

Curriculum Vitae and Bibliography

Sorin J. Brull, MD, FCARCSI (Hon)



PERSONAL INFORMATION

Home Address and Phone: 101 Sawbill Palm Drive
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Business Address and Phone: Mayo Clinic Jacksonville
Department of Anesthesiology
4500 San Pablo Road S., Jacksonville, FL 32224
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Brull.Sorin@mayo.edu

Citizenship: United States
Marital Status: Married; Children: 3
Languages: Italian, Romanian, French (read)

PRESENT ACADEMIC RANK AND POSITION

Professor of Anesthesiology , Mayo Clinic, College of Medicine	01/01/05 – present
Consultant , Department of Anesthesiology, Mayo Clinic	01/01/07 – present
Clinical Professor (Courtesy), Department of Anesthesiology, University of Florida, Gainesville, FL	07/01/02 - present

EDUCATION

Brandeis University, Waltham, MA	1974-1977
Wheeling College, Wheeling, WV	B.S. (Biology) 1977-1979
West Virginia University School of Medicine Morgantown, WV	M.D. 1980-1984
Doctorate Program, Yale University Graduate School Health Policy Administration; Epidemiology & Public Health, New Haven, CT	1995-1998
Internship: Transitional, Yale University School of Medicine Hospital of St. Raphael, New Haven, CT	1984-1985
Residency: Anesthesiology, Yale University School of Medicine Yale-New Haven Hospital, New Haven, CT	1985-1987
Fellowship: Obstetric Anesthesia, Yale University School of Medicine Yale University School of Medicine, YNHH, New Haven, CT	1987-1988

Fellowship: Thoracic and Peripheral Vascular Anesthesia 1987-1988
Yale University School of Medicine, YNHH, New Haven, CT

Fellowship: American Hospital Association/National Patient Safety 2011-2012
Foundation (AHA/NPSF) Patient Safety Leadership Fellowship
American Hospital Association, Chicago, IL

BOARD CERTIFICATION

National Board of Medical Examiners (# 297992) 1985
American Board of Anesthesiology (#15648) Certification, Recertification 1988, 2002, 2016
American Academy of Pain Management (#2086) 1991

MEDICAL LICENSURE

Arizona	# 35635 (Active)	2006	Connecticut	#027745 (Inactive)	1986
Arkansas	# E-1692 (Inactive)	1998	Florida	#ME - 84568 (Active)	2002
California	#G-064533 (Inactive)	1988	Minnesota	#48252 (Active)	2006

PREVIOUS PROFESSIONAL POSITIONS/EMPLOYMENT

Laboratory Technician, Massachusetts General Hospital and 1974-1976
Chelsea Memorial Hospital, Chelsea, MA

Emergency Medical Technician, New England Sinai Hospital, Stoughton, MA 1976-1977

ECG and Stress Testing Technician, Cardiac Rehabilitation Center 1977-1979
Wheeling Hospital, Wheeling, WV

Respiratory Therapy Technician, Ohio Valley Medical Center, Wheeling, WV 1979-1980

Instructor in Anesthesiology 1987-1988
Yale University School of Medicine, New Haven, CT

Assistant Professor of Anesthesiology 1988-1993
Yale University School of Medicine, New Haven, CT

Associate Professor of Anesthesiology 1993-1998
Yale University School of Medicine, New Haven, CT

Acting Chief of Service, Section of General (Adult) Anesthesia 1994-1995
Yale-New Haven Hospital, New Haven, CT

Chief, Section of General (Adult) Anesthesia 1995-1998
Yale-New Haven Hospital, New Haven, CT

Chairman , Department of Anesthesiology University of Arkansas for Medical Sciences, Little Rock, AR	1998-2001
Professor of Anesthesiology (Tenured) University of Arkansas for Medical Sciences, Little Rock, AR	1998-2002
Medical Director and Chief , Department of Anesthesiology Florida Hospitals - Memorial System, Ormond Beach, FL	2002-2004
Senior Associate Consultant , Department of Anesthesiology Mayo Clinic, Jacksonville, FL	2004-2007
Program Director , Anesthesiology Residency Program, Mayo Clinic, Jacksonville, FL	2007

PROFESSIONAL MEMBERSHIPS / SOCIETIES

Academy of Anesthesiology, Elected Member	2010-present
Accreditation Association for Ambulatory Health Care (AAAHC)	2005-2008
American Academy of Pain Management (AAPM)	1991-2007
American College of Physician Executives (ACPE)	1991-2002
American Society of Anesthesiologists (ASA)	1985-present
ASA Representative to the Accreditation Association for Ambulatory Health Care (AAAHC)	2005-2008
Member, AAAHC Board of Directors	2005-2008
ASA Representative to the Association of periOperative Registered Nurses (AORN)	2008-2011
Member, Recommended Practices Committee	
Committee on Academic Anesthesiology	2008-2010
Committee on Ambulatory Surgical Care	2006-2011
Committee on Anesthesia Care Team	2009-2011
Committee on Equipment, Monitoring and Engineering Technology	2012-present
Vice-Chair , ASA Abstract Review Subcommittee	2014-2016
Chair , ASA Abstract Review Subcommittee	2016-2018
Committee on Panels	1999-2001
Committee on Patient Safety and Education	2010-2012
Committee on Physician Resources	1998-2001
Committee on Quality Improvement & Practice Management	1998-2000
Committee on Quality Management & Dept. Administration (Adj.)	2000-1, 2002-6
Committee on Quality Management & Dept. Administration	2007-2011
Committee on Research	1998-2001
Committee on Residents and Medical Students	1998-2001, 2003-5
Committee on Scientific Papers	1998-2000
Committee on Scientific Advisory	2016-2018
Committee on Surgical Anesthesia Care (Adjunct)	1997-2001, 2002-3, 2005
Committee on Surgical Anesthesia Care	2007-2011
Teller, House of Delegates	1996-1999
Subcommittee on Neuromuscular Transmission	1991-2, 1995-6, 2009-10
Subcommittee on Local Anesthesia and Pain	1996-8, 1999-2001
Chair , Subcommittee on Local Anesthesia and Pain	1998, 1999

Subcommittee on Fundamentals of Anesthesiology	2016-2018
American Society of Critical Care Anesthesiologists (ASCCA)	1986-1993
American Society of Regional Anesthesia (ASRA)	1988-2007
Anesthesia Patient Safety Foundation (APSF)	1992-present
APSF Scientific Evaluation Committee	1996-2014
Vice-Chair	2000-2001
Chair	2001-2014
APSF Board of Directors	2002-present
APSF Executive Committee	2001-2016
APSF Newsletter Editorial Board	2002-present
Chair , APSF Scientific Evaluation Subcommittee - "Neurocognitive Effects of the Head-Above-Heart Position" Request-for-Proposal (RFP)	2010
Association of University Anesthesiologists (AUA)	1993-present
Connecticut State Society of Anesthesiologists	1985-1998
Co-Chair , Scientific Program Organizing Committee	1991-1994
Alternate Delegate, State of Connecticut	1996-1998
European Patient Safety Foundation (EuPSF)	2015-present
Member, OPUS Steering Committee	2015-present
European Society of Anaesthesiology (ESA)	2013-present
European Society of Regional Anesthesia (ESRA)	1989-1992
European Society for Computing and Technology in Anaesthesia and Intensive Care (ESCTAIC)	2013-present
Member, International Organizing Committee	2013-present
Florida Society of Anesthesiologists (FSA)	2004-present
Alternate Delegate to ASA, State of Florida – District 13	2006-2011
Annual Meeting Steering Committee	2007-2011
Co-Chair , Annual Meeting Steering Committee	2005-2007
International Anesthesia Research Society (IARS) #15287	1985-present
International Association for the Study of Pain (IASP)	1994-2003
International Society of Anaesthetic Pharmacology (ISAP)	2012-2016
Society for Ambulatory Anesthesia (SAMBA)	2005-2011
Society for Education in Anesthesia (SEA) #558	1987-2000
Membership Committee	1988-1995
Society for Intravenous Anesthesia (SIVA)	1992-1994
Society for Technology in Anesthesia (STA) #206	1990-1996
Member, Committee on Industry Liaison (CIL)	1992-1996
World Federation of Societies of Anaesthesiologists (WFSA)	2016-present
Member, Safety and Quality Committee	

EDITOR, PATIENT SAFETY SECTION

Anesthesia and Analgesia 2007-2016

EDITOR

Advances in Anesthesiology 2013-2015

SCIENTIFIC REVIEWER FOR MEDICAL JOURNALS

<i>Anesthesia & Analgesia</i>	1991-present
<i>Journal of Clinical Anesthesia</i>	1992-2007
<i>Anesthesiology</i>	1993-present
<i>Yale Journal of Biology and Medicine</i>	1993-1996
<i>Southern Medical Journal</i>	1994-2000
<i>American Journal of Anesthesiology</i>	1995-1996
<i>Journal of Clinical Monitoring</i>	1995-2013
<i>British Journal of Anaesthesia</i>	2001-present
<i>Clinical Neurology and Neurosurgery</i>	2006-present
<i>Critical Care Medicine</i>	2007-present
<i>Journal of Medical Case Reports</i>	2007-present
<i>Acta Anaesthesiologica Scandinavica</i>	2008-present
<i>Drugs</i>	2008-present
<i>Minerva Anestesiologica</i>	2008-present
<i>Acta Pharmacologica Sinica</i>	2010-present
<i>Mayo Clinic Proceedings</i>	2010-present
<i>European Journal of Anaesthesiology</i>	2014-present
<i>BMC Anesthesiology (electronic journal)</i>	2014-present

EDITORIAL BOARD MEMBERSHIP

<i>Yale Journal of Biology and Medicine</i>	1996-2007
<i>American Journal of Anesthesiology</i>	1996-2000
<i>Same-Day Surgery</i>	2001-2005
<i>Anesthesia Patient Safety Foundation Newsletter</i>	2002-present
<i>Anesthesia & Analgesia - Guest Reviewer</i>	2003-2007
<i>BMC Anesthesiology (electronic journal)</i>	2006-2010
<i>Romanian Journal of Anesthesiology and Intensive Care</i>	2008-present
<i>InforMed</i>	2012-2013
<i>Moldovan Journal of Health Sciences</i>	2014-present
<i>Journal of Clinical Anesthesia</i>	2017-present

GUEST EDITOR

- Yale Journal of Biology and Medicine* - "Anaesthesia and Critical Care Symposium, 1990"
Volume 64, Number 4, July/August 1991.
- Yale Journal of Biology and Medicine* - "Anaesthesia and Critical Care Symposium, 1993"
Volume 66, Number 5, September/October 1993.
- Yale Journal of Biology and Medicine* - "Anaesthesia and Critical Care Symposium, 1997"
Volume 70, 1997.

AWARDS AND HONORS

Elected Member, AUA Association of University Anesthesiologists, Seattle, WA	1993
Invited Reviewer, Scientific Review Group - Program Project Grant, NCI/NIH National Cancer Institute, National Institutes of Health (NIH) Department of Health & Human Services (DHHS), Bethesda, MD	1994
Invited Reviewer, Special Scientific Review Group – NINR/NIH National Institute of Nursing Research, National Institutes of Health (NIH) Department of Health & Human Services (DHHS), Bethesda, MD	1994-5
Recipient – Astra USA Unrestricted Educational Grant for Fellowship in Regional Anesthesia – Yale University (\$22,500)	1996
Recipient – Astra USA Unrestricted Educational Grant for Fellowship in Regional Anesthesia – Yale University (\$22,500)	1997
Co-Investigator – “Study of Chemogenic Low Back Pain” - 1 RO1 NS39568-01A1 National Institute of Neurological Disorders and Stroke (NINDS), NIH (\$850,000)	2000-4
Section Editor, <i>Anesthesia & Analgesia</i> International Anesthesia Research Society (IARS)	2007
Invited International Reviewer, Georgian Republic National Science Foundation State Science Grants Competition 2007, Tbilisi, Republic of Georgia	2007
Elected Member, International Editorial Board <i>Romanian Journal of Anaesthesia and Intensive Care</i>	2008
Recipient, <i>Outstanding Oral Boards Exams Teaching Award</i> Anesthesiology Residents, Mayo Clinic Jacksonville Residency Program	2008
Department of Health and Human Services, Public Health Service Food and Drug Administration (FDA) Special Government Employee (SGE)	2008
Member, Anesthetic and Life Support Drugs Advisory Committee (ALSDAC) Food and Drug Administration (FDA), DHHS, Rockville, MD	2008
Introductory Welcome Speaker - Mayo School of Health Sciences (MSHS) All-School Convocation, Mayo School of Medicine, Rochester, MN	2008
Invited International Reviewer, Georgian Republic National Science Foundation State Science Grants Competition 2008, Tbilisi, Republic of Georgia	2008
Invited Faculty Reviewer, International Anesthesia Research Society (IARS) Symposium Lecture, IARS Annual Meeting, San Diego, CA	2009

Invited International Reviewer, Georgian Republic National Science Foundation State Science Grants Competition 2009, Tbilisi, Republic of Georgia	2009
Chairman's Performance Review Committee – Invited External Reviewer Department of Anesthesiology Dean's Committee University of Cincinnati College of Medicine, Cincinnati, OH	2009
Invited International Reviewer, Georgian Republic National Science Foundation State Science Grants Competition 2010, Tbilisi, Republic of Georgia	2010
Elected Member, <i>Academy of Anesthesiology</i> Rochester, MN – The Anaesthetists' Club, Founded 1929	2010
Honorary Fellowship - FCARCSI <i>College of Anaesthetists of Ireland, Royal College of Surgeons</i> , Dublin, Ireland	2011
Honorary Professorship <i>State Medical and Pharmaceutical University "Nicolae Testemitanu"</i> Ministry of Health of the Republic of Moldova, Chisinau, Moldova	2011
Invited International Reviewer, Georgian Republic National Science Foundation State Science Grants Competition 2011, Tbilisi, Republic of Georgia	2011
External Peer Reviewer, The Portuguese Foundation for Science and Technology Portuguese Research Council, Ministry of Education & Science, Portugal	2013
CA-2 Faculty Teacher of the Year Award Mayo Clinic Residency Program	2014
CA-3 Faculty Teacher of the Year Award Mayo Clinic Residency Program	2014
Neuro-Anesthesiology Faculty Teacher of the Year Award Mayo Clinic Residency Program	2014
Honoree, University of Debrecen, <i>Debrecen Anaesthesia Days</i> Debrecen, Hungary	2014
Honorary Member Diploma, S.R.A.T.I. Romanian Society of Anaesthesia and Intensive Care, Sinaia, Romania	2015
Teacher of the Year Award Anesthesiology Residency Program, Mayo Clinic Florida	2015
Member, Royal Society of Medicine (by invitation) 1 Wimpole Street, London, United Kingdom	2015
Elected member, Assembly/Committee: Optimizing Patients Undergoing Surgery (OPUS). Perioperative management of neuromuscular blockade, European Patient Safety Foundation (EuPSF), Brussels, Belgium	2016

Neuroanesthesia Consultant of the Year Award 2017
Anesthesiology Residency Program, Mayo Clinic Florida

Research Mentor of the Year Award 2017
Anesthesiology Residency Program, Mayo Clinic Florida

EDUCATIONAL ACTIVITIES• **Curriculum / Course Development**

Program Organizing Chairman, Scientific Director <i>Anaesthesia and Critical Care Symposium-1990</i> Killarney, Co. Kerry, Ireland	1989-1990
Director , Fiberoptic Workshop Department of Anesthesiology, Yale University, New Haven, CT	1991-1994
Program Co-Chairman, Scientific Director <i>Second Anaesthesia and Critical Care Symposium-1993</i> Killarney, Co. Kerry, Ireland	1992-1993
Poster Session Moderator , <i>Neuromuscular Transmission</i> American Society of Anesthesiologists Meeting, New Orleans, LA	1996
Program Co-Chairman , <i>Third Anaesthesia and Critical Care Symposium - 1997</i> Killarney, Co. Kerry, Ireland	1995-1997
Poster Session Moderator , <i>Regional Anesthesia</i> American Society of Anesthesiologists Meeting, New Orleans, LA	1996
Poster Session Moderator , <i>Regional Anesthesia and Pain</i> American Society of Anesthesiologists Meeting, Orlando, FL	1998
Poster Session Moderator , <i>Neuromuscular Transmission</i> American Society of Anesthesiologists Meeting, Dallas, TX	1999
Poster Session Moderator , <i>Neuromuscular Transmission</i> American Society of Anesthesiologists Meeting, San Francisco, CA	2000
Director , Medical Education Simulation Laboratory (Laerdal) University of Arkansas for Medical Sciences, Little Rock, AR	2002-2003
Coordinator , Anesthesia Residents' Journal Club Department of Anesthesiology, Mayo Clinic, College of Medicine	2004-2007
Course Co-Director , <i>Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2008</i> , Mayo Clinic, College of Medicine	2007-2008
Coordinator , Anesthesia Residents' Oral Boards Preparation Department of Anesthesiology, Mayo Clinic, College of Medicine	2006-present
Poster Session Moderator , <i>Education and Patient Safety</i> International Anesthesia Research Society (IARS) Congress, San Francisco, CA	2007

Course Co-Director, Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2009 , Mayo Clinic, College of Medicine	2008-2009
Member, International Advisory Board <i>International Meeting of the Society of Anaesthesiology and Critical Care of the Republic of Moldova</i> , Chisinau, Moldova	2008
Member, Florida Society of Anesthesiologists' Annual Meeting FSA Annual Meeting Scientific Committee, Ft. Lauderdale, FL	2008-2014
Member, International Scientific Committee <i>21st International Congress</i> , Israel Society of Anesthesiologists, Tel Aviv, Israel	2008
Course Co-Director, Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2010 , Mayo Clinic, College of Medicine	2009-2010
Invited Independent Clinical Reviewer, CME-Accredited Activity North American Center for CME, International Anesthesia Research Society (IARS) Meeting, San Diego, CA	2009
Member, International Advisory Board <i>International Meeting of the Society of Anaesthesiology and Critical Care of the Republic of Moldova</i> , Chisinau, Moldova	2009
Program Co-Chairman <i>4th Anaesthesia and Critical Care Symposium-2010</i> Killarney, Co. Kerry, Ireland	2009-2010
Florida Society of Anesthesiologists (FSA) Annual Meeting 2010 Education & Meeting Steering Committee, Ft. Lauderdale, FL	2009-2010
Member, International Scientific Committee <i>3rd International Symposium on Patient Safety</i> Israel Society of Anesthesiologists, Mayney Ha'yeshuah, Tel Aviv, Israel	2010
Chair, APSF RFA Scientific Evaluation Committee "Blood Pressure Management in the Head-up Position" RFA Anesthesia Patient Safety Foundation (APSF), Indianapolis, IN	2010
Course Co-Director, Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2011 , Mayo Clinic, College of Medicine	2010-2011
Florida Society of Anesthesiologists (FSA) Annual Meeting 2011 Education & Meeting Steering Committee, Ft. Lauderdale, FL	2010-2011
Poster Session Moderator, Neuromuscular Pharmacology American Society of Anesthesiologists Annual Meeting, San Diego, CA	2010

Member, International Scientific Committee <i>4th International Symposium on Patient Safety</i> Israel Society of Anesthesiologists, Mayney Ha'yeshuah, Tel Aviv, Israel	2011
Course Co-Director , <i>Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2012</i> , Mayo Clinic, College of Medicine	2011-2012
Chair, APSF Executive Committee RFA Evaluation Committee "Patient Safety Career Development Award" Request for Applications Anesthesia Patient Safety Foundation (APSF), Indianapolis, IN	2012
Co-Director, International Scientific Committee <i>5th International Symposium on Patient Safety</i> Israel Society of Anesthesiologists, Mayney Ha'yeshuah, Tel Aviv, Israel	2012
Course Co-Director , <i>Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2013</i> , Mayo Clinic, College of Medicine	2012-2013
Editorial Advisory Board Member InforMed – 2013 ER/LA Opioid REMS Education Series, Jacksonville, FL	2012-2013
Course Co-Director , <i>Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2014</i> , Mayo Clinic, College of Medicine	2013-2014
Course Co-Director , <i>Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2015</i> , Mayo Clinic, College of Medicine	2014-2015
Member, Scientific Committee European Society for Computing and Technology in Anaesthesia and Intensive Care (ESCTAIC) <i>25th Annual Meeting</i> , Timisoara, Romania	2014
Co-Director, International Scientific Committee <i>6th International Symposium on Patient Safety</i> Israel Society of Anesthesiologists, Mayney Ha'yeshuah, Tel Aviv, Israel	2015
Course Co-Director , <i>Mayo Clinic Symposium on Anesthesia and Perioperative Medicine 2016</i> , Mayo Clinic, College of Medicine	2015-2016
Program Co-Chairman <i>5th Anaesthesia and Critical Care Symposium-2016</i> Cong, Co. Mayo, Ireland	2015-2016
Abstract Reviewer , IARS 2017 International Anesthesia Research Society (IARS), Washington, DC	2017
Chair , <i>APSF / ASA Collaborative Panel on Neuromuscular Blockade And Patient Safety</i> Anesthesia Patient Safety Foundation / American Society of Anesthesiologists, Rochester, MN	2017

Education – Anesthesiology Specialty American Board of Anesthesiology (ABA) Examiner

Provisional Examiner, ABA Part II – Oral Boards American Board of Anesthesiology, Raleigh, NC	1992-1994
Junior Examiner, ABA Part II – Oral Boards American Board of Anesthesiology, Raleigh, NC	1994-2000
Associate Examiner, ABA Part II – Oral Boards American Board of Anesthesiology, Raleigh, NC	2000-2008
Senior Examiner, ABA Part II – Oral Boards American Board of Anesthesiology, Raleigh, NC	2008-present

Teaching (Intramural) Activities and Presentations**Mayo Clinic College of Medicine, Jacksonville, FL**

<u>Title of Lecture</u>	<u>Audience</u>	<u>Date</u>
Neuroanesthesia – Morning Report (Sedation and Delayed Extubation after Neurosurgery)	Anesthesia Resident Core Curriculum	9/28/17
Neuroanesthesia – Morning Report (Neuroanesthesia Grab-bag)	Anesthesia Resident Core Curriculum	8/31/17
Neuroanesthesia – Morning Report (Vascular Air Embolism)	Anesthesia Resident Core Curriculum	8/17/17
Neuroanesthesia – Morning Report (Postoperative vs. Emergence Delirium)	Anesthesia Resident Core Curriculum	8/3/17
Neuroanesthesia – Morning Report (Awake Craniotomy)	Anesthesia Resident Core Curriculum	7/20/17
Muscle Relaxants; Clinical Use and Neuromuscular Monitoring	Anesthesia Resident Core Curriculum	7/5/17
Neuromuscular Physiology and Pharmacology	Anesthesia Resident Core Curriculum	6/14/17
Anesthesia for Thoracic Surgery	Departmental Mock Oral Boards Sessions	1/30/17
The Neuromuscular Junction – Pharmacology and Physiology, Events and Function	Anesthesia Resident Core Curriculum	1/16/17
Muscle Relaxants – Depolarizing and Nondepolarizing Agents – Mechanism of Action, Pharmacology	Anesthesia Resident Core Curriculum	12/12/16
Physics for the Anesthesiologist	Anesthesia Resident Core Curriculum	8/8/16
Sugammadex and Clinical Implications	Departmental Grand Rounds Lecture	7/11/16
Regional Anesthesia	Mock Oral Boards Review Sessions	4/25/16

Muscle relaxants: Structure-Function Relationship	Anesthesia Resident Core Curriculum	2/22/16
Neuromuscular Physiology and Pharmacology	Anesthesia Resident Core Curriculum	10/9/15
Trauma and Head Injury	Departmental Mock Oral Boards Sessions	6/15/15
Renal Failure and Kidney Transplantation	Departmental Mock Oral Boards Sessions	6/15/15
Neuromuscular Block - Pharmacology	Anesthesia Resident Core Curriculum	5/5/15
Cardiac Anesthesia	Departmental Oral Boards	4/28/15
Transplant Anesthesia	Departmental Oral Boards	3/31/15
Trauma Anesthesia	Departmental Oral Boards	2/24/2015
Cardiovascular Anesthesia	Departmental Oral Boards	12/2/2014
Pharmacology of Neuromuscular Blocking Agents	Anesthesia Resident Core Curriculum	11/25/2014
Neuromuscular Diseases and Disorders	Anesthesia Resident Core Curriculum	9/8/2014
Clinical Use of Muscle Relaxants	Anesthesia Resident Core Curriculum	7/2/2014
Cardiac Anesthesia	Departmental Oral Boards	4/2/2014
Neuromuscular Pharmacology – When, Why and How Much?	Anesthesia Resident Core Curriculum	2/17/2014
Obstetric Anesthesia	Departmental Oral Boards	1/17/2014
Cardiovascular Anesthesia	Departmental Oral Boards	12/12/2013
Anatomy and Physiology of NMJ	Anesthesia Resident Core Curriculum	10/3/2013
Neuromuscular Junction – Physiology and Pharmacology	Anesthesia Resident Core Curriculum	7/10/2013

Neuromuscular Blocking Agents – Basic Physiology and Pharmacology	Anesthesia Resident Core Curriculum	7/11//2012
Residual Neuromuscular Block and Patient Safety: “My Patient Is Fine...”	Journal Club, Department of Anesthesiology	6/18/2012
Cystic Fibrosis and Anesthetic Implications	Departmental Oral Boards	6/11/2012
Spinal Anesthesia and Zones of Differential Block – How High Is That Spinal?	Anesthesia Resident Core Curriculum	4/2/2012
Physiology of the Autonomic Nervous System	Anesthesia Resident Core Curriculum	4/2/2012
Obstetric Anesthesia	Departmental Oral Boards	1/23/2012
Basic Physiology and Pharmacology of the Neuromuscular Junction	Anesthesia Resident Core Curriculum	9/7/2011
Postoperative Residual Neuromuscular Weakness: Patient Safety Implications	Department of Anesthesiology Grand Rounds Lecture	8/22/2011
Major Trauma and Anesthetic Implications	Anesthesia Residents Oral Boards	5/9/2011
Anesthesia and Orthopedic Emergencies	Anesthesia Residents Oral Boards	3/7/2011
Intrathoracic Surgery and Anesthetic Implications	Anesthesia Residents Oral Boards	2/14/2011
Anesthesia for Major Blunt Trauma	Anesthesia Residents Oral Boards	1/10/2011
Anesthesia for Patients with Critical Pulmonary Disease	Anesthesia Residents Oral Boards	11/29/2010
Anesthesia for Obstetric Emergency	Anesthesia Residents Oral Boards	9/13/2010
Anesthesia for Pediatric Trauma	Anesthesia Residents Oral Boards	7/12/2010
Advances in Neuromuscular Pharmacology and Monitoring of Block: Acceleromyography	Department of Anesthesiology Grand Rounds Lecture	6/21/2010
Trauma and ICU Anesthesia	Anesthesia Resident Oral Boards	5/10/2010
Obstetric Anesthesia - Placenta Previa	Anesthesia Resident Oral Boards	2/8/2010
Physiology, Pharmacology and Function of Nerve Fibers	Anesthesia Resident Core Curriculum	2/8/2010

Neuromuscular Physiology and Pharmacology	Anesthesia Resident Core Curriculum	10/7/2009
Neuromuscular Function Monitoring - When, Why, How?	Anesthesia Resident Core Curriculum	7/15/2009
Obstetric Anesthesia and Pregnancy-Induced Hypertension (PIH)	Anesthesia Resident Oral Boards	4/27/2009
Anesthesia for Intracerebral Hemorrhage	Anesthesia Resident Oral Boards	3/23/2009
Anesthesia for Transplantation	Anesthesia Resident Oral Boards	1/26/2009
Renal Failure and Anesthesia	Anesthesia Resident Oral Boards	11/3/2008
Post-Operative Visual Loss (POVL) and Prone Positioning	Anesthesia Resident Core Curriculum	11/3/2008
Spinal Cord Injury – Positioning and Airway Management	Anesthesia Resident Core Curriculum	11/3/2008
Cardiothoracic Anesthesia – Mock Oral Boards	Anesthesia Resident Oral Boards	8/29/2008
Physiology of the Neuromuscular Junction	Anesthesia Resident Core Curriculum	7/28/2008
Pharmacology of Muscle Relaxants	Anesthesia Resident Core Curriculum	7/28/2008
Anesthesia for Patients with Endocrine Disease	Anesthesia Resident Oral Boards	5/5/2008
Residual Neuromuscular Paralysis – Cause and Complications	Anesthesia Resident Core Curriculum	4/28/2008
Obstetric Anesthesia – Pregnancy-Induced Hypertension	Resident Subspecialty Lecture	1/16/2008
Trauma Anesthesia – Mock Oral Boards Exam	Anesthesia Resident Oral Boards	12/17/2007
Neuroanesthesia – Mock Oral Boards Exam	Anesthesia Resident Oral Boards	10/29/2007
Pediatric Anesthesia – Mock Oral Boards Exam	Anesthesia Resident Oral Boards	9/24/2007
Cardiac Anesthesia – Mock Oral Boards Exam	Anesthesia Resident Oral Boards	6/13/2007
Trauma Anesthesia – Mock Oral Boards Exam	Anesthesia Resident Oral Boards	5/9/2007
Spinal Cord Injury and Myelopathy – CNS Monitoring	Anesthesia Resident Core Curriculum	4/30/2007

Spine Surgery and Ischemic Optic Neuropathy	Anesthesia Resident Core Curriculum	4/30/2007
Obstetric Anesthesia – Mock Oral Board Exam	Anesthesia Resident Oral Boards	3/28/2007
Neuroanesthesia – The Real Story	Anesthesia Residents’ Journal Club	2/14/2007
To Block or Not to Block: That is the Agent	Anesthesia Department Grand Rounds	12/4/2006
Spinal Anesthesia: Anatomy and Physiology	Anesthesia Resident Core Curriculum	11/6/2006
Neuroanesthesia – Physiologic Effects of ICP	Anesthesia Resident Subspecialty Conference	10/4/2006
Physiology of the Neuromuscular Junction	Anesthesia Resident Core Curriculum	7/19/2006
Pharmacology of Muscle Relaxants	Anesthesia Resident Core Curriculum	7/19/2006
Anesthesia for Outpatient Surgery	Anesthesia Resident Subspecialty Conference	6/21/2006
Spinal Blockade / Anesthesia	Anesthesia Residents’ Journal Club	3/15/2006
Muscle relaxants I: Physiology of the Neuromuscular Junction	Anesthesia Resident Core Curriculum	1/30/2006
Muscle relaxants II: Monitoring and Reversal	Anesthesia Resident Core Curriculum	1/30/2006
Neurovascular Surgery I: Carotid Endarterectomy & Carotid Artery Stenting	Anesthesia Resident Core Curriculum	10/21/2005
PACU Management of the Neurosurgical Patient	Anesthesia Resident Core Curriculum	10/21/2005
Obstetric Anesthesia	Anesthesia Resident Oral Boards	9/28/2005
Neuroanesthesia	Anesthesia Resident Subspecialty Conference	8/31/2005
Muscle relaxants I: Physiology of the Neuromuscular Junction	Anesthesia Resident Core Curriculum	7/20/2005
Muscle relaxants II: Monitoring and Reversal	Anesthesia Resident Core Curriculum	7/20/2005

Spinal Anesthesia	Anesthesia Residents' Journal Club	6/15/2005
Postoperative Pain Management	Anesthesia Resident Subspecialty Conference	5/11/2005
Obstetrics	Anesthesia Resident Subspecialty Conference	3/9/2005
What is New in Neuromuscular Research?	Anesthesia Residents' Journal Club	2/17/2005
Clinical Applications of Spinal Anesthesia	Anesthesia Department Grand Rounds	9/13/2004
Problem-Based Learning: Differential Sensitivity of Muscle Groups to Muscle Relaxants	Anesthesia Resident Core Curriculum	8/16/2004
Neuromuscular Junction: Physiology and Pharmacology	Anesthesia Resident Core Curriculum	7/19/2004

Florida Hospital – Memorial Systems, Ormond Beach, FL

<u>Title of Lecture</u>	<u>Audience</u>	<u>Date</u>
Residual Paralysis in PACU – Diagnosis & Treatment	Departmental Update Lecture	10/2002
Preemptive Analgesia and Surgical Outcome	Departmental Update Lecture	2/2003
Malignant Hyperthermia Update	Departmental Update Lecture	4/2003
Perioperative Temperature Management	Departmental Update Lecture	6/2003
Perioperative Management of Pheochromocytoma	Departmental Update Lecture	7/2003
Care of the Critically-Ill Patient – Nursing Issues	Nursing Department Lecture	8/2003
Postoperative Pain Control – What Are the Limits?	Nursing Department Lecture	8/2003
JCAHO – National Patient Safety Goals	Nursing Department Lecture	9/2003
Neuromuscular Monitoring in the PACU – Is Residual Block Present?	Critical Care Nursing	10/2003
Tracheal Extubation Criteria in the PACU	Critical Care Nursing	11/2003

University of Arkansas for Medical Sciences, Little Rock, AR

<u>Title of Lecture</u>	<u>Audience</u>	<u>Date</u>
Physiology of Neuromuscular Junction: Clinical Applications	Anesthesia Resident Didactic Program	7/1998
Physiology of Neuromuscular Junction	Medical Student Didactic Program, Department of Anesthesiology	11/1998
Role of Preemptive Analgesia in Clinical Practice	Anesthesia Resident Didactic Program	2/1999
Autonomic Nervous System: Problem-Based Learning Discussion	Anesthesia Resident Didactic Program	6/1999
Physiology and Pharmacology of the Neuromuscular Junction	Anesthesia Resident Didactic Program	8/1999
Physiology of the Neuromuscular Junction	Anesthesia Resident Didactic Program	7/2000
Pharmacology of the Neuromuscular Junction	Anesthesia Resident Didactic Program	8/2000
Physiology and Pharmacology of the Neuromuscular Junction	Medical Student Didactic Program, Department of Anesthesiology	9/2000
Autonomic Nervous System: Problem-Based Learning Discussion/Chairman's Corner	Anesthesia Resident Didactic Program	10/2000
Monitoring of the Neuromuscular Junction	Anesthesia Resident Didactic Program	11/2000
Physiology of Spinal Anesthesia	Anesthesia Resident Didactic Program	12/2000
Physiology and Pharmacology of the Neuromuscular Junction	Anesthesia Resident Didactic Program	2/2001
Autonomic Nervous System: Problem-Based Learning Discussion/Chairman's Corner	Anesthesia Resident Didactic Program	3/2001
Physiology of One-Lung Ventilation	Anesthesia Resident Didactic Program	4/2001

Anesthesia and Surgical Outcome	Anesthesia Resident Didactic Program	1/2002
Rational Use of Muscle Relaxants	Anesthesia Resident Didactic Program	2/2002

University of Arkansas School of Medicine, Little Rock, AR

<u>Title of Lecture</u>	<u>Audience</u>	<u>Date</u>
Physiology and Pharmacology of the Neuromuscular Junction (6 course hours)	Medical School Core Curriculum - Sophomore Year	2000
Pharmacology - Local Anesthetics (6 course hours)	Medical School Core Curriculum - Sophomore Year	2001

Yale University School of Medicine, New Haven, CT

<u>Title of Lecture</u>	<u>Audience</u>	<u>Date</u>
Renal Effects of Mechanical Ventilation and PEEP	Department of Anesthesiology Grand Rounds	1985
Midazolam: A New Induction Agent	Department of Anesthesiology Grand Rounds	1986
Anaphylaxis and Anesthesia	Critical Decisions Conference, Department of Anesthesiology	1987
Cardiovascular Effects of PEEP in Hyper-, Hypo-, and Eu-volemic patients	Journal Club, Department of Anesthesiology	1987
Spinal Anesthesia	Anesthesia Resident Didactic Program	1988
Endocrine Disease and Anesthesia	Anesthesia Resident Didactic Program	1988
Munchausen's Syndrome: Case Presentation	Department of Anesthesiology Grand Rounds	1988
High-Risk Obstetric Anesthesia	CA-3 Resident Conference, Department of Anesthesiology	1989
Endocrine Disease and Anesthesia	Department of Anesthesiology Grand Rounds	1989
Intraoperative Renal Failure	Critical Decisions Conference, Department of Anesthesiology	1989
New Concepts in Neuromuscular Blockade Monitoring	Anesthesia Resident Didactic Program	1989
Advances in Neuromuscular Monitoring	Clinical Research Presentation, Department of Anesthesiology	1990
Metabolism and Nutrition	CA-3 Resident Conference, Department of Anesthesiology	1990
Departmental College Bowl Challenge I	Department of Anesthesiology Grand Rounds	1990
Understanding the Anesthesia Machine	Anesthesia Resident Didactic Program	1990

Diseases of Metabolism and Nutrition	CA-3 Resident Conference, Department of Anesthesiology	1990
Fiberoptic Orotracheal Intubation Workshop	Departmental Didactic Workshop, Department of Anesthesiology	1991
Munchausen's Syndrome: Case Presentation	Anesthesia Resident Didactic Program	1991
Departmental Oral Board Rehearsals	Department of Anesthesiology Grand Rounds	1991
Departmental College Bowl Challenge II	Department of Anesthesiology Grand Rounds	1991
Anatomy of the Anesthesia Machine: Practical Exam	Anesthesia Resident Didactic Program	1991
Complications of Spinal and Epidural Anesthesia	Critical Decisions Lecture, Department of Anesthesiology	1991
Departmental Oral Boards	Department of Anesthesiology Grand Rounds	1992
Thoracic Anesthesia and One-Lung Ventilation	Morbidity & Mortality Conference	1992
Complications of Epidural Anesthesia	Department of Anesthesiology Grand Rounds	1992
Anatomy of the Anesthesia Machine: Practical Exam	Department of Anesthesiology Grand Rounds	1992
Complications of Regional Anesthesia	Morbidity & Mortality Conference	1992
Perioperative Complications: Role of Obesity	Morbidity & Mortality Conference	1993
Departmental Oral Boards	Department of Anesthesiology Grand Rounds	1993
Anatomy of the Anesthesia Machine: Practical Exam	Anesthesia Resident Didactic Program	1993
Anesthesia for Major Vascular Surgery	Anesthesia Resident Didactic Program	1993
Obesity as an Anesthetic Risk	Anesthesia Resident Didactic Program	1993
Legal Issues in Anesthesia	Morbidity & Mortality Conference	1994

Departmental Oral Boards	Department of Anesthesiology Grand Rounds	1994
Anatomy of the Anesthesia Machine: Practical Exam	Anesthesia Resident Didactic Program	1994
Monitoring of Neuromuscular Function	Anesthesia Resident Didactic Program	1995
Departmental Oral Boards	Department of Anesthesiology Grand Rounds	1995
Use of Muscle Relaxants in the ICU Setting	Department of Surgery, Surgical ICU Rounds	1995
Muscle Relaxants and Clinical Use	Department of Internal Medicine, Medical ICU Rounds	1995
Anatomy of the Anesthesia Machine: Practical Exam	Anesthesia Resident Didactic Program	1995
Regional Anesthesia - Problem-Based Learning Discussion	Anesthesia Resident Didactic Program	1995
Thoracic Anesthesia - Problem-Based Learning Discussion	Anesthesia Resident Didactic Program	1995
Obstetric Anesthesia - Problem-Based Learning Discussion	Anesthesia Resident Didactic Program	1996
Understanding the Anesthesia Machine and Equipment	Anesthesia Resident Didactic Program	1996
Regional Anesthesia: Clinical Controversies - Problem-Based Learning Discussion	Anesthesia Resident Didactic Program	1996
Autonomic Nervous System: Problem-Based Learning Discussion	Anesthesia Resident Didactic Program	1996
Monitoring Neuromuscular Block	Anesthesia Resident Didactic Program	1996
Regional Anesthesia: Clinical Controversies - Problem-Based Learning Discussion	Anesthesia Resident Didactic Program	1997
Monitoring Neuromuscular Block	Anesthesia Resident Didactic Program	1997
Role of Preemptive Analgesia in Clinical Practice	Anesthesia Resident Didactic Program	1997

Pharmacoeconomics of Muscle Relaxants	Anesthesia Resident Didactic Program	1997
Obstetric Anesthesia – Physiology of Pregnancy	Anesthesia Resident Didactic Program	1997
Obstetric Anesthesia: Clinical Controversies - Problem-Based Learning Discussion	Anesthesia Resident Didactic Program	1997

TEACHING ACTIVITIES• **Individual Anesthesia Specialty ABA Oral (Part 2) Board Exams (Mayo Clinic)**

Melissa Vu, M.D.	3-20-04	Raquel Buser, M.D.	6-27-05
Laurie Wright, M.D.	4-18-05	Prentice McCullough, M.D.	6-27-05
Scott Raffo, M.D.	4-20-05	Greg Giergenti, M.D.	9-27-05
Teresa Cherry, M.D.	6-23-05	Christopher Robards, M.D.	11-15-05
Arvin Trippensee, D.O.	1-05-06	Prentice McCullough, MD	5-09-06
Joshua Fuhrmeister, MD	3-1; 3-10-06	Christopher Robards, MD	6-19-06
Stephen Aniskevich, MD	3-15-06	Robert Ebener, MD	6-19-06
William Hogan, MD	4-05-06	Gloria Walters, MD	7-25-06
Gloria Walters, MD	7-26; 7-27-06	Sarah Stollendorf, MD	1-21-07
Justin Evans, MD	5-22-07	Robert Ebener, DO	6-13-07
Christopher Robards, MD	9-20-07	Stephen Aniskevich, MD	9-24-07
Mario Gutierrez, MD	10-12-07	Jason York, MD	11-20-07
Will Kramer, MD	3-11-08	John Giacoman, MD	3-11-08
Robert Ebener, DO	7-28-08	Robert Ebener, DO	9-12-08
Kevin Riutort, MD	4-16-09	Brian Emerson	3-22-10
Eduardo Rodrigues, MD	8-23-11	Sher-Lu Pai, MD	4-12-12
Ashley Greene, MD	3-28-13	Jack Bairamian, MD	4-1-13
Igor Ianov, MD	8-27-13	Albert Aldron, MD	2-26; 4-2-14
Ross Renew, MD	4-8-14	Ami Attala, MD	12-12-14
Arun Kalava, MBBS	1-17; 2-10-15	Sandeep Dhanjal, MD	2-26-16
Timothy Howard, MD	8-9-17		

MENTORSHIP ACTIVITIES• **Mentorship**

- **Neuromuscular Pharmacology and Physiology, Yale University** 1990-1994
Neil Roy Connelly, MD
Current Position: Professor of Anesthesiology, Tufts University School of Medicine; Director, Anesthesia Research; Head, Thoracic Anesthesia Section, Baystate Medical Center, Springfield, MA
- **Neuromuscular Physiology and Pharmacology, Monitoring** 1992-1994
Derмот Kelly, MD
Current Position: Consultant Anaesthetist, St. Vincent's University Hospital; Consultant, Eye & Ear Hospital, Dublin, Ireland
- **Curriculum Development-Fellowship in Regional Anesthesia, Yale University** 1995
Harry Frizelle, MB BS
Current position: Honorary Treasurer, College of Anaesthetists of Ireland and Director, Department of Anaesthesia, Mater University Hospital, Dublin, Ireland

- Regional Anesthesia and Neurophysiologic Monitoring**
 Peter G. Atanassoff, MD
Current Position: Associate Professor of Anesthesiology, Yale University;
 Chief Physician, Hospital du Jura Bernois, Moutier, Switzerland

1994-1999
- Carl Koller Regional Anesthesia Fellowship Award, Yale University**
 Thomas Halaszynski, DMD, MD
Current Position: Associate Professor of Anesthesiology, Yale University;
 Director, Perioperative & Adult Anesthesia; Associate Director, Pre-Admission
 Testing Unit, Yale Department of Anesthesiology, New Haven, CT

1997
- Major and Peripheral Vascular Fellowship**
 Shamsuddin Akhtar, MD
Current Position: Associate Professor of Anesthesiology and Director,
 Medical Student Education, Yale University School of Medicine

1996-1998
- Neurosciences Laboratory Program, UAMS**
 Jun-Ming Zhang, MSc, MD
Current Position: Professor of Anesthesiology; Director of Research, University
 of Cincinnati College of Medicine, Cincinnati, OH; Honorary Professor,
 Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing;
 Honorary Professor, The Fourth Military Medical University, Xi'an, China

1997-2002
- High School Young Scientist Development Initiative**
 Laura McGrimley, MD
Current Position: Pediatrician, Branford Pediatrics, Madison, CT

1997-2003
- College Student Mentorship – Interest in Medicine, Mayo Clinic**
 Carlo Petrillo
Current Position: Resident, Anesthesiology

2005, 2008
- International Anesthesia Research Society (IARS) Mentorship Program**
One-on-one K08, T32 mentor sessions. San Francisco, CA

2007
- C.R.I.S.P. Mentorship Program – Kelly Marie Jones, Pharmacy Student, UF**
Student mentorship, Mayo School of Health Sciences, Jacksonville, FL

2009
- C.R.I.S.P. Mentorship Program – Mueez Qureshi, Student, UNF**
Student mentorship, Mayo School of Health Sciences, Jacksonville, FL

2010
- C.R.I.S.P. Mentorship Program – Booyeon Hun, Student, Princeton University**
Student mentorship, Mayo School of Health Sciences, Jacksonville, FL

2010
- C.R.I.S.P. Mentorship Program – Casey Beleckas, Student, Emory University**
Student mentorship, Mayo School of Health Sciences, Jacksonville, FL

2011

- Fulbright Scholar Mentorship** – Ruslan Baltaga, MD
Sponsor: World Health Organization – Republic of Moldova
Current Position: Associate Professor and Chairman
Department of Anesthesiology and Critical Care Medicine,
National Centre for Emergency Medicine, Chisinau, Moldova

2011
- C.R.I.S.P. Mentorship Program** – Danielle Reimer, Student, UNF
Student mentorship, Mayo School of Health Sciences, Jacksonville, FL

2012
- C.R.I.S.P. Mentorship Program** – Stefan A. Brooks, University of Pittsburgh
Student mentorship, Mayo School of Health Sciences, Jacksonville, FL

2013
- C.R.I.S.P. Mentorship Program** – Victoria Howe, Southern University
Student mentorship, Mayo School of Health Sciences, Jacksonville, FL

2014
- C.R.I.S.P. Mentorship Program** – Tiffany Hoeckelberg
Student mentorship, Mayo School of Health Sciences, Jacksonville, FL

2015
- Fulbright Scholar Mentorship** – Reka Nemes, MD
Sponsor: University of Debrecen, Hungary

2017-8

Educational Scholarships and Grants

- Recipient** - Unrestricted Educational Grant for Advancement of Regional Anesthesia
1996 - Astra USA (\$22,500) – Founder, Regional Anesthesia Fellowship, Yale
- Recipient** - Unrestricted Educational Grant for Advancement of Regional Anesthesia
1997 - Astra USA (\$22,500) – Regional Anesthesia Fellowship, Yale
- Recipient** - Unrestricted Educational Grant – Evolution of a Didactic Program in
Anesthesia Simulation. 2001 - Merck & Co., Inc. (\$5,000)
- Recipient** - Unrestricted Educational Grant - “Anesthesia Outcomes Research”
1996-1997 - Organon Teknika, Belgium (\$75,000)

Academic Career Development

<p><i>“Understanding Databases and Their Role in Information Management”</i> 1992 Summer Executive Symposium, American College of Physician Executives. Boston, Massachusetts (14 CME Credit Hours)</p>	1992
<p><i>“The Three Faces of Quality: Total Quality Management, Outcomes Management, and Practice Guidelines”</i> 1992 Summer Executive Symposium, American College of Physician Executives. Boston, Massachusetts (14 CME Credit Hours)</p>	1992
<p><i>“Physician in Management” Seminar I.</i> 1993 Summer Executive Symposium, American College of Physician Executives. Boston, Massachusetts (31 CME Credit Hours)</p>	1993
<p><i>“Culturally Competent Communication Course”</i> - Module I Mayo Clinic, Jacksonville, Florida</p>	2009
<p><i>“Quality Academy”</i> – Bronze Level Certification Mayo Clinic, Jacksonville, Florida</p>	2011
<p><i>“Culturally Competent Communication Course”</i> - Module II Mayo Clinic, Jacksonville, Florida</p>	2012
<p>American Hospital Association / National Patient Safety Foundation <i>(AHA/NPSF) Patient Safety Leadership Fellowship</i> American Hospital Association, Chicago, IL</p>	2011-2012

COMMUNITY

- Little League Soccer Coach, Madison, CT 1993-1996
- Cub Scouts Volunteer and Den Leader, Madison, CT 1995-1996
- Madison T-ball coach, Madison, CT 1994
- Holiday Basket Delivery (Underserved)– New Haven County, CT 1994-1997
- Holiday/Thanksgiving Basket Delivery – Duval County, FL 2010

INSTITUTIONAL / DEPARTMENTAL COMMITTEES**YALE UNIVERSITY**

General (Adult) Anesthesia Section	1988-1998
Acting Chief	1994-1995
Chief	1995-1998
Thoracic and Peripheral Vascular Anesthesia Division	1988-1998
Chief	1992-1994
Acute Pain Service	1988-1994
Critical Care (High-Risk) Consult Service	1988-1995
Obstetric Anesthesia Section	1988-1993
Residency Program Committee	1988-1998
Resident Selection Committee	1988-1998
Resident Education Monitoring Committee	1989-1998
Chair	1989-1998
Curriculum (Education) Committee	1990-1995
Chair	1990-1995
Clinical Competence Committee	1990-1993
Continuous Quality Improvement (CQI) Program	1992-1998
Director	1992-1998
On-Call Mediation Committee	1992-1994
Call Adjustment Committee	1996-1998
Departmental Executive Committee	1993-1996
Departmental Academic Promotions Committee	1993-1998
Committee on Appointments, Reappointments and Promotions	1996-1998
Academic Time Reallocation Committee	1994-1998
Chair	1994-1998
Education Steering Committee	1994-1998
Clinical Research Committee	1995-1998
Departmental Leave Policy Committee	1996-1998
Chair	1996-1998
Executive Leadership Council , Member	1996-1998
Managed Care Committee	1996-1998

YALE-NEW HAVEN HOSPITAL

Medical Staff Quality Assurance Committee	1992-1998
Clinical Practice Incentives Committee (Yale Physicians Practice Group)	1993-1994
Chair , ICU Paralysis and Sedation Committee; Department of Pharmacy Services	1994-1998
Medical Products Evaluation Committee	1995-1996
Clinical Pathways (Orthopedics, Vascular Surgery) Development Committee	1996-1998

UNIVERSITY HOSPITAL, LITTLE ROCK, AR

Patient Care Issues Committee	1998-2001
Chair	1998-2001
Hospital Medical Executive Board	1998-2001

Perioperative Services Management Committee	1998-2001
Physicians' Health Committee	1998-2002
Partnership Affiliations Council Executive Committee (PACE) UAMS/McClellan VA Hospital, Little Rock, AR	1998-2001
Council of Departmental Chairs Committee	1998-2001
University Hospital Credentials Committee	1999-2002
Graduate Medical Education Committee	1998-2002
Quality Review Committee	1998-2001
University Hospital Medical Ethics Committee	1999-2002
Physicians' Information Integration Committee	1999-2000
Managed Care/Practice Development Committee	1998-2002
Compliance Oversight Committee	1999-2001
Professional Liability and Malpractice Committee	1999-2002
Group Practice Executive Committee (GPEC)	1998-2001
Hospital Medical Board	2000-2001
Secretary	2000-2001

UNIVERSITY OF ARKANSAS COLLEGE OF MEDICINE

Executive Committee , Arkansas Center for Neuroscience	1999-2001
University Promotion and Tenure Committee	2000-2001
Medical School Curriculum Committee	2000-2002
Medical School Clinical Decision Making (CDM) Subcommittee	2000-2002
Medical School Dean's Executive Committee	2000-2001
Faculty Practice Finance and Operations - Executive Committee	2000-2002
Medical School Admissions Committee – member at large	1999-2002

FLORIDA HOSPITALS – MEMORIAL DIVISION, ORMOND BEACH, FL

Surgical Care Evaluation Committee	2002-2003
Co-Chair , Surgical Committee	2002-2004
Quality Improvement Committee	2002-2004
Institutional Review Board	2002-2003
Chair , Critical Care Steering Committee	2002-2004
JCAHO Standards Committee	2002-2003

MAYO CLINIC, JACKSONVILLE, FL

Anesthesiology Department Education Committee (DEC)	2004-2007
Chair , Anesthesia Clinical Competence Committee (CCC)	2004-2007
Vice-Chair , Anesthesia Education Committee	2007
Anesthesiology / CCM Research Committee	2004-2007
Anesthesiology Practice / PI Committee	2004-2007
Moderate Sedation Task Force (St. Luke's Hospital)	2005-2006
Chair , Procedural Sedation Committee	2006-2011
Chair , Anesthesia Finance Committee	2006-2008
Jacksonville Practice Performance Committee	2006-2007

Mayo School of Health Sciences (MSHS) Subcommittee	2007-2011
Patient Safety Oversight Committee (PSOC)	2006-2008
Chair , PSOC Patient Education Subcommittee	2007-2008
Allied Health Professionals Academic Appointments & Promotions Committee	2009-2013
Academic Appointments & Promotions Committee, Mayo School of Medicine	2012-present
Risk Management Committee, Mayo Clinic Florida Hospital	2014-2016
Multidisciplinary Research Committee, Mayo Clinic Florida	2014-present

ADMINISTRATIVE, CLINICAL and SCIENTIFIC CONSULTING EXPERIENCE

- **Member, American Society of Anesthesiologists (ASA) Consultation Program** 2000-2012
Description of Duties (see also <http://www.asahq.org/clinical/consultation.htm>)

History. The ASA Anesthesia Consultation Program came into existence as a result of the Society's need to respond to calls for help from medical staffs concerned with the quality of anesthetic care in their hospitals. Accordingly, the ASA Committee on Quality Management and Departmental Administration developed an innovative national program whereby it would make available experienced, practicing anesthesiologists to conduct on-site consultations at requesting hospitals.

The Anesthesia Consultation Program became operational in 1982 following approval by the ASA Board of Directors and House of Delegates. Since that time, the Committee on Quality Management and Departmental Administration has been asked to assist more than 180 U.S. hospitals and their medical staffs to improve their quality of anesthetic care.

The ASA Anesthesia Consultation Program consists of a group of Board-certified anesthesiologists who are mostly past or present members of the Committee on Quality Management and Departmental Administration. Included are several Past Presidents of ASA, and many are chiefs or former chiefs of anesthesiology departments. The consultants come from all parts of the United States and work in institutions ranging from a 100-bed community hospital to a 1,000-bed medical teaching center.

Many of the consultants are well known as speakers at anesthesia meetings across the country, and each is actively involved in patient care. All are thoughtful, experienced clinicians who bring years of experience to the program. It is from this group that two of these individuals are appointed as an Ad Hoc Subcommittee to perform an Anesthesia Consultation.

As a member of the ASA Anesthesia Consultation Committee, I participated in 15 institutional and departmental reviews between 2000-12.

- **Chair**, International Consultative Team for Anaesthesia and Critical Care Services 2006
King Faisal Specialist Hospital and Research Centre (KFSH&RC), Riyadh, Saudi Arabia

Led multinational team of experts to review the clinical, administrative, research and educational operations at KFSH&RC's Department of Anaesthesiology and Critical Care in Riyadh, Saudi Arabia.

- **Chair**, International Consultative Team for Anaesthesia and Critical Care Services 2007
King Faisal Specialist Hospital and Research Centre (KFSH&RC), Riyadh, Saudi Arabia

Follow-up review of implementation of recommendations (clinical, administrative, personnel, research and academic) at KFSH&RC's Department of Anaesthesiology and Critical Care, Riyadh, Saudi Arabia.

- **Consultant**, Cortex Pharmaceuticals, Inc., Irvine, CA 2007-2009

Provided scientific and clinical consultative services regarding the development of positive allosteric modulators of the AMPA receptor (ampakines) for the treatment of respiratory depression. The company is also involved in clinical development in the areas of neurological and psychiatric disorders. It develops ampakine compounds comprising CX1739 for the treatment of patients with central and mixed sleep apnea, and CX1942, a soluble ampakine to be used in an injectable formulation as a rescue medication for the emergency treatment of drug-induced respiratory depression.

- **Member, Anesthetic and Life Support Drugs Advisory Committee (ALSDAC)** 2008-2011
Food and Drug Administration (FDA), Rockville, MD

As a member of the Anesthesia and Life Support Drugs Advisory Committee (ALSDAC), I participated in FDA Advisory Committee meetings that dealt with important topics impacting patient clinical care and safety:

1. Narcotic abuse and diversion; evaluation of various manufacturing methods designed to diminish the abuse and diversion potential of scheduled narcotics
2. The safety and toxicity of propoxyphene and propoxyphene-containing compounds
3. The evaluation of acetaminophen and acetaminophen-containing products' potential for liver injury - evaluations included maximum daily dose recommendations, and development of a program to reduce the availability of over-the-counter acetaminophen-containing narcotic analgesics
4. Discussion of Risk Evaluation and Mitigation Strategies (REMS) for extended-release and long-acting opioid analgesics
5. Evaluation of the request to extend current label indications for duloxetine in the treatment of chronic pain

- **Editor, Patient Safety Section, *Anesthesia & Analgesia*** 2007-2016

As Section Editor, I was responsible for assignment of manuscripts for review, handling of reviewer comments, personal review of manuscripts, collating reviewer comments and drafting of decision letters regarding acceptance or rejection of manuscripts for publication. As Section Editor, I also made decisions regarding accompanying editorials, and personally wrote or invited authorship of editorial manuscripts. The position required handling of 150-200 original manuscripts per year, in addition to the 150-200 manuscript revisions that were required prior to manuscript acceptance and publication. Along with the other Section Editors and the Editor-in-Chief, I provided yearly input into developing and updating the Journal's Guidelines for Authors. I attended biannual Editor meetings and participated in the selection of the Editorial Board members.

- **Chair, Scientific Evaluation Committee;** 1998-2013
Member, Executive Committee; Member, Board of Directors.
Anesthesia Patient Safety Foundation (APSF)

As Chair of the Scientific Evaluation Committee, I received, reviewed, collated and distributed all applications that sought funding from APSF. This yearly process involved writing of grant guidelines, development of a secure website for uploading applications submitted by applicants, coordinating grant review process for 30-40 applications each year, and scientific review of all grants. I chaired the committee responsible for awarding of 3-7 grants per year, for total yearly funding of \$750,000-\$1,000,000 (www.APSF.org). As of 2013, APSF had approved over 100 research proposals and awarded in excess of \$9 million from among the 700+ applications received.

- **Scientific Director and Co-Founder (with Prof. Anthony J. Cunningham)** 1990-present
“Anaesthesia and Critical Care Symposium” – Royal College of Surgeons in Ireland (College of Anaesthetists) and Yale University. Killarney, Co. Kerry, Ireland

In cooperation with my colleagues at the Royal College of Surgeons in Ireland (RCSI), I have developed, advertised, organized and conducted 4 international symposia on anesthesia, pain medicine and critical care topics. All of these international meetings have been financially self-supported and educationally endorsed and supported by the Royal College of Surgeons in Ireland (College of Anaesthetists) and Yale University. The meetings have been held in Killarney, Ireland, and have included registrants from North and South America, Europe, Asia, Africa and Australia. The last meeting in 2010 marked the 20th anniversary of this international symposium. The final meeting will be held in 2016 at Ashford Castle, Cong, Co. Mayo, Ireland.

- **Founder, Chief Medical Officer – T4Analytics, LLC (Dover, DE)** 2011 - 2015

As founder of T4Analytics, LLC, I designed, built, and tested a portable, easy-to-use, and reliable prototype of a neuromuscular monitor that is based on electromyography. The monitor completed Phase 1 trials in normal volunteers and Phase 1 clinical trials in healthy patients undergoing surgery. A total of 6 abstracts describing the technology were published and presented at the 2 major specialty meetings, the American Society of Anesthesiologists (ASA) Annual Meeting and the International Anesthesia Research Society (IARS) Annual Meeting. T4Analytics was acquired by Acacia Designs BV in 2014.

- **Founder, Chief Medical Officer – Acacia Designs B.V. (Maastricht, Netherlands)** 2014 - 2016

Over 235 million patients undergo major surgical procedures worldwide every year. During general anesthesia for such surgeries, neuromuscular blocking agents (NMBAs) are used to paralyze the patients' muscles and allow surgery to be performed. The response of individual patients to NMBAs is highly variable. Larger doses of NMBAs during surgery than actually necessary to immobilize the patient can contribute to residual postoperative weakness (paralysis). Medical researchers and clinicians alike advocate monitoring the degree of neuromuscular blockade throughout surgery to improve dosing of NMBAs, and to reduce the incidence of postoperative complications. However, there is no available, clinically practicable, easy-to-use hand-held device that can accurately and easily measure the degree of neuromuscular blockade in the clinical setting.

Medical research studies show that 20-40% of patients arrive in the Post Anesthesia Care Unit (PACU) with objective evidence of residual neuromuscular blockade -- muscle weakness or residual paralysis. Of those patients, 0.8% will experience a Critical Respiratory Event (CRE) -- the inability to breathe independently, resulting in oxygen desaturation and apnea. Estimates are that in the United States alone, up to 100,000 patients per year suffer a CRE, some even requiring tracheal reintubation after the patient is out of surgery and in the PACU. This results in increased morbidity and mortality, prolongs hospital stay, and markedly increases patient dissatisfaction and healthcare costs.

There is a critical need for a device that can objectively monitor the degree of neuromuscular blockade throughout surgical procedures in which NMBAs are used. Acacia Designs B.V. has developed an objective, easy-to-use, reliable electromyographic Neuromuscular Blockade Monitor (the TetraGraph™) that can provide direct quantitative measurement of the degree of neuromuscular relaxation intraoperatively to assure adequate neuromuscular recovery prior to tracheal extubation.

- **Member, Board of Directors – Senzime AB (Uppsala, Sweden)** 2016-present

Senzime AB is a publicly traded Swedish company that develops unique patient-oriented monitoring systems that make it possible to assess patients' biochemical and physiological processes before, during and after surgery. The portfolio of technologies includes bedside systems that enable automated and continuous monitoring of life-critical substances such as glucose and lactate in both blood and tissues, as well as systems to monitor patients' neuromuscular function perioperatively and in the intensive care medicine setting.

The solutions are designed to ensure maximum patient benefit, reduce complications associated with surgery and anesthesia, and decrease health care costs. In 2016, Senzime AB merged with Acacia Designs BV. Senzime operates in growing markets that in Europe and the United States are valued in excess of \$10 billion. The company's shares are listed on NASDAQ Stockholm First North (Short Name: SEZI) (<http://www.Senzime.com>).

- **Member, Clinical Advisory Board – ClearLine MD (Woburn, MA)** 2016-present

Founded and funded by forward-thinking device engineers based on first-hand knowledge of an avoidable, clinical event, ClearLine MD develops and markets fluid management devices that advance operational safety. The Company is delivering a new standard of care for eliminating air from IV tubing sets and avoiding air embolism (www.clearlineMD.com).

- **Member, Anesthesia Advisory Board – The Doctors Company (Napa, CA)** 2016-present

The Doctors Company was founded in 1976 in response to the medical malpractice insurance crisis in California that closed thousands of physician offices and threatened patient access to affordable care. After leading the charge for comprehensive tort reform, the founders established The Doctors Company to continue the cause of advocating for physicians and advancing the practice of good medicine. As the nation's largest physician-owned medical malpractice insurer, The Doctors Company is committed to relentlessly defending, protecting, and rewarding their members with the industry's most aggressive claims defense, unrivaled protection, and innovative rewards. In 2008, the Company created a Foundation to support Patient Safety research and education programs through charitable grants (www.thedoctors.com).

- **Member, Scientific Advisory Board – NMD Pharma (Aarhus, Denmark)** 2017-present

NMD Pharma is a Danish small-molecule biomedical company that develops novel treatments for neuromuscular disorders. It was founded based on discoveries obtained in the Muscle Laboratory at Aarhus University, Denmark. As a drug-development company, NMD Pharma is on a mission to develop novel treatments that improve muscle function in patients with neuromuscular disorders.

Walking and breathing are examples of essential human behavior that are controlled by the nervous system and powered by contractions of skeletal muscles. The term “neuromuscular disorders” refers to a broad range of conditions in which the communication between the central nervous system and skeletal muscle fails, and patients develop debilitating weakness and fatigue.

In patients with such neuromuscular disorders, the loss of muscle functionality leads to reduced mobility and lack of independence and, in turn, markedly reduces quality of life. In severely affected patients, this muscle weakness can lead to life-threatening respiratory problems.

The vision of NMD Pharma is to improve the quality of life, function and survival of patients with neuromuscular disorders by developing novel treatments that include improving of neuromuscular transmission. (<http://www.nmdpharma.com>)

REGIONAL / NATIONAL / INTERNATIONAL PRESENTATIONS (FACULTY)

Invited by/Course	Location	Lecture Title(s)	Date
Organon, Inc. - Regional Meeting	Long Island, NY	• Assessment of Neuromuscular Function	1989
Hoffman-La Roche/Syntex	Boston, MA	• Perioperative Pain Control: Ketorolac Tromethamine	1990
Royal College of Surgeons in Ireland/Yale University. <i>Anaesthesia and Critical Care Symposium</i>	Killarney, Co. Kerry, Ireland	• The Neuromuscular Junction Workshop: Clinical Applications • Anaesthesia and the Cardiovascular System • Monitoring in Anaesthesia & Critical Care	1990
Astra Pharmaceuticals – Regional Meeting	Farmington, CT	• Options in Perioperative Pain Control	1991
New England Spine Surgery Study Group – <i>Advances in Pain Management</i>	Mystic, CT	• Continuous Infusion Anesthesia for Iliac Crest Graft Sites in Spinal Surgery	1991

Network for Continuing Medical Education	New York City, NY	• Panel Specialist: The National Symposium on Acute Pain Management	1991
Organon, Inc. Guest Lecture	Mystic, CT	• Neuromuscular Monitoring: Limitations of Technique	1991
Vermont Association of CRNAs – <i>Annual Meeting Faculty Lecture</i>	Burlington, VT	• Mivacurium - A New Muscle Relaxant	1992
Maine Association of CRNAs – <i>Annual Meeting Faculty Lecture</i>	W. Boothbay Harbor, ME	• New Developments in Nondepolarizing Muscle Relaxants	1992
<i>5th Annual Symposium: The State of the Art in Muscle Relaxants</i>	Atlantic City, NJ	• Advances in Monitoring Neuromuscular Function in the Operating Room	1993
Baystate Medical Center / Tufts University: <i>17th Annual Anesthesia Symposium</i>	Springfield, MA	• Anesthesia in the Outpatient Setting rest Graft Sites in Spinal Surgery	1993
Canadian Society of Anaesthesiologists: <i>Analgesia 1993 Symposium</i>	Halifax, Nova Scotia, Canada	• Pathophysiology of Acute Pain • New Trends in Postoperative Pain Management: Analgesia	1993
Regional Symposium; AHCPR Guidelines Faculty Lecture	Atlanta, GA Miami, FL Houston, TX Dallas, TX New Orleans, LA Raleigh, NC San Antonio, TX Pittsburgh, PA Charlotte, SC	• Managing Acute Pain in the '90s (9 lectures)	1993-1994
Royal College of Surgeons in Ireland/Yale University. <i>2nd Anaesthesia and Critical Care Symposium</i>	Killarney, Co. Kerry, Ireland	• Monitoring Neuromuscular Function • Anaesthesia and the Cardiovascular System	1993
<i>4th Annual Lower Alabama Continuing Education Seminars</i>	Gulf Shores, AL	• Monitoring of Neuromuscular Block - Recent Developments	1993
International Anesthesia Research Society (IARS) – <i>Faculty Lecture</i>	Orlando, FL	• Panel Faculty: Inhalational Anesthesia	1994

Sixth Annual Symposium on Muscle Relaxants – <i>Annual Meeting Faculty</i>	Atlantic City, NJ	<ul style="list-style-type: none"> Advances in Monitoring of Neuromuscular Block 	1994
American Academy of Pain Management: <i>Annual Meeting</i>	Vancouver, Canada	<ul style="list-style-type: none"> Pathophysiology of Acute Pain and Its Treatment 	1994
American Society of Anesthesiologists: <i>Annual Meeting</i>	San Francisco, CA	<ul style="list-style-type: none"> Laparoscopic and Thoracoscopic Procedures: Anesthetic Implications (Refresher Course) 	1994
Rhode Island State Society of Anesthesiologists: <i>Annual Meeting</i>	Newport, RI	<ul style="list-style-type: none"> Cost Effective Use of Muscle Relaxants 	1995
World Federation of Societies of Anaesthesiologists <i>Refresher Course Faculty Member</i>	Moscow, Russia	<ul style="list-style-type: none"> Anesthetic Management for Laparoscopic and Thoracoscopic Procedures Monitoring of Neuromuscular Block – What to Do, When, and Why Pre-Emptive Analgesia – Clinical Benefits 	1995
World Federation of Societies of Anaesthesiologists <i>Refresher Course Faculty Member</i>	St. Petersburg, Russia	<ul style="list-style-type: none"> Physiology of Spinal Anesthesia – Applications to Clinical Care Use of Muscle Relaxants and Cost Containment 	1995
7th Annual Symposium on Muscle Relaxants - <i>Annual Meeting Faculty</i>	Atlantic City, NJ	<ul style="list-style-type: none"> Advances in Monitoring of Neuromuscular Block – Submaximal Stimulation 	1995
Colby College/Tufts University <i>15th Annual Anesthesiology Review Course</i>	Waterville, ME	<ul style="list-style-type: none"> Clinical Applications of Pre-Emptive Analgesia Monitoring of Neuromuscular Block 	1995
American Academy of Pain Management: <i>Annual Meeting</i>	Dallas, TX	<ul style="list-style-type: none"> Pre-Emptive Analgesia: Theory and Practice 	1995
Glaxo-Wellcome Advisory Board - <i>Faculty Lecture</i>	Ft Lauderdale, FL Atlanta, GA	<ul style="list-style-type: none"> Muscle Relaxant Regional Update (2 lectures) 	1996
Etomidate (Amidate) - <i>Advisory Board Faculty</i>	Washington, DC	<ul style="list-style-type: none"> Intravenous Induction Agents 	1996
Baystate Medical Center / Tufts University: <i>20th Annual Anesthesia Symposium</i>	Springfield, MA	<ul style="list-style-type: none"> Monitoring of Neuromuscular Block 	1996

Mexican Society of Anesthesiology: <i>XXII Annual Meeting</i>	Mexico City, Mexico	<ul style="list-style-type: none"> Monitoring of Neuromuscular Block: From Basics to Clinical Applications Anesthetic Implications of Laparoscopic Procedures 	1996
American Society of Anesthesiologists: <i>Regional Meeting</i>	Chicago, IL	<ul style="list-style-type: none"> Monitoring of Neuromuscular Function - Clinical Implications Clinical Applications of Pre-Emptive Analgesic Techniques 	1996
American Society of Anesthesiologists: <i>Annual Meeting</i>	New Orleans, LA	<ul style="list-style-type: none"> Muscle Relaxants: What Should I Monitor and What Does It Tell Me? Spinal Anesthesia: from Memories to Mechanisms 	1996
USC/Emory: <i>Advances in Anesthesia – Annual Meeting</i>	Lake Tahoe, NV	<ul style="list-style-type: none"> Clinical Applications of Pre-Emptive Analgesia Neuromuscular Block Monitoring: Clinical Applications 	1997
Colby College/Tufts University <i>17th Annual Anesthesiology Review Course Update</i>	Waterville, ME	<ul style="list-style-type: none"> Monitoring of Neuromuscular Block: Physiology Monitoring of Neuromuscular Block: Clinical Implications New Neuromuscular Blocking Agents: In the Quest of the Ideal 	1997
Royal College of Surgeons in Ireland/Yale University. <i>3rd Anaesthesia and Critical Care Symposium</i>	Killarney, Co. Kerry, Ireland	<ul style="list-style-type: none"> Physiology of the Neuromuscular Junction and Monitoring Neuromuscular Blocking Drugs of the Next Millennium 	1997
American Society of Anesthesiologists: <i>Annual Meeting</i>	San Francisco, CA	<ul style="list-style-type: none"> Muscle Relaxants: What Should I Monitor and What Does It Tell Me? 	1997
American Society of Anesthesiologists: <i>Annual Meeting</i>	Orlando, FL	<ul style="list-style-type: none"> Muscle Relaxants: What Should I Monitor and What Does It Tell Me? 	1998
Arkansas State Society of Anesthesiologists: <i>Annual Meeting</i>	Little Rock, AR	<ul style="list-style-type: none"> Report Cards in Anesthesiology (Keynote Speaker) 	1998
Belgian Society of Anaesthesiologists <i>Annual Symposium</i>	Brussels, Belgium	<ul style="list-style-type: none"> Neuromuscular Blocking Drugs for the Next Millennium 	1998
ECNA – <i>1st European Congress</i>	Utrecht, Holland	<ul style="list-style-type: none"> Intraoperative Use of Neuromuscular Blocking Drugs 	1998

American Society of Anesthesiologists: <i>Annual Meeting</i>	Dallas, TX	<ul style="list-style-type: none"> Muscle Relaxants: What Should I Monitor and What Does It Tell Me? 	1999
<i>53rd Annual Postgraduate Assembly</i> – NY State Society Assembly	New York, NY	<ul style="list-style-type: none"> Advances in Regional Anesthesia: Clinical Care in the United States 	1999
<i>27th Western Anaesthetic Symposium</i> , University College Cork	Cork, Ireland	<ul style="list-style-type: none"> Higher Education in the United States: Overseas Opportunities? Anaesthesia and Neuromuscular Disease 	2000
<i>54th Annual Postgraduate Assembly</i> – NY State Society Assembly	New York, NY	<ul style="list-style-type: none"> Pearls and Pitfalls of Regional Anesthesia Strategies for Managing the Difficult Airway 	2000
American Red Cross Faculty Panelist – <i>Transfusion Practices</i>	Dallas, TX	<ul style="list-style-type: none"> Transfusion Practices and Safety: Improving Plasma Safety for Surgical Patients 	2000
<i>7th International Neuromuscular Meeting</i>	Belfast, No. Ireland	<ul style="list-style-type: none"> Submaximal Stimulation Current and Clinical Monitoring 	2001
American Society of Anesthesiologists: <i>Annual Meeting</i>	New Orleans, LA	<ul style="list-style-type: none"> Medical Errors and the Role of Anesthesia Patient Safety Foundation (APSF) Electronic Medical Records in Clinical Practice: A Modern M&M Clinical Workforce Panel: Recruiting Graduating Residents 	2001
The Western Pennsylvania Hospital: <i>Alaskan Anesthesia Adventure</i>	Girdwood, AK	<ul style="list-style-type: none"> Neuromuscular Physiology I, II Monitoring the Neuromuscular Function Preemptive Analgesia and Outcome Clinical Applications of Spinal Anesthesia 	2002
<i>15th Annual Current Topics in Anesthesia</i> – Mayo Clinic – <i>Faculty Lecture</i>	Scottsdale, AZ	<ul style="list-style-type: none"> Anatomy and Physiology of the NMJ 	2/26/ 2005
Florida Society of Anesthesiologists (FSA) Annual Meeting - <i>Faculty Lecture</i>	Palm Beach, FL	<ul style="list-style-type: none"> Clinical Monitoring of Muscle Relaxants Muscle Relaxant Pharmacology Anesthesia Jeopardy Judge 	6/24/ 2006
<i>16th Annual Current Topics in Anesthesia</i> – Mayo Clinic - <i>Faculty Lecture</i>	Scottsdale, AZ	<ul style="list-style-type: none"> Anatomy and Physiology of the NMJ Fiberoptic Bronchoscopy Workshop 	2/21- 24/ 2006

2 nd International Difficult Airway Management Workshop - <i>Faculty Lecture</i>	Riyadh, Saudi Arabia	<ul style="list-style-type: none"> • Techniques of Fiberoptic Intubation • Fiberoptic Intubation Workshop I • Fiberoptic Intubation Workshop II 	4/10-12/2007
Organon, USA Headquarters <i>Keynote Speaker Faculty Lecture</i>	Roseland, NJ	<ul style="list-style-type: none"> • Pharmacology of Steroid Muscle Relaxants • Physiology of the Neuromuscular Junction • Anesthesia Patient Safety Foundation (APSF) – From Inception to Present 	6/18/2007
Florida Society of Anesthesiologists (FSA) Annual Meeting - <i>Faculty Lecture</i>	Palm Beach, FL	<ul style="list-style-type: none"> • New Developments in Muscle Relaxant and Reversal Agents Pharmacology • Anesthesia Jeopardy Judge 	6/22-24/2007
First International Congress of the Society of Anesthesiology and Reanimatology of the Republic of Moldova - <i>Faculty Lecture</i>	Chisinau, Moldova	<ul style="list-style-type: none"> • Management of the Difficult Airway - workshop 	8/26-30/2007
32 nd Annual Conference, American Academy of Anesthesiologist Assistants - <i>Faculty Lecture</i>	Hilton Head Island, SC	<ul style="list-style-type: none"> • History of APSF 	4/26-30/2008
32 nd Annual Conference, American Academy of Anesthesiologist Assistants - <i>Faculty Lecture</i>	Hilton Head Island, SC	<ul style="list-style-type: none"> • Management of Residual Paralysis 	4/26-30/2008
Nova Southeastern University – AA Program - <i>Faculty Lecture</i>	Ft. Lauderdale, FL	<ul style="list-style-type: none"> • Neuromuscular Physiology and Pharmacology 	7/23/2008
Nova Southeastern University – AA Program - <i>Faculty Lecture</i>	Ft. Lauderdale, FL	<ul style="list-style-type: none"> • Spinal and Epidural Anesthesia Workshop 	7/23/2008
International Anesthesia Research Society Annual Meeting – IARS 2009 <i>Faculty Lecture</i>	San Diego, CA	<ul style="list-style-type: none"> • Operating Room Fires: Causes, Prevention, and the ASA Advisory 	3/14/2009
35 th Congress of the Romanian Society of Anaesthesia and Intensive Care <i>Refresher Course Faculty Lecture</i>	Sinaia, Romania	<ul style="list-style-type: none"> • Assessment of the Difficult Airway • Update on Neuromuscular Blockers and Reversal Agents 	5/13-17/2009

15th Annual Advances in Physiology & Pharmacology in Anesthesia and Critical Care <i>Wake Forest School of Medicine</i>	Amelia Island, FL	<ul style="list-style-type: none"> Monitoring of Neuromuscular Blockers: A Patient Safety Issue 	11/1-4/2009
Medication Safety in the Operating Room: Time for a New Paradigm - <i>Group Leader</i>	Scottsdale, AZ	<ul style="list-style-type: none"> Medication Safety - Pharmacy/Prefilled/Premixed Syringes 	1/25-26/2010
International Anesthesia Research Society (IARS) 2010 Annual Meeting <i>Faculty Lecture</i>	Honolulu, HI	<ul style="list-style-type: none"> Perioperative Blood Pressure: Milestones, Mishaps, and Management Excellence in Research - APSF 25th Anniversary 	3/21/2010
3 rd International Symposium on Anaesthesia and Critical Care - Mayanei Ha'Yeshua Medical Center	B'nai Brak, Tel Aviv, Israel	<ul style="list-style-type: none"> Residual Neuromuscular Weakness in PACU: Safety Implications 	4/13/2010
Fourth Anaesthesia and Critical Care Symposium – Killarney, Co. Kerry, Ireland	Killarney, Ireland	<ul style="list-style-type: none"> Sugammadex: New Developments in Emergency Reversal of Steroidal Relaxants 	9/2/2010
4 th International Symposium on Anaesthesia and Critical Care - Mayanei Ha'Yeshua Medical Center	B'nai Brak, Tel Aviv, Israel	<ul style="list-style-type: none"> Intraoperative Patient Positioning: Safety Implications 	3/30/2011
Irish Congress of Anaesthesia – Annual Meeting 2011. <i>College of Anaesthetists of Ireland</i>	Dublin, Ireland	<ul style="list-style-type: none"> We Train Residents in Three Years at Mayo – How Do We Do It? 	5/21/2011
Irish Congress of Anaesthesia – Annual Meeting 2011. College of Anaesthetists of Ireland	Dublin, Ireland	<ul style="list-style-type: none"> KEYNOTE LECTURE: “Monitoring the Neuromuscular Function and Residual Paralysis – A Patient Safety Concern” 	5/21/2011
American Society of Anesthesiologists: <i>Annual Meeting</i>	Chicago, IL	<ul style="list-style-type: none"> APSF BOARD OF DIRECTORS PANEL: “Residual Neuromuscular Block and Patient Safety Implications” 	10/15/2011
International Anesthesia Research Society: <i>Annual Meeting</i>	Boston, MA	<ul style="list-style-type: none"> IARS-APSF SAFETY PANEL: “Mishaps, Missteps and (Mis)-Management: Neuromuscular Monitoring and Patient Safety” 	5/19/2012

5 th International Symposium on Anaesthesia and Critical Care - Mayanei Ha'Yeshua Medical Center	B'nai Brak, Tel Aviv, Israel	• "Patient Safety and Obstetric Anesthesia"	8/30/2012
Committee for European Education in Anaesthesia (CEEA) – European Society of Anaesthesiology (ESA)	Târgu Mureș, Romania	• "Residual Neuromuscular Block and Pulmonary Complications"	9/4/2012
3 rd International Congress of the Society of Anesthesiology and Critical Care	Chișinău, Moldova	• "Residual Neuromuscular Block and Pulmonary Complications"	9/6/2012
32 nd Annual Meeting of the Japan Society for Clinical Anesthesia – Plenary Lecture	Fukushima City, Japan	• "Perioperative Monitoring of Neuromuscular Function and Patient Safety"	11/2/2012
32 nd Annual Meeting of the <i>Japan Society for Clinical Anesthesia</i>	Fukushima City, Japan	• PLENARY LECTURE - "Residual Neuromuscular Block: Lessons Unlearned"	11/3/2012
66 th Postgraduate Assembly in Anesthesiology, NYSSA – <i>Anesthesia Patient Safety Foundation (APSF) Scientific Panel</i>	New York City, NY	• "Back to the Future: Trends, Needs and Developments in Monitoring for Safe Clinical Care"	12/3/2012
Mayo Clinic Symposium on Anesthesia and Perioperative Medicine	Scottsdale, AZ	• "Residual Neuromuscular Block: It NEVER Happens to Me!"	2/14/2013
Japanese Society of Anesthesiologists – <i>International Neuromuscular Meeting</i>	Sapporo, Japan	• "Principles of Mechanomyography and Electromyography in Neuromuscular Monitoring"	5/25/2013
International Symposium 2013 – <i>University of Medicine and Pharmacy Iuliu Hatieganu</i>	Cluj-Napoca, Romania	• "Principles to Reduce the Incidence of Residual Postoperative Neuromuscular Block"	6/20/2013
		• "Monitoring of Neuromuscular Block – Electromyography vs. Mechanomyography"	6/21/2013
Karolinska Institutet International Expert Panel on Neuromuscular Monitoring – <i>Updates on NM Physiology and Pharmacology</i>	Stockholm, Sweden	• "From Guesswork to Science – How Monitoring Became Objective"	6/1/2014

American Association of Nurse Anesthetists (AANA) <i>Annual National Conference</i>	Orlando, FL	<ul style="list-style-type: none"> • “Patient Safety and Neuromuscular Blockade – A Lesson for All Practitioners” 	9/16 2014
Anesthesiology 2014 – <i>American Society of Anesthesiologists’ Annual Meeting</i>	New Orleans, LA	<ul style="list-style-type: none"> • “Safety Issues and Neuromuscular Blockade and Reversal” - Fundamentals of Anesthesiology Panel 	10/13 2014
Anesthesiology 2014 – <i>American Society of Anesthesiologists’ Annual Meeting</i>	New Orleans, LA	<ul style="list-style-type: none"> • “Perioperative Neuromuscular Management: Novel Challenges and Solutions in Ambulatory Anesthesia” – Ambulatory Anesthesia Track 	10/14 2014
12 th Guidelines and Protocols Congress	Timisoara, Romania	<ul style="list-style-type: none"> • Neuromuscular Monitoring Guidelines and Patient Safety 	10/25 2014
European Society for Computing and Technology in Anaesthesia and Intensive Care (ESCTAIC)	Timisoara, Romania	<ul style="list-style-type: none"> • New Techniques and Technologies for Airway Management 	10/25 2014
Mayo Clinic Symposium on Anesthesia and Perioperative Medicine	Scottsdale, AZ	<ul style="list-style-type: none"> • Monitoring Neuromuscular Block I • Monitoring Neuromuscular Block II • Challenging Cases 	3/4-7/ 2015
International Anesthesia Research Society: <i>Annual Meeting</i>	Honolulu, HI	<ul style="list-style-type: none"> • My Patient in the PACU Can’t Be Weak: She Had 4 Good Twitches! 	3/21/ 2015
12 th Anesthesiology Paulista Congress – <i>12° COPA</i>	Sao Paulo, Brazil	<ul style="list-style-type: none"> • NMJ Pharmacology – From Curare to Calabadians, and Back • Residual Neuromuscular Block – It NEVER Happens to Me! • Perioperative Monitoring and Why We Need Guidelines • Objective Monitoring – Why My Eyes Deceive Me 	4/24-6/ 2015
41 st Congress of the Romanian Society of Anesthesiology and Intensive Care: <i>SRATI Annual Meeting</i>	Sinaia, Romania	<ul style="list-style-type: none"> • Residual Neuromuscular Paralysis and Why We Need Guidelines 	5/16/ 2015
Anesthesiology 2015 – <i>American Society of Anesthesiologists’ Annual Meeting</i>	San Diego, CA	<ul style="list-style-type: none"> • Neuromuscular Function: Depth of Block, Monitoring, Reversal and Perioperative Outcomes • Effects of Residual Neuromuscular Block on Patient Outcomes 	10/24- 8/2015

42 nd Congress of the Romanian Society of Anesthesiology and Intensive Care: <i>SRATI Annual Meeting, 2016</i>	Sinaia, Romania	• Neuromuscular Function and Patient Safety: Do We Need Guidelines?	5/11-15/16
<i>Anaesthesia and Critical Care Medicine Symposium 2016</i>	Cong, Ireland	• New Developments in Neuromuscular Function Monitoring	9/7 – 10/16
<i>14th Romanian National Congress on Guidelines and Protocols in Anesthesia, Intensive Care and Emergency Medicine</i>	Timisoara, Romania	• International Guidelines for the Management of Neuromuscular Block	10/23-25/16
<i>26th European Society for Computing and Technology in Anaesthesia and Intensive Care (ESCTAIC)</i>	Timisoara, Romania	• Deep Neuromuscular Block – When Do I Pay for my Sins?	10/22-24/16
43 rd Congress of the Romanian Society of Anesthesiology and Intensive Care: <i>SRATI Annual Meeting, 2017</i>	Sinaia, Romania	• Neuromuscular Monitoring: Conceptual and Technical Insights	5/10-14/17
Canadian Society of Anesthesiologists – Satellite Symposium.	Niagara Falls, Canada	• Patient Safety and Neuromuscular Monitoring: Conceptual and Technical Insights	6/25/2017
Anesthesiology 2017 – <i>American Society of Anesthesiologists' Annual Meeting</i>	Boston, MA	• APSF/ASA Collaborative Panel on Neuromuscular Blockade and Patient Safety	10/21/2017
Anesthesiology 2017 – <i>American Society of Anesthesiologists' Annual Meeting</i>	Boston, MA	• Neuromuscular Physiology, Pharmacology and Monitoring: Debunking the Myths	10/24/2017

UNIVERSITY VISITING PROFESSORSHIPS

Invited by/Course	Location	Lecture Title(s)	Date
University Hospital Zurich	Zürich, Switzerland	<ul style="list-style-type: none"> • Acute Pain Service: Organizational and Implementing Principles • Neuromuscular Relaxants in Clinical Anesthesia Practice • Acute Pain Service: The American Experience 	1989
University of Bern	Bern, Switzerland	<ul style="list-style-type: none"> • Patient-Controlled Analgesia: New Concepts in Postoperative Pain Relief • Monitoring of the NMJ during Clinical Anesthesia 	1989
Yale University - Griffin Hospital	Derby, CT	<ul style="list-style-type: none"> • Monitoring of Neuromuscular Blockade 	1990
Yale University - Danbury Hospital	Danbury, CT	<ul style="list-style-type: none"> • Monitoring of Recovery from Nondepolarizing Blockade 	1991
Universite Catholique de Louvain	Louvain, Belgium	<ul style="list-style-type: none"> • Peripheral Nerve Stimulator Characteristics – The Submaximal Stimulation 	1991
Royal College of Surgeons in Ireland (RCSI); Beaumont Hospital	Dublin, Ireland	<ul style="list-style-type: none"> • New Developments in Muscle Relaxant Agents • Clinical Monitoring of Neuromuscular Block 	1992
University College Galway - UC Hospital	Galway, Ireland	<ul style="list-style-type: none"> • Recent Advances in Monitoring of Muscle Relaxants 	1992
University Hospital - University of Medicine and Dentistry of New Jersey	Newark, NJ	<ul style="list-style-type: none"> • Clinical Use of Muscle Relaxants: An Update 	1992
Michigan State University	Lansing, MI	<ul style="list-style-type: none"> • Regional Anesthesia and Preemptive Analgesia 	1993
Yale University School of Medicine, Yale-New Haven Hospital	New Haven, CT	<ul style="list-style-type: none"> • Hyperalgesic Responses in Volunteers: Role of Central Sensitization 	1993

University of Medicine and Dentistry of New Jersey Hackensack Medical Center	Hackensack, NJ	• Regional Anesthesia and Preemptive Analgesia	1993
Yale University - St. Vincent's Hospital	Bridgeport, CT	• Regional Anesthesia and Preemptive Analgesia	1993
Indiana University and Indiana State Society Meeting	Indianapolis, IN	• Regional Anesthesia and Preemptive Analgesia – Clinical Applications	1993
Yale University - Stamford Hospital	Stamford, CT	• The Role of Preemptive Analgesia in Clinical Practice	1994
Yale University - Bridgeport Hospital	Bridgeport, CT	• Regional Anesthesia and Preemptive Analgesia	1994
Albany Medical College	Albany, NY	• Monitoring of Neuromuscular Function	1994
Johns Hopkins University	Baltimore, MD	• Physiology of Spinal Anesthesia	1994
Indiana University	Indianapolis, IN	• Monitoring of Neuromuscular Block	1994
University of South Florida	Tampa, FL	• Advances in Monitoring of Neuromuscular Block	1994
Medical College of Virginia, Virginia Commonwealth University	Richmond, VA	• Clinical Assessment of Neuromuscular Block • Pre-emptive Analgesia Options	1994
Harvard Medical School - Brigham & Women's Hospital	Boston, MA	• Monitoring of Neuromuscular Function – to Do or Not to Do	1995
Mount Sinai School of Medicine	New York, NY	• Physiology of Spinal Anesthesia	1995
Seton Hall University	Paterson, NJ	• Effects of Regional Anesthesia on Perioperative Outcome	1995
Tufts University - New England Medical Center	Boston, MA	• Regional Anesthesia and Surgical Outcome	1995
Yale University - Norwalk Hospital	Norwalk, CT	• Anesthetic Management for Laparoscopic and Thoracoscopic Procedures	1995

Bowman Gray School of Medicine, Wake Forest University	Winston-Salem, NC	<ul style="list-style-type: none"> • Clinical Monitoring of Neuromuscular Block • Physiology of Neuromuscular Junction and Clinical Applications • Mechanisms and Effectiveness of Preemptive Analgesia • Physiology of Spinal Anesthesia: Clinical Applications • Clinical Cases – Journal Club 	1995
Yale University - St. Vincent's Hospital	Bridgeport, CT	<ul style="list-style-type: none"> • Minimally Invasive Surgery - Anesthetic Implications 	1996
West Virginia University – University Hospital	Morgantown, WV	<ul style="list-style-type: none"> • Muscle Relaxants and Neuromuscular Monitoring 	1996
Seton Hall University	Paterson, NJ	<ul style="list-style-type: none"> • Regional Anesthesia and Perioperative Outcome – Is the Cost Worth the Price? 	1996
Harvard Medical School – Deaconess Hospital	Boston, MA	<ul style="list-style-type: none"> • Clinical Applications of Pre-Emptive Analgesia 	1996
Maine Medical Center	Lewiston, ME	<ul style="list-style-type: none"> • Intraoperative Use of Muscle Relaxants: The “Cost” of Pharmacoeconomics 	1996
Cornell University - New York Hospital	New York, NY	<ul style="list-style-type: none"> • Clinical Applications of Neuromuscular Block Monitoring 	1996
Dartmouth Medical School - Lahey Clinic	Burlington, MA	<ul style="list-style-type: none"> • Pharmacoeconomics of Muscle Relaxants 	1997
Tufts University - Baystate Medical Center	Springfield, MA	<ul style="list-style-type: none"> • Rational Use of Neuromuscular Blocking Agents 	1997
University of Leuven (Louvain)	Louvain, Belgium	<ul style="list-style-type: none"> • Clinical Applications of Neuromuscular Monitoring 	1997
Laval University	Quebec, Canada	<ul style="list-style-type: none"> • To Monitor or not to Monitor: What Is the Practice? • Pharmacoeconomics of New Neuromuscular Agents 	1997

University of Mississippi	Jackson, MS	<ul style="list-style-type: none"> • Physiology of Spinal Anesthesia and Clinical Implications • Clinical Monitoring of Neuromuscular Function 	2001
University of Florida	Gainesville, FL	<ul style="list-style-type: none"> • Monitoring Neuromuscular Function: Why, How and When? 	2002
University of Cincinnati	Cincinnati, OH	<ul style="list-style-type: none"> • Monitoring the Neuromuscular Function: Clinical Applications • Journal Club: Spinal Anesthesia and Fluid Preloading • Mock Oral Exams 	9/27/2006
Mayo Clinic, College of Medicine	Rochester, MN	<ul style="list-style-type: none"> • Physiology of Neuromuscular Junction and Monitoring (Grand Rounds) • New Developments in Neuromuscular Pharmacology 	5/7/2007
University of Medicine and Pharmacy	Cluj-Napoca, Romania	<ul style="list-style-type: none"> • Academic Appointments and Promotions: the Mayo Model 	5/13/2009
University of Miami	Miami, FL	<ul style="list-style-type: none"> • New Developments in the Pharmacology of Muscle Relaxants and Their Antagonists (Grand Rounds Lecture) • Postoperative Critical Respiratory Events and Patient Safety (Journal Club lecture) 	1/6-7/2010
Rambam Health Care	Haifa, Israel	<ul style="list-style-type: none"> • New Horizons in Neuromuscular Pharmacology 	4/12/2010
Hadassah Hebrew University Medical School	Jerusalem, Israel	<ul style="list-style-type: none"> • Neuromuscular Junction Pharmacology, Physiology and Monitoring. A New Paradigm 	4/14/2010
St. Vincent's University Hospital	Dublin, Ireland	<ul style="list-style-type: none"> • Selective Reversal Binding Agents (SRBA): Clinical Pharmacology 	9/2/2010
Beaumont Hospital, Royal College of Surgeons in Ireland	Dublin, Ireland	<ul style="list-style-type: none"> • History, Incidence and Prevention of Postoperative Neuromuscular Weakness 	5/19/2011
University of Debrecen, Debrecen, Hungary	Debrecen, Hungary	<ul style="list-style-type: none"> • Neuromuscular Blockade and Reversal: Safety Issues. <i>Keynote Speaker, Debrecen Anaesthesia Days</i> 	10/16/2014

Mayo Clinic, College of Medicine	Scottsdale, AZ	<ul style="list-style-type: none"> • Perioperative Neuromuscular Management – Implications for Patient Safety • ABA Oral Boards Preparatory Sessions 	3/2/2015
Middle Tennessee School of Anesthesia	Nashville, TN	<ul style="list-style-type: none"> • Plenary Lecture: Perioperative NMB Monitoring and Outcome – How, When, Where and Why 	9/3-4/2015
Vanderbilt University Medical Center	Nashville, TN	<ul style="list-style-type: none"> • Current Status of Neuromuscular Antagonism • Conceptual and Technical Insights into the Basis of Neuromuscular Monitoring 	4/20-21/2017
Vancouver General Hospital and Health Sciences Centre	Vancouver, Canada	<ul style="list-style-type: none"> • Perioperative Neuromuscular Management and Implications for Patient Safety 	7/12/2017

INVITED PANELS

<u>Title of Panel</u>	<u>Purpose</u>	<u>Location</u>	<u>Date</u>
Neuromuscular Blockade: Clinical Update	Symposium Speaker	Naples, FL	1991
Anesthesia in the '90s: the Impact of Desflurane	Research Colloquium	Naples, FL	1992
Toradol (ketorolac) Advisory Panel Meeting	Symposium Panel	Naples, FL	1992
Speakers' Forum - Clinical Experience with Mivacurium	Symposium Panel	Miami Beach, FL	1992
Mivacurium - Uses In Clinical Practice	Guest Lecturer	Pittsburgh, PA	1992
Speakers' Forum: Introduction to Mivacurium	Guest Lecturer	Trumbull, CT	1992
Speakers' Forum: Introduction to Mivacurium	Guest Lecturer	Brooklyn, NY	1992
Speakers' Forum: Introduction to Mivacurium	Guest Lecturer	Farmington, CT	1992
Speakers' Forum: Recent Developments in Nondepolarizing Relaxants	Guest Lecturer	Long Island, NY	1992
Speakers' Forum: Recent Developments in Nondepolarizing Relaxants	Guest Lecturer	Chattanooga, TN	1992

Speakers' Forum: Clinical Use of Muscle Relaxants and Neuromuscular Monitoring	Guest Lecturer - Beth Israel Medical Center	Newark, NJ	1992
Epidural Anesthesia - Applications for the Surgical Patient	Faculty Lecture - Regional Anesthesia Workshop	Pittsburgh, PA	1993
Use of Muscle Relaxants in the Outpatient Setting	Guest Lecturer	Manchester, CT	1993
Speakers' Forum: Advances in Neuromuscular Pharmacology	Guest Lecturer	Utica, NY	1993
Speakers' Forum: Recent Developments in Nondepolarizing Relaxants	Guest Panelist	Plattsburgh, NY	1993
The Role of Regional Anesthesia in the Postoperative Period	Guest Lecturer	Albany, NY	1993
Update 1993: Spring Anesthesia Symposium - Inhalation Anesthesia In Outpatients	Guest Lecturer	Springfield, MA	1993
Speakers' Forum: Use of Muscle Relaxants in the Outpatient Setting	Guest Lecturer	Springfield, MA	1993
Speakers' Forum: Recent Developments in Nondepolarizing Relaxants	Guest Lecturer - St. John Medical Center	Detroit, MI	1993
Speakers' Forum: Recent Developments in Nondepolarizing Relaxants	Guest Lecturer	Messina, NY	1993
Pathophysiology of Acute Pain	Faculty Lecturer – Pain Forum	Fort Worth, TX	1993
Preemptive Analgesia: Mechanisms and Benefits	Faculty Lecturer– Pain Forum	Fort Worth, TX	1993
Pathophysiology of Acute Pain and Preemptive Analgesia	Faculty Lecturer– Pain Forum	New Bedford, MA	1993
Pathophysiology of Acute Pain and Preemptive Analgesia	Faculty Lecturer– Pain Forum	Providence, RI	1993
Monitoring Neuromuscular Function	Faculty Lecturer	Westerly, RI	1993
Total Intravenous Anesthesia: Principles and Practice	Faculty Lecturer	Beverly, MA	1993
Total Intravenous Anesthesia: Principles and Practice	Faculty Lecturer	Albany, NY	1993

Regional Anesthesia and Preemptive Analgesia	Faculty Lecturer– Pain Forum	Boston, MA	1993
Total Intravenous Anesthesia (TIVA)	Faculty Lecturer– Pain Forum	Indianapolis, IN	1994
Use of Neuromuscular Blocking Agents in the Clinical Setting	Faculty Lecturer	Middletown, NY	1994
Advances in Muscle Relaxants: Rocuronium	Advisory Board Member	Atlanta, GA	1994
Use of Neuromuscular Blocking Agents in the Clinical Setting	Faculty Lecturer	Binghamton, NY	1994
Use of Neuromuscular Blocking Agents in the Clinical Setting	Faculty Lecturer	Newton, MA	1994
Acute Pain Management: Role of Ketorolac	Advisory Board Member	New York City, NY	1994
Monitoring of Neuromuscular Blocking Agents in the Clinical Setting	Faculty Lecturer	Richmond, VA	1994
Monitoring of Neuromuscular Block	Faculty Lecturer	Baltimore, MD	1994
Managing Acute Pain in the '90s. Regional Symposium	AHCPR Guidelines Faculty Lecture	Columbia, SC	1994
Inhalation Anesthesia: An Update	Faculty Lecture, Suffolk & Nassau Co., NY State Society Meeting	Long Island, NY	1994
Preemptive Analgesia	Faculty Lecturer– Pain Forum	Norwalk, CT	1994
Preemptive Analgesia	Faculty Lecturer– Pain Forum	Towson, MD	1994
Monitoring of Neuromuscular Block	Faculty Lecturer	Andover, MA	1994
Intraoperative Use of Muscle Relaxants	Faculty Lecturer	Pittsfield, MA	1994
Mechanism of Preemptive Analgesia: Does it Work?	Faculty Lecturer– Pain Forum	Warwick, RI	1994
Advances in the Use of Muscle Relaxants	Faculty Lecturer	Indianapolis, IN	1994
Mechanisms of Central and Peripheral Sensitization to Tissue Injury	Faculty Lecturer– Pain Forum	Burlington, MA	1994
Advances in the Use of Muscle Relaxants	Faculty Lecturer	South Bend, IN	1995
Cost Containment and the Use of Muscle Relaxants	Faculty Lecturer	Grand Rapids, MI	1995

Cost Containment and the Use of Muscle Relaxants	Faculty Lecturer	Cherry Hill, NJ	1995
Intraoperative Use of Muscle Relaxants: Pharmacoeconomics	Faculty Lecturer	Lawrence, MA	1997
Pharmacoeconomics of Muscle Relaxants	Faculty Lecturer	Lynn, MA	1997
Defining Standards of Practice in Pain Management	Faculty Lecturer– Pain Forum	Scottsdale, AZ	2001
Physiology of Neuromuscular Junction and Monitoring of NMB Effects	Faculty Lecturer	Dallas, TX	2008
Neuromuscular Monitoring and Patient Safety Implications	Faculty Lecturer	Calgary, Canada	2017
Residual Neuromuscular Block – How Do We Avoid It?	Faculty Lecturer	Kelowna, Canada	2017

U.S. FOOD AND DRUG ADMINISTRATION (FDA), Center for Drug Evaluation and Research (CDER) – Member, Anesthesia and Life Support Drug Advisory Committee (ALSDAC)

FDA Advisory Committee Meeting – Narcotic abuse and diversion	Anesthesia and Life Support Drugs Advisory Committee (ALSDAC) and Drug Safety & Risk Management Committee (DSRMC) Advisory Meeting	Gaithersburg, MD	11/12-14 2008
FDA Advisory Meeting – Propoxyphene and propoxyphene-containing compounds	Anesthesia and Life Support Drugs Advisory Committee (ALSDAC)	Gaithersburg, MD	1/29-31/ 2009
FDA/CDER Advisory Committee Meeting – Acetaminophen and acetaminophen- containing products and liver injury	Anesthesia and Life Support Drugs Advisory Committee (ALSDAC), Drug Safety & Risk Management Committee (DSaRMC), and Nonprescription Drug Advisory Committee (NDAC) Meeting	Adelphi, MD	6/29-30/ 2009
FDA/CDER Advisory Committee Meeting – Risk Evaluation and Mitigation Strategies (REMS) for extended-release and long-acting opioid analgesics.	Anesthesia and Life Support Drugs Advisory Committee (ALSDAC) and Drug Safety & Risk Management Committee (DSaRMC)	Adelphi, MD	7/22-23/ 2010
FDA/CDER Advisory Committee Meeting – Evaluation of request to extend current label indications for duloxetine in the treatment of chronic pain.	Anesthesia and Life Support Drugs Advisory Committee (ALSDAC), Drug Safety & Risk Management Committee (DSaRMC), and Nonprescription Drug Advisory Committee (NDAC) Meeting	Bethesda, MD	8/19/ 2010

RESEARCH INTERESTS:

- Neuromuscular Transmission and Muscle Relaxants – Pharmacology
- Neuromuscular Junction – Physiology
- Neuromuscular Monitoring- Physiologic Basis
- Physiology and Pharmacology of Spinal Anesthesia
- Airway Management
- Neurosciences - Acute and Chronic Pain; Central Sensitization; Pre-emptive Analgesia
- Patient Safety and Outcomes

PATENTS / PATENT APPLICATIONS:

- Anesthesia Monitoring Systems and Methods of Monitoring Anesthesia – App # 2,862,867 – Canada 10187-002CA1
- Anesthesia Monitoring Systems and Methods of Monitoring Anesthesia – App # 13703958.2 – Europe – EPO 10187-002EP1
- Neuromuscular Monitoring Display System – App # 14/051,785 – USA 10187-006US1
- Neuromuscular Monitoring Display System – App # PCT/US2013/064518 - South Korea 10187-006WO1
- Anesthesia Monitoring Systems and Methods of Monitoring Anesthesia – App # PCT/US2013/023169 – USA 10187-002PCT1
- Anesthesia Monitoring Systems and Methods of Monitoring Anesthesia – App # 13/750.463 – USA 10187-002US1
- Anesthesia Monitoring Systems and Methods of Monitoring Anesthesia – App # 61/591,547 – USA 10187-002PV1
- Neuromuscular Monitoring Display System – App # 61/713,202 – USA 10187-006PV1
- One-Way Intra-Arterial Catheter Connector. Patent Application No.: 61/122,967. Docket No.: 230.00580160. Mayo Case No.: 2008-267 - Intra-arterial Injection Protection.
- New Design for a Flow-Directed Catheter Balloon – in development

INVESTIGATIONAL GRANTS:

1. **Principal Investigator** - Protocol # I-653-11
“The Comparative Anesthetic Effects of Desflurane versus Isoflurane During General Anesthesia in Elderly Patients.” 1990 - Anaquest (\$150,000).
2. **Principal Investigator** - Protocol B.A.M.A. - #33-04
“Bispectral Analysis for Monitoring Anesthesia.”
1990 - Aspect Medical Systems (\$24,000).
3. **Principal Investigator** - “Intraoperative Monitoring of Neuromuscular Function”
1990 - Burroughs-Wellcome Scientific Award (\$5,000)
4. **Principal Investigator** - “Fluid Management in Anesthesia and Critical Care”
1990 - Dupont Pharmaceuticals Scientific Award (\$10,000)

5. **Principal Investigator** - "Quality Assurance in Anesthesia"
1990 - Abbott Laboratories Scientific Award (\$5,000)
6. **Principal Investigator** - Crystalline™ Liquid Crystal Thermometry
"Intraoperative Assessment of Temperature Changes."
1991 - Sharn, Inc. (\$4,000).
7. Investigator - "Analgesic Efficacy of Intramuscular Ketorolac Tromethamine in Post-Gynecological Surgery Patients"
1991 - Hoffman-La Roche, Inc. (\$2,500).
8. **Principal Investigator** - Protocol # LAB/KET617/USA
"Ketorolac I.V. or Placebo I.V. Used Intraoperatively and Postoperatively"
1992 - Syntex Laboratories, Inc. (\$52,000).
9. **Principal Investigator** - Desflurane Protocol I-653-13. "The Safety and Efficacy of Desflurane during General Anesthesia in Surgical Patients"
1992 - Anaquest (\$16,000).
10. **Co-Principal Investigator**, Protocol #34-03
"Efficacy and Safety of Divided Dose Administration of Mivacron for Tracheal Intubation in Surgical Patients during O₂/Opioid/Propofol Anesthesia"
1993 - Burroughs Wellcome Co. (\$24,000)
11. **Co-Principal Investigator** - Multicenter Study - (Harvard U. and Yale U.)
"Treatment of Myocardial Ischemia in Vascular Surgery Patients by Esmolol Infusion"
1994-1996 - Ohmeda PPD, Inc. (\$206,000).
12. **Principal Investigator** - Project #94RO81
"Effectiveness of Ropivacaine for Postoperative Analgesia"
1995 - Astra USA (\$58,500).
13. **Principal Investigator** - Project #4008ORG; Protocol #021-904
"Neuromuscular Parameters, Clinical Responses and Safety of Rocuronium (Zemuron™)"
1995-1997- Organon, Inc. (\$24,000).
14. Investigator - "Assessment of Blood Transfusion Decisions"
1995-1996 - Battelle Centers for Public Health Research and Evaluation (\$80,000).
15. Investigator - "The Effect of Intradermal Opioid Administration on Pain Induced by Burn Injury"
1995 - Adolor (\$15,000).
16. **Principal Investigator** - "Analgesic Effects and Pharmacokinetics of Intramuscular Lidocaine-Ketorolac Mixture" 1996 - Roche (\$3,000).
17. **Site Principal Investigator** - "A Clinical Study of Troponin I in Cost-Effectiveness Strategies for the Evaluation of a Perioperative Myocardial Infarction"
1996 - Dade International (\$70,783).

18. **Co-Principal Investigator** - “Cost per Quality of Life Year (QUALY) in the treatment of cerebrovascular disease.” Multi-national study - Ireland, Denmark and USA
1996-8 - Yale University, Departments of Anesthesiology and Neurosurgery (\$5,000).
19. **Mentor/Co-Investigator** - “Interaction of Calcium-gated Potassium Channel Blockers with Terbutaline and Volatile Anesthetics in Proximal and Distal Airways in Dogs”
1997 - Yale Department of Anesthesiology Research Grant (\$2,000).
20. **Mentor/Co-Investigator** - “Relationship of Arterial and Venous Endothelin-1 (ET-1) and Endothelin-3 (ET-3) Levels during Aortic Cross-clamping”
1997 - Yale Department of Anesthesiology Research Grant (\$10,000).
21. **Co-Investigator** – “A Double-Blind, Placebo-Controlled, Single Dose Evaluation of the Safety and Efficacy of Hydromorphone Hydrochloride Controlled-Release 24 mg Capsules in Acute Post-Operative Pain” – (Protocol HMP-3003) 2000 - Purdue Pharma L.P.
22. **Co-Investigator** – “Study of Chemogenic Low Back Pain” - 1 RO1 NS39568-01A1.
National Institute of Neurological Disorders and Stroke (NINDS).
2000-2004 - NIH (\$850,000)
23. **Principal Investigator** – “Patient Safety and Medical Education: Medical School Curriculum Development” - Medical Education Foundation Fund of Arkansas (MEFFA).
2001 (\$3,500)
24. **Co-Investigator** – “Development and Validation of a Curriculum to Train ACLS Providers in Intubation Techniques Using a High-Fidelity Patient Simulator” – AHRQ/ARCF/MEFFA.
25. **Principal Investigator** – “Combined Spinal-Epidural Analgesia in Patients with Marfan’s Syndrome.” Mayo IRB #105-05.
26. **Principal Investigator** – “Assessment of Intraoperative Muscle Relaxation Using Tetanic Stimulation.” Mayo Clinic and Foundation. IRB #116-05. 1/18/2005 – 2011.
27. **Principal Investigator** – “A Pilot Study to Ensure Staff Proficiency Using the TOF-Watch SX Device to Measure Neuromuscular Functioning in Subjects Undergoing General Anesthesia.” Organon USA. Mayo IRB # 2169-05. 10/25/2005 - 2/28/2007.
28. **Principal Investigator** – “Crigler-Najjar and Its Anesthetic Implications.” Mayo IRB Protocol #99-05
29. **Principal Investigator** – “A Multicenter, Randomized, Parallel Group, Comparative, Active Controlled, Safety-assessor Blinded, Phase IIIa, Pivotal Trial in Adult Subjects Comparing ORG 25969 with Neostigmine as a Reversal Agent of Neuromuscular Block Induced by Maintenance Dosing of Rocuronium or Vecuronium at 1-2 PTCs.” Organon USA. IRB # 2184-05. 11/4/2005-3/15/2007 (\$119,985).
30. **Principal Investigator** – “A Multicenter, Randomized, Double-blind, Placebo-Controlled, Parallel-Group Study of Intravenous Methylthaltrexone (MOA-728) for the Treatment of Postoperative Ileus.” Wyeth. IRB # 06-006358. 11/13/2006 - 2008 (\$122,120). Mayo IRB Protocol# 07-004716, 2006-7.

31. Co-Investigator – “Correlation of a New SRG Pulse Oximeter/hematocrit Analyzer with Current Standard Monitors.” Mayo IRB Protocol# 07-001809, 2007.
32. Co-Investigator – “Percutaneous Localization of Nerves Using the BBraun Stimuplex Pen.” Mayo IRB Protocol# 07-002104, 2007.
33. **Principal Investigator** – “A Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel-Group Study of Intravenous Methylnaltrexone (MOA-728) for the Treatment of Post Operative Ileus after Ventral Hernia Repair.” Wyeth. IRB # 07-004716, 2007-8 (\$105,000).
34. Co-Investigator – “Peripheral Nerve Blockade Facilitates Early Diagnosis of Postoperative AMI.” Mayo IRB Protocol# 08-002290, 2008.
35. **Principal Investigator** – “A Randomized, Double-Blind, Double-Dummy, Dose-Ranging, Active- and Placebo-Controlled Study of Single-Dose Oral Rolapitant Monotherapy for the Prevention of Postoperative Nausea and Vomiting (PONV).” Schering-Plough Research Institute. IND# 72,754. 07/07/2007 – 2008 (\$102,780).
36. Co-Investigator – “TEE – a new window into the spine.” Mayo IRB Protocol# 08-007278, 2008.
37. **Co-Principal Investigator** - "Effects of Jaw-Thrust vs. Cricoid Pressure Maneuvers on Ease of Laryngeal Visualization Using the GlideScope Videolaryngoscope." Mayo Clinic College of Medicine IRB# 78-004837, 2009-2010.
38. **Co-Principal Investigator** - "A Survey of Patient Attitudes regarding Postoperative Visual Loss (POVL) in Major Back Surgery in the Prone Position." Mayo IRB Protocol #09-005591, 2009-2010.
39. **Co-Principal Investigator** – “Using the Natural Recoil of the Inflating Syringe as a Safety Valve to Limit Laryngeal Mask Airway (LMA) Cuff pressure and Decrease LMA-Induced Complications.” Mayo IRB Protocol #11-001506, 2011-12.
40. **Principal Investigator** – “Noninvasive ECOM monitoring of hemodynamic parameters during robotic surgery in the extreme head-down position.” Mayo IRB Protocol# 10-004019, 2010-14.
41. **Principal Investigator** – “National drug shortage effect on anesthesia and patient safety – questionnaire content validity and reliability testing.” Mayo IRB Protocol #13-008998, 2013.
42. Co-Investigator – “The Use of ECOM (Endotracheal Cardiac Output Monitor) to Guide Intravascular Replacement Therapy in Patients in Extreme Surgical Positions.” Mayo IRB Protocol #10-007600, 2010-13.
43. Co-Investigator – “Long-term evaluation of a focused echocardiography training course for rescue applications in general anesthesia providers.” Mayo IRB Protocol #13-005099, 2013.
44. Co-Investigator – “The Effectiveness of Intravenous Formulation Acetaminophen as an Analgesic in Neurosurgical Procedures.” Mayo IRB Study, 2013.

45. **Co-Principal Investigator** – “Comparison of hemodynamic parameters collected with Endotracheal Cardiac Output Measuring system (ECOM) with parameters obtained with pulmonary artery catheter.” Mayo IRB Protocol #10-007600, 2010.
46. **Principal Investigator** – “Use of manometry for ETT and LMA reduces postoperative pharyngo-laryngeal adverse events.” Mayo IRB Protocol #14-007053, 2014.
47. **Principal Investigator** – “Evaluation of anesthesiologist attributes for effective supervision of residents, fellows, SRNAs and CRNAs at Mayo Clinic operating rooms.” Mayo IRB #12-003670, 2013.
48. **Co-Principal Investigator** – “Survey of the national drug shortage effect on anesthesia and patient safety: a patient perspective.” Mayo IRB Protocol #13-009642, 2013.
49. **Co-Investigator** – “Risk-based decision support thresholds for hypotension in adult patients undergoing non-cardiac surgery.” Mayo IRB Protocol# 12-008325, 2012-15.
50. **Co-Investigator** – “Non-invasive minute ventilation risk assessment and treatment algorithm for use in the post-anesthesia care unit.” Mayo IRB Protocol #14-000466, 2014.
51. **Mayo Site Principal Investigator** – “Protective Ventilation with Higher versus Lower PEEP during General Anesthesia for Surgery in OBESE Patients - The PROBESE Randomized Controlled Trial.” Mayo IRB Protocol #14-005465, 2014.
52. **Co-Principal Investigator** – “Anesthesiologists’ perceptions of "acceptable" (i.e., minimum) performance of a nurse anesthetist.” Mayo IRB Protocol #15-003671, 2015.
53. **Investigator** – “Clinical evaluation of auditory-evoked potential index (aepEX) to measure hypnotic depth during sedation and general anesthesia. Mayo IRB Protocol #15-001378-02, 2015.
54. **Co-Investigator** – “Perioperative Intravenous Lidocaine Infusion for Patients Undergoing Laparoscopic and Open Pancreatectomies.” Mayo IRB Protocol #15-003955, 2015.
55. **Co-Investigator** – “Residual Paralysis and Postoperative Respiratory Problems - a Prospective Pilot Trial.” Merck Investigator Studies Program (MISP), 2015. Funding: \$50,000.
56. **Principal Investigator** – “Randomized Double-Blinded, Controlled Trial to Compare the Effectiveness of Sugammadex vs. Neostigmine to Prevent Residual Neuromuscular Block and Respiratory Complications in the Post-Anesthesia Care Unit as Evaluated with a Non-Invasive Respiratory Volume Monitor.” Merck Investigator Studies Program (MISP), 2015. Mayo Clinic IRB Protocol #15-008685. Funding: \$210,000.
57. **Co-Investigator** – “Effects of noise level reduction in the operating room on anesthesia providers at various stages of training.” Mayo Clinic IRB Protocol #15-006658, 2015.
58. **Investigator** – “Environmental Interference with Electromyographic Devices – the TetraGraph and EMI.” IRB Exempt Study Protocol, 2016.
59. **Co-Investigator** – “Electromyographic Assessment of the TetraGraph in Normal Volunteers.” IRB Protocol #16-005022, 2016.

60. **Principal Investigator** – “Patient Survey of Referral from One Surgeon to Another to Reduce Maximum Waiting Time for Elective Surgery and Hours of Over-Utilized Operating Room Time.” IRB Protocol #16-002308, 2016.
61. Co-Investigator – “Examining the Current Use of Intraoperative Norepinephrine Administration.” IRB Protocol #16-005187, 2016.
62. **Co-Principal Investigator** – “Implementation of a Patient-Centered Perioperative Checklist to Improve Surgical Care Quality and Patient Satisfaction.” IRB Protocol #16-005306
63. Co-Investigator – “EPAD monitoring of patients undergoing robotic assisted laparoscopic genitourinary surgery.” IRB Protocol #17-006546

BIBLIOGRAPHY

PEER-REVIEWED, INDEXED PUBLICATIONS

Author h-index = 27; Cited Author h-index = 95:

1. **Brull SJ**, Greene NM: Time-courses of zones of differential sensory blockade during spinal anesthesia with hyperbaric tetracaine or bupivacaine. *Anesth Analg* 1989; 69:342-347. PMID: 2774229
2. Sinatra R, Chung KS, Silverman DG, **Brull SJ**, Chung J, Harrison DM, Donielson D, Weinstock A: An evaluation of morphine and oxymorphone administered via patient-controlled analgesia (PCA) or PCA plus basal infusion in postcesarean-delivery patients. *Anesthesiology* 1989; 71:502-507. PMID: 2478049
3. **Brull SJ**, Ehrenwerth J, Silverman DG: Stimulation with submaximal current for train-of-four monitoring. *Anesthesiology* 1990; 72:629-632. PMID: 2321779
4. *Connelly NR, DuBose R, **Brull SJ**: Use of single-dose epidural morphine in a patient undergoing an abdominal aortic aneurysm resection. *J Clin Anesth* 1990; 2:272-275. PMID: 2390256
5. **Brull SJ**, Connelly NR, Silverman DG: Correlation of train-of-four and double burst stimulation ratios at varying amperages. *Anesth Analg* 1990; 71:489-492. PMID: 2171383
6. *Connelly NR, Silverman DG, O'Connor TZ, **Brull SJ**: Subjective responses to train-of-four and double burst stimulation in awake patients. *Anesth Analg* 1990; 70:650-653. PMID: 2160781
7. **Brull SJ**, Connelly NR, Silverman DG: Effect of tetanus on subsequent neuromuscular monitoring in patients receiving vecuronium. *Anesthesiology* 1991; 74:64-70. PMID: 1670914
8. **Brull SJ**, Ehrenwerth J, Connelly NR, Silverman DG: Assessment of residual curarization using low-current stimulation. *Can J Anaesth* 1991; 38:164-168. PMID: 1673643
9. **Brull SJ**, Greene NM: Zones of differential sensory block during extradural anaesthesia. *Br J Anaesth* 1991; 66:651-655. PMID: 2064879
10. **Brull SJ**, Silverman DG: Visual assessment of train-of-four and double burst-induced fade at submaximal stimulating currents. *Anesth Analg* 1991; 73:627-632. PMID: 1952146
11. Silverman DG, Connelly NR, O'Connor TZ, Garcia R, **Brull SJ**: Accelerographic train-of-four at near-threshold currents. *Anesthesiology* 1992; 76:34-38. PMID: 1729934
12. *Connelly NR, Silverman DG, **Brull SJ**: Temporal correlation of succinylcholine-induced fasciculations to loss of twitch response at different stimulating frequencies. *J Clin Anesth* 1992; 4:190-193. PMID: 1319187

13. **Brull SJ**: An update on monitoring of neuromuscular function. *Curr Opin Anaesth* 1992; Vol. 5, 4;577-583. ISSN: 0952-7907
14. Silverman DG, Swift CA, Dubow HD, O'Connor TZ, **Brull SJ**: Variability of onset times within and among relaxant regimens. *J Clin Anesth* 1992; 4:28-33. PMID: 1347222
15. **Brull SJ**, Lieponis JV, Murphy MJ, Garcia R, Silverman DG: Acute and long-term benefits of iliac crest donor site perfusion with local anesthetics. *Anesth Analg* 1992; 74:145-147. PMID: 1734778
16. **Brull SJ**, Silverman DG: Tetanus-induced changes in apparent recovery after bolus doses of atracurium or vecuronium. *Anesthesiology* 1992; 77:642-645. PMID: 1358004
17. Sevarino FB, Sinatra RS, Paige D, Ning T, **Brull SJ**, Silverman DG: The efficacy of intramuscular ketorolac in combination with intravenous PCA morphine for postoperative pain relief. *J Clin Anes* 1992; 4:285-288. PMID: 1419009
18. **Brull SJ**: Superficial cervical plexus block for pulmonary artery catheter insertion. *Crit Care Med* 1992; 20:1362-1363. PMID: 1521454
19. Silverman DG, **Brull SJ**, Paige DA, Sevarino FB, Sinatra RS, Preble L: Intramuscular ketorolac as a supplement to patient controlled analgesia (PCA) with morphine after orthopedic surgery. *Am J Pain Management* 1993; 3:68-71.
20. Silverman DG, **Brull SJ**: Assessment of double-burst monitoring at 10 mA above threshold current. *Can J Anaesth* 1993; 40:502-506. PMID: 8104723
21. Cunningham AJ, **Brull SJ**: Laparoscopic cholecystectomy - anesthetic implications. *Anesth Analg* 1993; 76:1120-1133. PMID: 8053989
22. **Brull SJ**, Cunningham AJ, Connelly NR, O'Connor TZ, Silverman DG: Liquid crystal skin thermometry: an accurate reflection of core temperature? *Can J Anaesth* 1993; 40:375-381. PMID: 8485798
23. Silverman DG, **Brull SJ**: Depth of block after divided doses of mivacurium spaced 60 seconds apart. *Anesth Analg* 1993; 77:164-167. PMID: 8317726
24. Silverman DG, O'Connor TZ, **Brull SJ**: Integrated assessment of pain scores and rescue morphine use during studies of analgesic efficacy. *Anesth Analg* 1993; 77:168-170. PMID: 8317727
25. Silverman DG, **Brull SJ**: The effect of a tetanic stimulus on the response to subsequent tetanic stimulation. *Anesth Analg* 1993; 76:1284-1287. PMID: 8098919
26. *Connelly NR, **Brull SJ**: Anesthetic management of a patient with factor XI deficiency and factor XI inhibitor undergoing a cesarean section. *Anesth Analg* 1993; 76:1365-1366. PMID: 8498679
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* Indicates that the primary author was a mentee.

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