May 2001: OE Magazine Technology Innovator Award

Spring 2001: Chairman, Optical Society of America Bio-Optics Working Group

January 2001: Member, Beckman Foundation Grants Advisory Council

November 2000: Coherent-Biophotonics "Young Investigator in Biophotonics" Award

April 2000: Avon Foundation Breast Cancer Research Scholar

September 1999: Cornelius Hopper Innovation Award, California Breast Cancer Research Symposium

July 1999: Appointed Editor-in-Chief, Journal of Biomedical Optics

July 1997: Elected Co-chairman, Biannual meeting, The Engineering Foundation, *Advances in Optical Technology for Medicine and Surgery,* Snowbird, Utah

October 1996: Royal Society Lecture, Symposium on Near Infrared Spectroscopy and Imaging of Living Systems, London, England

May 1996: Rank Prize Funds Lecture, Diagnostic and Therapeutic Applications of Tissue Optical Properties, Symposium on Photodynamic Therapy, Grasmere, England

January 1994: National Institutes of Health FIRST Award (5 years)

May 1993: Selected for 9-member National Science Foundation panel on Non-Invasive Medical Diagnostics; conducted workshops and lectures in China

August 1992: Whitaker Foundation Young Investigator Award (3 years)

March 1988: Hewitt Foundation Postdoctoral Fellowship at the Beckman Laser Institute, University of California, Irvine

1988: Co-recipient of Martin Marietta Energy Systems Outstanding Publication Award, Oak Ridge National Laboratory

1988: National Research Council Postdoctoral Fellowship at the U.S. Naval Research Laboratory, Washington, D.C. (not accepted)

1986-1988: Department of Energy-Oak Ridge Associated Universities Pre-Doctoral Fellowship at Oak Ridge National Laboratory

1987: Research and Development top 100 technological innovations in 1987 (R&D-100 award) for dissertation research on antibody-based fiber optic sensors

June 1986-1987: Tennessee Science Alliance Academic Achievement Award

June 1986: John A. Dean Award, Outstanding Analytical Graduate Student

Professional Societies

Optical Society of America (OSA), The International Society for Optical Engineering (SPIE), Biomedical Optics Society (BiOs), Society for Molecular Imaging, SIGMA XI (The Scientific Research Society)

Service Activities

Editorial

Guest Co-Editor, Journal of Biomedical Optics: Special Issue on Translating Optical Technologies from Benchtop to Bedside, January 2011

Guest Co-Editor, Journal of Biophotonics, Special Issue on Topical Problems of Biophotonics, Fall 2010

Editor-in-Chief, Journal of Biomedical Optics, June 1999-December 2009

Editorial Board Member, Molecular Imaging, January 2002-present

Associate Editor, Lasers in Surgery and Medicine, 1995-1997

Associate Editor, Journal of Biomedical Optics, 1995-1999

Guest Editor, Applied Optics/Journal of the Optical Society of America-A, Special Issue on Photon Migration and Imaging in Diffuse Media, 1996/1997

Guest Editor, Optical Engineering, February 1993 Special Issue on Biomedical Optics

Journal Review

Journal of Biomedical Optics, Biomedical Optics Express, Applied Optics, Optics Letters, Journal of the Optical Society of America, Photochemistry and Photobiology, Lasers in Surgery and Medicine, Review of Scientific Instruments, Physics in Medicine and Biology, Proceedings of the National Academy of Science, Cancer Research, Biophysical Journal, Nature Medicine, Nature Biotechnology, Nature Photonics, Clinical Cancer Research, Technology in Cancer Research and Treatment

Grant/Program Review

Keck Foundation; National Cancer Institute of Canada; Swiss National Science Foundation; National Science Foundation; Arnold and Mabel Beckman Foundation; Beckman Foundation Macular Initiative 2009-present, National Institutes of Health: Laser Special Study Section, 1992-1994: *Ad Hoc* reviews for Diagnostic Radiology Study Section, MRI/Optical Imaging Study Section, General Clinical Resource Center Program, 1994-1999; Member, NIH Biomedical Engineering and Instrumentation Program, Division of Research Resources, review group, chair Applied Physics Track, October 1993; Biotechnology Resource Program, 1997-present; Member, Laboratory for Integrative Medicine and Biophysics, NICHD external review board, 2000, 2004, and 2008; Member, National Institute of Biomedical Imaging and Bioengineering, Program Progress Review Group, Optical Imaging, 2007-present; NIH Bioengineering Research Partnerships study section, February 2008, 2010.

National/International Advisory Committees and Boards

Laser Biomedical Research Lab, NIH Biotechnology Resource, External Scientific Advisory Board, MIT, 2010-present

M+Vision MIT-Madrid Consortium, Advisory Committee, 2011-present

Department of Defense, CDMRP Era of Hope, Technical Program Committee, 2010/2011

Center for Magnetic Resonance and Optical Imaging, NIH Biotechnology Resource, External Scientific Advisory Board, University of Pennsylvania, 2009-present

Institute for Engineering in Medicine, University of Minnesota, Scientific Advisory Board, January 2009-present

Society for Nuclear Medicine, Optical Imaging Working Group, 2007-2010

Science & Technology International, Science Advisory Board, 2007-2010

American College of Radiology Imaging Networks, Experimental Imaging Sciences Committee, 2007-present

American College of Radiology Imaging Networks (ACRIN)-National Cancer Institute (NCI) Five-Center Clinical Trial: *Diffuse Optical Imaging in Breast Cancer*, Study Chair, 2010-present

Britton Chance Center for Biomedical Photonics, Huazhong University of Science and Technology, China, Business & Scientific Advisory Board, 2007-present

Cornell University, Department of Biomedical Engineering, External Advisory Board, 2007-present

Hewitt Foundation for Medical Research, Board of Directors, 2005-present

Scientific Advisory Board, Modulated Imaging, Inc., 2005-present

National Cancer Institute, Network for Translational Research in Optical (NTROI) Steering Committee Co-Chair, 2003-2008

NSF Center for Biophotonics Science and Technology, UC Davis, Scientific Advisory Board, 2004-present

Washington University Small Animal Imaging Research Center, Scientific Advisory Board, 2004-2008

International Society for Optical Engineering (SPIE), Board of Directors, 2003-2006; 2009-present

Beckman Foundation Grants Advisory Council, 2001-present

Xenogen/Caliper Corporation, Scientific Advisory Board, 2000-2008

International Society for Optics and Photonics (SPIE), Publications Committee, 1999-present

Laboratory for Fluorescence Dynamics, NIH Biotechnology Resource Center, External Scientific Advisory Board, University of Illinois and UC Irvine, 1998-present

SPIE/OSA Joint Congressional Position Paper, committee on Biomedical Optics, 2003

Editorial Advisory Board, OE magazine, 2003-2004

Optical Society of America, Bio-Optics Advisory Committee, 1999-2003 (Chair 2001-2002)

Joint Working Group on Functional Imaging in Cancer, U.S. Department of Health and Human Services, Office of Women's Health and National Cancer Institute 1997/1998

Advisory Council on Optical Technologies, U.S. Public Health Service, 1997

Conference Organization

Gordon Research Conference on Lasers in Biology and Medicine, Diffuse Optics Session Chair, 2012

Lasers in the Life Sciences (LALS), International Meeting, Co-Chair, Sacramento, CA, June 2012.

University of California Biophotonics Alliance Workshop, Co-Chair, San Francisco, CA, January 2012

Canada-California Strategic Innovation Partnership (CCSIP) Workshop on Bioimaging Technologies Co-Chair: University of British Columbia, April 2010; UC Irvine, December 2010

National Center for Research Resources Workshop on T1 Translational Research, National Institutes of Health, Workshop Co-Chair, Bethesda, MD, November 2009

National Institutes of Health Workshop on Optical Diagnostic Imaging from Bench to Bedside, Meeting Co-Chair, Sept. 2006, October 2009, September 2011

NCI Network for Translational Research in Optical Imaging (NTROI), Co-Chair, Workshop on Optical Imaging in Translational Research, NIH, Bethesda, MD, November 2005, October 2006, 2007

NTROI Multi-Dimensional Diffuse Optical Imaging in Breast Cancer, Workshop & Retreat Chair, Newport Beach, CA, June 2004, 2005, 2006, 2007

The International Society for Optical Engineering (SPIE), Biomedical Optics Society Annual Meeting, *Optical Tomography and Spectroscopy of Tissues,* Conference Co-Chair, January 2001, 2003, 2005, 2007, 2009, 2011

Optical Imaging 2004, NIH: Optical Diagnostic Imaging from Bench to Bedside at the NIH, Program Organizer and Committee Chair, 2004

Society for Molecular Imaging (SMI) Third Annual Meeting of SMI: Optical Tomography and Low Light Imaging Session Organizer & Co-Chair, St. Louis, MO, 2004

Gordon Research Conference on Lasers in Biology and Medicine, U.S., Chair, 2004

Optical Society of America, National Meeting, *Optical Technologies in Biology and Medicine,* Overall Chair/Organizer, Tucson, AZ, 2003

Optical Society of America Topical Meeting, *Biomedical Optics*, Overall Conference Co-Chair, Miami, FL, Spring 2002

United Engineering Foundation, *Advances in Optics for Biotechnology, Medicine and Surgery*, Organizing Chair/Session Chair, Canada, July 2001

Gordon Research Conference on Lasers in Biology and Medicine, Advanced Microscopy Methods Session Chair, July 2000

Optical Society of America Topical Meeting Conference Co-Chair: *Photon Migration and Imaging,* Miami, FL, April 2000

United Engineering Foundation, *Advances in Optics for Biotechnology, Medicine and Surgery*, Organizing Chair/Session Chair, Hawaii, July 1999

United Engineering Foundation, *Advances in Optical Technology for Medicine and Surgery*, Co-chairman, Snowbird, UT, July 1997

Alexander Von Humboldt University, First International Symposium on Optical Techniques for Breast Tumor Detection, Session Co-Chair on Optical Property Measurements, Berlin, Germany, June 1997

Optical Society of America National Meeting, Technical Program Committee Chair, Long Beach, CA, 1997

Biomedical Optics, Biomedical Optics Society, Conference co-chair, organizing committee: *"Functional Imaging and Optical Manipulation of Living Cells"* and "*Photon Migration and Imaging in Random Media and Tissues,*" San Jose, CA, 1993-1999

Gordon Research Conference on Lasers in Biology and Medicine, Microscopy Session Chairman, 1996

Optical Society of America topical meeting, Conference Program Committee/organizer: *Biomedical Optical Spectroscopy and Diagnostics,* Orlando, FL, March 1996, March 1998

Optical Society of America, Conference on Lasers and Electro-Optics (CLEO), Technical Program Committee, 1996, 1997

American Society for Photobiology National Meeting, Laser Diagnostics Co-Chair, Atlanta, GA, June 1996

Optical Society of America National meeting (OSA/ILS '95), Conference Program Committee/organizer: *Photon Migration Spectroscopy for Physiological Monitoring and Functional Imaging,* Portland, OR, 1995

American Society for Lasers in Surgery and Medicine, National Meeting, Poster Section Chairman, San Diego, CA, April 1995

American Society for Lasers in Surgery and Medicine, National Meeting, *Basic Science and Safety,* Chair, New Orleans, LA, April 1993

University

University of California Advocacy Visits, Capitol Hill, Washington, D.C., June 21-23, 2011.

School of Medicine Strategic Planning Committee on Research Infrastructure, 2010

Chair, Henry Samueli School of Engineering Dean Search Committee, 2010-present

Campuswide Panel Discussion Moderator, S*uccess at NIH: The Impact of the New Scoring Criteria for Grant Proposals;* 6/25/2010

Member, Henry Samueli School of Engineering Dean's Council, 2009-present

School of Medicine Cancer Campaign Steering committee, 2009-present

Henry Samueli School of Engineering, Strategic Planning Steering Committee, 2009-2010

Office of Sponsored Projects, Internal Review Committee, 2009

School of Medicine, Deans Research Council, 2008-present

School of Medicine, Clinical Research Enterprise Taskforce, 2008-2009

College of Health Sciences, Representative Assembly, 2007-2008

Chair, Henry Samueli School of Engineering Dean Search Committee, 2007-2008

Institute for Clinical and Translational Science (ICTS), Translational technology core leader and steering committee member, 2006-present

Center for Biology of Complex Systems (CCBS) Executive Committee, 2007-present

Chair, Biomedical Engineering Department Chair Review Committee, 2007

Chair, Beckman Laser Institute Clinic Committee, 2008-present

Editor, Beckman Laser Institute and Medical Clinic Newsletter, 2003-present

Health Sciences Campaign Planning Committee, 2007

Henry Samueli School of Engineering, Dean Review Committee, 2006

School of Engineering Annual Research Symposium, *Prosperity Through Technology:* Co-organizer and Session chair, Ophthalmology and Vision Science, May 2006

CalIt2 Division Council Member, 2005- present

UCI Center for Imaging Genetics, Scientific Advisory Committee, 2005-2007

Vice-chair, UCI School of Medicine Vision 2010 Committee, 2004-2005

Chao Cancer Center Executive Committee, 2004-2006

Co-Leader, Onco-Imaging and Spectroscopy Program, Chao Family Comprehensive Cancer Center, 2004-present

School of Medicine Deans Advisory Board, 2003-present

Vice Chair, Department of Biomedical Engineering, 2002-2005

Co-Chair, Executive Council, Beckman Laser Institute, 2001-2002

Member, Center for Complex Systems and Mathematics in Biology, 2001-present

Department Chair Search Committee: Dept. of Ob/GYN (F. Waffarn, Chair), 2005

Planning Committee, Center for Exercise in Children, GCRC/UCIMC, 2001-2002

Executive Committee, In Vivo Functional Onco-Imaging Center, 2000-2005

Member, Center for Embedded Systems, 1999-2000

Associate Director, Center for Biomedical Engineering, 2000- 2004

College of Medicine, Representative Assembly, 2000-2002

Co-leader, Photomedicine Clinical Program, Chao Family Comprehensive Cancer Center, UC Irvine (NCI-designated Comprehensive Cancer Center), 1996-2004

Faculty Advisor for UCI Student Undergraduate Research Fellowship Program (SURF), 1993, and Pre-Graduate Mentorship Program (PGMP), 1998

Faculty Advisor for National Science Foundation Young Scholars Program, 1993-1994

M.D./Ph.D. Program Admissions Committee, 1992-1997

Ph.D. Advancement Committee Member in Physics, Electrical Engineering, Chemistry, Biosciences, Biomedical Engineering, Chemical Engineering, 1992-present

Ph.D. written/oral exam committee, Electro Optics, Electrical and Computer Engineering, Spring 1999-2002

Chair, Biomedical Optics Symposium Series, Laser Microbeam and Medical Program, Beckman Laser Institute, 1995-2005

Member of UCI Clinical Cancer Center Faculty, 1992-present

Co-Coordinator of UCI Clinical Cancer Center's Optical Biology Core Resource Facility, 1994-present

Associate Director, Laser Microbeam and Medical Program (LAMMP) at the Beckman Laser Institute and Medical Clinic, 1994-1997

Member of UCI Cancer Research Institute, 1994-present

Member of UCI Clinical Cancer Center Clinical Trials Protocol Review and Monitoring Committee, 1995-1998

Member of Strategic Planning Committee, UCI Clinical Cancer Center, 1997/1998; 2002/2003

Member, Faculty Search Committee: Cell and Developmental Biology, 1998-1999

Member, Faculty Search Committee: Biomedical Engineering, 1998-2004

Member, Faculty Search Committee: Radiological Sciences, 1999-2000

Community

Optics in Medicine Lecture, Osher Lifelong Learning Institute (OLLI) at UCI, September 15, 2010

Biophotonics Lecture, Cosmos: California State Summer School for Math and Science, July 15, 2010

Advisory Committee, Optical Society of Southern California, 2009-present

Invited Speaker, Susan G. Komen Breast Cancer Foundation, Orange County Chapter, 2009 Komen Breast Health Symposium, "The Role of Optical Imaging in Breast Cancer"

AYSO Soccer Coach, recreational and APP leagues, 1994-2006; 2010 (U9-U19)

Pacific Club Soccer Coach, Administrator U10 and U14 boys, 2000-2004

Irvine Youth Basketball League and Irvine Little League Baseball coach, 1998-2004

Commissioner, AYSO, Region 144 Boys Soccer, Divisions 5, 6, 7. 1996-1999

Speaker for Irvine Unified School District, NSF-sponsored Science Career Options Conference, 1992-1998

Invited Speaker, Susan G. Komen Breast Cancer Foundation, Orange County Chapter, Annual Meeting, "Optical Techniques for the Detection of Breast Cancer," 1996

Invited Speaker, Science and Technology in Society, Orange County Science Education Association, "Lasers in Biology and Medicine," November 1995

Participant in Discipline Dialogues sponsored by the Fund for the Improvement of Post-Secondary Education, 1993

Contracts and Grants

Active - Principal Investigator

National Institutes of Health/NCI (1R01CA142989-01): *Developing DOSI Technology for Monitoring Response to Breast Cancer Chemotherapy,* 01/01/2010-12/31/2012: $1,882,945

National Institutes of Health/NCRR (P41-RR001192): *Laser Microbeam and Medical Program,* 05/01/08-03/31/13, $5,369,183

National Institutes of Health/NCRR (P41-RR01192-32S1) *Laser Microbeam and Medical Program* 09/01/11 – 08/31/12 $796,357 *"Development of Medical Biophotonic Technologies for Imaging and Therapy"*

National Institutes of Health/NCRR (P41-RR01192-30S2): *Development of Medical Biophotonic Technologies for Imaging and Therapy*, 09/01/09-08/31/12, $517,481

National Institutes of Health/NCRR (P41-RR01192-30S3): *Development of Bedside Medical Biophotonic Diagnostic Devices*, 09/01/09-08/31/12, $1,013,617

National Institutes of Health/NCI (U54CA136400-01): *Monitoring Breast Cancer Chemotherapy Response Using Diffuse Optical Spectroscopic Imaging (DOSI), MRI, and Biomarkers*, 07/01/09-06/30/12, $1,391,957

American College of Radiology Imaging Networks (ACRIN), ACR-50185-01: *Monitoring and Predicting Breast Cancer Neoadjuvant Chemotherapy Response Using Diffuse Optical Spectroscopic Imaging (DOSI)*, 01/1/09-6/30/12, $138,919

University of California, Office of the President, UC Discovery Grant, UC-212122 *"A Handheld Tomographic Laser Breast Scanner (t-LBS)"* 09/01/11-08/31/12, $249,610

Active – Mentor

NIH-NIA F30 AG039949: *Novel translatable optical imaging platform for staging vascular impairment in Alzheimer's disease* 7/01/11 – 6/31/14, $180,000, Trainee: Alexander Lin

NIBIB K25 EB007309: *A Virtual Tissue Simulator for Biomedical Optics,* 8/1/08-7/31/13, $580,000, Trainee: Carole Hayakawa

DOD- CDMRP Postdoctoral Fellowship Award: *Predicting Pathological Response Within the First Week of Neoadjuvant Chemotherapy Using Functional Parameters Measured with Diffuse Optical Spectroscopic Imaging (DOSI),* 11/1/10-10/3/13, $375,254, Trainee: Darren Roblyer

National Cancer Institute: *Carcinogenesis Training Grant Postdoctoral Fellowship*, 12/2010–11/2012*,* Trainee: Tom O'Sullivan

Active - Co-Investigator / Center Grants

National Institutes of Health (1R21RR024411-01A1), 07/29/09-6/30/12: *Spatially Modulated Scatter Imaging System to Detect Tumor-Associated Stroma*. Principal Investigator: W. Wells, $116,265 subcontract

UC Office of the President, Canada-California Strategic Innovation Partnership (CCSIP) Award, 9/2009-12/2010: *Bioimaging technologies for enhanced healthcare*. Principal Investigators: M. J. Deen, McMaster University; W. Grundfest, UCLA, $100,000 total cost (subproject total: $25,000)

Department of Defense/Air Force (FA9550-08-1-0384), 07/01/09 -06/31/11: *Military Photomedicine Program*. Principal Investigator: M. Berns, $1,750,000 total cost (subproject total: $160,000)

National Institutes of Health/NCI (2P30CA62203), 02/01/09-01/31/12: *University of California, Irvine Cancer Center Support Grant*. Principal Investigator: F. Meyskens, $11,798,011 total cost (subproject total: $18,850)

National Institutes of Health/NHLB (R01HL067954), 08/01/09-07/31/13: *Linking Optical, Mechanical, and Biological Properties of the Airway Mucosa*. Principal Investigator: S. George, $1,123,000 total cost

National Institutes of Health/NCI (R21CA129758-01), 9/17/07-08/31/11: *Spatially Modulated Near-Infrared Light for Image-Guided Cancer Surgery*. Principal Investigator: John V. Frangioni, subproject total: $271,050

National Institutes of Health/NIGMS (P50GM076516-01A1), 8/31/07-7/31/12: *Systems Biology of Morphogenesis and Spatial Information Flow*. Principal Investigator: Arthur Lander, $14,500,000 total cost (subproject total: $45,000)

National Institutes of Health/NCI (1R21CA153594), 7/1/10-6/30/12: *Neoadjuvant Photodynamic Immunomodulation for Colon Cancer*. Principal Investigators: R. Holcombe and E. Nelson, $500,000 total cost

National Institutes of Health/NCRR (UL1RR031985) 07/01/10-06/30/15: *Institute for Clinical and Translational Science*. Principal Investigator: Dan Cooper, $16,832,963 (Total Cost) Translational Technology Core leader.

Previous Awards

Previous Awards – Principal Investigator

National Institutes of Health/NCRR (P41-RR01192-30S1): *Biophotonics Summer Undergraduate Research Program,* 06/04/09-09/30/10. Principal Investigator: B. J. Tromberg, $163,453

National Institutes of Health/NCI (U54 CA105480): *A Network for Translational Research in Optical Imaging: Multi-Dimensional Diffuse Optical Imaging in Breast Cancer,* 09/29/03-08/31/09. Principal Investigator: B. J. Tromberg, $7,179,817

California Breast Cancer Research Program (10EB-0208): *Breast Cancer Functional Imaging with Optics and MRI,* 07/01/04-06/30/07. Principal Investigator: B. J. Tromberg, $500,000

U.S. Environmental Protection Agency (68-C-03-088): *Development of a High-Throughput Methods for the Separation of Live and Dead/Compromised Cell and/or Spores,* 05/01/03-12/31/04. Principal Investigator: B. J. Tromberg, $249,984

California Breast Cancer Research Program (6EB-0123): *Non-InvasiveOptical Characterization of Breast Physiology,* 07/01/00-06/30/03. Principal Investigator: B. J. Tromberg, $499,915

National Institutes of Health (R01-HD34091-01A1): *Photodynamic Treatment of Benign Uterine Disease*, 07/03/98-06/30/03. Principal Investigator: B. J. Tromberg, $750,767

National Institutes of Health (5P-41RR01192): *Laser Microbeam and Medical Program,* 4/1/98-3/31/08. Principal Investigator: B. J. Tromberg, $10.2 million.

National Science Foundation (UCI grant # 27414): *Fiber Optics Confocal Module for Biomedical Application (SBIR - Intelligent Optical Systems),* 2/1/00-2/1/02. Principal Investigator: Bruce Tromberg, $59,302

National Institutes of Health (R29 GM50958): *Diagnostic Applications of Photon Density Waves*, 01/01/94 - 12/31/99. Principal Investigator: B. J. Tromberg, $500,000

Beckman Instruments (J920331): *Quantitative Clinical Analysis using Frequency Domain Photon Migration,* 05/01/92-03/31/96. Principal Investigator: B. J. Tromberg, $253,160

California Breast Cancer Research Program (21B-0183: *Non-Invasive Optical Detection of Breast Cancer,* 06/09/96-05/31/97. Principal Investigator: B. J. Tromberg, $50,000

National Institutes of Health (RO1-RR06961): *Optical Laser Trap for Biological Cell Studies,* 09/30/94-09/29/97. Principal Investigator: B. J. Tromberg, $107,598

U.S. Army (BC972457): *Measurements of Breast Tissue Optical Properties*, 9/30/98-10/30/01. Principal Investigator: B. J. Tromberg, $122,120

Whitaker Foundation: *Properties of Photon Density Waves in Biological Tissues,* 08/01/92-07/31/95. Principal Investigator: B. J. Tromberg, $150,000

Previous Awards – Co-Investigator

Doris Duke Charitable Foundation, Doris Duke Clinical Interface Award 2005 (2005057): *A Mitochondrial Basis for Metabolic Syndrome,* 12/1/05-11/30/10. Principal Investigator: Doug Wallace, $2,250,000

Air Force Office of Scientific Research (F49620-00-1-0371): *A Center for Free Electron Laser-Related Biomedical Research,* 01/01/04–12/31/08. Principal Investigator: M. W. Berns, $8,380,674, Sub-projects: 1) Photon Migration Spectroscopy for Critical Care Monitoring, and 3) Imaging Neurotrauma (subprojects total $1,910,980)

National Institutes of Health/NCI (R21/R33-CA-101139): *Combined MR-Diffuse Optics for Functional Imaging,* 3/1/04-03/31/10. Principal Investigator: O. Nalcioglu, $1,416,489

National Institutes of Health/NCI Phase II SBIR with Praevium Corporation: *Compact Multi-Wavelength Probe for Quantitative Tissue Spectroscopy*, 12/01/05-05/30/09. Principal Investigator: Albert Cerussi, $200,000

National Institutes of Health/NIBIB (R01-92063): *Photon Migration for Measurements of Small Tissue Volumes,* 07/01/01-09/30/07. Principal Investigator: V. Venugopalan, $1,341,721

National Institutes of Health (P20-CA-86182): *Center for In-Vivo Molecular Functional Onco-Imaging,* 03/01/00-08/28/03. Principal Investigator: O. Nalcioglu, $1,399,082

DARPA: *Using Hyperspectral Images for Human Identification at a Distance*, 12/01/00-11/30/02. Principal Investigator: Glen Healey, $133,413

Department of Energy (DE-FG-3-91-ER61227): A Center of Excellence for Laser Applications in Medicine. Laser Medical Facility Program Grant. Sub-Project: *Non-Invasive Tissue Diagnostics Using Frequency Domain Photon Migration*, 09/91-12/00. Principal Investigator: M. W. Berns. $1,5000,000

Previous Awards – Mentor

Hewitt Foundation Postdoctoral Fellowship: 8/2008-7/2011, $150,000, Trainee: Soren Konecky

DOD- Era of Hope Postdoctoral Award: *Respiratory Challenges in Breast Cancer: Potential for Enhanced Diagnostics and Therapy,* 7/1/08-6/30/11, $405,099, Trainee: Jae Kim

National Cancer Institute *Carcinogenesis Training Grant Postdoctoral Fellowship,* 5/2009-10/2010 Trainee: Darren Roblyer

Rothschild Foundation Fellow: *Spatially Modulated Imaging of Neural Function,* 9/01/05-8/31/06, $46,700
Postdoctoral Fellow: David Abookasis

California Breast Cancer Research Program: *Combined Optical and Ultrasound Imaging for Breast Cancer,* 7/01/03-6/30/05, $58,304
Graduate Student: Sean Merritt (Physics)

National Science Foundation Predoctoral Fellowship: *Modulated Imaging of Subsurface Structure and Function,* 7/01/04-6/30/07
Graduate Student: David Cuccia (Biomedical Engineering)

Department of Defense: *Career Development Award,* 7/02-6/05
Assistant Professor: David Hsiang

Hewitt Foundation: Postdoctoral Fellowship, 11/03-10/06
Postdoctoral Fellow: Julia Lyubovitsky

Hewitt Foundation: Postdoctoral Fellowship, 1/02-2/03
Postdoctoral Fellow: Vanitha Sankaran

National Cancer Institute: *Carcinogenesis Training Grant Postdoctoral Fellowship,* 1/00-12/31/02
Postdoctoral Fellow: Alvin Yeh

Hewitt Foundation: Postdoctoral Fellowship, 8/98-7/01
Postdoctoral Fellow: Andrew Berger

The Whitaker Foundation: Graduate Bioengineering Fellowship, 1/31/96-5/31/99
M.D./Ph.D. Student: Tuan Pham

Swiss National Science Foundation: Postdoctoral Fellowship, 3/99-2/00
Postdoctoral Fellow: Frederic Bevilacqua

Swiss National Science Foundation: Postdoctoral Fellowship, 2/94-1/95
Postdoctoral Fellow: Olivier Coquoz

German National Science Foundation: Postdoctoral Fellowship, 3/93-2/95
Postdoctoral Fellow: Karsten Koenig

Active Protocols

Human

2010-7852: *Monitoring Chemotherapy Response of Soft Tissue Sarcomas and Osteosarcomas using Diffuse Optical Spectroscopic Imaging (DOSI)*
P.I.- Bruce Tromberg

2010-7812: *Monitoring and Predicting Breast Cancer Neoadjuvant Chemotherapy Response Using Diffuse Optical Spectroscopic Imaging (DOSI)* **(NCI-ACRIN 6691, National Multi-Center Trial Protocol,** http://www.acrin.org/TabID/681/Default.aspx**)** P.I.- Bruce Tromberg

2010-7789: *Predicting Pathological Response within the First Week of Neoadjuvant Chemotherapy using Functional Parameters Measured with Diffuse Optical Spectroscopic Imaging (DOSI)*
P.I.- David Hsiang and Bruce Tromberg

1995-563: *Measurements of Breast Tissue Optical Properties*
P.I.- Bruce Tromberg

2002-2333: *Studies of Monocyte-Derived Dendritic Cell Biology; Application to Anti-tumor Immunotherapy*
P.I.- Edward Nelson and Bruce Tromberg

2002-2608: *Mitochondria Inborn Errors of Metabolism and ANT Defect in Mitochandiral Diseases: A Master Protocol*
P.I.- Jay Gargus

2004-3626: *Measurement of the Distribution of Optical Properties in Adult Human Muscle*
P.I.- Albert Cerussi

2005-4760: *Monitoring Menstrual Cycle Functional Variations in DOS*
P.I.- Bruce J. Tromberg

2006-4954: *Use of DOS for Evaluation of the Trauma/Critically Care Patients*
P.I.- Michael Lekawa

2006-5191: *Development of an Algorithm for Prediction of Onset of Hemodynamic Instability in Humans using DOS*
P.I.- Matthew Brenner

2007-5572: *Immunologic Abnormalities, Chronic Inflammation and Oxidative Stress in Chronic Kidney Disease*
P.I.- Madeleine Pahl

2008-6307: *Skin Imaging with Technologies in Development*
P.I.- Kristen Kelly

2008-6415: *Vascular Reactivity in Metabolic Syndrome and Diabetic Patients Using Diffuse Optical Spectroscopy*
P.I.- Ping Wang and Bruce Tromberg

2008-6549: *UCI 08-38: Study of Chemotherapy Side Effects in Breast Cancer Patients: Non Invasive Optical Measurements of the Brain*
P.I.- Edward Nelson

2010-7521: *Assessing Cerebrovascular Reactivity based on Cerebral Oximetry: A Pilot Study*
P.I.- Lingzhong Meng, William Mantulin and Bruce Tromberg

2010-7612: *Phase I/II Study of Pre-Operative Neoadjuvant Photodynamic Therapy in Treating Colon Cancer*
P.I.- Edward Nelson and Bruce Tromberg

Teaching

Undergraduate

BioSci 130: "Photomedicine," (1.5 lecture hours), Fall 1995-2010.

BME 136: "Engineering Optics for Biomedical Research," 2003-present (4 units, lecture + lab, Winter)

ECE 176: "Engineering Optics for Biomedical Research," (3 unit course, Spring 2001-2002)

ECE 199, BioSci 199, BME 199: Undergraduate Research, Winter 1991-present.

BioSci 25: Guest Lecturer, The Biology of Cancer: Lasers in Cancer Research, Winter 1993, 1994

Graduate

BME 295: "Cancer Imaging," Winter 2011 (1 unit)

BME 236: "Engineering Optics for Biomedical Research," 2003-present (4 units, lecture + lab, Winter)

ENGR 298/BME 298: "Seminars in Biomedical Engineering," Fall, Winter, Spring 2000 – Spring 2008 (1 unit)

ECE 298: "Special Topics in Biomedical Optics," Spring 2000 (3 units)

BME C270: Guest lecturer, "Biomedical Optics" course in Department of Biomedical Engineering, UCLA, Spring 2001 (2 lecture hours)

Physics 147C/Electrical and Computer Engineering 237C: "Medical Physics" and "Biophysics with Light," Spring 1997-1999 (4.5 lecture hours)

Physiology and Biophysics 204C: *Optical Spectroscopy in Biophysics,* Spring 1991-1995 (9 lecture hours and 10 laboratory hours)

Physiology small group discussions: Endocrinology, June 1995, 1996

Physiology/Biophysics 200, 299, and BME 299: Graduate Research

Medical Student Research Elective Teaching: Summer 1991, Fall 1992

Other Teaching Activities

3rd International Biophotonics and Imaging Graduate Summer School (BIGG'S 10) The Burren, Ireland, September 2010: 4 lecture hours on Medical Photonic Imaging, sponsored by The University of Limerick, Ireland, http://www.biophotonics.ul.ie/bigss.html

International Graduate Biophotonics Summer School, Ven, Sweden, June 2009, 4 lecture hours on Medical Imaging Using Spatially and Temporally Modulated Light, sponsored by the University of Lund, Sweden, and Technical University of Denmark, www.biop.dk/biophotonics09

International Graduate Biophotonics Summer School, Ven, Sweden, June 2004, "*Biophotonics in Breast Cancer,*" 4 lecture hours, sponsored by the University of Lund, Sweden, and Technical University of Denmark, www.biop.dk/biophotonics

Ph.D. written/oral advancement exam committee in Biomedical Engineering, Spring 2002-present (as needed).

Ph.D. written/oral advancement exam committee in Electro Optics, Department of Electrical and Computing Engineering, Spring 1999-2001.

Biomedical Optics for Diagnostics and Imaging 1/2 day short course developed for International Society for Optics and Photonics (SPIE), Los Angeles, January 26, 1994

Biomedical Optics, 1/2 day short course for Department of Electrical Engineering, UC Irvine, June 19, 1995

Digital Imaging and Laser Applications in Microscopy, hands-on short course with lectures and laboratories, Northwestern University. Course directors: D. L. Farkas and B. J. Tromberg, 6/25/95-6/30/95

Graduate Student Trainees (primary advisor)

Student	Degree Awarded	Current Position
Angelique Louie	Ph.D. (1994), Cell Biology (co-advisor w/ M. W. Berns)	Associate Professor, Biomedical Engineering, UC Davis
Xunbin Wei	Ph.D. (1999), Physiology and Biophysics	Professor, School of Medicine, Fudan University, Shanghai, China
Tuan Pham	Ph.D. (2000), Electrical & Computer Engineering; M.D. (2002), MSTP program	Pediatric Surgeon, Phoenix, AZ; Adjunct Professor, Arizona State University
Dorota Jakobowski	Ph.D. (2002) Physics; M.D. (2004) MSTP program	Assistant Professor, Radiology, UC San Francisco
Mariah Coleno	Ph.D., (2001) Chemical Engineering	Senior Scientist, BioRad, Inc.
Thorsten Spott	Ph.D. (1999), Electrical Engineering, NTNU Trondheim (co-advisor with L. Svaasand)	Senior Engineer, Siemens Corporation
Natasha Shah	M.S. (2000), Chemistry	Project Manager, Health IQ
Aikaterini Zoumi	Ph.D. (2002), Biomedical Engineering	Consultant, Biomedical Optics, Athens, Greece
Sean Merritt	Ph.D. (2005), Physics	Senior Scientist, Massimo, Inc.
David Cuccia	Ph.D. (2006), Biomedical Engineering	Chief Technology Officer, Modulated Imaging, Inc.
Sophie Chung	Ph.D. (2009), Biomedical Engineering	Postdoctoral Fellow, Univ. Of Pennsylvania
Jessie Weber	Ph.D. (2009), Biomedical Engineering	Postdoctoral Fellow, MIT
Amaan Mazhar	Ph.D. (2010), Biomedical Engineering	Postdoctoral Fellow, UC Irvine
Jing Liu	Ph.D. (2010), Physics	Postdoctoral Fellow, UC Davis
Ryan Lim	Ph.D. (2011 expected), Physiology and Biophysics	
Hosain Hagany	Ph.D. (2012 expected), Physics	
Alexander Lin	Ph.D. (2013 expected) Biomedical Engineering; M.D. (2015 expected) MSTP program	
Tyler Rice	Ph.D. (2013 expected) Physics	
Soroush M. Mirzaei Zarandi	Ph.D (2014 expected) Biomedical Engineering	
Jeffrey Suhalim Co-advisor w/E. Potma	Ph.D (2014 expected) Biomedical Engineering	

Graduate Student Committee Member

Student	Degree Awarded	Current Position
Zhihong Pan	Ph.D. (2003), Electrical Engineering & Computer Science	Application Scientist, Galileo Group
Joon You	Ph.D. (2005), Biomedical Engineering	COO, Modulated Imaging Inc., Irvine, CA
Stefan Carp	Ph.D. (2005), Chemical Engineering	Research Fellow, Martinos Ctr., Biomedical Imaging, Massachusetts General Hospital
Alan Lee	Ph.D. (2005), Biomedical Engineering	Graduate student
Hyle Park	Ph.D. (2005), Biomedical Engineering	Assistant Professor, Biomedical Engineering, UC Riverside
Subhadra Srinivasan	Ph.D. (2005), Engineering Sciences, Dartmouth College	Assistant Professor, Dartmouth College
Shenghao Tseng	Ph.D. (2006), Electrical Engineering	Principal Scientist, Johnson & Johnson
Hermann Frieboes	Ph.D. (2006), Biomedical Engineering	Assistant Specialist, Dept. of Mathematics, UC Irvine
Inseouk Seo	Ph.D. (2007), Chemical Engineering	Graduate student
Cyrus Gajhar	Ph.D. (2008), Biomedical Engineering	Postdoctoral Fellow, UC Berkeley, Lawrence Berkeley National Laboratory
Chris Raub	Ph.D. (2009), Biomedical Engineering	Postdoctoral Fellow, UC San Diego
Chris Rutherglen	Ph.D. (2009), Electrical & Computer Engineering	Postdoctoral Fellow, UC Irvine
Sylvain Gioux	Ph.D. (2009), Biomedical Engineering, Boston University	Research Scientist, Harvard Medical School
Giulia Ossato	Ph.D. (2009), Biomedical Engineering	Postdoctoral Fellow
Nicholas Gunn	Ph.D. (2010), Biomedical Engineering	Postdoctoral Fellow, UC Irvine
Nivedan Tiwari	Ph.D. (2011), Mechanical & Aerospace Engineering	Graduate student
Melissa Davis	Ph.D. (2011), Neurobiology & Behavior	Graduate student
David Thayer	Ph.D. (2011), Biomedical Engineering	Graduate student
Adam Gardner	Ph.D. (2011), Chemical Engineering & Materials Science	Graduate student
Ashley Laughney	Ph.D. (2012), Thayer School of Engineering, Dartmouth College	Graduate student
Ylenia Santoro	Ph.D. (2012), Biomedical Engineering	Graduate student

Cosimo Arnesano	Ph.D. (2012), Biomedical Engineering	Graduate student
Shanshan Xu	Ph.D. (2012), Biomedical Engineering	Graduate student

Postdoctoral Fellow Trainees

Fellow	Period	Current Position
Tatiana Krasieva, Ph.D.	1990-95	Research Scientist, Beckman Laser Institute
Tsong-Tseh Tsay, Ph.D.	1991-93	Senior Scientist, Beckman Instruments, Inc.
Satoshi Shimizu, M.S.	1991-93	Engineer, Canon Corporation
Curtis Chapman, Ph.D.	1991-97	Faculty, Science, Mathematics, Engineering, Modesto Jr. College
Rolf Steiner, M.D. (co-advisor with Y. Tadir, M.D.)	1992-93	Chairman, Dept. of OB/Gyn, Chur Regional Hospital, Switzerland
Steen J. Madsen, Ph.D.	1992-94	Professor, Chair, Dept. of Health Physics, University of Nevada, Las Vegas
Karsten König, Ph.D.	1993-95	Professor, Engineering Physics, Saarbrucken University, Fraunhoffer Institute, Germany
Pius Wyss, M.D. (co-advisor with Y. Tadir, M.D.)	1993-94	Professor, Dept. of OB/Gyn, University of Zurich, Switzerland
Mathias Fehr, M.D. (co-advisor with Y. Tadir, M.D.)	1994-95	Instructor, Dept. of OB/Gyn, University of Zurich, Switzerland
Attila Major, M.D. (co-advisor with Y. Tadir, M.D.)	1994-96	Dept. of OB/Gyn, University Hospital, Geneva, Switzerland
Olivier Coquoz, Ph.D.	1994-97	Senior Scientist, Zenogen/Caliper Corp., Alameda, CA
Joshua Fishkin, Ph.D.	1995-98	Senior Scientist, Boeing Corp.
Rene Hornung, M.D. (co-advisor with Y. Tadir, M.D.)	1996-97	Instructor, Dept. of OB/Gyn, University of Zurich, Switzerland
Vasan Venugopalan, Sc.D.	1996-97	Associate Professor, Chemical Engineering, UC Irvine
Jeffrey Gross, M.D.	1996-97	Director, Dept. of Neurosurgery, Mission Regional Hospital, Mission Viejo, CA
Andrew Dunn, Ph.D.	1997-99	Associate Professor, Biomedical Engineering, Cockrell School of Engineering, University of Texas at Austin
Vincent Wallace, Ph.D.	1997-2000	Senior Lecturer, School of Electrical, Electronic and Computer Engineering, The University of Western

		Australia
Andrew Berger, Ph.D.	1998-2000	Associate Professor, Dept. of Optics, Institute of Optics, University of Rochester
Albert Cerussi, Ph.D.	1999-2001	Associate Researcher, Beckman Laser Institute, UC Irvine
Frederic Bevilacqua, Ph.D.	1999-2003	Research Scientist, IRCAM, Paris, France
Alvin Yeh, Ph.D.	2000-2003	Associate Professor, Texas A&M
David Hsiang, M.D.	2000-2002	Associate Professor, Dept. of Surgery, UC Irvine
Sam Im, M.D. (co-advisor with P. DiSaia, M.D.)	2000-2002	Medical Fellow
Anthony Durkin, Ph.D.	2001-2003	Associate Professor, Beckman Laser Institute, UC Irvine
Jangwoen Lee, Ph.D.	2002-2004	Research Scientist, Beckman Laser Institute, UC Irvine
Shuo Tang, Ph.D.	2003-2006	Assistant Professor, Dept. of Electrical & Computer Engineering, Univ. of British Columbia
Julia Lyubovitsky, Ph.D.	2003-2006	Assistant Professor, Dept. of Bioengineering, UC Riverside
Philippe Zatta, Ph.D.	2003-2005	Consultant, LabView Software
Ang Li, Ph.D.	2005-2008	Chief Technical Officer, VoLighten, Inc.
David Abookasis, Ph.D.	2005-2008	Associate Professor, Dept. of Electrical Engineering, Ariel University Center, Israel
Zhongping Jian, Ph.D.	2008	Senior Engineer, Edwards LifeSciences, Irvine, CA
Jae Kim, Ph.D.	2006-present	Dept. of Defense Postdoctoral Fellow, Beckman Laser Institute, UC Irvine
Mihaela Balu, Ph.D.	2007-present	Postdoctoral Fellow, Beckman Laser Institute, UC Irvine
Soren Konecky, Ph.D.	2008-present	Hewitt Postdoctoral Fellow, Beckman Laser Institute, UC Irvine
Darren Roblyer, Ph.D.	2009-present	National Cancer Institute/Dept. of Defense Postdoctoral Fellow, Beckman Laser Institute, UC Irvine
Thomas O'Sullivan, Ph.D.	2010-present	National Cancer Institute Postdoctoral Fellow, Beckman Laser Institute, UC Irvine

Patents

Copyrights

MONARCH: Software designed to extract optical properties form frequency-domain photon migration (FDPM) data

Patents

UC Case 1992-136-1
Apparatus and Method for Qualitative and Quantitative Measurements of Optical Properties in Turbid Media Using Frequency Domain Photon Migration (FDPM)
Patent: 5, 424,843
Issued: 06/13/95
Co-inventors: Bruce Tromberg, Richard Haskell, Michael W. Berns, Lars O. Svaasand

UC Case 1992-267-1
Intrauterine Device for Light Diffusion
Patent: 5,478,339
Issued: 12/26/95
Co-inventors: Yona Tadir, Bruce Tromberg, Michael Berns

UC Case 1993-097-1
Vaginal Speculum for Photodynamic Therapy
Patent: 5,458,595
Issued: 10/17/95
Co-inventors: Yona Tadir, Bruce Tromberg, Brad Monk, Glen Profeta

UC Case 1993-304-1
Flourophore-Polymer Based Illuminator for Conventional Light Microscopy
Patent: 5,734,498
Issued: 03/31/98
Co-inventors: Tatiana Krasieva, Bruce Tromberg, Alexander Dvornikov, Michael W. Berns

UC Case 1995-117-1
High Resolution Biosensor for In-situ Microtherometry
Patent: 5,631,141
Issued: 5/20/97
Co –inventors: Greg Sonek, Bruce Tromberg, Yagang Lui

UC Case 1998-044-1
Fast Controllable Laser Lysis of Cells for Analysis
Patent: 6,156,576
Issued: 12/05/00
Co-inventors: Nancy Allbritton, Bruce Tromberg, Chris Sims, Gavin Meredith, Tatiana Krasieva, Michael W. Berns

UC Case 1998-044-2
Method and Apparatus for Detecting Enzymatic Activity using Molecules that Change Electrophoretic Mobility
Patent: 6,335,201
Issued: 01/01/02
Co-inventors: Nancy Allbritton, Chris, Sims, Gavin Meredith, Bruce Tromberg, Tatiana Krasieva, Michael W. Berns

UC Case 2002- 071-1
Diffuse Optics for Reflectance Microscopy
Patent: 6,661,574
Issued: 12/09/03
Co-inventors: Bruce Tromberg, Tatiana Krasieva, Alexander Dvorinik, Michael W. Berns

UC Case 2002-203-2
Method and Apparatus for Performing Quantitative Analysis and Imaging Surfaces and Subsurfaces of Turbid Media using Spatially Structured Illumination
Patent: 6,958,815
Issued: 10/25/05
Co-inventors: Fred Bevilacqua, Bruce Tromberg, Anthony Durkin, David Cuccia

UC Case 1998-044-3
Method and Apparatus for detecting Enzymatic Activity using Molecules that change Electrophoretic Mobility Patent: 7,157,223
Issued: 01/02/07
Co-Inventors: Nancy Allbritton, Christopher Sims, Michael W. Berns, Gavin Meredith, Tatiana Krasieva, Bruce J. Tromberg, Chao L. Lee

UC Case 2004-505-2
Method and Apparatus for Dynamically Monitoring Multiple InVivo Tissue Chromophores
Patent: 7,248,909
Issued: 07/24/07
Co-Inventors: Jangwoen Lee, Bruce Tromberg, Albert Cerussi, Matthew Brenner

UC Case 2000-461-2
Quantitative broadband absorption and scattering spectroscopy in Turbid Media by combined frequency-domain and steady-state methodologies
Patent: 7,428,434
Issued: 09/23/08
Co-inventors: Andrew Berger, Fred Bevilacqua, Bruce Tromberg, Albert Cerussi, Dorota Jakubowski

UC Case 2005-164-1
Method and Apparatus for Spatially Modulated Fluorescence Imaging and Tomography
Patent 7,729,750
Issued: 06/01/10

Patents Pending

UC Case 2002-431-1
Methods for assessing the condition of bone *in vivo* using non-ionizing radiation
Patent Application filed: **1/18/06**
Co-inventors: Albert Cerussi, Bruce Tromberg, Anthony Durkin, Sean Merritt, Natasha Shah

UC Case 2005-114-2
Monitoring Temperature Non- Invasively Using Broadband Diffuse Optical Spectroscopy (DOS)
Patent Application filed: **10/07/05**
Co-Inventors: Anthony Durkin, Sean Merritt, Bruce Tromberg, Albert Cerussi

UC Case 2006-070-1
Methods for Assessing the Molecular Water Binding of Deep Tissue In Vivo Using Non Ionizing Radiation
Patent Application filed: **06/04/07**
Co-inventors: Sean Merritt, Bruce Tromberg, Albert Cerussi, Anthony Durkin, SoHyun Chung

UC Case 2006-639-1

A Method for Determination of Intrinsic Spectroscopic Tumor Markers by Broadband Frequency Domain Technology
Patent Application filed: **05/16/07**
Co-Inventors: Enrico Gratton, Bruce Tromberg, Albert Cerussi, Shwayta Kukreti

UC-Case 2007-126-2
Three Dimensional Breast Anatomy Imaging System
Patent Application filed: **12/1/05**
Inventors: Bruce Tromberg, Albert Cerussi, Fred S. Azar, Ali Khamene, Frank Sauer

UC-Case 2007-230-1
Method and Apparatus for performing Qualitative and Quantitative Analysis of Produce (fruit, vegetables) using Spatially Structured Illumination
Patent Application filed: **10/29/07**

UC Case 2008-325-2
An Apparatus and Method for Widefield Functional Imaging (WiFi) using Integrated Structured Illumination and Laser Speckle Imaging
Co-Inventors: Anthony Durkin, David Cuccia, Bruce Tromberg, Amaan Mazhar, Bernard Choi
Patent Application filed: **1/18/08**

UC Case 2010-400-1
System and method for efficient Anti-Stokes Raman scattering endoscopic and intravascular imaging and mutimodal imaging
Co-Inventors: Zhongping Chen, Gangjun Liu, Mihaela Balu, Bruce Tromberg, Eric Potma
Patent Application filed: **12/18/10**

Disclosures

UC Case 2002-062-1
Perturbation/differential Monte Carlo solutions of inverse problems in particle transport
Provisional patent filed 8/24/01 decided not to pursue full application.
Co-inventors: Jerry Spanier, Vasan Vengugopalan, Fred Bevilacqua, Joon You, Carol Hayakawa, Bruce Tromberg
Status: **Copyright submission pending**

UC Case 2005-424-1
Method for the non-invasive Measurement of Cellular Apoptosis Using Endogeneous Tissue Signals
Co-inventors: Bruce Tromberg, Albert Cerussi, Dorota Jakobowski, David Hsiang, John Butler
Status: **Disclosure filed.**

UC Case 2008-328-1
Probe for Non-linear Optical Microscopic Imaging of joints and tissues
Co-Inventors: Nivedan Tiwari, George Peavy, Bruce Tromberg, Brian Andrews, Zhongping Chen
Status: **Provisional patent application filed 11/07/07**

UC Case 2008-700-1
A fast (2D) Diffuse Optical Imaging (DOI) algorithm to recover lesions' optical spatial signature based on physiologically realistic models of lesion optical properties'
Co-Inventors: Ang Li, Jing Liu, Albert Cerussi, Bruce Tromberg
Status: **Disclosure filed**

Commercialization: Companies Started

Co-Founder, 2005, Modulated Imaging, Inc., A start-up for commercializing Spatial Frequency Domain Imaging Technologies.

Co-Founder, 2009, Volighten, Inc., A start-up for commercializing Diffuse Optical Spectroscopic Imaging Technologies.

Publications

Peer - Reviewed Journals

J1. Huff, PB, Tromberg, BJ, Sepaniak, MJ, *Sequentially Excited Fluorescence Detection in Liquid Chromatography,* Analytical Chemistry, 54(6), 946-950, 1982.

J2. Sepaniak, MJ, Tromberg, BJ, Eastham, JF, *Optical Fiber Fluoroprobes in Clinical Analysis,* Clinical Chemistry, 29(9), 1678-1682, 1983.

J3. Tromberg, BJ, Eastham, JF, Sepaniak, MJ, *Optical Fiber Fluoroprobes for Biological Measurements,* Applied Spectroscopy , 38(1), 38-42, 1984.

J4. Fung, KW, Matthews, TG, Tromberg, BJ, *Surface Emission Monitoring of Pressed-Wood Products Containing Urea-Formaldehyde Resins, Environment International,* 12, 301, 1986.

J5. Fung, KW, Matthews, TG, Tromberg, BJ, Hawthorne, AR, *Impact of Indoor Environmental Parameters on Formaldehyde Concentrations in Unoccupied Research Houses*, JAPCA, 36(11), 1244-1249, 1986.

J6. Tromberg, BJ, Sepaniak, MJ, Vo-Dinh, T, Griffin, GD, *Fiber-Optic Chemical Sensors for Competitive Binding Fluoroimmunoassay,* Analytical Chemistry, 59(8), 1226-1230, 1987.

J7. Vo-Dinh, T, Tromberg, BJ, Griffin, GD, Ambrose, KR, Sepaniak, MJ, Gardenhire, EM, *Antibody-Based Biosensor for the Carcinogen Benzo(A)Pyrene*, Applied Spectroscopy, 41(4), 735-738, 1987.

J8. Tromberg, BJ, Sepaniak, MJ, Alarie, JP, Vo-Dinh, T, Santella, RM, *Development of Antibody-Based Fiber-Optic Sensors for Detection of a Benzo[A]Pyrene Metabolite,* Analytical Chemistry, 60(18), 1901-1908, 1988.

J9. Sepaniak, MJ, Tromberg, BJ, Vo-Dinh, T, *Fiber Optic Affinity Sensors in Chemical Analysis,* Progress in Analytical Spectroscopy, 11(5), 481-509, 1988.

J10. Berns, MW, Wright, WH, Tromberg, BJ, Profeta, GA, Andrews, JA, Walter, RJ, *Use of a Laser-Induced Optical Force Trap to Study Chromosome Movement on the Mitotic Spindle,* Proc. Nat. Acad. Sci., 86(12), 4539-4543, 1989.

J11. Kimel, S, Tromberg, BJ, Roberts, WG, Berns, MW, *Singlet Oxygen Generation of Porphyrins, Chlorins, and Phthalocyanins,* Photochemistry and Photobiology,, 50(2), 175-183, 1989.

J12. Tromberg, BJ, Orenstein, A, Kimel, S, Barker, S, Hyatt, J, Roberts, WG, Nelson, JS, Berns, MW, *Tumor Oxygen Tension during Photodynamic Therapy,* Journal of Photochemistry and Photobiology (B), 5(1), 121-126, 1990.

J13. Tromberg, BJ, Orenstein, A, Kimel, S, Barker, S, Hyatt, J, Roberts, WG, Nelson, JS, Berns, MW, *In-Vivo Tumor Oxygen Tension Measurements for the Evaluation of the Efficiency of Photodynamic Therapy,* Photochemistry and Photobiology, 52(2), 375-385, 1990.

J14. Tromberg, BJ, Svaasand, LO, Tsay, TT, Haskell, RC, *Properties of Photon Density Waves in Multiple-Scattering Media,* Appl. Opt., 32(4), 607-616, 1993.

J15. Svaasand, LO, Tromberg, BJ, Haskell, RC, Tsay, TT, Berns, MW, *Tissue Characterization and Imaging Using Photon Density Waves,* Optical Engineering, 32(2), 258-266, 1993.

J16. Chapman, CF, Tadir, Y, Tromberg, BJ, Yu, K, Manetta, A, Sun C, Berns, MW, *Effect of Administration Route and Estrogen Manipulation on Endometrial Uptake of Photofrin II,* American Journal of Obstetrics and Gynecology, 168(2), 685-692, 1993.

J17. Wyss, P, Tadir, Y, Tromberg, BJ, Liaw, L, Krasieva, T, Steiner, R, Villalon, VP, Berns, MW, *Benzoporphyrin Derivative (BPD): A Potent Photosensitizer for Photodynamic Destruction of the Rabbit Endometrium*, Obstetrics and Gynecology, 84(3), 409-414, 1994.

J18. Haskell, RC, Svaasand, LO, Tsay, T, Feng, T, McAdams, MS, and Tromberg, BJ, *Boundary Conditions for the Diffusion Equation in Radiative Transfer,* Journal of the Optical Society of America-A, 11(10), 2727-2741, 1994.

J19. Madsen, SJ, Wyss, P, Svaasand, LO, Haskell, RC, Tadir, Y, Tromberg, BJ, *Determination of the Optical Properties of Human Uterus Using Frequency-Domain Photon Migration and Steady-State Techniques,* Physics in Medicine and Biology, 39(8), 1191-1202, 1994.

J20. Madsen, SJ, Anderson, ER, Tromberg, BJ, *A Portable High-Bandwidth Frequency Domain Photon Migration Instrument for Tissue Spectroscopy,* Opt. Lett, 19(23), 1934-1936, 1994.

J21. Liu, Y, Cheng, DK, Sonek, GJ, Berns, MW, Tromberg, BJ, *A Microfluorimetric Technique for the Determination of Localized Heating in Organic Particles,* Applied Physics Letters, 65(7), 919-921, 1994.

J22. Wyss, P, Tromberg, BJ, Wyss, MT, Krasieva, T, Liaw, L, Schell, M, Berns, MW, Tadir, Y, *Photodynamic Destruction of Endometrial Tissue Using Topical 5-Aminolevulinic Acid (5-ALA),* American Journal of Obstetrics and Gynecology, 171(5), 1176-1183, 1994.

J23. Wyss, P, Svaasand, LO, Tadir, Y, Haller, U, Berns, MW, Wyss, MT, Tromberg, BJ, *Photomedicine of the Endometrium: Experimental Concepts*, Human Reproduction, 10,(1) 221-226, 1995.

J24. Steiner, RA, Tromberg, BJ, Wyss, P, Krasieva, T, Chandanani, N, McCullough, J, Berns, MW, Tadir, Y, *Rat Reproductive Performance Following Photodynamic Therapy with Topically-Administered Photofrin*, Human Reproduction, 10(1), 227-233, 1995.

J25. Tromberg, BJ, Haskell, RC, Madsen, SJ, Svaasand, LO, *Characterization of Tissue Optical Properties Using Photon Density Waves,* Comments on Molecular and Cellular Biophysics, 8(6), 359-386, 1995.

J26. Peavy, GM, Krasieva, TB, Tromberg, BJ, Eusantos, E.D, Berns, MW, *Variation in Distribution of a Pthalocyanine Photosensitizer in Naturally Occurring Tumors of Animals,* Journal of Photochemistry and Photobiology B: Biology, 27(3), 271-275, 1995.

J27. Liu, Y Cheng, DK, Sonek, GJ, Berns, MW, Chapman, CF, Tromberg, BJ, *Evidence for Localized Cell Heating Induced by Infrared Optical Tweezers,* Biophysical Journal, 68(5), 2137-2144, 1995.

J28. Chapman, CF, Liu, Y, and Sonek, GJ, Tromberg, BJ, *The use of Exogenous Fluorescent Probes for Temperature Measurement in Single Living Cells*, Photchem. Photobiol., 62(3), 416-425, 1995.

J29. König, K, Liang, H, Berns, MW, Tromberg, BJ, *Cell Damage By Near-IR Microbeams*, Nature (letter), 377(6544), 20-21, 1995.

J30. Liu, Y, Sonek,,GJ., König, K, Berns, MW, Tromberg, BJ, *Two-Photon Excitation in Continuous Wave Infrared Optical Tweezers,* Opt. Lett, 20(21), 2246-2248, 1995.

J31. Fehr, M, Madsen, S, Svaasand, LO, Tromberg, BJ, Eusebio, J, Berns, MW, Tadir, Y, *Intrauterine Light Delivery for Photodynamic Therapy of the Human Endometrium,* Human Reproduction, 10(11), 3067-3072, 1995.

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Invited Editorial

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P90. Pan, Z, Healey, G, Tromberg, B, *Multiband and Spectral Eigenfaces for Face Recognition in Hyperspectral Images* in Biometric Technology for Human Identification II, Proc. of SPIE Vol. 5779, 2005.

P91. Tang, S, Krasieva, T, Chen, Z, Tempea, G, Tromberg, B, *Increasing Efficiency of Two-photon Excited Fluorescence and Second Haromonic Generation using Ultrashort Pulses* in Multiphoton Microscopy in the Biomedical Sciences VI, Proc. of SPIE Vol. 6089, 2006.

P92. DeMagalhããs, N, Liaw, LH, Li L, Liogys, A, Madsen, S, Hirschberg, H, Tromberg, B, *Investigating the Effects of Combined Photogynamic and Anti-angiogenic Therapies using a Three-dimensional in-vivo Brain Tumor System* in Photonic Therapeutics and Diagnostics II, Proc. of SPIE Vol. 6078, 2006.

P93. Weber, JR, Cuccia, DJ, Tromberg, BJ, *Modulated Imaging in Layered Media* in IEEE Eng. Med. Bilo. Soc, 6674-6, 2006.

P94. Chung, SH, Cerussi, A, Merritt, S, Hsiang, D, Mehta, R, Tromberg, B, *Tissue Bound Water Studies on Breast Tumors using Diffuse Optical Spectroscopy* in Optical Tomography and Spectroscopy of Tissue VII, Proc. of SPIE Vol. 6434, 2007.

P95. Abookasis, D, Mathews, M, Lay, C, Cuccia, D, Frostig, R, Linskey, M, Tromberg, B, *Mapping Tissue Chromophore Changes in Cerebral Ischemia: a Pilot Study* in Photonic Therapeutics and Diagnostics III, Proc. of SPIE Vol. 6424, 2007.

P96. Abookasis, D, Mathews, M, Lay, C, Frostig, R, Tromberg, B *Modulated Imaging: a Novel Method for Quantifying Tissue Chromophores in Evolving Cerebral Ischemia* in Medical Imaging 2007: Physiology, Function, and Structure from Medical Images, Proc. of SPIE Vol. 6511, 2007.

P97. Azar, F, de Roquemaurel, B, Cerussi, A, Hajjioui, N, Li, A, Tromberg, B, Sauer, F, *A 3D Visualization and Guidance System for Handheld Optical Imaging Devices* in Medical Imaging 2007: Visualization and Image-Guided Procedures, Proc. of SPIE Vol. 6509, 2007.

P98. Klifa, C, Hattangadi, J, Watkins, M, Li, A, Sakata, T, Tromberg, B, Hylton, N, Park, C, *Combination of Magnetic Resonance Imaging and Diffuse Optical Spectroscopy to Predict Radiation Response in the Breast: an Exploratory Pilot Study* in Multimodal Biomedical Imaging II, 64310C, Proc. of SPIE Vol. 6431, 2007.

P99. Barton, J, Tang, S, Lim, R, Tromberg, B, *Simultaneous Optical Coherence and Multiphoton Microscopy of Skin-equivalent Tissue Model* in Optical Tomography and Coherence Techniques III, Proc. of SPIE Vol. 6627, 2007.

P100. Pan, Z, Healey, G, Tromberg, B, *Hyperspectral Face Recognition under Unknown Illumination,* The Journal of the Society of Photo-Optical Instrumentation Engineers, 46(7), 77201, 2007.

P101. Abookasis, D, Mathews, M, Owen, C, Binder, D, Linskey, M, Frostig, R, Tromberg, B, *Using NIR Spatial Illumination for Detection and Mapping Chromophore Changes during Cerebral Edema* in Photonic Therapeutics and Diagnostics IV, Proc. of SPIE Vol. 6842, 2008.

P102. Jung, W, Tang, S, Xie, T, McCormick, D, Ahn, YC, Su, J, Tomov, I, Krasieva, T, Tromberg, B, Chen, Z, *Miniaturized Probe using 2 Axis MEMS Scanner for Endoscopic Multiphoton Excitation Microscopy* in Endoscopic Microscopy III, Proc. of SPIE Vol. 6851, 2008.

P103. Raub, C., Kim, P., Putnam, A., Lowengrub, J., Tromberg, B., George, S., *Correlations between Second Harmonic Signal, Microstructure, and Mechanics of Contracting Collagen Gels* in Optics in Tissue Engineering and Regenerative Medicine II, Proc. of SPIE Vol. 6858, 2008.

P104. Lyubovitsky, J, Xu, X, Sun, CH, Andersen, B, Krasieva, T, Tromberg, B, *Characterization of*

Dermal Structural Assembly in Normal and Pathological Connective Tissues by Intrinsic Signal Multiphoton Optical Microscopy in Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues VI, Proc. of SPIE Vol. 6859, 2008.

P105. Moy, A, Kim. J, Lee, E, Tromberg, B, Cerussi, A, Choi, B, *Brca1/p53deficient Mouse Breast Tumor Hemodynamics during Hyperoxic Respiratory Challenge Monitored by a Novel Wide-field Functional Imaging (WiFI) System* in Optical Tomography and Spectroscopy of Tissue VIII, Proc. of SPIE Vol. 7174, 2009.

P106. Yu, L, Jian, Z, Rao, B, Tromberg, B, Chen, Z, *Three-dimensional Speckle Suppression in Optical Coherence Tomography based on the Curvelet Transform* in Optical Coherence Tomography and Coherence Domain in Optical Methods in Biomedicine XIV, Proc. of SPIE Vol. 7554, 2010.

P107. Cerussi, A, Durkin, A, Kwong, R, Quang, T, Hill, B, Tromberg, B, MacKinnon, N, Mantulin, W, *Quality Control and Assurance for Validation of DOS/I Measurements* in Design and Performance Validation of Phantoms used in conjunction with Optical Measurement of Tissue II, Proc. of SPIE Vol. 7567, 2010.

P108. Balu, M, Liu, G, Chen, Z, Tromberg, B, Potma, E, *Scheme for Efficent Fiber-based CARS Probe* in Multiphoton Microscopy in the Biomedical Sciences X, Proc. of SPIE Vol. 7569, 2010.

P109. Sylvain Gioux; Amaan Mazhar; Bernard T. Lee; David J. Cuccia; Alan Stockdale; Rafiou Oketokoun; Yoshitomo Ashitate; Nicholas Durr; Anthony J. Durkin; Bruce J. Tromberg; John V. Frangioni. *Preclinical and clinical validation of a novel oxygenation imaging system* Proc. of SPIE Vol. 7896. DOI: 10.1117/12.875603

P110. Nathan Hagen; Noah Bedard; Amaan Mazhar; Soren Konecky; Bruce J. Tromberg; Tomasz S. Tkaczyk. Spectrally-resolved imaging of dynamic turbid media (Proceedings Paper). Proc. of SPIE Vol. 7892. DOI: 10.1117/12.875406

Invited Lectures

Seminars/Colloquia

C1. Beckman Instruments, Diagnostic Systems Group, *Development of Antibody-Based Fiber Optic Sensors,* Brea, CA, June 1, 1989.

C2. Southern California Pharmacology Group, City of Hope National Medical Center, *Tumor Oxygen Tension During Photodynamic Therapy,* Duarte, CA, December 1, 1989.

C3. University of California, Irvine Department of Chemistry, Physical Chemistry Seminar Series, *Optical Spectroscopy in Cancer Therapy and Diagnosis,* April 17, 1990.

C4. Vestar Pharmaceutical Company, Inc., *Laser-Based Optical Imaging and Therapeutics in Cancer*. San Dimas, CA, June 28, 1990.

C5. UCI Drug Resistance Affinity Group Winter Retreat, *Measurement of Anthracycline Efflux From Single Multidrug Resistant MCF-7 Cells,* January 7, 1991.

C6. Beckman Instruments, Diagnostic Systems Group, *Optical Spectroscopy in turbid media: Frequency-domain photon migration,*. Brea, CA, May 3, 1991.

C7. Beilinson Medical Center, Department of Obstetrics and Gynecology, Tel Aviv University, *Priniciples of Photodynamic Therapy*, Tel Aviv, Israel, May 29, 1991.

C8. Technion-Israel Institute of Technology, Department of Chemistry Colloquium, *Optical Properties in the Multiple-scattering Regime Using Frequency-domain Photon Migration,* Haifa, Israel, May 30, 1991.

C9. University of Tennessee, Knoxville, Department of Chemistry Colloquium, *Optical Spectroscopy in Tissues,* Knoxville, TN, August 9, 1991.

C10. Stanford University, Hansen Experimental Physics Lab Lecture Series, *Photon Migration in Biological Tissue,* Stanford, CA, December 2, 1991.

C11. Advanced Monitoring Development Group, Health and Safety Research Division Seminar Series, Oak Ridge National Laboratory, Oak Ridge, TN *Photon Flux Measurements in Biological Tissues,* March 30, 1992.

C12. University of California, Irvine, Department of Chemistry, Physical Chemistry Seminar Series, *Propagation of Photon Density Waves in Biological Tissues,* April 21, 1992.

C13. Kaiser Permanente, *General Surgical Applications of Lasers,* Panorama City, California, April 22, 1992.

C14. University of California, Irvine, Annual Cancer Research Symposium, *Optical Spectroscopy in Cancer Diagnosis,* May 2, 1992.

C15. University of California, Irvine, Drug Resistance Affinity Group Summer Retreat, *Imaging and Pharmacokinetics in Single Multi-drug Resistant Cells*, June 13, 1992.

C16. Spectroscopic Approaches to Analysis of Biological Tissue, Conference Organized for Corporate Office of Science and Technology, Johnson and Johnson Corporation, *Determination of Tissue Optical Properties Using Frequency-Domain Photon Migration,* Albuquerque, New Mexico, July 1 and 2, 1992.

C17. Johnson Foundation Seminars, University of Pennsylvania, *Properties of Photon Density Waves in Biological Tissues*, Philadelphia, PA, August 13, 1992.

C18. Photomedicine Lecture Series, Wellman Laboratories of Photomedicine, Massachusetts General Hospital, Harvard University, *Properties of Photon Density Waves in Tissues*, Boston, MA, October 13, 1992.

C19. University of California, Irvine, College of Medicine, Department of Radiology, General Seminar, *Photon Migration in Radiology,* May 27, 1993.

C20. Optical Society of San Diego, *Medical Diagnostics Using Photon Density Waves*, San Diego, CA, February 17, 1994.

C21. Lawrence Livermore National Laboratory, *Medical Diagnostics Using Photon Density Waves*, LLNL laser colloquium, Livermore, CA, June 7, 1994.

C22. University of California, Irvine, College of Medicine, Department of Pathology, Seminar, *Optical Properties of Tissues,* October 17, 1994.

C23. Southern California Confocal Microscopy Users Group, Advanced Confocal Imaging Workshop, *Two-Photon Processes in Laser Microbeams*, April 25, 1995.

C24. University of California, Los Angeles, Mathematics Department, Colloquium on *Mathematical Modelling in Biology and Medicine Tissue Characterization using Photon Migration,* Los Angeles, CA, November 8, 1995.

C25. University of California, Irvine, Radiological Sciences Department, Winter Colloquia *Non-Invasive Optical Diagnosis in Medicine*, March 5, 1996.

C26. Oncotech, Inc., *Diagnostic Applications of Tissue of Properties,* Irvine, CA, March 27, 1996.

C27. Oregon Health Sciences University, OMLC Lecture Series, *Diagnostic and Therapeutic Applications of In-Vivo Tissue Optical Properties,* August 23, 1996.

C28. University of California, Irvine, Department of Epidemeology and Biostatistics Lecture Series, *Non-Invasive Optical Detection of Breast Cancer,* March 1997.

C29. National Institutes of Health, NCRR annual council meeting, *Optical Detection of Breast Tumors using Frequency Domain Photon Migration,* Washington, D.C., May, 1997.

C30. Food and Drug Administration, Center for Devices and Radiological Health, Electro-Optics Branch, *Frequency-Domain Photon Migration for Non-invasive Characterization of Breast Tumors,* May, 1997.

C31. Swiss Federal Institute of Technology (EPFL), *Quantitative Measurements of Breast Tissue Optical and Physiological Properties,* Lausanne, Switzerland, June, 1997.

C32. Boehringer-Mannheim, *Factors Affecting Accuracy and Precision in Calculating Optical Properties using Frequency Domain Photon Migration,* Mannheim, Germany, June, 1997.

C33. Max Delbruck Center for Molecular Medicine, Robert Roessle Hospital, *Combining Optical and Molecular Techniques for Imaging and Manipulating Function in Living Cells,* Berlin, Germany, June, 1997.

C34. NCRR BECON (bioengineering consortium), *Monitoring and Imaging Tissue Function Using Biophotonic Devices,* February, 1998.

C35. UCI College of Medicine Faculty Research Poster Session, *Non-Invasive Optical Detection of Breast Cancer Using Frequency-Domain Photon Migration (FDPM),* April, 1998.

C36. Joint Photomedicine Lecture Series, Wellman Laboratories, Harvard Medical School and MIT, *Optical and Physiological Properties of Breast Tumors,* June, 1998.

C37. FDA workshop on Biomedical Optics, Baltimore, *Principles of Light Propagation in Tissue: Diagnostic and Therapeutic Techniques,* September, 1998.

C38. Johnson & Johnson Corporate Office: Medical Optics Symposium, *Principles of Tissue Optical Spectroscopy for Biomedical Diagnostics,* San Jose, CA, January, 1999.

C39**.** Cedars-Sinai Clinical Neuroscience Lecture, *Near-Infrared Optical Diagnostics in Human Tissues: Applications to Brain and Breast Functional Imaging,* Los Angeles, CA, February, 1999.

C40**.** Lund Institute of Technology, Department of Physics, *Imaging, Wound Healing and Collagen Synthesis in Artificial Tissues Using 2-Photon Microscopy,* Lund, Sweden, May, 1999.

C41. SIAM Math-In-Industry Workshop, Claremont Graduate School, *Characterizing Tissue Function Using Near Infrared Spectroscopy And Imaging,* June, 1999.

C42**.** Molecular Imaging Symposium, Mt. Zion Cancer Center, UCSF, *Functional Imaging in Tissues Using Quantitative Near infrared Optical Spectroscopy,* June, 1999.

C43**.** NTNU, Norwegian Technical University, *Two-Photon Imaging in Thick Tissues,* Trondheim, Norway, August, 1999.

C44. Inter-Institute Workshop on In Vivo Optical Imaging at the NIH, *Photon Migration Spectroscopy of Normal and Tumor Containing Breast Tissue: Effect of Menopausal Status, Menstrual Cycle and Malignant Transformation,* Bethesda, MD, September, 1999.

C45. Fluorescence Optical Techniques in Modern Biology Symposium, Cedars-Sinai Medical Center, *Applications of Two-Photon Microscopy to Imaging in Tissues*, October, 1999.

C46. UCSF Breast Oncology Program research meetings, *Detecting Breast Cancer with Light,* December, 1999.

C47. UCLA Crump Institute for Biological Imaging*, Detecting Breast Cancer with Light,* February, 2000.

C48. Oregon Medical Laser Center's Advisory Board Meeting,, *The Future of Photons for Medical Diagnosis,* June, 2000.

C49. Advanced Optical Technologies in Medical Diagnostics, Berlin, Germany, June, 2000.

C50. NIH Workshop on Benchtop to Bedside Technologies, *Biomedical Optics as the Translational Research Ideal*, September, 2000.

C51. UCI, Department of Physiology and Biophysics 2000-2001 Seminar Series, October, 2000.

C52. UCI/AVON Breast Cancer Research and Care Symposium, *Photon Migration Spectroscopy as a New and Unique Diagnostic Modality,* New York City, November, 2000.

C53. University of Arizona, Workshop on Angiogenesis: Detection, Therapy, and Function, *Photomedicine and Cancer: Unique Opportunities for Translational Research,* November, 2000.

C54. Beckman Institute Workshop, University of Illinois, Urbana-Champaign, *Lasers in Biology and Medicine,* November, 2000.

C55. Duke University, Fitzpatrick Photonics Center Convocation, *Photonics in Biology and Medicine*, April, 2001.

C56. UCLA Crump / General Electric / LSI Molecular Imaging Seminar Series, *Functional Diffuse Optical Spectroscopy Of Human Breast Tissue*, February, 2002. (webcast at http://video.crump.ucla.edu/)

C57. University of Tennessee, Dept. of Chemistry departmental seminar series, *Functional Diffuse Optical Spectroscopy of Thick Tissues: Towards the Development of Optical Mammography*, February, 2002.

C58. Oak Ridge National Laboratory, *Functional Diffuse Optical Spectroscopy of Thick Tissues: Towards the Development of Optical Mammography*, February, 2002.

C59. Chao Family Comprehensive Cancer Center: Advances in the Therapy of Cancer, *Non-Invasive Chemotherapy Monitoring of Breast Cancer using Bedside Optical Probes*, June, 2002.

C60. NIH Interagency workshop on Optical Imaging: *The Role of Optical Methods in the Clinical Management of Breast Cancer,* September, 2002.

C61. Cedars Sinai Department of Surgery Colloquium: *Modern Techniques in Optical Imaging*, November, 2002

C62. NIH Biomedical Imaging Research Opportunities Workshop, *Optical Imaging Across Spatial Scales*, January, 2003.

C63. UPenn BCMCXC Symposium, *Development of Diffuse Optical Spectroscopy for Quantitiaive Characterization of Thick Tissues,* July, 2003.

C64. The City of Hope Comprehensive Cancer Center, *The Role of Optical Imaging in Breast Cancer Detection,* December, 2003.

C65. Washington University Small Animal Imaging Resource Advanced Symposium: Molecular Imaging of Cancer, *Functional Optical Imaging of Breast Cancer*, March, 2004.

C66. Rice University Dept. of Bioengineering Seminar Series, *Multi-Dimensional Optical Imaging,* March, 2004.

C67. University of Tennessee Dept. of Chemistry Honors Day, *Tissue Optical Spectroscopy: Turning People into Cuvettes,* May, 2004.

C68. UCLA Dept. of Physics and Astronomy Seminar Series, *Multi-Dimensional Optical Imaging in Thick Tissues: Contrast across spatial scales,* May, 2004.

C69. Northwestern University Biomedical Engineering Seminar, *The Role of Diffuse Optics in Breast Cancer Detection,* May, 2004.

C70. Beckman Fellows Symposium, California Institute of Technology, *Optical Spectroscopy & Imaging in Thick Tissues,* May, 2004.

C71. National Cancer Institute/NTROI Breast Cancer Retreat, *Broadband Measurements of Malignant Tumors: Development of a Tissue Optical Index,* June, 2004

C72. Medical Free Electron Laser/AFOSR Investigator Meeting, Harvard Medical School, *Optical Technologies in Wound Healing: Imaging Across Spatial Scales,* December, 2004

C73. University of Texas, Austin, Biomedical Engineering Departmental Seminar, March, 2005.

C74. NIH NCRR/NIBIB joint P41 Center Principal Investigators Meeting, *Multi-Dimensional Optical Imaging: Contrast Across Spatial Scales,* June, 2005

C75. Medical Free Electron Laser/AFOSR, Stanford University, *Diffuse Optical Spectroscopy for Monitoring Wounds and Trauma,* September, 2005

C76. NIH National Center for Research Resources Advisory Council Meeting, *Translating Optical Technologies from Bench to Bedside* May 18, 2006
http://www.ncrr.nih.gov/about_us/advisory_council/minutes/20060518.asp

C77. Founders Series Lecture, Vanderbilt University Institute of Imaging Science, *Medical Imaging in Thick Tissues using Diffuse Optics,* October, 2006
http://vuiis.vanderbilt.edu/seminars2006.php

C78. Biomedical Photonics Symposium in Toyko, Biomedical Photonics in 21st Century: Potential in Optical Device, plenary lecture: *Medical Imaging with Light*, December 2006

C79. Molecular Imaging Program Seminar Series, Stanford University, *Medical Imaging in Thick Tissues using Diffuse Optics,* June 2007
http://mips.stanford.edu/public/mi_seminar.adp

C80. Washington University, Department of Biomedical Engineering 10th Anniversary Symposium lecture: *Medical Imaging in Thick Tissues using Diffuse Optics,* June 2007

C81. Broadcom Corporation, *Engineering Optical Technologies in Medicine,* Newport Beach, CA, July 31, 2007

C82. Rice University, McIntire Lecture, *Medical Imaging in Thick Tissues using Diffuse Optics,* April 2008, http://events.rice.edu/index.cfm?month=04-25-2008&action=month

C83. University of Arizona, Optical Science College Colloquium, *Medical Imaging in Thick Tissues using Diffuse Optics,* May 2008
http://www.optics.arizona.edu/Colloquium/08-05-01.htm

C84. Stanford University, OSA Student Chapter, *Multi-Dimensional Optical Imaging in Thick Tissues: Contrast across Spatial Scales,* May 2008
http://event.stanford.edu/events/141/14131/

C85. University of Pennsylvania, Chemical Biophysics Mini-Symposium, *Spectroscopy and Imaging in Medicine: Moving Benchtop Optical Technologies to the Bedside,* March 19, 2009

C86. Rochester Institute of Technology, Imaging Science Seminar, *Spectroscopy and Imaging in Medicine: Moving Benchtop Optical Technologies to Bedside,* May 13, 2009
http://www.cis.rit.edu/files/2631_BruceTromberg_abstract.pdf

C87. University of Rochester, Institute of Optics and Department of Biomedical Engineering, Joint Colloquium Speaker, May 14, 2009

C88. Boston University Photonics Center, Future of Light Symposium, *Medical Imaging in Thick Tissues using Spatially and Temporally Modulated Light,* November 16, 2009

C89. University of Minnesota, Department of Biomedical Engineering Seminar Series, March 29, 2010

C90. Dartmouth University, Norris Cotton Cancer Center, Grand Rounds, *Diffuse Optical Spectroscopy and Imaging of Breast Cancer,* July 22, 2010

C91. University of California, Riverside, Bioengineering Distinguished Speaker Colloquium Series, November 3, 2010

C92. University of St. Andrews, Scotland, Cancer Colloquium, *The role of diffuse optical imaging in breast cancer detection and treatment*, November 11, 2010

C93. Texas A&M University, Department of Biomedical Engineering Seminar Series, Nov. 19, 2010

C94. University of Pennsylvania, Department of Physics, Advances in Biomedical Optics Colloquium Series, March 1, 2011.

C95. University of Pennsylvania, Britton Chance: His Life Times and Legacy, *"Bio-economics: Supply and Demand According to Chance",* June 4, 2011.

C96. MD Anderson Cancer Center, University of Texas, Houston Texas, Department of Radiology Colloquium, *"Optical Imaging in Breast Cancer Detection and Treatment"*, October 10, 2011.

C97. University of Virginia, Department of Biomedical Engineering Seminar Series, October 20, 2011.

C98. Cornell University, Department of Biomedical Engineering Seminar Series, November 10, 2011.

C99. Saitama University Medical Center, Cancer Colloquium, Saitama, Japan, December 1, 2011.

C100. Tokyo National Defense Medical College, Optics and Photonics Seminar Series, December 2, 2011.

C101. Hamamatsu Corporation Lecture Series, Hamamatsu, Japan, December 5, 2011.

C102. Tel Aviv University, Tel Aviv, Israel, Sackler Lectures: December 20 and 22, 2011.

Professional Meetings

PM1. International Society for Optics and Photonics, *Synchronous Fluorescence Studies of Anthracycline Anti-tumor Drugs,* Los Angeles, CA, January 1989.

PM2. International Society for Optics and Photonics, *Singlet Oxygen Generation of Porphyrin and Phthalocyanin Photosensitizers,* Los Angeles, CA, January 1989.

PM3. American Society for Photobiology, Workshop on Photodynamic Therapy, *Transcutaneous Oxygen Electrodes for the Evaluation of the Efficiency of Photodynamic Therapy,* Boston, MA, July 1989.

PM4. International Society for Optics and Photonics Institute on Photodynamic Therapy, *Oxygen Monitoring During Photodynamic Therapy,* San Diego, CA, January 1990.

PM5. International Society for Optics and Photonics, Laser-Tissue Interaction Session: *Monitoring the Efficiency of Photodynamic Therapy in Tissue,* Los Angeles, CA, January 1990.

PM6. American Society for Photobiology National Meeting, Vancouver, *Fiber Optic Chemical Sensors in Bio-Analysis,* British Columbia, Canada, June 1990.

PM7. International Society for Optics and Photonics, Laser-Tissue Interaction Session: *Indirect Spectroscopic Detection of Singlet Oxygen during Photodynamic Therapy*, Los Angeles, CA, January 1991.

PM8. MedTech-91, *Determination of Tissue Optical Properties Using Multifrequency Phase and Modulation Spectroscopy,* Berlin, Germany, May 1991.

PM9. Pacific Conference on Chemistry and Spectroscopy, *Optical Property Measurements in the Multiple-scattering Regime Using Frequency-domain Photon Migration,* Anaheim, CA, October 1991.

PM10. International Society for Optics and Photonics, Laser-Tissue Interaction Session: *Monitoring Photochemistry in Tumors Using Frequency Domain Photon Migration,* Los Angeles, CA, January 1992.

PM11. International Society for Optics and Photonics, Photon Migration and Imaging in Random Media: *Properties of Photon Density Waves at Boundaries,* Los Angeles, CA, January 1993.

PM12. American Urological Association, Eighty-Eighth Annual Meeting, *Diagnostic Applications of Lasers,* San Antonio, TX, May 1993.

PM13. Optical Society of America, Advances in Optical Imaging and Photon Migration Topical Meeting, *Frequency-Domain Photon Migration Spectroscopy in Turbid Media*, Orlando, FL, March 1994.

PM14. American Society for Lasers in Surgery and Medicine Annual Meeting, *Principles of Laser-Based Diagnostics*, Toronto, Canada, April 1994.

PM15. Gordon Research Conference on Lasers in Medicine and Biology, *What Does Microirradiation Really Do To Cells?,* Meriden, NH, July 1994.

PM16. International Society for Optics and Photonics, Photon Migration and Imaging in Random Media: *Frequency Domain Photon Migration in Small Volumes,* San Jose, CA, February 1995.

PM17. American Society for Lasers in Medicine and Surgery, *Light and Drug Dosimetry during Photodynamic Therapy,* San Diego, April 1995.

PM18. Life Sciences Industry Council: Second Annual Technology Showcase, *Photon Migration: A new optical technique for non-invasive medical diagnostics,* Irvine, CA, September 1995.

PM19. Engineering Foundation, *Frequency-Domain Photon Migration for Tissue Spectroscopy,* Snowbird, UT, July 1995.

PM20. Rank Prize Funds Lecture, *Diagnostic and Therapeutic Applications of Tissue Optical Properties,* Grasmere, England, May 1996.

PM21. American Society for Photobiology National Meeting, *Monitoring Tissue Optical and Physiological Properties Using Frequency-Domain Photon Migration,* Atlanta, GA, June 1996.

PM22. Optical Society of America, Topical Meeting on Biomedical Optical Spectroscopy and Diagnostics, *Frequency-Domain Photon Migration (FDPM) Measurements of Tissue Optical Properties for Biomedical Diagnostics,* Orlando, FL, 1996.

PM23. Biomedical Optics Society, Annual Meeting, *Characterization of Breast Tumor Optical and Physiological Properties using Frequency Domain Photon Migration,* San Jose, CA, February 1997.

PM24. Humboldt University, First International Symposium on Advances in Optical Techniques for Breast Tumor Detection, *Relationship between Optical and Physiological Properties in Breast Tumors,* Berlin, Germany, June 1997.

PM25. Engineering Foundation Meeting, Advances in Optical Technologies for Medicine and Surgery, *Photon Migration Methods for Characterizing Breast Tumor Optical and Physiological Properties,* July, 1997.

PM26. Radiological Society of North America, *Non-Invasive Optical Detection of Breast Cancer Using Frequency-Domain Photon Migration (FDPM),* Chicago, IL, December 1997.

PM27. First World Congress of Photomedicine in Gynecology, *Frequency Domain Photon Migration for Tissue Diagnostics,* and *Light and Photosensitizer Dosimetry in the Endometrium*. Zurich, Switzerland; February 1998.

PM28. Optical Society of America, *Non-invasive Characterization of Breast Lesion Optical and Structural Properties using multi-wavelength, multi-frequency photon density waves co-registered with ultrasound imaging,* Orlando, FL, March 1998.

PM29. Optical Society of America, *Optical and Physiological properties of Tumors,* Baltimore, MD, October 1998.

PM30. International Society for Optics and Photonics, *The Future of Optical Tomography,* San Jose, CA, February 1999.

PM31. International Society for Optics and Photonics, *In-vivo Measurements of Human Breast Optical Properties Reveal Menopausal-Dependent Absorption and Scattering Variations,* San Jose, CA, February 1999.

PM32. United Engineering Foundation, *Two-Photon Imaging in Thick Tissues: How Deep Can We Go?* Kona, HI, August 1999.

PM33**.** Optical Society of America, Annual Meeting, *Strategies for Optimizing Sensitivity of Remitted Light Signals to Dysplastic Transformation,* Santa Clara, CA, September 1999.

PM34. Optical Society of America, Annual Meeting, *Photon Migration Spectroscopy of Normal and Tumor-Containing Breast Tissues: Effects of Menopausal Status, Estrous Cycle and Malignant Transformation,* Santa Clara, CA, September 1999.

PM35. Optical Society of America, Biomedical Topical Meeting, *Intralipid or Patient, IRB or Not to Be,* Miami, FL, April 2000.

PM36. Gordon Research Conference on Lasers in Biology and Medicine, *Advances in Intravital Imaging,* June 2000.

PM37. Radiological Society of North America, *Optical Imaging: A New Diagnostic Technique,* Chicago, IL, November 2000.

PM38. A. E. Profio Memorial Lecture, International Photodynamic Association 8th World Congress on Photodynamic Medicine, *Optical Diagnostics: Past, Present, and Future*, Vancouver, BC, Canada, June 2001.

PM39. Association of University Radiologists 50th Anniversary meeting, *Optical Diagnostics*, Phoenix, AZ, April 2002.

PM40. Society of Nuclear Medicine: Modern Imaging Technology: Basic Science in Medical Applications workshop, *Modern Techniques in Optical Imaging*, Los Angeles, CA, June 2002.

PM41. SPIE-Biomedical Optics Society Annual Meeting, "Hot Topics" Lecture: *Optical Methods in Breast Cancer*, San Jose, CA, January 2003

PM42. ASLMS Optical Diagnostic Imaging Workshop*, Diffuse Optical Spectroscopy and Imaging*, Anaheim, CA, April 2003.

PM43. German-American Frontiers of Engineering Symposium, *Quantitative In-Vivo Optical Imaging,* Germany, April 2003.

PM44. Society for Molecular Imaging Annual Meeting, *Defining Contrast in Optical Mammography Using Broadband Diffuse Optical Spectroscopy (DOS),* San Francisco, CA, August 2003.

PM45. 2nd Annual UCSD Symposium on Biomedical Imaging and Bioengineering, *The Role of Optical Imaging in Breast Cancer Detection*, San Diego, CA, November 2003.

PM46. American Institute of Medical and Biological Engineers (AIMBE) Annual Event: Imaging and Bioengineering: Partners for the Future, *Multi-Dimensional Tissue Optical Imaging,* Washington, DC, February 2004.

PM47. UC Systemwide Bioengineering Symposium, *Optics in Breast Cancer Detection,* Irvine, CA, June 2004.

PM48. National Science Foundation US - Egypt workshop, *Laser Chemistry and Applications to Materials and Biomedical Research*, Cairo, Egypt, October 2004.

PM49. International Conference on Tumor Progression and Therapeutic Resistance, *Functional Optical Imaging of Breast Cancer,* Philadelphia, PA, November 2004.

PM50. SPIE 18th Annual Symposium-Photonics West, *Workshop on Molecular Imaging,* San Jose, CA, January 2005.

PM51. St. Andrews University Cancer Colloquium, *The Role of Optics in Breast Cancer Detection and Clinical Management*, St. Andrews, Scotland, February 2005.

PM52. International Laser Safety Conference 2005, *Medical Imaging Using Lasers,* Marina del Rey, CA, March 2005

PM53. Institut Pasteur EuroConference, *Tissue repair and ulcer/wound healing: Molecular mechanisms, therapeutic targets and future directions,* Paris, France, March 2005

PM54. National Cancer Institute Special Programs of Research Excellence (SPORE) Investigators Workshop, *Clinical Trials Consortium: Optical Technologies in Breast Cancer,* Washington. DC, July 2005

PM55. Molecular Imaging in 2020, *Monitoring and Predicting Chemotherapeutic Response in Breast Cancer*, Jackson Hole, WY, September 2005

PM56. American Institute for Medical and Biological Engineering (AIMBE) 15th Annual Event, Plenary Session Lecture, *Optical Imaging Across Spatial Scales*, Washington, DC, February 2006.

PM57. Biophotonics in Australia: Showcase and Strategic Planning, Plenary Session Lecture, *Medical imaging in Thick Tissues using Diffuse Optics,* Sydney, Australia, February 2006.

http://www.physics.mq.edu.au/research/fluoronet/BIA/talkAbstract.htm

PM58. Optical Diagnostic Imaging from Bench to Bedside at the National Institute of Health, *Overcoming Barriers to the Translation of Optical Technologies,* Bethesda, MD, September 25-27 2006.

PM59. Association of Pathology Chairs, New Frontiers for Pathology Education, Plenary lecture, *Optical Imaging: Gross Examination without an Excised Specimen,* Colorado Springs, CO, July 18-21 2007.

PM60. 3rd Asian and Pacific Rim Symposium on Biophotonics, Plenary lecture, *Multi-Dimensional Optical Imaging in Thick Tissues: Contrast Across Spatial Scales,* Cairns, Australia, July 9-11, 2007.

PM61. Advanced Technology Applications for Combat Casualty Care (ATACCC), *In-Vivo Optical Imaging of Cerebral Ischemia and Perfusion in a Brain Injury Model,* St. Petersberg, FL, August 2007.

PM62. San Antonio Breast Cancer Meeting, Molecular Imaging Mini Symposium: *Non-Invasive Optical Methods for Breast Cancer Detection and Management,* December 13-16, 2007, Plenary Speaker.

PM63. International Society for Optics and Photonics (SPIE), Hot Topics Session, *Monitoring and Predicting Chemotherapy Using Diffuse Optics,* San Jose, CA, January 19, 2008, Plenary Speaker.

PM64. 1st International Congress on Biophotonics (ICOB), *Engineering Optics from Benchtop to Bedside,* Sacramento, CA, February 3-7, 2008, Keynote Address.

PM65. Optical Society of America, Biomedical Topical Meeting, *Clinical Translational Impact of Diffuse Optics in Breast Cancer,* St. Petersburg, FL, March 16-19, 2008, Invited Speaker.

PM66. Experimental Biology Meeting, Microscopy Symposium, *Label-free Molecular Imaging of Blood Vessels using Multi-dimensional Non-linear Microscopy,* San Diego, CA, April 6, 2008, Invited Speaker.

PM67. National Center for Research Resources, Annual Principal Investigators Meeting, National Institutes of Health, *Tissue Optical Imaging Using Spatially Modulated Structured Illumination,* Bethesda, MD, November, 2008, Invited Speaker.

PM68. San Antonio Breast Cancer Meeting, *Optical Imaging and Spectroscopy in Breast Cancer Detection and Management,* San Antonio, TX, December 2008, Invited Poster Symposium Lecture and Moderator.

PM69. The Arnold & Mabel Beckman Foundation and Keck Initiatives Conference, Vision for the Future through Interdisciplinary Discovery, *Advances in Tissue Optical Spectroscopy and Imaging,* Irvine CA, January 23-25, 2009, Invited Speaker.
http://media.doheny.org.s3.amazonaws.com/2008/bruce_tromberg/bruce_tromberg.htm

PM70. 56th Annual Western Spectroscopy Association Conference, Spectroscopy and Imaging in Medicine, *Moving Benchtop Optics to the Bedside,* Pacific Grove, CA, January 28-30, 2009, Plenary Speaker.

PM71. National Institutes of Health Workshop on Optical Diagnostic Imaging from Bench to Bedside, *Barriers to Clinical Translation of Optical Technologies,* Bethesda, MD, October 2009, Invited Speaker.

PM72. International Symposium on Topical Problems of Biophotonics, *Diffuse Optical Spectroscopic Imaging using Spatially and Temporally Modulated Light,* Nizhny Novgorod, Russia, July 19-24, 2009, Plenary Speaker.

PM73. The Pittsburgh Conference (PITTCON 2010), Technical Program, *Spectroscopy and Imaging in Medicine: Moving Benchtop Optical Technologies to the Bedside*, February 27-March 3, 2010, Orlando FL, Invited Speaker.

PM74. Optical Society of America, Biomedical Topical Meeting, Bio-Optics in Clinical Applications, *Clinical Metabolic Imaging using Diffuse Optics,* Miami, FL, April 11-14, 2010, Invited Speaker.

PM75. Future Diagnostics Conference, *Optical Imaging of Cancer Therapies*, Cambridge Healthtech Institute, UC Irvine, April 27, 2010, Invited Speaker.

PM76. Laser Applications in the Life Sciences (LALS), *Medical Imaging using Spatially and Temporally Modulated Light,* Oulu Finland, June 2010, http://www.ee.oulu.fi/LALS-2010/Plenaries/Plenaries.htm, Plenary Speaker.

PM77. Gordon Research Conference on Lasers in Biology and Medicine, *Diffuse Optical Imaging of Chemotherapy Response,* New Hampshire, July 25-29, 2010, Invited Speaker.

PM78. World Molecular Imaging Conference Satellite Meeting, *Medical Imaging in Thick Tissues with Light,* Seoul, South Korea, September 6, 2010, Invited Speaker.

PM79. International Congress on Biophotonics (ICOB), *Biophotonics in drug discovery*, Quebec, Canada, September 27, 2010, Invited Panel Discussion Speaker and Leader.

PM80. American College of Radiology Imaging Networks (ACRIN) National Meeting, Experimental Imaging Sciences Committee, *DOSI technology in Breast Cancer Imaging,* October 1, 2010, Invited Speaker.

PM81. Royal Society Lecture, Theo Murphy meeting on Biomedical Optics-The Kavli Royal Society International Center, *DOSI in Breast Cancer Detection and Treatment*, November 8-10, 2010, Invited Speaker.

PM82. American Society for Clinical Oncology (ASCO), *"ACRIN Trial of Optical Imaging for Predicting Breast Cancer Chemotherapy Response"* June 6, 2011.

PM83. California Biophotonics Alliance/CBST Retreat, Lake Tahoe, CA, *"Engineering Optics from Blackboard to Bedside"* July 11-13, 2011

PM84. International Photonics Conference, NCKU, Tainan, Taiwan, Plenary Lecture, *"Medical Imaging Using Spatially and Temporally Modulated Light"*, December 10, 2011.