



Carla M. Pugh, MD, PhD, FACS
Professor of Surgery

Personal Data

Stanford University
Department of Surgery
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Education

9/1984-5/1988	University of California, Berkeley	B.A. Neurobiology
9/1988-5/1992	Howard University College of Medicine	M.D. Medicine
9/1997-5/2001	Stanford University School of Education	Ph.D. Education

Graduate Medical Education

7/1992-6/1993	Howard University Hospital	General Surgery Internship
7/1993-6/1997	Howard University Hospital	General Surgery Residency

Other

1999	Surgical Education: Principles and Practice, American College of Surgeons Postgraduate course – October 12, 1999
2006	Early Career Women Faculty Professional Development Seminar – American Association of Medical Colleges – July 8-12, 2006
2007	Workshop on Quasi-Experimentation in Education – Northwestern Institute for Policy Research – July 30 - August 3, 2007
2007	Business for Scientists and Engineers – Northwestern Kellogg School of Management – December 2007 - February 2008
2009	Clinical Fellowship – Acute Care Surgery, University of Michigan Department of Surgery, July 1, 2009 - December 31, 2009
2014	ELAM (Executive Leadership in Academic Medicine) – Drexel University, September 2013 - April 2014



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Certification and Licensure

American Board of Surgery	1998 - Certificate #44296	
American Board of Surgery	2007 - Recertification	Expires: 07/01/2019
State of California	License #: G83898	Expires: 02/28/2019
State of Illinois	License #: 036110285	Expired: 07/31/2017
Washington, DC	License #: MD21336	Expired: 12/31/2010
State of Michigan	License #: 4301095193	Expired: 01/31/2010
State of Wisconsin	License #: 56978 – 20	Expires: 10/31/2019

Present Appointments/Positions

Faculty & Staff Appointments:

03/01/2018-Present Professor of Surgery (with Tenure)
Stanford University
Department of Surgery

Stanford University Committee Service Appointments:

03/01/2018-Present Department of Surgery Evaluation Committee, Stanford
Medicine

Past Appointments/Positions

Faculty & Staff Appointments:

6/2001-8/2003 Research Assistant Professor, Stanford University School of Medicine

8/2003-6/2010 Assistant Professor of Surgery, Northwestern University Feinberg School
of Medicine, Department of Surgery

8/2003-6/2010 Assistant Professor of Education, Northwestern University School of
Education

7/2010-2/2012 Associate Professor of Surgery, Northwestern University Feinberg School
of Medicine, Department of Surgery

7/2010-2/2012 Associate Professor of Education, Northwestern University School of
Education

3/2012-6/2015 Associate Professor of Surgery (with Tenure), University of Wisconsin
School of Medicine and Public Health, Department of Surgery



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- 7/2014-6/2015 Associate Professor of Industrial & Systems Engineering, University of Wisconsin, School of Engineering
- 7/2015-2/2018 Professor of Surgery (with Tenure), University of Wisconsin, Department of Surgery
- 7/2015-2/2018 Professor of Industrial & Systems Engineering, University of Wisconsin, School of Engineering
- 4/2015-2/2018 Susan Behrens, MD Professor of Surgical Education, University of Wisconsin, Department of Surgery

Hospital Appointments:

- 8/1998-8/2003 Staff Surgeon, Kaiser Permanente Medical Group, Department of Surgery
- 1/2004-6/2010 Staff Surgeon, Chicago Lakeside VA, Department of Surgery
- 1/2006-2/2012 Attending Surgeon, Northwestern Memorial Hospital, Department of Surgery

Administrative Appointments:

- 8/2003-6/2007 Associate Director, Center for Advanced Surgical Education, Northwestern University Feinberg School of Medicine, Department of Surgery
- 7/2007-3/2012 Director, Center for Advanced Surgical Education, Northwestern University Feinberg School of Medicine, Department of Surgery
- 3/2012-2/2018 Clinical Director of the UW Health Clinical Simulation Program University of Wisconsin
- 3/2012-6/2017 Vice-Chair of Education and Patient Safety, University of Wisconsin, Department of Surgery,
- 7/2014-6/2017 Director of the UW MOC Portfolio Program
- 7/2014-2/2018 Director of the UW-ACS Surgical Education Fellowship
- 7/2017-2/2018 Vice-Chair of Innovation and Entrepreneurship University of Wisconsin, Department of Surgery



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Committee Service Appointments:

2003-2012	Resident Evaluation Committee, Department of Surgery, Northwestern
2007-2010	Physician's Health Committee – Northwestern Memorial Hospital
2008-2012	Surgical Residency Advisory Committee, Department of Surgery, Northwestern University
2012-2018	Executive Council – Department of Surgery, University of Wisconsin
2012-2018	Administrative Council – Department of Surgery, University of Wisconsin
2012-2017	Quality Council – Department of Surgery, University of Wisconsin
2012	Research Review Committee – Department of Surgery, University of Wisconsin
2012-2017	Center for Quality and Productivity Improvement Member, School of Engineering, University of Wisconsin
2012-2017	Office of Continuing Professional Development in Medicine and Public Health Strategic Planning Committee – University of Wisconsin School of Medicine and Public Health
2013-2017	MOC Advisory and Liaison Committee – University of Wisconsin School of Medicine and Public Health
2013-2017	Steering Committee for Surgery Summer Research Experience for Medical Students (Doris Duke)
2014-2017	Advisory Committee Member – Surgery Oncology T32 Diversity Oversight Committee
2014	Search and Screen Committee for Vice Chancellor for Research and Graduate Education – University of Wisconsin
2015	Search and Screen Committee for MIS Chief
2015	Health Occupations and Professions Exploration (HOPE) Advisory Board Member
2015-2017	Technology Assessment Committee – University of Wisconsin Hospital and Clinics
2016	Search and Screen Committee for the Senior Associate Dean of the Graduate School – University of Wisconsin
2016	Search and Screen Committee for the Associate Dean of Faculty Affairs and Development – University of Wisconsin School of Medicine and Public Health
2016-2017	Discovery to Product (D2P) Review Committee – University of Wisconsin
2016-2018	Surgical Education and Innovation Working Group – Department of Surgery, University of Wisconsin

Military Service:

2002 - 2010	Special Assistant to the Director – Telemedicine and Advanced Technology Research Center – U.S. Army Medical Research & Material Command, Ft. Detrick, MD
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Professional Society Memberships

1988-1999	Medical Society of the District of Columbia
1988-1992	Women in Medicine
1998-1992	Student National Medical Association, Chapter Secretary 1989-1990
1994-Present	National Medical Association
1995-Present	American College of Surgeons-Fellow <ul style="list-style-type: none">• Member – Committee on Informatics, 2006-2012• Member – Education and Technology Advisory Committee, 2006• Member – Surgical Research Committee, 2010-2014• Executive Member – Surgical Research Committee, 2014-Present• Member – Accredited Education Institutes R & D Committee, 2010-2017• Member – Accredited Education Institutes Fellowship Committee, 2011-2017• Member – Committee on Surgical Skills for Practicing Surgeons, 2014-Present• Recorder – Accredited Education Institutes Annual Meeting, 2016-Present
1997-1999	San Mateo County Medical Association
1997-1999	California Medical Association
1999-Present	Association of Women Surgeons
1999-Present	LaSalle D. Leffall Surgical Society
1999-Present	Society of Black Academic Surgeons <ul style="list-style-type: none">• Member – Research, Education, Training Committee, 2015-Present• Executive Member – Leadership Institute Committee, 2015-Present• Secretary Elect, 2015• Secretary, 2016-Present
2000-Present	Association for Surgical Education
2001-Present	Claude H. Organ Surgical Society
2006-2016	Medicine Meets Virtual Reality <ul style="list-style-type: none">• Organizing Committee, 2007-2016
2006-Present	Association for Academic Surgery <ul style="list-style-type: none">• Member – Education Committee, 2007• Co-Chair – Education Committee, 2008• Member – Nominating Committee, 2009• 2006 Class Council Representative, 2010-2012• AAS Liaison to the AWS, 2012-2014
2006-2016	American Education Research Association <ul style="list-style-type: none">• Member – Social Justice Action Committee, 2006-2009• Editorial Board – American Education Research Journal, 2014-2016



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2007-2012	The Institute of Medicine of Chicago
2007-2012	Chicago Surgical Society
2007-2018	Central Surgical Association
2010-Present	Society of University Surgeons <ul style="list-style-type: none">• Liaison – Council of Faculty and Academic Societies (AAMC), 2013-2016• Senior Member – Nominating Committee, 2016
2011-Present	Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) <ul style="list-style-type: none">• Co-chair – Hernia Task Force, 2011-2017• Member – Fundamentals of Laparoscopic Surgery (FLS), 2011-2017• Member – Curriculum Task Force, 2016-2017• Member – Development Committee, 2016-Present• Member – Organization Wide Learning System (OWLS) Tech Workgroup, 2017-present
2013-Present	Surgical Biology Club II
2014-Present	American Medical Association
2014-Present	American Surgical Association
2014-Present	American Board of Medical Specialties <ul style="list-style-type: none">• Board of Directors – Research in Education Foundation, 2014-Present• Chair Elect – Research in Education Foundation, 2014-2017• Chair – Research in Education Foundation, 2017-Present
2014-2016	TEDMED Editorial Advisory Board
2015-Present	Society of Simulation in Healthcare <ul style="list-style-type: none">• Vice Chair – Fellowship Academy, 2015-2017
2016-Present	American Society for Clinical Investigation
2016-Present	Surgical Data Science <ul style="list-style-type: none">• Board Member, 2016-Present
2016-Present	Institute for Surgical Excellence <ul style="list-style-type: none">• Member – Board of Directors, 2016-Present
2016-Present	Layton F. Ridders Surgical Society
2016-Present	The Society for Surgery of the Alimentary Tract
2018-Present	Artificial Intelligence in Healthcare Summit Advisory Board Member
2018-Present	Academy of Master Surgeon Educators Member

Honors and Awards

Student Awards & Distinctions:

1986	Community Involvement Teams in Every Sector, Scholarship Award, Oakland, CA
1989	Social Heritage Group, Scholarship Award, Richmond, CA
1989	Joseph Collins Scholarship Award, Joseph Collins Foundation, New York, NY
1990	Mitchell Surgical Fellowship Award, James F. Mitchell Foundation, Washington, DC



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- 1990 Sinkler-Miller Scholarship Award, Oakland California Chapter, National Medical Association
- 1990 Alma Wells – Givens Scholarship Award, Auxiliary to the National Medical Association
- 1991 Pfizer Research Award – Pfizer Medical Student Scholars Program, New York, NY
- 1992 Honorable Mention Outstanding Academic Performance Howard University Hospital Department of Internal Medicine

Resident Awards & Distinctions:

- 1993 Highest Score – American Board of Surgery In-Training Examination
- 1996 British Journal of Surgery Merit Award – Howard University Hospital Department of Surgery
- 1996 First Place – Laparoscopic Skills Drill-At Large Competition, American College of Surgeons, San Francisco, CA
- 1996 Patient Care Award – Howard University Hospital
- 1996 Leadership Award for House Staff – Howard University Hospital Medical Staff
- 1996 House Staff President – Howard University Hospital
- 1997 Outstanding Resident Award – Howard University Hospital Medical Association
- 1997 Vivian B. Allen Educational Fellowship – Deans Office, Howard University School of Medicine – Fellowship completed at Stanford University 2001

Professional Awards & Distinctions:

Local Awards:

- 2007 Public Service Award – Cosmopolitan Chamber of Commerce
- 2007 Inducted into the President's Council – Museum of Science and Industry-Chicago
- 2008 Invited Speaker – Chicago Humanities Festival, November 8, 2008
- 2009 Outstanding Women in Technology Award – Circuit Court of Cook County, Chicago, IL
- 2009 Chosen as a Chicago Visionary – Chicago Public Radio and Chicago Matters
- 2009 Achievement Award – African American Women's Business and Career Group-Chicago
- 2011 Chosen as one of the Top 25 Most Influential African American Physicians in Chicago – Black Health Magazine
- 2012 Invited Speaker – A Day at Northwestern Conference: "Touch, Technology and the Cost of Healthcare" April 14, 2012
- 2012 Invited Speaker – Madison East High School for AVID/TOP Program, May 18, 2012
- 2012 Invited Keynote Speaker – Midwest Regional HSPN: "Advancing Healthcare Quality through Formative and Summative Assessment" Madison, WI, July 12, 2012
- 2013 Scholarship Recipient: University of Wisconsin School of Medicine and Public Health Centennial Scholars Program
- 2014 Chosen as one of 2014 Women to Watch – Brava Magazine
- 2014 Invited Speaker – Madison West High School for AVID/TOP Program, March 17, 2014
- 2014 Recipient of the Susan Behrens Surgery Education Professorship
- 2015 Selected as a participant in the Discovery to Product (D2P) Igniter Program



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- 2015 Recipient of the Stanford Graduate School of Education Alumni Excellence Award
- 2016 Recipient of the Vilas Faculty Mid-Career Investigator Award

National Awards:

- 2002 Consumers' Research Council of America, America's Top Surgeons
- 2004 Consumers' Research Council of America, America's Top Surgeons
- 2006 Marquis "Who's Who in America" 2007 Edition
- 2006 Featured in an NIH NLM Museum Exhibit – Contemporary African American Surgeons
- 2007 Consumers' Research Council of America, America's Top Surgeons
- 2007 Marquis "Who's Who in America" 2008 Edition
- 2007 Marquis "Who's Who in Science & Engineering" 2008 Edition
- 2008 Marquis "Who's Who in America" 2009 Edition
- 2008 Invited Member – Covidien Women in Surgery Advisory Board
- 2010 Marquis "Who's Who in America" 2011 Edition
- 2010 Associate Examiner – Certifying (Oral) Examination of the American Board of Surgery, Chicago, IL, April 19-20-21
- 2011 American College of Surgeons, 2012 – Claude Organ, MD, FACS Traveling Fellowship
- 2012 Invited Speaker – NIH – NIBIB 10th Anniversary: A Decade of Innovation for Health: "Use of Sensors and Simulation Technology to Quantify Clinical Palpation" Rockville, MD, June 21-22, 2012
- 2012 Invited Keynote Speaker – 2012 NMA Scientific Assembly Surgical Section Annual Meeting: The 2012 Sinkler Lecture, New Orleans, LA, July 31-August 2, 2012
- 2013 Fellow: 2013-2014 Class of the Hedwig van Ameringen Executive Leadership in Academic Medicine (ELAM) Program for Women
- 2014 Marquis "Who's Who in America" 2014 Edition
- 2014 Invited Speaker – Association for Academic Surgery – TED Talks – Surgical Innovation
- 2014 Invited Speaker – The National Academy of Sciences – Distinctive Voices – Sensors, Simulation and Medical Performance: Are we there yet?
- 2014 Named to AcademicKeys Who's Who in Medicine Higher Education (WWMHE)
- 2015 Invited Co-Host of TEDMED 2015
- 2017 Invited Speaker – NIH Director's Wednesday Afternoon Lecture Series (WALS)
- 2017 Savoy Magazine "2017 Top Black Doctor"
- 2017 Marshal for the 2017 American College of Surgeons Convocation of Initiates
- 2018 Inducted into the American Institute for Medical and Biological Engineering, April 12, 2018

International Awards:

- 2012 Association for Academic Surgery/Colombian Surgical Association International Visiting Professorship Award
- 2014 Invited Speaker – TEDMED 2014 – Haptics: The Science of Touch, September 11, 2014
- 2015 Invited Speaker – TEDYouth 2015, November 14, 2015



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Keynote:

- 2005 Keynote Speaker – 9th Annual Graduate and Professional Student Research Conference hosted by BGSA (The Black Graduate Student Association) “Many Minds, Many Voices”, Northwestern University, Chicago, IL, April 23, 2005
- 2008 Invited Keynote Speaker – Chicago School for Agricultural Sciences Annual Job Fair
- 2010 Invited Keynote Speaker – Association for Surgical Education Annual Meeting
- 2010 Invited Keynote Speaker – Graduation Address, Brenneman Junior High School
- 2010 Invited Keynote Speaker – Science Minors Graduation, Museum of Science & Industry
- 2011 Invited Keynote Speaker – Science Chicago Address, Malcolm X College
- 2011 Invited Keynote Speaker – Science, Inventorship & Entrepreneurship, Olive Harvey College
- 2011 Invited Keynote Speaker – Girls for Science, Museum of Science & Industry
- 2012 Invited Keynote Speaker – Howard University College of Medicine Graduation Ceremony, May 11, 2012
- 2015 Invited Keynote Speaker – Martin Luther King, Jr. Day Celebration, Medical College of Wisconsin
- 2015 Invited Keynote Speaker – Royal Australasian College of Surgeons
- 2016 Invited Keynote Speaker – Edward Alexander Bouchet Graduate Honor Society Induction Ceremony – University of Wisconsin-Madison, March 16, 2016
- 2016 Invited Keynote Speaker – SIM-one SIM Expo, Toronto, Canada, October 7, 2016
- 2017 Invited Keynote Speaker – Northwestern University Medical Scientists Training Program’s Diverse Perspectives of Physician Scientists, Chicago, IL, May 8, 2017
- 2017 Invited Keynote Speaker – Stanford Innovations in Medical Education Conference, Stanford University, May 13, 2017
- 2017 Invited Keynote Speaker – University of Chicago Medical Education Day, University of Chicago, November 16, 2017
- 2018 Invited Keynote Speaker – Howard University 48th Annual Drew/Syphax Lecture and Seminar, March 19, 2018

Research Awards & Distinctions:

- 1997 Excellent Poster Presentation – National Medical Association, Third Place Basic Science
- 2002 Excellent Poster Presentation – Biomedical Computation at Stanford, Second Place
- 2002 Excellent Poster Presentation – Medicine Meets Virtual Reality, Second Place
- 2002 Satava Simulation Award – Medicine Meets Virtual Reality Laboratory Group Award
- 2007 Margaret and Muir Frey Memorial Prize – Department of Biomedical Engineering: “The Male Rectal Exam Simulator” First Place, Students: Leslie Gittings, Nurul Hamzah, Sofiah Syed, and Latha Subramaniam
- 2008 Northwestern Medical Student Summer Research Program – Competitive Award
- 2008 Margaret and Muir Frey Memorial Prize – Department of Biomedical Engineering: “The Bleeding Vessel Simulator (BVS).” Students: Josh Abecassis, Nicholas Deep, Suraj Gupta, Neil Tiwari
- 2008 Northwestern Medical Student Thesis Program – Faculty Mentor
- 2008 Association for Surgical Education – Haemonetics Best Paper Award



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- 2009 Margaret and Muir Frey Memorial Prize – Department of Biomedical Engineering: “Female Pelvic Exam Simulator for the Developing World” Students: Tadas Sileika, Rebecca Etrenne, John Leuthner, and Lee Lamers
- 2009 Perfect Score National Institutes of Health R-01
- 2011 Presidential Early Career Award for Scientists and Engineers
- 2012 Perfect Score National Institutes of Health F-32
- 2013 Association of Women Surgeons Starr Poster Contest – Resident Winner, Third Place
- 2016 Inducted into the American Society for Clinical Investigators – April 16, 2016
- 2017 Layton F. Ridders, MD, Best Resident Oral Presentation Award – University of Wisconsin Department of Surgery Research Summit, January 18, 2017

Visiting Professorships:

- 2005 Visiting Professorship in Surgery, University of Southern California, April 30, 2005
- 2007 Visiting Professorship in Surgery, Medical College of Georgia, January 29, 2007
- 2007 Visiting Professorship in Surgery, Eastern Virginia Medical School, Sept 14, 2007
- 2008 Visiting Professorship in Surgery, New York Hospital in Queens, March 19, 2008
- 2009 Visiting Professorship in Surgery, Southern Illinois University, March 27, 2009
- 2009 Visiting Professorship in Medical Education, Meharry Medical School, April 9, 2009
- 2009 Kappy Flanders Visiting Professorship in Simulation, McGill University, Sept 16, 2009
- 2011 Visiting Professorship in Surgery, Kansas University Medical Center, October 2011
- 2011 Visiting Professorship in Surgery, University of Illinois, Peoria, December 16, 2011
- 2012 Visiting Professorship in Simulation, Baystate Medical Center, November 15, 2012
- 2014 Visiting Professorship in Surgery, Stanford University, November 11, 2014
- 2015 Visiting Professorship in Engineering, Johns Hopkins University, November 4, 2015
- 2015 Ravitch Visiting Professorship in Surgery, Johns Hopkins University, November 5, 2015
- 2016 Martin Luther King Jr, Visiting Professorship in Surgery, Georgetown University, January 5, 2016
- 2016 Laycock Visiting Professorship in Education, University of Texas Southwestern, January 20, 2016
- 2016 LB Sanders Visiting Professorship in Education and Surgery, Tufts University / Lahey Hospital and Medical Center, May 4, 2016
- 2016 Kim Ephgrave Visiting Professorship, University of Oklahoma, May 13, 2016
- 2016 Visiting Professorship in Surgery, Thomas Jefferson University, May 26, 2016
- 2016 Visiting Professorship in Surgery, University of Virginia, October 26, 2016
- 2016 Visiting Professorship in Surgery, Augusta University, October 31, 2016
- 2016 Ziffren Visiting Professorship in Surgery, University of Iowa, November 11, 2016
- 2016 J. Rawson Collins Visiting Professorship in Surgery, University of Cincinnati, January 11, 2017
- 2017 Daniel W. Elliott Visiting Professorship in Surgery, Wright State University, May 3, 2017
- 2017 Claude Organ Lectureship, Medical University of South Carolina, May 16, 2017
- 2017 Visiting Professorship in Surgery, University of California Irvine, October 26, 2017
- 2018 Visiting Professorship in Surgery, Rutgers University, January 19, 2018
- 2018 Visiting Professorship in Surgery, University of Toledo, February 28, 2018



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- 2018 Visiting Professor in Surgical Education, Teaching Scholars Program, University of California - San Francisco, April 24, 2018
- 2018 J. Englebert Dunphy Visiting Professor, Resident Research Symposium, University of California - San Francisco, April 25, 2018

Radio, Television and News:

- 2002 News Article, Wired Magazine, March 18, 2002
- 2007 News Article, Reuters, March 19, 2007
- 2007 News Article, Reuters, April 5, 2007
- 2007 News Article, Chicago Sun Times, May 1, 2007
- 2007 News Article, BBC News, July 9, 2007
- 2007 News Article, The Chronicle of Higher Education, July 27, 2007
- 2008 News Article, The New York Times, February 12, 2008
- 2008 Radio Interview, National Public Radio – The Bryant Park Project, February 13, 2008
- 2008 Featured in a mini-documentary, CPS Right Now! Television Program
- 2009 Featured in a Channel 7 ABC News Segment, CPS Job Fair Mentor
- 2009 Featured in a Channel 11 Television Segment on the Chicago Tonight Show
- 2010 News Article, Chicago Tribune, June 27, 2010
- 2011 Featured in a Channel 7 ABC News Segment – Black History Month, February 2011
- 2011 News Article, Associated Press, March 23, 2011
- 2011 White House Press Release – Presidential Early Career Award, September 26, 2011
- 2011 News Article, Chicago Tribune, September 29, 2011
- 2011 News Article, Chicago Defender, September 29, 2011
- 2013 News Article, Reuters Health, April 29, 2013
- 2014 Magazine Article, Brava Magazine – 2014 Women to Watch, January 9, 2014
- 2014 Featured in a Channel 27 News Segment – Robotics at UW Hospital, October 5, 2014
- 2014 News Article, Wisconsin State Journal, November 16, 2014
- 2015 Magazine Article, Quarterly Magazine, March 13, 2015
- 2015 News Article, National Institute of Biomedical Imaging and Bioengineering, April 6, 2015
- 2015 Featured in a Chanel 3 CBS News Segment – Simulator helps UW surgeon improve medical training, patient care, October 26, 2015
- 2016 Magazine Article, UMOJA Magazine, October 2016
- 2016 News Article, Madison 365, October 14, 2016
- 2017 Featured in a Channel 3 CBS News Segment – Research Indicates correct breast examination techniques are widely misunderstood, January 22, 2017
- 2017 News Article, NIH Record, April 7, 2017
- 2017 Featured on NIH Women in Biomedical Careers - Women Scientists in Action, June 22, 2017
- 2018 Featured in a MomsEveryday Segment – New Technology Seeks to Teach Proper Self-Breast Exam Techniques, February 5, 2018



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Grant Support

Current

Title: Tourniquet Master Training
Sponsor: DOD SBIR Phase IIb – Continuation Award #W81XWH-13-C-0021
Years: 2017-2020
Role: University Subcontract PI
Percentage of effort: 5%
PI: Carla Pugh, MD, PhD

Title: The Use of Epistemic Network Analysis to Evaluate Non-Technical Skills Performance in Trauma Simulation Education
Sponsor: National Board of Medical Education – Stemmler Medical Education Research Fund
Years: 2016-2018
Role: Co-investigator
Percentage of effort: 0%
PI: Hee Soo Jung, MD

Title: Patient's Perceptions of the Clinical Breast Examination as a Tool for Patient Education
Sponsor: National Institutes of Health 3R01EB011524-07S1
Years: 2016-2018
Role: PI
Percentage of effort: 5%
PI: Carla Pugh, MD, PhD

Title: Ponseti Method
Sponsor: School of Medicine and Public Health
Years: 2016
Role: Consultant
Percentage of effort: 0%
PI: Kenneth Noonan

Title: Surgery Clinical Research Experience for High School Students
Sponsor: Doris Duke Charitable Foundation
Years: 2012-2020
Role: PI
Percentage of effort: 5%
PI: Carla Pugh, MD, PhD



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Title: Surgical Oncology Research Training Program
Sponsor: NIH NCI T32 CA090217-16
Years: 2016-2021
Role: Trainer
Percentage of effort: 0%
PI: Caprice Greenberg, MD, MPH

Title: Integrated Training for Physician Scientists
Sponsor: NIH T32 GM008692
Years: 2016 - 2021
Role: Diversity Committee Member
Percentage of effort: 0%
PI: Anna Huttenlocher, MD

Major Past Awards

Title: AAS Courses to Increase Women and Minorities in Academic Surgery
Sponsor: NIH R13GM095236
Years: 2014-2017
Role: Co-investigator
Percentage of effort: 5%
PI: Caprice Greenberg, MD, MPH

Title: Use of Technology for Performance Measurement in Medicine
Sponsor: University of Wisconsin Discovery to Product Entrepreneurship Program
Years: 2015-2017
Role: PI/Chief Scientific Officer
Percentage of effort: 0%
PI: Carla Pugh, MD, PhD

Title: Validation of Sensorized Breast Models for High Stakes Testing
Sponsor: National Institutes of Health R01EB011524
Years: 2010-2016
Role: PI
Percentage of effort: 25%
PI: Carla Pugh, MD, PhD

Title: Tourniquet Master Training
Sponsor: DOD SBIR Phase II - Award #W81XWH-13-C-0021
Years: 2014-2017
Role: Co-investigator
Percentage of effort: 5%
PI: Peter Weyhrauch



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Title: Assuring and Defining Outcomes through Procedural Training (ADOPT)
Sponsor: Covidien
Years: 2014-2016
Role: PI
Percentage of effort: 20%
PI: Carla Pugh, MD, PhD

Title: Psycho-Motor and Error Enabled Simulations: Modeling Vulnerable Skills in the Pre-Mastery Phase
Sponsor: U.S. Army Medical Research and Materiel Command- W81XWH-13-1-008
Years: 2013-2016
Role: PI
Percentage of effort: 15%
PI: Carla Pugh, MD, PhD

Title: SIMLAB: Using Patient Simulation for Student Exploration of Community Health Issues
Sponsor: National Institutes of Health 1R25RR026013
Years: 2011-2016
Role: Consultant
Percentage of effort: 2%
PI: Mayas and Ward

Title: The Wisconsin Surgical Coaching Program
Sponsor: PERC Education and Research Committee
Years: 2012-2015
Role: Co-investigator
Percentage of effort: 5%
PI: Caprice Greenberg, MD, MPH

Title: Automated Performance Assessment System
Sponsor: NIH – NIBIB – F32 - Award # F32 EB017084
Years: 2013-2015
Role: PI
Percentage of effort: 0 (Mentor/Sponsor)
PI: Anne-Lise Maag/Carla Pugh, MD, PhD



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Title: Hands-Free Kinetic System for Medical Simulation
Sponsor: DOD SBIR Phase II - Award #W81XWH-11-C-0050
Years: 2011-2014
Role: Consultant
Percentage of effort: 5%
PI: Timothy Judkins

Title: Tourniquet Master Training
Sponsor: DOD SBIR Phase I - Award #W81XWH-13-C-0021
Years: 2013-2014
Role: Co-investigator
Percentage of effort: 5%
PI: Peter Weyhrauch

Title: Corridor of Innovation: Simulation for Improved Healthcare Outcomes, Chicago to Peoria, IL
Sponsor: Peoria, Illinois – Jump Trading Simulation and Education, JTSEC001-2010
Years: 2011-2013
Role: Co-PI (2011-2012)
Percentage of effort: 7%
PI: Vozenilek

Title: Validity Evidence for a Competency Based Resident OR Instruction and Assessment System
Sponsor: Augusta Webster Educational Grant – Northwestern University
Years: 2011-2014
Role: Co-PI (2011-2012)
Percentage of effort: 3%
PI: DaRosa

Title: Use of Decision-Based Surgical Simulators to Assess Intra-Operative Performance: A Focus on Operating Room Efficiency, Patient Safety & Team Communication
Sponsor: Illinois Excellence in Academic Medicine Grant
Years: 2010-2012
Role: PI
Percentage of effort: 10%
PI: Carla Pugh, MD, PhD



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Title: "HCC-Medium: Mixed Reality Virtual Humans for Training"
Sponsor: National Science Foundation – Grant #0803652
Years: 2008-2012
Role: Consultant
Percentage of effort: 5%
PI: Lok

Title: "Transparency in Teleoperation"
Sponsor: United States – Israel, Bi-national Science Foundation
Grant # 2007195
Years: 2008-2012
Role: Consultant
Percentage of effort: 5%
PI: Mussa-Ivaldi

Title: Medical Reserve Trauma Training Program: Achieving Optimal Outcomes
& Improving Team Performance
Sponsor: USAMRMC-W81XWH-05-1-0372
Years: 2007
Role: Consultant
Percentage of effort: 5%
PI: Augustein

Title: The Use of Cognitive Task Analysis to Expose Critical Decision Making in
Surgical Procedures
Sponsor: USAMRMC-W81XWH0710190
Years: 2007-2009
Role: PI
Percentage of effort: 10%
PI: Carla Pugh, MD, PhD

Title: "A simulation-based intervention to improve cancer screening physical
examination skills."
Sponsor: Cancer Institute-Supplement Grant-3U01CA116875-03S1-
Years: 2007-2009
Role: Co-PI/Mentee
Percentage of effort: 75%
PI: Charles Bennett



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Title: Evaluating Potential Uses of Simulation Technology in Teaching and Assessing Hands-on Technical Skills: A Focus on Intimate Clinical Examinations

Sponsor: Augusta Webster Educational Innovation Grants Program

Years: 2005-2007

Role: PI

Percentage of effort: 5%

Title: The Shoulder Dystocia Simulator

Sponsor: Northwestern Memorial Foundation 2005 Research and Education Grants Initiative

Years: 2005

Role: Co-PI

Percentage of effort: 3%

PI: Grobman

Title: The Breast Exam Simulator: Development and Assessment of a Novel Training Tool

Sponsor: Eleanor Wood-Prince Grants Initiative

Years: 2004

Role: PI

Percentage of effort: 3%

Title: Quantitative Evaluations of Clinical Performance

Sponsor: Stanford Media X Grant

Years: 2003

Role: Co-PI

Percentage of effort: 10%

PI: Dev

Title: Biocomputational Methods in Simulation

Sponsor: National Board of Medical Examiners (NBME) Stemmler Fund

Years: 2002-2004

Role: Co-PI (2002-2003)

Percentage of effort: 15%

PI: Carla Pugh, MD, PhD (2003-2004)

Title: Consultant and Technology Development

Sponsor: King's College London Technology Fund II

Years: 2002

Role: Researcher, Consultant

Percentage of effort: 10%

PI: Marsh



Carla M. Pugh, MD, PhD, FACS
Professor of Surgery

Title: Prostate Exam Simulator
Sponsor: Eli Lilly Bio-Technology Initiative at Howard University
Years: 2002
Role: Consultant
Percentage of effort: 5%
PI: Ahagotu

Title: Advanced E-Team Grant
Sponsor: National Collegiate Inventors and Innovators Alliance (NCIIA)
Years: 2002
Role: E-Team Leader
Percentage of effort: 10%
PI: Pugh & Krummel

Title: Telemedicine and Advanced Medical Technology: Refined Training Tools for Medical Readiness
Sponsor: STTR – ARMY02-T017 (DAMD17-02-C-0126)
Years: 2002
Role: Co-PI
Percentage of effort: 10%
PI: Higgins

Title: Burroughs-Wellcome Research Travel Grant
Sponsor: King's College London
Year: 2001
Role: PI

Title: Next Generation Internet Contract "Anatomy and Surgical Simulation"
Sponsor: National Library of Medicine
Years: 2001-2006
Role: Researcher
Percentage of effort: 50%
PI: Dev

Title: Consultant and Technology Development
Sponsor: King's College Teaching Fund London
Years: 2001-2003
Role: Researcher
Percentage of effort: 10%
PI: Marsh



Carla M. Pugh, MD, PhD, FACS
Professor of Surgery

Title: Educational Research Grant
Sponsor: Linkoping University, Sweden
Years: 2001
Role: Consultant
Percentage of effort: 10%
PI: Wijma

Title: Intelligent Assistant for Web-based Training Vignette Design
Sponsor: Naval Air Warfare Center SBIR – OSD01-CR14
Years: 2001
Role: Consultant
Percentage of effort: 5%
PI: Thompson

Title: Spencer Dissertation Grant for Educational Research
Sponsor: Spencer Foundation
Year: 2000
Role: PI

Publications

Peer-reviewed research articles (Over 100):

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10. **Pugh CM**, Salud LH. Fear of Missing a Lesion: Use of Simulated Breast Models to Decrease Student Anxiety When Learning Clinical Breast Examinations. *American Journal of Surgery*. 193 (6):766-70, 2007.
11. Silverstein J, Selkov G, Salud L, **Pugh CM**. Developing Performance Criteria for the e-Pelvis Simulator Using Visual Analytics *Studies in Health Technology and Informatics*. 125:436-8, 2007
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13. Mackel T, Rosen J, **Pugh CM**. Markov Model Assessment of Subjects' Clinical Skill Using the E-Pelvis Physical Simulator. *IEEE Transactions in Bio-Medical Engineering*. 54(12):2133-41, 2007.
14. **Pugh CM**, DaRosa DA, Glenn D, Bell RH. A Comparison of Faculty and Resident Perception of Resident Learning Needs in the Operating Room. *Journal of Surgical Education*. 64(5):250-55, 2007.
15. Lo DJ, Bilimoria KY, **Pugh CM**. Bowel Complications after Plug and Patch Inguinal Hernia Repair. *Hernia: the journal of hernias and abdominal wall surgery*. 12(4):437-40, 2008.
16. **Pugh CM**, Domont ZB, Salud LH, Blossfield KM. A Simulation Based Assessment of Clinical Breast Examination Techniques: Do patient and clinician factors affect clinician approach? *American Journal of Surgery*. 195(6):874-80, 2008
17. Scott DJ, Cendan JC, **Pugh CM**, Minter RM, Dunnington GL, Kozar RA. The changing face of surgical education: simulation as the new paradigm. *Journal of Surgical Research*. 15; 147(2):189-93, 2008
18. Deladisma A, Gupta M, Kotranza A, Bittner B, Imam T, Swinson D, Gucwa A, Nesbit R, Lok B, **Pugh CM**, Lind DS. "A Pilot Study to Integrate an Immersive Virtual Patient

with a Breast Complaint and Breast Exam Simulator into a Surgery Clerkship".
American Journal of Surgery. 197(1):102-6., Jan 2009

19. Balkissoon R, Blossfield-Iannitelli K, Salud L, Ford D, **Pugh CM**. Lost in Translation: Unfolding Medical Students' Misconceptions of How to Perform the Clinical Digital Rectal Examination. *American Journal of Surgery*. 197(4):525-32, April 2009
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22. **Pugh CM**, Aidoo KA. Fear of Causing Harm: Use of Mannequin-Based Simulation to Decrease Student Anxiety Prior to Interacting with Female Teaching Associates. *Teaching and Learning in Medicine*. 2009 Apr-Jun; 21(2):116-20
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25. **Pugh CM**, Plachta S, Auyang E, Pryor A, Hungness E. Outcome Measures for Surgical Simulators: Is the focus on technical skills the best approach? *Surgery*. 147(5): 646-54, May 2010
26. **Pugh CM**, DaRosa DA, Bell, Jr. RH. Residents' Self-Reported Learning Needs for Intra-Operative Knowledge: are we missing the bar? *American Journal of Surgery*. 199(4):562-5, April 2010
27. **Pugh CM**, Santacaterina S, DaRosa DA, Clark R. Intra-Operative Decision Making: More than meets the eye. *Journal of Biomedical Informatics*. 2011 Jun; 44(3):486-96
28. **Pugh CM**, DaRosa DA, Santacaterina S, Clark R. Faculty evaluation of simulation-based modules for assessment of intra-operative decision making. *Surgery*. 149(4):534-42. April 2011
29. Scott DJ, **Pugh CM**, Ritter EM, Jacobs LM, Pellegrini CA, Sachdeva AK. New Directions for Simulation-based Education and Training: Breakout Session Reports from the 2010

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30. Salud LH, **Pugh CM**. Use of sensor technology to explore the science of touch. *Studies in Health Technology and Informatics*. 163:542-8, March 2011
31. Salud LH, Peniche AR, Salud JC, de Hoyos AL, **Pugh CM**. Toward a simulation and assessment method for the practice of camera-guided rigid bronchoscopy. *Studies in Health Technology and Informatics*. 163:535-41, March 2011
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33. Kaye AR, Salud LH, Domont ZB, Blossfield Iannitelli K, **Pugh CM**. Expanding the use of simulators as assessment tools: the new pop quiz. *Studies in Health Technology and Informatics*. 163:271-3, March 2011
34. **Pugh CM**, Bevan MG, Duve R, White HL, Magee JH, Wiehagen GB. A Retrospective Review of TATRC Funding for Medical Modeling and Simulation Technologies. *Simulation in Healthcare*. 2011 Aug;6(4):218-25
35. Huang F, Mussa-Ivaldi F, **Pugh CM**, Patton J. Learning Kinematic Constraints in Laparoscopic Surgery. *IEEE Eng Med Biol Soc*. 2010;2010:2097-102
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57. Laufer S, Cohen ER, Maag AD, Kwan C, VanVeen B, **Pugh CM**. Multimodality approach to classifying hand utilization for the clinical breast examination. *Studies in Health, Technology, and Informatics*. 2014; 196:238-44
58. Kwan C, Cohen ER, Salud L, **Pugh CM**. Modification of the pelvic examination simulator for the developing world. *Studies in Health, Technology, and Informatics*. 2014; 196:222-4
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75. D'Angelo AD, Ray RD, Jenewein CG, Jones GF, **Pugh CM**. Residents' perception of skill decay during dedicated research time. *Journal of Surgical Research*. 2015 Nov; 199(1): 23-31

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83. D'Angelo AD, Rutherford DN, Ray RD, Laufer S, **Pugh CM**. Working volume: validity evidence for motion-based metric of surgical efficiency. *American Journal of Surgery*. 2016 Feb; 211(2): 445-50
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Editorials, Reviews, Chapters, Books, Commentaries:

1. **Pugh CM.** (2001) Evaluating Simulators for Medical Training: The Case of the Pelvic Exam Model. *ProQuest/Bell and Howell Dissertations Publishing*, Ann Arbor, MI
2. **Pugh CM.** (2007) Simulation and High Stakes Testing - *Clinical Simulation: Operations, Engineering, and Management* by Kyle & Murray, Boston, MA Topic 68(1): 655-666.
3. McGaghie W, Wayne D, **Pugh CM.** (2007) Fundamentals of Educational Research Using Medical Simulation- *Clinical Simulation: Operations, Engineering, and Management* by Kyle & Murray, Boston, MA Topic 56(1): 517-526.
4. **Pugh CM,** Halverson AL. (2009) Team Training Simulation: Developing Simulation Based Team Training Scenarios – *ACS/APDS Surgical Skills Curriculum: Guidebook for Faculty*. American College of Surgeons Division of Education, Chicago, IL-Web Publication-<http://elearning.facs.org>
5. **Pugh CM.** Perforated Duodenal Ulcer Repair: Omental Patch. *Northwestern Handbook of Surgical Procedures, 2nd Edition*. © 2010 Landes Bioscience
6. **Pugh CM.** Small Bowel Resection and Anastomosis (Enterectomy): Open. *Northwestern Handbook of Surgical Procedures, 2nd Edition*. © 2010 Landes Bioscience
7. **Pugh CM.** Enterolysis for Small Obstruction: Open. *Northwestern Handbook of Surgical Procedures, 2nd Edition*. © 2010 Landes Bioscience
8. **Pugh CM.** Open Feeding Jejunostomy. *Northwestern Handbook of Surgical Procedures, 2nd Edition*. © 2010 Landes Bioscience
9. **Pugh CM.** Mechanical Simulators versus Patient Actors: Addressing the Content Validity Question. *Journal of Surgical Research*. 2011 Jun 15; 168(2):177-8. Epub 2010 Jun 4.
10. **Pugh CM.** Low-Cost, Locally Fabricated Simulators: The Wave of the Future. *Journal of Surgical Research*. 2011 Jun 1; 168(1):29-30. Epub 2010 Aug 7.
11. **Pugh CM.** Medical Education Meets Patient Safety. *Journal of Surgical Research*. 2011. 176(2): 400-401.

12. **Pugh CM.** Warm-Ups, Mental Rehearsals and Deliberate Practice: Adopting The Strategies of Elite Professionals. *Journal of Surgical Research*. 2011 Jun 25 176(2): 404-405.
13. **Pugh CM, Cannon-Bowers J.** Higher Order Performance Assessments Using Error Enabled Simulations: A New Approach. *CyberTherapy and Rehabilitation*. 4(4); 22-23. Winter 2011.
14. **Pugh CM.** Time Management. *Success in Academic Surgery-Part 1*. (2012) Eds. Chen, Herbert, Kao, Lillian. Springer.
15. Sippel RS, **Pugh CM.** An Overview of Opportunities in Surgical Education. *Success in Academic Surgery: Developing a Career in Surgical Education*. Eds Sippel, RM and Pugh, CM. Springer. (2013)
16. Swaroop M, **Pugh CM.** Prevention of Postoperative Infection. *ACS Surgery: Principles and Practice*. BC Decker Inc. (2013)
17. Krummel TM, **Pugh CM.** How to Protect your Intellectual Property: Invention Disclosures and Patents. *Success in Academic Surgery: Basic Science*. Springer London, 2014. 195-203.
18. **Pugh CM.** Competency, Mastery and Deliberate Practice: Revisiting the goals of simulation based assessments. *MEdSim Magazine*. Issue 4/2013: 14-19
19. **Pugh CM.** Can Engineering Metrics Help Pave the Way for New Learning Opportunities in Medicine? *AM Rounds*. 2014 Sept. 2.
<http://academicmedicineblog.org/can-engineering-metrics-help-pave-the-way-for-new-learning-opportunities-in-medicine/>
20. **Pugh CM, Stefanidis D.** (2015). Grant Funding. In R. Aggarwal, J. Korndorffer & J. Cannon-Bowers (Eds.), *ACS Principles and Practice for Simulation and Surgical Education Research* (1 ed., Vol. 1, pp. 165-181). Chicago, IL: American College of Surgeons.
21. **Pugh CM.** Presentation Skills. *Navigating Your Surgical Career: The AWS Guide to Success*. MedTronic (2015)
22. **Pugh CM, Golden RN.** Medical Training in the Fitbit, Google Glass and Personal Information Era: Will advanced technologies change the way we learn and practice medicine? *Wisconsin Medical Journal*. 2015 Aug; 114(4): 168-169
23. **Pugh CM.** A Holistic Model of Surgical Expertise and Competency. *Annals of Surgery*. 2017 Feb; 265(2): 268-269



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24. Nathwani JN, **Pugh CM**. Time Management. *Success in Academic Surgery-Second Edition*. Eds. Chen, H, and Kao, L. Springer. 2017. 187-199
25. Jung HS, **Pugh CM**. What Does an Academic Career Look Like in Surgical Education? *Success in Academic Surgery: A How To Guide for Medical Students*. Springer. Eds. Englesbe, M, Meyers, MO. 2017. 9-14
26. Forsynth KE, D'Angelo AD, Cohen ER, **Pugh CM**. Improving Clinical Performance by Analyzing Surgical Skills and Operative Errors. *Surgical Patient Care: Improving Safety, Quality and Value*. Springer. Eds. Sanchez, JA, Barach, P, Johnson, JK, Jacobs, JP. 2017. 555-568
27. George EI, Skinner A, **Pugh CM**, Brand TC. Performance Assessment in Robotic and Laparoscopic Surgery. *Surgeons as Educators: A Guide for Academic Development and Teaching Excellence*. Eds. Kohler, T, Schwartz, B. (Under Review)
28. Seymour N, Pugh CM. Skills and Simulation. *Schwartz's Principles of Surgery – Eleventh Edition*. Edz. Brunicaardi FC, Andersen DK, Billiar TR, Dunn DL, Hunter JG, Matthews J, Pollock RE. (Under Review)

Case reports, Technical notes, Letters:

1. **Pugh CM**, Mezghebe HM, Leffall LD. Spontaneous Bowel Perforations in Drug Abusers. *American Journal of Emergency Medicine*. 13(1): 113-115, 1995
2. **Pugh CM**, Heinrichs WL, Srivastava SS, et al. Objective Assessment of Clinical Skills with a Simulator. *Journal of the American Medical Association*. Sep 5; 286(9):1021-3, 2001
3. Huang FC, **Pugh CM**, Patton JL, Mussa-Ivaldi FA. Learning kinematic mappings in laparoscopic surgery. *Conf Proc IEEE Eng Med Biol Soc*. 2010; 1:2097-102
4. Rooney D, **Pugh CM**, Darosa DA. Northwestern Center for Advanced Surgical Education (N-CASE). *Journal of Surgical Education*. 2011 Jan-Feb; 68(1):73-6

Research Presentations (past 5 years only):

1. Poster: AWS STARR Poster Session. *Use of advanced sensor and motion tracking technology to classify clinical breast examination techniques*. October 2013
2. Podium: Wisconsin Surgical Society. *Development of an automated performance assessment system (APAS) to measure technical and decision-making*. November 2013
3. Poster: NextMed/ Medicine Meets Virtual Reality Annual Meeting. *Sensor-based assessment of cast placement and removal*. February 2014



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4. Poster: NextMed/ Medicine Meets Virtual Reality Annual Meeting. *Multimodality approach to classifying hand utilization for the clinical breast examination*. February 2014
5. Poster: NextMed/ Medicine Meets Virtual Reality Annual Meeting. *Modification of the pelvic examination simulator for the developing world*. February 2014
6. Poster: NextMed/ Medicine Meets Virtual Reality Annual Meeting. *Validity of a newly developed tri-axial sensor for clinical breast examination skills*. February 2014
7. Poster: NextMed/ Medicine Meets Virtual Reality Annual Meeting. *Application of a new adaptable thyroid model for ultrasound and hands-on skill assessment*. February 2014
8. Poster: NextMed/ Medicine Meets Virtual Reality Annual Meeting. *Tourniquet Master Training for Junctional and Inguinal Hemorrhage Control (TMT)*. February 2014
9. Podium: Academic Surgical Congress Annual Meeting. *Assessing inter-station and cross-task validity evidence for sensor-based performance measures*. February 2014
10. Podium: Academic Surgical Congress Annual Meeting. *Investigating the importance of taskwork in team-based assessments*. Academic Surgical Congress. February 2014
11. Podium: American College of Surgeons Accredited Education Institutes Annual Meeting. *Use of error analysis to assess resident performance*. March 2014
12. Poster: Americas Hernia Society Annual Meeting. *A summative assessment of laparoscopic ventral hernia repair for general surgery residents: perception does not equal reality*. March 2014
13. Podium: Association for Surgical Education Annual Meeting. *Use of decision-based simulations to assess resident readiness for operative independence*. April 2014
14. Poster: Society of Black Academic Surgeons Annual Meeting. *The variable tissue simulator: validation of a quantitative model of intra-operative decision making*. April 2014
15. Podium: American College of Surgeons Annual Meeting. *Resident Readiness for Independence: An Analysis of Intra-Operative Error Management in a Simulated Setting*. October 2014
16. Podium: Wisconsin Surgical Society Annual Meeting. *Intra-operative decision making: impact of the error recognition process on successful error recovery*. October 2014
17. Poster: University of Wisconsin Department of Surgery Research Summit. *The use of*



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error analysis to assess resident performance. January 2015

18. Poster: University of Wisconsin Department of Surgery Research Summit. *Position clustering: a novel approach to quantifying laparoscopic port placement.* January 2015
19. Poster: University of Wisconsin Department of Surgery Research Summit. *Error tolerance: a new psychomotor performance metric in laparoscopic surgery.* January 2015
20. Poster: University of Wisconsin Department of Surgery Research Summit. *Use of decision-based simulations to assess resident readiness for operative independence.* January 2015
21. Poster: University of Wisconsin Department of Surgery Research Summit. *Residents' perception of skill decay during dedicated research time.* January 2015
22. Podium: Academic Surgical Congress Annual Meeting. *Residents' perception of skill reduction during dedicated research time.* February 2015
23. Podium: Academic Surgical Congress Annual Meeting. *Position clustering: a novel approach to quantifying laparoscopic port placement.* February 2015
24. Poster: American College of Surgeons – Accredited Education Institutes Annual Meeting. *Error Tolerance: a new psychomotor performance in laparoscopic surgery.* March 2015
25. Poster: Society of Black Academic Surgeons: *Evaluation of teaching effectiveness for a simulation based, CME course: from structured to unstructured.* April 2015
26. Poster: Association for Surgical Education Annual Meeting. *Penetration of rule-based errors throughout the learning curve of LVH Repair.* April 2015
27. Podium: Association of American Medical Colleges. *Error tolerance: a new analysis approach in laparoscopic surgical simulation.* November 2015
28. Podium: Association of American Medical Colleges. *A tale of two measures and their association with task outcomes: the case of psychomotor skills and self-assessment.* November 2015
29. Poster: International Meeting on Simulation in Healthcare. *In situ progressive site interprofessional pediatric emergency simulation as a needs assessment for quality improvement.* January 2016



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30. Poster: University of Wisconsin Department of Surgery Research Summit. *Junctional and inguinal hemorrhage simulation: Tourniquet master training.* January 2016
31. Poster: University of Wisconsin Department of Surgery Research Summit. *Development and analysis of psychomotor skills metrics for procedural skills decay.* January 2016
32. Poster: University of Wisconsin Department of Surgery Research Summit. *Use of SIM to evaluate resident performance during complex scenarios in urinary catheter insertion.* January 2016
33. Poster: University of Wisconsin Department of Surgery Research Summit. *Exploring hand coordination as a measure of surgical skill.* January 2016
34. Poster: University of Wisconsin Department of Surgery Research Summit. *A tale of two measures and their association with task outcomes: the case of psychomotor skills and self-assessment.* January 2016
35. Poster: University of Wisconsin Department of Surgery Research Summit. *Research resident use of assistant correlates to perceived difficulty and skill decay in bowel repair.* January 2016
36. Poster: University of Wisconsin Department of Surgery Research Summit. *An exploration of moonlighting effects on surgical skill in lab residents.* January 2016
37. Poster: University of Wisconsin Department of Surgery Research Summit. *Fabric force sensors for the clinical breast examination simulator.* January 2016
38. Poster: University of Wisconsin Department of Surgery Research Summit. *A simulator measuring forces during surgical knots.* January 2016
39. Poster: University of Wisconsin Department of Surgery Research Summit. *A multi-layered needle injection simulator.* January 2016
40. Poster: University of Wisconsin Department of Surgery Research Summit. *A structured, extended training program to facilitate adoption of new techniques for practicing surgeons.* January 2016
41. Poster: University of Wisconsin Department of Surgery Research Summit. *Assessing pre-operative communication between attendings and residents.* January 2016
42. Podium: Academic Surgical Congress Annual Meeting. *Use of SIM to evaluate resident performance during complex scenarios in urinary catheter insertion.* February 2016
43. Podium: Academic Surgical Congress Annual Meeting. *Errors during bladder*



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catheterization: are residents ready for complex scenarios. February 2016

44. Podium: Academic Surgical Congress Annual Meeting. *Exploring hand coordination as a measure of surgical skill.* February 2016
45. Podium: Academic Surgical Congress Annual Meeting. *Do resident's operative leadership skills correlate with self-assessments of technical skill?* February 2016
46. Podium: Academic Surgical Congress Annual Meeting. *How motion tracking relates to end product quality in laparoscopic procedures.* February 2016
47. Podium: Academic Surgical Congress Annual Meeting. *An exploration of moonlighting effects on surgical skill in lab residents.* February 2016
48. Poster: NextMed / Medicine Meets Virtual Reality Annual Meeting. *Junctional and inguinal hemorrhage simulation: Tourniquet master training.* April 2016
49. Poster: NextMed / Medicine Meets Virtual Reality Annual Meeting. *A multi-layered needle injection simulator.* April 2016
50. Poster: NextMed / Medicine Meets Virtual Reality Annual Meeting. *Development and analysis of psychomotor skills metrics for procedural skills decay.* April 2016
51. Poster: NextMed / Medicine Meets Virtual Reality Annual Meeting. *A simulator for measuring forces during surgical knots.* April 2016
52. Podium: NextMed / Medicine Meets Virtual Reality Annual Meeting. *Fabric force sensors for the clinical breast examination simulator.* April 2016
53. Podium: Association for Surgical Education Annual Meeting. *Error management: Do residents identify operative errors as reversible?* April 2016
54. Poster: Association of Program Directors in Surgery Surgical Education Week. *The relationship between technical errors and decision making skills in the junior resident.* April 2016
55. Poster: Association of Program Directors in Surgery Surgical Education Week. *Exploring senior residents' intraoperative error management strategies: A potential measure of performance improvement.* April 2016
56. Poster: University of Wisconsin Undergraduate Research Symposium. *Junior lab resident's approach to complex urinary pathology.* April 2016
57. Poster: University of Wisconsin Undergraduate Research Symposium. *Achieving learning objectives by adding complexity to off-the-shelf simulator models.* April 2016



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58. Poster: University of Wisconsin Undergraduate Research Symposium. *Do resident's operative leadership skills correlate with self-assessments of technical skill?* April 2016
59. Poster: University of Wisconsin Undergraduate Research Symposium. *Anatomical accuracy of commercial female urinary catheter training simulators.* April 2016
60. Poster: University of Wisconsin Undergraduate Research Symposium. *Novel data collection system for tourniquet mastery training (Tmt).* April 2016
61. Poster: Society of Black Academic Surgeons. *Junior lab resident's approach to complex urinary pathology.* April 2016
62. Podium: Society of Black Academic Surgeons. *Assessment during clinical years changes resident perception of skills decay.* April 2016
63. Podium: Society of Black Academic Surgeons. *Do errors and critical events relate to laparoscopic ventral hernia repair outcomes?* April 2016
64. Poster: University of Wisconsin Department of Surgery Research Summit. *Why saying what you mean matters: A discourse analysis of trauma teams.* January 2017
65. Poster: University of Wisconsin Department of Surgery Research Summit. *Identifying targets to improve trauma team communication using epistemic network analysis.* January 2017
66. Poster: University of Wisconsin Department of Surgery Research Summit. *The hands and head of a surgeon: Modeling operative competency with multimodal epistemic network analysis.* January 2017
67. Poster: University of Wisconsin Department of Surgery Research Summit. *Modeling operative thinking in a simulation-based continuing medical education course on laparoscopic hernia repair.* January 2017
68. Poster: University of Wisconsin Department of Surgery Research Summit. *Hand smoothness in laparoscopic surgery correlates to psychomotor skills in virtual reality.* January 2017
69. Poster: University of Wisconsin Department of Surgery Research Summit. *Rescuing the clinical breast examination: Advances in classifying technique and assessing physician competency.* January 2017
70. Poster: University of Wisconsin Department of Surgery Research Summit. *Error tolerance: A new psychomotor performance metric in laparoscopic surgery.* January 2017

71. Poster: University of Wisconsin Department of Surgery Research Summit. *The relationship between confidence level and procedural errors: A bladder catheterization model.* January 2017
72. Poster: University of Wisconsin Department of Surgery Research Summit. *Exploring changes in senior residents' intraoperative error management strategies: a potential measure of performance improvement.* January 2017
73. Poster: University of Wisconsin Department of Surgery Research Summit. *Time away from clinical duties changes resident perceptions of skill decay.* January 2017
74. Poster: University of Wisconsin Department of Surgery Research Summit. *Junior lab residents' approach to complex urinary pathology.* January 2017
75. Poster: University of Wisconsin Department of Surgery Research Summit. *The relationship between technical errors and decision making skills in the junior resident.* January 2017
76. Poster: University of Wisconsin Department of Surgery Research Summit. *Do errors and critical events relate to hernia repair outcomes?* January 2017
77. Poster: University of Wisconsin Department of Surgery Research Summit. *Gauging competence in general surgery residents through defining and assessing surgical entrustable professional activities (SEPA's).* January 2017
78. Podium: University of Wisconsin Department of Surgery Research Summit. *Rescuing the clinical breast examination: Advances in classifying technique and assessing physician competency.* January 2017
79. Podium: Academic Surgical Congress Annual Meeting. *Residents' response to bleeding during a simulated robotic surgery experience.* February 2017
80. Podium: Academic Surgical Congress Annual Meeting. *How does surgical performance change in the laboratory years?* February 2017
81. Poster: American College of Surgeons – Accredited Education Institutes Annual Surgical Simulation Meeting. *Modeling operative thinking in a simulation-based continuing medical education course on laparoscopic hernia repair.* March 2017
82. Podium: American College of Surgeons – Accredited Education Institutes Annual Surgical Simulation Meeting. *Using epistemic network analysis to identify targets for educational interventions in trauma team communication.* March 2017

83. Poster: University of Wisconsin Undergraduate Research Symposium. *Skill loss and maintenance for research residents: A longitudinal study.* April 2017
84. Podium: Association for Surgical Education Annual Meeting. *The hands and head of a surgeon: Modeling operative competency with multimodal epistemic network analysis.* April 2017
85. Poster: Association for Surgical Education Annual Meeting. *Faculty perceptions of resident skills decay during dedicated research fellowships.* April 2017
86. Podium: Association for Surgical Education Annual Meeting. *Why saying what you mean matters: a discourse analysis of trauma teams.* April 2017
87. Poster: Society of Black Academic Surgeons. *Perceptions of maintenance of certification (MOC) of physician leaders in multiple specialties.* April 2017
88. Poster: Society of Black Academic Surgeons. *General surgery residents' perspectives on the preoperative interactions with attendings: the necessity of "the surgical flight plan."* April 2017
89. Poster: Society of Black Academic Surgeons. *Improving diagnosis in healthcare: Local versus national adoption of recommended guidelines for the clinical breast examination.* April 2017
90. Podium: Society of Black Academic Surgeons. *Breast health awareness: What are patients' learning needs?* April 2017
91. Podium: Society of Black Academic Surgeons. *Skill loss and maintenance for research residents: A longitudinal study.* April 2017
92. Poster: Military Health System Research Symposium. *Objective sensor-based feedback improves performance of skill in applying junctional hemorrhage control devices.* August 2017
93. Poster: Military Health System Research Symposium. *Skills decay: Understanding how time away from surgery effects performance.* August 2017
94. Poster: University of Wisconsin Department of Surgery Research Summit. *Assessment of trauma team communication using automated discourse coding and epistemic network analysis.* January 2018
95. Poster: University of Wisconsin Department of Surgery Research Summit. *Immediate visual feedback and its effect on technical skills and confidence during complex tourniquet applications.* January 2018



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96. Poster: University of Wisconsin Department of Surgery Research Summit. *Improving diagnosis in healthcare: local versus national adoption of recommended guidelines for the clinical breast examination.* January 2018
97. Poster: University of Wisconsin Department of Surgery Research Summit. *Learning through a laparoscopic trainer: Observations between PGY1-PGY4 OB/GYN Residents.* January 2018
98. Poster: University of Wisconsin Department of Surgery Research Summit. *Pedagogical strategies in simulated CME contexts: How learners' expertise impacts avoidant instructional approaches.* January 2018
99. Poster: University of Wisconsin Department of Surgery Research Summit. *Residents' surgical performance during the laboratory years: An analysis of rule-based errors.* January 2018
100. Poster: University of Wisconsin Department of Surgery Research Summit. *Skills decay: Understanding how time away from surgery affects performance.* January 2018
101. Poster: University of Wisconsin Department of Surgery Research Summit. *What do you know? How surgical experience predicts the types of questions asked in a didactic CME course.* January 2018

Patents

Issued

1. "Medical Examination Teaching System" – U.S. Patent Number 6,428,323. 2002
2. "Medical Examination Teaching and Measurement System" – U.S. Patent Number 8,764,450. 2014
3. "Clinical Assessment and Training System" – U.S. Patent Number 9,741,264. 2017

Educational Activities & Presentations

Medical Student Courses:

1996-2003	Clinical Instructor "Surgical Anatomy and Technique" Course Emory University-School of Medicine
1997-2003	Teaching Assistant Human Anatomy Course Stanford University School of Medicine



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2000-2003 Instructor/Course Coordinator Introduction to Pre-Clinical Medicine
Course Stanford University School of Medicine

2003-2012 Instructor/Course Coordinator Physical Exams Skills Unit
Northwestern University Feinberg School of Medicine

Medical Student Teaching/Mentoring:

2004 **Alison Chu** – Medical Student, Northwestern – Summer Internship
Project: "American Board of Surgery Pilot Breast Surgery Website"

2005 **Eniola Obadina** – Medical Student, Northwestern – Summer Internship
Project: "Efficacy of Pelvic Exam Simulators for Medical Student Learning"

2006 **Zachary Domont** – Medical Student, Northwestern – Summer Internship
Project: "Use of Simulation to Characterize Breast Exam Techniques"

2007 **Rishi Balkissoon** – Medical Student, Howard University – Summer
Fellow, Project: "Use of Simulation to Characterize Digital Rectal Exam
Techniques"

2007 **Usha Periyanyagam** – Medical Student, Northwestern
Project: Clinical Case Study – "Closed Loop Obstruction after an
Appendectomy"

2008 **Brandon Andrews** – Medical Student, Northwestern – Summer
Internship, Project: "Data Mining of the Digital Rectal Exam Technique
Database"

2009 **Chiagonzie Ononye** – Medical Student, Northwestern – Summer
Internship, Project: "Modification of commercially available simulators to
elicit decision making behavior"

2014 **Kimberly Maciolek** – Medical Student, University of Wisconsin, Madison
M1: Shapiro Summer Project Candidate, Project: "Wearable Breast
Training and Assessment Model"

2015 **Bridget O'Connell-Long** – Medical Student, University of Wisconsin,
Madison M1: Shapiro Summer Project Candidate, Project: "Unexpected
Errors and Decreased Confidence During Bladder Catheterization: Are
Residents Ready for Complex Scenarios?"

2015 **Colin Millar** – Medical Student, University of Wisconsin, Madison M1:



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- Shapiro Summer Project Candidate, Project: "Relationship between Motion-Related Metrics and Quality of Laparoscopic Hernia Repair"
- 2016 **Lakita Maulson** – Pre-Medical Student, University of Wisconsin, Diversity Supplement Grant, Project: Patient's Perceptions of the Clinical Breast Examination as a Tool for Patient Education
- 2016 **Jessica Hammes** – Medical Student, University of Wisconsin, Madison M1: Shapiro Summer Project Candidate, Project: "An Educational Model for Robotic Pelvic Tumor Excision"
- 2016 **Matthew Kaili** – Medical Student, University of Wisconsin, Madison M1: Shapiro Summer Project Candidate, Project: "Development of an Instrumented Clubfoot Model: Educating and Improving the Quality of Correction via the Ponseti Method"
- 2017 **James Xu** – Medical Student, University of Wisconsin, Madison M1: Shapiro Summer Project Candidate, Project: "Bleeding and Pulsatile Master Tourniquet Training Model"

Resident Teaching:

- 2003–2012 Attending Physician & Resident Teaching Clinical Setting
Westside VA – Northwestern Residency Program
- 2003–2012 Examiner, Annual Mock Oral Examinations – Northwestern University,
Rush University & University of Illinois at Chicago
- 2004-2012 Annual Northwestern Surgical Intern Lecture Series – "Drains and Pain
Management"
- 2004-2012 Northwestern Surgery Resident Core Curriculum Lecture – "Diseases of
the Small Bowel"
- 2004 Instructor, Residents as Teacher Course – Northwestern University
- 2005 Northwestern Surgery Resident Seminar Series – "Identifying Your
Learning Style"
- 2009 Northwestern Surgery Resident Seminar Series – "Team Based Decision
Making During Laparoscopic Ventral Hernia Repair"
- 2010 Northwestern Surgery Resident Core Curriculum Lecture – "Hernia



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Anatomy, Diagnosis and Complications”

- 2010 Northwestern Surgery Resident Decision Making Lecture – “Laparoscopic Guided Irrigation and Drainage for Perforated Diverticular Disease.”
- 2010 Northwestern PGY 1 – Skills Training – Central Line Placement and Urinary Catheterization
- 2011 Northwestern Surgery Resident Seminar Series – “Team Based Decision Making During Laparoscopic Ventral Hernia Repair”

Resident Mentoring:

- 2004 Formal Assigned Mentee – **Nik Dallas**, Surgical Resident (PGY1 - PGY3)
- 2008 Summer Research Project – **Alicia Growney** (PGY5)
- 2008 Formal Assigned Mentee – **Ashley Hardy**, Surgical Resident (PGY1 - PGY2)
- 2013 Formal Assigned Research Mentee – **Anne-Lise D’Angelo** (PGY3; 2013-2015), University of Wisconsin - Madison
- 2014 Research Mentee – **Eran Gwillim** (Unassigned Surgery Intern; 2014-2015), University of Wisconsin - Madison
- 2015 Formal Assigned Research Mentee – **Jay Nathwani** (PGY3; 2015-2017), University of Wisconsin – Madison
- 2018 Formal Assigned Research Mentee – **Kenneth Perrone** (PGY2; 2018-2019), Stanford University

Master’s & Doctoral Student Teaching/Mentoring:

- 2001-2003 **Kunal S. Girotra** – Masters’ Program – Chemical Engineering, Stanford Research Assistant
- 2004 **Paulo Blikstein** – Doctoral Program – School of Education, Northwestern Independent Study/Pilot Research
- 2008 **Patrick Gould** – Masters’ Program – School of Education, Northwestern Independent Study/Pilot Research
- 2013-2015 **Andrew Rutherford** – Masters’ Program – Kinesiology, University of Wisconsin – Madison



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- 2013-2016 **Katherine Law** – Doctoral Program – Industrial & Systems Engineering, University of Wisconsin – Madison
- 2013 **David Azari** – Masters’ Program – Industrial & Systems Engineering, University of Wisconsin - Madison
- 2013 **Jayer Fernandes** – Doctoral Program – Electrical and Computer Engineering, University of Wisconsin - Madison
- 2014-2017 **Chembian Parthiban** – Doctoral Program – Mechanical Engineering, University of Wisconsin - Madison
- 2015 **Martin Moe III** – Masters’ Program – Industrial Engineering, University of Wisconsin - Madison – Part-time student Employee
- 2015-2016 **Abby Lian** – Masters’ Program – Science in Economics, University of Wisconsin - Madison
- 2015-2016 **Crystal Chen** – Masters’ Program – Biostatistics, University of Wisconsin - Madison
- 2017 **David Azari** – Doctoral Program – Industrial & Systems Engineering, University of Wisconsin - Madison

Post-Doctoral Mentoring:

- 2013-2017 **Shlomi Laufer** – PhD: Electrical Engineering & Computer Science
- 2014 **Patrick Barlow** – PhD: Educational Psychology & Research
- 2014-2016 **Rebecca Ray** – PhD: Psychology and Neuroscience
- 2014-2018 **Sarah Sullivan** – PhD: Learning Sciences
- 2015-2017 **Andrew Ruis** – PhD: History of Science, Medicine, and Technology
- 2015-present **Hossein Mohamadipanah** – PhD: Computer Vision, Robotics
- 2016-present **Adhira Sunkara** – PhD: Biomedical Engineering

Faculty Mentoring:

- 2013 – 2016 **Ryan Macke, MD** – Assistant Professor: Division of Thoracic Surgery – Department of Surgery, University of Wisconsin - Madison



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- 2013 – 2018 **Jacob Greenberg, MD, EdM** – Associate Professor (CHS): Division of Minimally Invasive, Foregut and Bariatric Surgery – Department of Surgery, University of Wisconsin - Madison
- 2014 – 2018 **Tony Kille, MD** – Associate Professor (CHS): Division of Otolaryngology – Head & Neck Surgery – Department of Surgery, University of Wisconsin - Madison
- 2014 – 2018 **Cara King, DO, MS** – Assistant Professor (CHS) – Department of Obstetrics and Gynecology, University of Wisconsin - Madison
- 2015 – 2018 **Ryan Thompson, MD** – Assistant Professor (CHS) – Department of Emergency Medicine, University of Wisconsin - Madison
- 2015 – 2018 **Jonathan Kohler, MD** – Assistant Professor: Division of Pediatric Surgery – Department of Surgery, University of Wisconsin - Madison
- 2016 – 2017 **Jennifer Steiman, MD** – Assistant Professor: Division of Surgical Oncology – Department of Surgery, University of Wisconsin - Madison

Undergraduate Student Teaching/Mentoring:

- 2004 **Abby Kaye** – Cognitive Science Student, UC Santa Barbara – Summer Intern, Project: "Learning Styles & Learning Preferences"
- 2005 **Jon Salud** – Premedical Student, Loyola University – Part-time Student Employee, 2005
- 2005 **Kyle Weber** – Mechanical Engineering student, Kettering University – Visiting Internship – "The Mechanical Maternal Pelvis for Shoulder Dystocia"
- 2005 Biomedical Engineering Students: **Mitra Afshari, Asad Basir, Shannon Gunstream, Joe Farnam, and Gnyan Patel**, Department of Biomedical Engineering Senior Design Course BME 390: "The Mechanical Fetus for Shoulder Dystocia"
- 2006 **Alec Peniche** – Premedical Student, Loyola University – Part-time Student Employee
- 2006 Biomedical Engineering Students: **Leslie Gittings, Nurul Hamzah, Sofiah Syed, and Latha Subramaniam**, Department of Biomedical Engineering Senior Design Course BME 390: "The Male Rectal Exam"



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- Simulator”
- 2007 Biomedical Engineering Students: **Josh Abecassis, Nicholas Deep, Suraj Gupta, Neil Tiwari**, Department of Biomedical Engineering Senior Design Course BME 390: “The Bleeding Vessel Simulator (BVS)”
- 2007 Biomedical Engineering Students: **Sirish Vullaganti, Vicky Huang, Siby Samuel, James Jin**, Department of Biomedical Engineering Senior Design Course BME 390: “The Hernia Simulator”
- 2007 **Matt Markese** – Premedical Student, Northwestern University – Summer Project: “Factors Associated with Missed Diagnosis in Colon Cancer”
- 2008 **Naomi M. Rapp** – Biomedical Engineering Student, George Washington University – Summer Intern, Project: “Material Analysis for Low-Cost Surgical Simulators”
- 2009 **Kyra Woods** – Biomedical Engineering Student – Northwestern University – Summer Intern, Project: Validity and reliability of a sensor-enabled intubation trainer: a focus on patient-centered data”
- 2009 Biomedical Engineering Students: **John Leuthner, Rebecca Etrenne, Tadas Sileika, and Lee Lamers**, Department of Biomedical Engineering Senior Design Course BME 390: “Solar Powered Pelvic Examination Simulator for Underserved Nations”
- 2010 Biomedical Engineering Independent Study: **Mohanned El Nator, Austin Walker, Roberts Metzler, and Kellie Kitamura**. Department of Biomedical Engineering Senior Design Course BME 390: “Fundal Massage Simulator”
- 2011 Biomedical Engineering Students: **Nate Davidson, Charles Hwang, John Kulesa and Jennifer Saluk**. Northwestern University Senior Design Course: Prototyping a Clinical Breast Examination Simulator for Teaching and Learning
- 2013 **Grace Jones** – Nutrition Science and Global Health Major/Pre Physician Assistant, University of Wisconsin, Madison – Part-time Student Employee, 2013 - 2015
- 2013 **Zachary Balsiger** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2013 - 2015
- 2014 **Aliyya Terry** – Biology and Global Health, University of Wisconsin, Madison – Summer Intern, Project: “Wearable Breast Assessment Model”



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- 2014 **Matdysen Friedrich** – Biomedical Engineering, Arizona State University– Summer Intern
- 2014 **Emily Fox** – Psychology, Northwestern University – Summer Intern, Project: “Use of Epistemic Network Analysis to Assess How Surgeons Integrate and Utilize Knowledge During Operative Procedures”
- 2014 **Caitlin Jenewein** – Biochemistry, Spanish, University of Wisconsin, Madison – Part-time student Employee, 2014 - 2015
- 2014 **Michael Daniels** – Clinical Nutrition, University of Wisconsin, Madison – Part-time student Employee, 2014
- 2014 **Samantha Gannon** – Kinesiology, University of Wisconsin, Madison – Part-time student Employee, 2014 - 2016
- 2014 **Brett Wise** – Neurobiology, University of Wisconsin – Madison – Part-time student Employee, 2014 - 2016
- 2014 **Anna Witt** – Biology and Environmental Studies, University of Wisconsin, Madison – Part-time student Employee, 2014 – 2017
- 2015 **Matthew Knoespel** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2015
- 2015 **Veronica Palma** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2015
- 2015 **Montserrat Calixto Contreras** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2015 - 2016
- 2015 **Derek Pitts** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2015
- 2015 **Rebekah Fiers** – Neurobiology, University of Wisconsin, Madison – Part-time student Employee, 2015 – 2016
- 2015 **Jordan Gates** – Marketing, University of Wisconsin, Madison – Part-time student Employee – 2015 - 2016, Biology 152 Project: “Anatomical accuracy of commercial female urinary catheterization training simulators”, Spring 2016
- 2015 **Elyse Linsmeier** – Biology and Global Health, University of Wisconsin, Madison – Part-time student Employee, 2015 - 2016



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- 2015 **Aude Lefranc** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2015
- 2015 **Danielle Sharon Abramaov** – Rehab Psychology, University of Wisconsin, Madison – Part-time student Employee, 2015 - 2016
- 2015 **Nicole Van Beek** – Kinesiology, University of Wisconsin, Madison – Part-time student Employee, 2015 - 2017
- 2015 **Su Yang** – Electrical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2015 - 2017
- 2016 **Maggie Garren** – Molecular Biology and Spanish, University of Wisconsin, Madison – Part-time student Employee, 2016 – 2018
- 2016 **Anna Garren** – Neurobiology, University of Wisconsin, Madison – Part-time student Employee, 2016 – 2018
- 2016 **Sydney Zaransky** – Human Development and Family Studies, University of Wisconsin, Madison – Part-time student Employee, 2016
- 2016 **Phillip Terrien** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2016
- 2016 **Trace Jocewicz** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2016 - 2017
- 2016 **Katie Peterson** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2016 - 2017
- 2016 **Lily Comp** – Communication Arts and Environmental Studies, University of Wisconsin, Madison – Part-time student Employee, 2016 – 2017
- 2016 **Jack McGinnity** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2016 - 2017
- 2016 **Ryan Sepehr** – Biomedical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2016 – 2017
- 2016 **Bryanna Buchman** – University of Wisconsin, Madison – Biology 152 Project, Fall 2016
- 2016 **David Yu** – Electrical Engineering, University of Wisconsin, Madison – Part-time student Employee, 2016 - 2017



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- 2017 **Cassidi Goll** – Journalism, University of Wisconsin, Madison – Part-time student Employee, 2017
- 2017 **Pazee (Lisa) Xiong** – PEOPLE Program Doris Duke Alumni Student – Summer Scholarship Recipient, Project: “Vaginal Cuff Simulation and Motion Metrics Study
- 2017 **Katrina Bell** – PEOPLE Program Doris Duke Alumni Student – Summer Scholarship Recipient, Project: “Penetrating Abdominal Trauma and Bowel Repair Methods”
- 2017 **Myia Mosley** – Allied Health, Azusa Pacific University Student – Student Intern, Summer 2018

High School Student Teaching/Mentoring:

- 2014 **Champange Goss** – PEOPLE Program Doris Duke Student – Summer Scholarship Recipient, Project: “Wearable Breast Assessment Model”
- 2015 **Pazee (Lisa) Xiong** – PEOPLE Program Doris Duke Student – Summer Scholarship Recipient, Project: “Resident Readiness: Evaluation of Errors During Bladder Catheterization”
- 2016 **Jacqueline Zuniga Paiz** – PEOPLE Program Doris Duke Student – Summer Scholarship Recipient, Project: “Model Evaluation: The SEnSE Lab Laparoscopic Pelvic Tumor Extraction Model”
- 2016 **Aniruddh Srinivasan** – High School Student Volunteer, Fall 2016 – Winter 2017
- 2017 **Elayne Quintanilla** – High School Student Volunteer, Project: “Thyroid Simulator Enhancement” – Winter 2017
- 2017 **Le Thuy Trang** – PEOPLE Program Doris Duke Student – Summer Scholarship Recipient, Project: “Penetrating Abdominal Trauma and Bowel Repair Methods”

Curriculum Development:

- 1999 Simulation Based Curriculum – “Clinical Female Pelvic Examination” – Pre-Clinical Medicine Course, 2nd yr Medical Students, Stanford University School of Medicine



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- 2004 Simulation Based Curriculum – “Clinical Female Pelvic Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 2nd yr Medical Students
- 2005 Simulation Based Curriculum – “Clinical Female Pelvic Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 1st yr Medical Students
- 2006 Simulation Based Curriculum – “Clinical Breast Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 1st yr Medical Students
- 2006 Simulation Based Curriculum – “Clinical Breast Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 2nd yr Medical Students
- 2006 Simulation Based Curriculum – “Clinical Male Genitourinary Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 1st yr Medical Students
- 2006 Simulation Based Curriculum – “Clinical Male Genitourinary Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 2nd yr Medical Students
- 2006 Simulation Based Curriculum – “Clinical Breast Examination” – Surgical Oncology Classroom Based Assessment, 3rd yr Surgical Clerkship Students, Northwestern
- 2006 Simulation Based Curriculum – “Clinical Breast and Pelvic Examination” – Classroom Based Assessment and Training, 3rd yr OB/Gyn Clerkship Students, Northwestern
- 2007 Simulation Based Curriculum – “Annual Endoscopic Therapies for Airway and Esophageal Disorders”, Northwestern Memorial Hospital CME Course
- 2008 Simulation Based Curriculum – “Management of Shoulder Dystocia”, Northwestern Memorial Hospital Team Training Course
- 2010 Simulation Based Curriculum – “Clinical Female Pelvic Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 2nd yr Physician’s Assistant Students.
- 2010 Simulation Based Curriculum – “Clinical Female Pelvic Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of



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Medicine, 1st yr Physician's Assistant Students.

- 2010 Simulation Based Curriculum – “Clinical Breast Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 1st yr Physician's Assistant Students.
- 2010 Simulation Based Curriculum – “Clinical Breast Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 2nd yr Physician's Assistant Students.
- 2010 Simulation Based Curriculum – “Clinical Male Genitourinary Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 1st yr Physician's Assistant Students.
- 2010 Simulation Based Curriculum – “Clinical Male Genitourinary Examination” – Physical Exams Skills Unit Northwestern University Feinberg School of Medicine, 2nd yr Physician's Assistant Students.

Continuing Medical Education Course Development

- 2011 97th Annual Clinical Congress
Co-Chair: Laparoscopic Hernia Hands-On Skills Course
October 2011
- 2012 SAGES Education Research 2012 Meeting
Co-Chair: Lap Ventral Hernia with Endoscopic Components Separation
March 2012
- 2013 99th Annual American College of Surgeons Clinical Congress
Co-Chair: Laparoscopic Hernia Hands-On Skills Course
October 2013
- 2015 101st Annual American College of Surgeons Clinical Congress
Chair: Laparoscopic Hernia Hands-On Skills Course
October 2015
- 2016 102nd Annual American College of Surgeons Clinical Congress
Chair: Laparoscopic Hernia Hands-On Skills Course
October 2016
- 2017 Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)
2017 Surgical Spring Week
SAGES University Master Series



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Co-Chair: Laparoscopy in Acute Care Surgery
March 2017

2017 103rd Annual American College of Surgeons Clinical Congress
Chair: Contemporary Strategies for Laparoscopic Inguinal and Ventral
Hernia Repair Surgical Skills Course
October 2017

Scientific Presentations

Invited Educator (Local and National):

- 1999 Presenter: The Pelvic Exam Simulator. Annual Medicine Meets Virtual
Reality Conference, Stanford, CA
- 1999 Presenter: The Pelvic Exam Simulator. DARPA/ISAT Summer Meeting,
Woods Hole, MA
- 2000 Presenter & Panelist: Staying in the Game: Surgery's Role in Pre-Clinical
Medicine. American College of Surgeons 82nd Clinical Congress, Chicago
Illinois
- 2001 Presenter: The Use of Simulators in Medical Education: Collection and
Analysis of Performance Data. Stanford Workshop on Surgical
Simulation, Stanford, CA
- 2001 Exhibitor & Instructor: Anatomical Trainers – The Pelvic, Breast and
Prostate Examination Simulators – CESTE Exhibit American College of
Surgeons 83rd Clinical Congress, New Orleans, LA
- 2001 Presenter: Mannequin Based Simulation Training and Assessment – “The
Virtual Body” – Stanford Continuing Studies Program, Stanford, CA
- 2001 Presenter: The E-Pelvis Simulator: A Teaching and Assessment Tool –
Innovations in Medical Education Exhibit - Association of American
Medical Colleges Annual Meeting, Washington, DC
- 2001 Presenter & Panelist: Clinical Skills Development with Computer Based
Devices – American Association of Gynecologic Laparoscopists – 30th
Annual Meeting, San Francisco, CA
- 2002 Presenter: Development and Evaluation of Physical Exam Simulators:
Objective Assessment Made Possible – Workshop Moderator, Annual
Association for Surgical Education Meeting, Baltimore, MD



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- 2002 Presenter: The E-Pelvis Simulator as an Assessment Tool – Group on Student Affairs (GSA)/Group on Educational Affairs (GEA) – AAMC Western Regional Meeting, Pacific Grove, CA
- 2002 Presenter & Panelist: The Surgeon and the Biotechnology Revolution - Oral Presentation - American College of Surgeons 84th Clinical Congress, San Francisco, CA
- 2002 Presenter & Exhibitor: The Use of Simulators for Clinical Skills Training and Assessment - ACP/ASIM- Annual Scientific Meeting, Monterey, CA
- 2002 Presenter: An Exploration of the Use and Integration of Simulation Technologies in Medical Education GEA/GSA Mini-Workshop Session – 113th AAMC Annual Meeting, San Francisco, CA
- 2003 Presenter: Simulators for Training: Assessment, Validation and Acceptance Strategies - The Pelvic Exam and Prostate Exam Simulators - Annual Medicine Meets Virtual Reality Meeting
- 2003 Presenter: Data Mining Techniques and the Development of Assessment Variables from Clinical Simulation Data - The Center for Integration of Medicine and Innovative Technology (CIMIT) Forum - Massachusetts General Hospital, Boston, MA
- 2003 Presenter: Data Mining Techniques and the Development of Assessment Variables from Clinical Simulation Data - The Stanford University Simulation in Medical Education (SIME) Series
- 2003 Presenter: Quantitative Evaluations of Clinical Performance - Media X at Stanford University - Annual Program, Stanford, CA
- 2004 Presenter & Panelist: “Adoption of Advanced Technologies in Medical Education, Diagnosis & Care: Economic and Human Realities”; Annual Medicine Meets Virtual Reality Meeting, Newport Beach, CA – January 2004
- 2004 Presenter: Using the Pelvic ExamSIM for Learning & Assessment of the Female Pelvic Exam Annual Human Patient Simulator Network, Tampa, FL – February 2004
- 2004 Panelist: State of the Science: Researcher Panel – Advanced Initiatives in Medical Simulation (AIMS), Center for Telemedicine Law, Washington, D.C. – May 10, 2004



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- 2004 Presenter: The Use of Simulators for Training and Assessing Physical Exam Skills – Innovations in Clinical Skills Education: The Chicago Perspective – Clinical Education Center, Northwestern University, Feinberg School of Medicine – Chicago, IL – June 24, 2004
- 2004 Presenter: Surgical Simulation and Education: Adult Learning Reloaded. 18th International Congress, Computer Assisted Radiology and Surgery, Chicago, IL, June 2004
- 2004 Presenter: Simulation Technology in Medical Education – Office of Medical Education and Faculty Development, Northwestern University, Feinberg School of Medicine – Chicago, IL -- October 20, 2004
- 2004 Presenter: Medical Skills Proficiency & Advanced Distributed Learning, Advanced Briefing for Industry (ABFI), December 2004 – Washington, DC
- 2005 Panelist: “Academia and Industry: The Future of Medical Simulation” – Annual Medicine Meets Virtual Reality Meeting (MMVR) – January 24-30, 2005
- 2005 Moderator: TATRC’s 5th Annual Advanced Medical Technology Review “Enabling Technologies to Make a Difference”, Long Beach, CA, January 26, 2005
- 2005 Moderator: “Gaming & Simulation Based Learning: Applications for Medicine,” 1st TATRC/SUMMIT Simulation Workshop, Long Beach, CA, January 25, 2005
- 2005 Co-Chair: All day TATRC Symposium on Advanced Distributed Learning – February 14-16, 2005
- 2005 Presenter: HPSN Annual Meeting – Workshop – “Integrating Simulators in the Medical School Curriculum” – February 22-25, 2005
- 2005 Facilitator: HPSN Workshop, “Effective Use of the Pelvic ExamSIM in Your Curriculum, hosted by METI (Medical Education Technologies, Inc.) Tampa, FL, February 22-25, 2005
- 2005 Presenter & Panelist: “Cognitive Development – Curriculum – Web-based” – Annual SAGES Meeting, Ft. Lauderdale, FL, April 15, 2005
- 2005 Presenter: “Simulation and VR Technology: The Future of Surgical Training and Assessment”, Northwestern University Department of Surgery Grand Rounds, Chicago, IL, April 26



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- 2005 Presenter: Objective Assessment of Physical Examination Skills Using Simulators: Development of a Self Report Measure of Medical Student Anxiety When Learning to Perform the Female Pelvic Examination. Clinical Skills Research – Chicago Style, Northwestern University Feinberg School of Medicine, Chicago, IL. June 2005
- 2005 Presenter: Teaching and Research Progress with the Pelvic Simulator. Northwestern University Simulation Technology in Medical Education Symposium Robert H. Lurie Research Center Northwestern University, Chicago, IL. October 2005
- 2005 Presenter & Panelist: Changing Paradigms Defining and Redefining Success. Association of Women Surgeons' 2005 Fall Conference Program, San Francisco, CA. October 2005
- 2005 Presenter: The Use of Training Simulators to Enhance Compassionate Patient Care During Sensitive Clinical Examinations: Development and Evaluation of a Breast Exam Simulator. The Woman's Board FY05 Eleanor Wood Prince Grant Recipient Presentations, Northwestern Memorial Hospital, Chicago, IL. November 2005
- 2005 Session Organizer: Practical Applications of Simulation in the Medical School. GIR/COD Joint Session, AAMC Annual Meeting, Washington, DC. November 2005
- 2006 Moderator: Important Characteristics of Simulation Training. The Fidelity of Simulation Systems Pros and Cons. TATRC's 6th Annual Advanced Medical Technology Review, Long Beach, CA January 2006
- 2006 Moderator: Potential Uses of Simulation in the World of Training, Assessment and Certification What Does the Future Hold? TATRC's 6th Annual Advanced Medical Technology Review, Long Beach, CA January 2006
- 2006 Presenter: Creating Games & Simulation for Learning. TATRC-West/SUMMIT Workshop, Long Beach, CA January 2006
- 2006 Presenter: New Approaches to Teaching the Breast Examination. Northwestern University Feinberg School of Medicine, Medical Education Research Group Inaugural Meeting, Chicago, IL. January 2006
- 2006 Presenter & Panelist: Enabling Technologies for Simulation: Impact and Influence on Medical Training and Education. Annual Medicine Meets Virtual Reality meeting (MMVR), Long Beach, CA. January 2006



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- 2006 Presenter: Simulation Coming of Age: Group Information Resources. Annual Meeting Keys to the Future: Association of American Medical Colleges-Group on Informatics Research, Charlotte, NC. March 2006
- 2006 Presenter: The Use of Simulation for Training, Assessment and Certification: Pearls for Developers and Industry. Minnesota's Medical Device Community Forum: Design of Medical Devices. April 2006
- 2006 Presenter: Simulation & VR Technology: The Future of Training and Assessment in Surgery. AASA-AAOA Educational Conference, Chicago, IL. May 2006
- 2006 Presenter: Assessing and Addressing Medical Student Needs While Learning Intimate Examination: The Use of Simulators in the Male GU Curriculum. 4th Annual Clinical Skills Education and Assessment. June 2006
- 2006 Presenter: Cancer Detection and Prevention: Do Physician Exam Skills Matter Anymore? Robert H. Lurie Medical Research Cancer Center Education Program, Chicago, IL. July 2006
- 2006 Presenter & Panelist: Emerging Technologies in Surgical Education: Surgical Simulation Past, Present & Future. American College of Surgeons Clinical Congress, Chicago, IL. October 2006
- 2006 Presenter & Panelist: Modeling, Simulation and Virtual Reality: What's Proven, What's Not: The Use of Simulators for Performance-Based Assessments. American College of Surgeons Clinical Congress, Chicago, IL October 2006
- 2006 Presenter & Panelist: E-Learning: Practice-Based Learning-It's How We're Going to Keep Up. American College of Surgeons Clinical Congress, Chicago, IL October 2006
- 2006 Moderator: Roadmap for Simulation & Game Based Learning Research: Next Generation Surgery Simulation. Quarterly Summit Gaming Conference, Stanford, CA October 2006
- 2006 Presenter: Patient Simulation as a Medical Education Tool. Northwestern Memorial Hospital Quarterly Medical Staff Meeting. December 2006
- 2007 Presenter: Funding Options in Simulation. International Meeting on Simulation & Healthcare. January 2007
- 2007 Presenter: Simulation for Education & Training. International Meeting on



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Simulation & Healthcare. January 2007

- 2007 Moderator: Partnering To Enable Technology: From Basic Research to Deployment. Medical Simulation, Annual Medicine Meets Virtual Reality Meeting February 2007
- 2007 Moderator: Surgical Simulation-Technology & Learning. Annual Medicine Meets Virtual Reality Meeting. February 2007
- 2007 Panelist: Designing The Next In Medicine. Annual Medical Meets Virtual Reality Meeting. February 2007
- 2007 Presenter: Effect of Teacher Training on a Simulation Curriculum for Sensitive Examinations. 5th Annual Clinical Skills Education and Assessment Meeting-Chicago Style. July 2007
- 2007 Instructor: Clinical Scenarios in Pelvic, Breast and Prostate Exams. Medical Simulations Course. Department of Medical Education UIC-College of Medicine. July 2007
- 2007 Presenter: Teaching Basic Clinical Skills Using Medical Simulation. Fourth Annual Research and Development Conference. Simulation in Medical Education- Northwestern University. October 2007
- 2007 Presenter: Simulation as a Quality Strategy. Medical leadership-Institute of Medicine Meeting. November 2007
- 2008 Moderator: Session on Surgical Simulation – Technology & Learning. 16th Annual Medicine Meets Virtual Reality Surgical Simulation Conference. January 2008
- 2008 Presenter: Use of Cognitive Task Analysis to Define Cognitive Learning Objectives in Surgery. 16th Annual Medicine Meets Virtual Reality Surgical Simulation Conference. January 2008
- 2008 Presenter & Panelist: Design, Development and Evaluation of Cognitive Simulators. 16th Annual Medicine Meets Virtual Reality Surgical Simulation Conference. January 2008
- 2008 Panelist: How can members of SSH better collaborate with Industry to develop systems that meet their needs? 8th Annual Meeting on Simulation in Healthcare. January 2008



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- 2008 Panelist: The Changing Face of Surgical Education: Simulation as the new Paradigm. 3rd Annual Academic Surgical Congress, February 2008
- 2008 Moderator: Scientific Papers: Education Session. 3rd Annual Academic Surgical Congress, February 2008
- 2008 Presenter: Lost in Translation: Exposing Medical Students' Misconceptions About How to Perform Hands-On Clinical Examinations. 6th Annual Northwestern Clinical Skills Education and Assessment. July 17, 2008
- 2008 Presenter: Mesh Options during Laparoscopic Ventral Hernia Repair. SAGES Advanced Laparoscopic Surgery Training Course. September 2008
- 2008 Presenter & Panelist: Measuring Simulation-based Medical Education Outcomes. RIME Symposium. Annual Association of American Medical Colleges Meeting. November 4, 2008
- 2008 Presenter: Work-Life Balance. Association for Academic Surgery - Fundamentals of Surgical Research Course. October 2008
- 2009 Moderator: Session on Surgical Simulation – Technology & Learning. 16th Annual Medicine Meets Virtual Reality Surgical Simulation Conference. January 2009
- 2009 Moderator: Surgical Education in the Internet Era - 4th Annual Academic Surgical Congress, February 2009
- 2009 Presenter: Simulation and Assessment: Surgical Training and Credentialing Reconsidered - Northwestern University Department of Surgery Grand Rounds
- 2009 Moderator, Speaker & Session Organizer: Covidien Women in Surgery Career Development Seminar.
- 2009 Presenter: Simulation Technology @ Northwestern, NUvention Board Meeting
- 2009 Presenter: Making Sense of Haptic Data. Northwestern Conference on Simulation Technology in Health Professions Education
- 2009 Moderator: Managing Information Overload - American College of Surgeon's Clinical Congress General Session, October 2009



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- 2009 Paper Discussant: Surgical Education Session - American College of Surgeon's Clinical Congress General Session, October 2009
- 2009 Presenter: Time Management - Weekly Fellows Conference, University of Michigan
- 2010 Moderator: Surgical Education Session - 5th Annual Academic Surgical Congress, February 2010
- 2010 Moderator: Emerging Technology Session - 5th Annual Academic Surgical Congress, February 2010
- 2010 Presenter: Use of Non-Surgeons as Faculty for Simulation-Based Surgical Education - ACS Accredited Education Institutes Consortium Meeting, March 2010
- 2010 Presenter: Surgical Applications of Surgical Activities for Lifelong Learning and Performance Assessment – American Board of Medical Specialties Simulation and MOC Workshop, April 2010
- 2010 Invited Speaker: Haptic Perception and the Cognitive-Motor Continuum: Use of Simulation Technology to Define, Teach and Assess Hands-on Clinical Skills – Northwestern School of Education and Social Policy, May 2010
- 2010 Invited Speaker: Strategies for success in Surgical Education Research - Women in Surgery Career Development Seminar, University of Maryland, May 2010
- 2010 Presenter: Sensors, Students and the Frey Award: The Perfect Bridge to Collaborating with NU Engineers – Northwestern Department of Surgery Faculty Retreat, June 2010
- 2010 Presenter: Use of Simulation Technology to Demonstrate the Complexity of Clinical Breast Disease - Women's Health Research Monthly Forum, June 2010
- 2010 Presenter: Patents, Inventions & Disclosures – AAS Fall Course, October 2010
- 2011 Moderator: Education Patient Safety & Simulation – AAS/ACS 6th Annual Academic Surgical Congress. Jan. 31-Feb. 4, 2011
- 2011 Discussant: AAS Plenary Session. AAS/ACS 6th Annual Academic Surgical Congress. Jan. 31-Feb. 4, 2011



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- 2011 Presenter: Decision Based Metrics. MMVR18/NextMed – Feb 8-12, 2011
- 2011 Invited Speaker: “The Role of Simulation in the Training of Today’s Surgeon” - Lasalle D. Leffall Symposium. March 6, 2011
- 2011 Speaker: AAS Session: How to Design, Analyze and Protect Your Work – AAS. Washington DC, October 2011
- 2011 Invited Speaker: Surgery Grand Rounds - Children’s Memorial Hospital, Chicago, IL, September 2011
- 2012 Moderator: Simulation – Design & Development – MMVR19/NextMed. Feb. 7-11, 2012
- 2012 Invited Speaker: The Oncofertility Consortium. “Striving for Excellence as a Surgeon Scientist”. Feb. 4, 2012. Northwestern Center for Advanced Surgical Education
- 2012 University of Wisconsin CME Course 3rd Annual Topics in General Surgery Simulation Based Medical Education. April 13, 2012
- 2012 UIUC Simulation Conference - Medical Simulation and Training Center of 2025-Challenges and Opportunities for Transformative Outcomes Panel: Perspectives from the Field. Champagne, IL, April 19, 2012
- 2012 Discussant: 25th Annual Resident Research Day - “Comprehensive Assessment of Resident Performance in the Operating Room: A Methodology for Developing an Instrument” May 23, 2012
- 2012 Military Health System Research Symposium “Analysis of Important Team Constructs During Decision Based Simulations” Fort Lauderdale, FL, August 13-16, 2012
- 2012 Speaker at Grand Rounds with the Department of Surgery at the University of Wisconsin, Madison, WI, September 5, 2012
- 2012 Urology Annual Residency Program Evaluation/Retreat Discussion Topic: Faculty Development, Madison, WI, September 19, 2012
- 2012 AAS Education Committee - “How to Protect Your Intellectual Property: Invention Disclosures and Patents” Chicago, IL, September 28, 2012
- 2012 AAS Annual Meeting - “Building Your Research Team and Establishing



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Outside Collaborations” Chicago, IL September 29, 2012

- 2012 ACS Annual Meeting - Nanotechnology, Nanobots and Surgery - “Biometric Haircell Sensors and Simulation Based Assessments” Chicago, IL, October 1, 2012
- 2012 ACS Annual Meeting - Simulation: The Future of Surgical Training and Rehearsal “The Decision-Based Simulators” - Chicago, IL, October 2, 2012
- 2012 ACS Annual Meeting - Paper Discussant: “Use of Operative Competency Model with Immediate Feedback to Evaluate Resident Technical Progression” - Chicago, IL, October 3, 2012
- 2012 ACS Annual Meeting- Mentoring and Monitoring Your Partners (co moderator) - Chicago, IL, October 3, 2012
- 2012 Speaker: University of Wisconsin School of Medicine and Public Health Department of Medicine Grand Rounds. “Simulation-based CME: A Maintenance of Quality Issues.”- Madison, WI, December 2013
- 2013 Intuitive Surgical. University of Wisconsin Robotics Performance Core Presentation. - Sunnyvale, CA, January 2013
- 2013 Speaker: University of Wisconsin School of Medicine and Public Health Department of Surgery Research Summit- Madison, WI, January 23, 2013
- 2013 Moderator: IMSH SIG Meeting: “Surgical Simulation on the Cheap: Low Cost May be High-Yield,”- San Francisco, CA, January 28, 2013
- 2013 Speaker: UW Research Symposium: “Use of Haptic Data for Clinical Skills Assessment,”- Madison, WI, January 2013
- 2013 Speaker: AAS-AWS Luncheon. “Achieving Goals through Strategic Partnerships.” ASC Annual Meeting - New Orleans, LA, February 4, 2013
- 2013 Speaker: AAS Surgical Investigators Course. “Conveying Significance and Innovation.” ASC Annual Meeting- New Orleans, LA, February 2013
- 2013 Speaker: MMVR Annual Meeting: “Engineering the OR of the future”- San Diego, CA, February 4, 2013



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- 2013 Speaker: UW Team Seminar – Teaching Team Competencies Using Simulation-Based Training- Madison, WI, February 2013
- 2013 Speaker: University of Wisconsin Departments of Medicine, Psychiatry, and Industrial & Systems Engineering- Class on Women in Leadership- Madison, WI, March 3, 2013
- 2013 Moderator: 6th Annual Consortium of ACS- AEI. “Research and Development Committee: Assessing Assessment Technologies.”- Chicago, IL, March 15, 2013
- 2013 Speaker: ASE Surgical Education Week Pre-meeting- Directing Surgical Simulation: Getting Started and Maintaining Excellence. “Creating and Evaluating Procedural Assessments,”- Orlando, FL, April 22, 2013
- 2013 Speaker: University of Wisconsin School of Medicine and Public Health General Surgery CME: “Complex Laparoscopic Hernia Repairs,”- Madison, WI, April 27, 2013
- 2013 Speaker: University of Wisconsin School of Medicine and Public Health General Surgery CME: “Use of Simulation in Laparoscopic Training and Assessment,”- Madison, WI, April 27, 2013
- 2013 Speaker: UW BME Symposium: “Use of haptic data for clinical skills assessment,” University of Wisconsin School of Engineering - Madison, WI, May 6, 2013
- 2013 Discussant: University of Wisconsin School of Medicine and Public Health- Resident Research Day: “Teaching Medical Students to Repair Traumatic Wounds: The Results of a Curriculum Change,”- Madison, WI, May 15, 2013
- 2013 Speaker: Graduate Medical Education Resident/Fellows Orientation- “Central Line Insertion Curriculum,”- Madison, WI, June 19, 2013 and June 27, 2013
- 2013 Presenter & Panelist: “The Status of Black Women's Health in Wisconsin.” 5th Annual Black Women's Wellness Day- Madison, WI, September 21, 2013
- 2013 Panelist & Presenter: How to Design, Analyze, and Protect your Work Session. “How to Protect your Intellectual Property: Invention Disclosure and Patents.” Association for Academic Surgery (AAS) Fall Courses- Washington, D.C., October 4, 2013



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- 2013 Panelist & Presenter: Technical Skill and Novel Approaches to Improving Performance. "The Error-enabled, Decision-based Simulators: Exploring New Performance Measures." Surgical Outcomes Club 9th Annual Scientific Sessions- Washington, D.C., October 6, 2013
- 2013 Moderator: Surgical Education Paper Session (SP08). ACS Annual Clinical Congress- Washington, D.C., October 8, 2013
- 2013 Panelist: Promoting Black Women's Health and Wellness in Higher Education. University of Wisconsin 2013 Diversity Forum- Madison, WI, October 22, 2013
- 2013 Panelist and Presenter: Planning Your Career: Academics. "Basic Research." University of Wisconsin Women in Surgery Career Symposium- Madison, WI, November 19, 2013
- 2013 Speaker: Attic Angel Association for Continuing Education Programs- Madison, WI, November 25, 2013
- 2013 Presenter: "Can Haptic Data be Used to set Standards for Hands-on Clinical Skills?" Pathology's Seminar Series. University of Wisconsin- Madison Cellular and Molecular Pathology Graduate Program- Madison, WI, December 11, 2013
- 2014 Panelist: Getting Bang for Your Buck: "Aligning Simulation-based Training with Quality Data and Organizational Goals." Surgery SIG Sponsored Events. SSH - International Meeting on Simulation Healthcare (IMSH) - San Francisco, CA, January 27, 2014
- 2014 Panelist: "Conveying Significance and Innovation." Essential Elements of a Successful Research Proposal – Outcomes/Health Services Research Session. AAS/SUS Surgical Investigators' Course - San Diego, CA, February 2, 2014
- 2014 Presenter: "Innovation in Surgery." AAS Presidential Plenary Session. Academic Surgical Congress Meeting - San Diego, CA, February 5, 2014
- 2014 Moderator: "Resident Readiness and Transition to Practice- Are Five Years of Training Still Good Enough?" Association of Women Surgeons Luncheon, Academic Surgical Congress Meeting - San Diego, CA, February 5, 2014



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- 2014 Panelist: “(Un?) Affordable Care.” Morning Plenary Session. Annual Medicine Meets Virtual Reality meeting (MMVR) – Los Angeles, CA, February 20, 2014
- 2014 Panelist: “Novel Approaches to the Study of Medical Skill Decay” Independently Organized Session, Annual Medicine Meets Virtual Reality meeting (MMVR) – Los Angeles, CA, February 21, 2014
- 2014 Presenter: “Sensors, Simulators and Medical Performance: Are we there yet?” CARE: Cultivating Authenticity, Reflection and Empathy in Medicine Seminar – Madison, WI, March 1, 2014
- 2014 Presenter: Health Occupations and Professions Exploration (HOPE) – Madison, WI, March 8, 2014
- 2014 Panelist: “Mastery and Deliberate Practice to Medical and Health Sciences Education.” Continuum of Health Sciences Education Teaching Enhancement Conference – Madison, WI, March 11, 2014
- 2014 Presenter: “How do I Review a Paper?” Career Development Symposium. Annual SAGES Meeting – Salt Lake City, UT, April 2, 2014
- 2014 Presenter: “Simulation Research in Surgery.” Association for Academic Surgery Meeting – San Francisco, CA, October 24, 2014
- 2014 Panelist: “Building a Research Career- This is my Story.” Association for Academic Surgery Meeting – San Francisco, CA, October 24, 2014
- 2014 Presenter: “Signatures: Drawing Meaning for Technical Skills Performance using Sensors and Motion Tracking Technology.” Surgical Biology Club II Meeting – San Francisco, CA, October 26, 2014
- 2014 Panelist: “Use of Simulation in Surgical Residency Training.” American College of Surgeons Clinical Congress – San Francisco, CA, October 26, 2014
- 2014 Discussant: “Innovative Clinical Technology.” American College of Surgeons Clinical Congress – San Francisco, CA, October 30, 2014
- 2015 Panelist: “Skills of Hands and Mind: Research into Decay, Recovery & Mastery.” Society for Simulation in Healthcare (IMSH) – New Orleans, LA, January 12, 2015
- 2015 Speaker: “Conveying Significance and Innovation.” Annual Academic Surgical Congress – Las Vegas, NV, February 2, 2015



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- 2015 Speaker: "Educating the Surgeon in Practice: Coaching, Collaboratives and Social Media - The American College of Surgeons Perspective." Annual Academic Surgical Congress – Las Vegas, NV, February 5, 2015
- 2015 Co-Chair: "All Things Hernia". Society of American Gastrointestinal and Endoscopic Surgeons – Nashville, TN, April 16, 2015
- 2015 Panelist: "Debate on Hot Topics in Simulation." Association for Surgical Education, Surgical Education Week – Seattle, WA, April 24, 2015
- 2015 Presenter: "Gaining Successful Organizational Leadership Support and Buy-in Within a Portfolio Sponsor Organization." The American Board of Medical Specialties Forum on Organizational Quality Improvement – Chicago, IL, May 14, 2015
- 2015 Presenter: "Palpation: Use of sensors and video classification to characterize exploratory procedures in medicine." IEEE World Haptics Conference – Chicago, IL, June 22, 2015
- 2015 Presenter: "Innovations in Learning Assessment: What is the New Generation Expecting?" American Board of Medical Specialties Annual Conference – Chicago, IL, September 8, 2015
- 2015 Speaker: "Simulation Research in Surgery." Association for Academic Surgery 2015 Fall Courses – 26th Annual Fundamentals of Surgical Research Course – Chicago, IL, October 3, 2015
- 2015 Discussant: "Post-Game Analysis: Postoperative Video-Based Coaching for Residents." American College of Surgeons Clinical Congress – Chicago, IL, October 5, 2015
- 2015 Discussant: "Development of a Fresh Cadaver Model for Instruction of Ultrasound-Guided Breast Biopsy during the Surgery Clerkship: Pre- and Post-Test Results among Third Year Medical Students." American College of Surgeons Clinical Congress – Chicago, IL, October 6, 2015
- 2015 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Seminar at Johns Hopkins University School of Engineering – Baltimore, MD, November 4, 2015
- 2015 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Johns Hopkins University Department of Surgery – Baltimore, MD, November 5, 2015



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- 2016 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Georgetown University Department of Surgery – Washington, DC, January 5, 2016
- 2016 Presenter: "New Pelvic Training Models for DaVinci Surgery." Intuitive Surgical Education and Training Research Grant Symposium – Sunnyvale, CA, January 7, 2016
- 2016 Panelist: "Special Session: Innovations and Research from United States Department of Defense." International Meeting on Simulation in Healthcare (IMSH) – San Diego, CA, January 18, 2016
- 2016 Presenter: "Playing Nice in the Sandbox: Interprofessional Transitions of Care and Progressive Site Simulation." International Meeting on Simulation in Healthcare (IMSH) – San Diego, CA, January 18, 2016
- 2016 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" UT Southwestern Medical Center Department of Surgery – Dallas, TX, January 20, 2016
- 2016 Presenter: "Conveying Significance and Innovation." AAS/SUS Surgical Investigators' Course – Jacksonville, FL, February 1, 2016
- 2016 Presenter: "Perishing by Publishing: A Surgeon, an Engineer and an Impact Factor of Zero." 11th Annual Academic Surgical Congress – Jacksonville, FL, February 3, 2016
- 2016 Moderator: "Education: Continuing Medical Education & Simulation-Based Training." 11th Annual Academic Surgical Congress – Jacksonville, FL, February 3, 2016
- 2016 Presenter: "What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" University of Wisconsin Department of Neurological Surgery Grand Rounds – Madison, WI, February 24, 2016
- 2016 Discussant: "Self/Peer Resident Assessment of the Basics of Open Laparotomy Training (BOLT) on a Simulated Abdominal Model." 9th Annual American College of Surgeons Accredited Education Institute (ACS AEI) Consortium Meeting – Chicago, IL, March 7, 2016
- 2016 Panelist: "ACS-AEI Best Practices in Curriculum Development: Several Ideas YOU Should STEAL from Your Peers." Annual American College of Surgeons Accredited Education Institute (ACS AEI) Consortium Meeting – Chicago, IL, March 7, 2016



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- 2016 Panelist: "Higher Fidelity: Better for Learning or a Waste of Money." Annual American College of Surgeons Accredited Education Institute (ACS AEI) Consortium Meeting – Chicago, IL, March 8, 2016
- 2016 Presenter: "Developing a Career in Research – Following your Passion." Society of Black Academic Surgeons (SBAS) Leadership and Faculty Development Institute – Columbus, OH, April 28, 2016
- 2016 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Lahey Hospital and Medical Center's Surgical Division Grand Rounds – Boston, MA, May 4, 2016
- 2016 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" University of Oklahoma Department of Surgery Grand Rounds – Oklahoma City, OK, May 13, 2016
- 2016 Presenter: "Novel Approaches to Resident Education and Training." The Association of Academic Surgical Administrators Midyear Retreat – Madison, WI, May 20, 2016
- 2016 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Thomas Jefferson University Department of Surgery Grand Rounds – Philadelphia, PA, May 26, 2016
- 2016 Presenter: "How Can Experienced Clinicians Embrace Simulation?" NIDDK-NIBIB Workshop Simulation Research in Gastrointestinal and Urologic Care: Challenges and Opportunities – Bethesda, MD, June 10, 2016
- 2016 Presenter: "Can Simulation Improve the Quality & Uniformity of Expert Performance." NIDDK-NIBIB Workshop Simulation Research in Gastrointestinal and Urologic Care: Challenges and Opportunities – Bethesda, MD, June 10, 2016
- 2016 Presenter: "A Surgeon in an Engineer's Body: The Quest for Performance Measurement." University of Wisconsin Madison School of Medicine and Public Health Mini Med School: Innovations in Medicine – Madison, WI, September 22, 2016
- 2016 Presenter: "Can a virtual reality assessment of fine motor skill predict successful central line insertion?" 34th Annual Conference of the Association of Women Surgeons – Washington, DC, October 15, 2016



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- 2016 Presenter: "Use of a simulation as a screening tool for surgical skills: Are we there yet?" American College of Surgeons Clinical Congress – Washington, DC, October 20, 2016
- 2016 Presenter: "Sensors, Motion Tracking and Data Science: The breakfast of Champions." Big Ideas for Busy People at the Wisconsin Science Festival – Madison, WI, October 22, 2016
- 2016 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" University of Virginia Department of Surgery Grand Rounds – Charlottesville, VA, October 26, 2016
- 2016 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Augusta University Department of Surgery Grand Rounds – Augusta, GA, October 31, 2016
- 2016 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" University of Iowa Carver College of Medicine's 2016 Surgery Post Graduate Conference - Ziffren Lecturer – Iowa City, IA, November 11, 2016
- 2017 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" University of Cincinnati Department of Surgery Grand Rounds – Cincinnati, OH, January 11, 2017
- 2017 Presenter: "Unexpected Events in Robotic Surgery: What can motion tracking tell us?" Intuitive Surgical Education and Training Research Grant Symposium – Sunnyvale, CA, January 26, 2017
- 2017 Presenter: "Progressive Site In-situ and IPE Transitions of Care." International Meeting on Simulation in Healthcare (IMSH) – Orlando, FL, January 30, 2017
- 2017 Presenter: "High Tech – High Touch: How sensors and data science can dramatically change healthcare." Wisconsin Institute of Discovery Spring qBio Seminar Series – Madison, WI, February 1, 2017
- 2017 Presenter: "Use of Sensor Technology to Model Physical Diagnosis Skills." Society to Improve Diagnosis in Medicine's Diagnostic Error in Medicine Journal Club – Webinar, February 27, 2017
- 2017 Presenter: "Sensors, motion tracking, and data science: the quest to train



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- MD's like elite athletes." National Institutes of Health (NIH) Director's Wednesday Afternoon Lecture Series (WALS) – Bethesda, MD, March 8, 2017
- 2017 Discussant: "Interprofessional Simulations to Inform Perioperative Facility Planning and Design." 10th Annual American College of Surgeons Accredited Education Institute (ACS AEI) Surgical Simulation Conference Meeting – Chicago, IL, March 17, 2017
- 2017 Presenter: "Sensors, Motion Tracking and Data Science Metrics: Implications for the Medical Practitioner." Stanford University Department of Surgery Seminar – Stanford, CA, April 13, 2017
- 2017 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Wright State University Department of Surgery Grand Rounds – Dayton, OH, May 3, 2017
- 2017 Presenter: "Innovative Pathways for MD PhDs." Northwestern Medical Scientist Training Program's Diverse Perspectives of Physician Scientists Speaker Series – Chicago, IL, May 8, 2017
- 2017 Presenter: "Teaching and Assessing Touch Using Simulation: An Untapped Performance Improvement Opportunity." Stanford Innovations in Medical Education Conference – Stanford, CA, May 13, 2017
- 2017 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Medical University of South Carolina Department of Surgery Grand Rounds – Charleston, SC, May 16, 2017
- 2017 Panelist: "Leadership in Medical Education." American Medical Association (AMA) Council on Medical Education Stakeholders' Forum – Chicago, IL, June 9, 2017
- 2017 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" University of Wisconsin Endocrinology Grand Rounds – Madison, WI, September 14, 2017
- 2017 Presenter: "The Clinical Breast Exam: Can we do better?" Wisconsin Women's Health Foundation's 11th Annual Dialogue – Madison, WI, October 18, 2017
- 2017 Presenter: "Current Pathways to Promotion." Association for Academic



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Surgery (AAS) Fall Courses – La Jolla, CA, October 21, 2017

- 2017 Panelist: “Nuts and Bolts of an Academic Career: Part 1 – How to Advance Your Career to Promotion.” Association for Academic Surgery (AAS) Fall Courses – La Jolla, CA, October 21, 2017
- 2017 Presenter: “Signatures: What Can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?” UC Irvine School of Medicine Department of Surgery Grand Rounds – Orange, CA, October 26, 2017
- 2017 Presenter: “Tacking Unaddressed Barriers Through Communities of Practice.” The Academy of Distinguished Medical Educators 11th Annual Medical Education Day – University of Chicago Pritzker School of Medicine – Chicago, IL, November 16, 2017
- 2017 Presenter: “Sensors, Motion Tracking and Data Science: Unfolding the metrics of mystery.” The Academy of Distinguished Medical Educators 11th Annual Medical Education Day – University of Chicago Pritzker School of Medicine – Chicago, IL, November 16, 2017
- 2017 Panelist: “D2P 2.0: UW-Madison’s Entrepreneurship Focus.” Wisconsin Alumni Research Foundation’s Entrepreneurs Event – Madison, WI, December 12, 2017
- 2018 Course Co-Chair and Panelist: “Emerging Technology.” 2018 Society for Simulation in Healthcare Forum on Modeling and Simulation – Los Angeles, CA, January 12, 2018
- 2018 Presenter: “Pivoting: An Exciting and Cautionary Tale for Surgeon Scientists.” University of Wisconsin Department of Surgery Research Summit – Madison, WI, January 17, 2018
- 2018 Presenter: “Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?” Rutgers New Jersey Medical School Department of Surgery Grand Rounds – Newark, NJ, January 19, 2018
- 2018 Moderator: “Education: Simulation Training QuickShot Session.” 13th Annual Academic Surgical Congress – Jacksonville, FL, January 31, 2018



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- 2018 Presenter: "Hacking Healthcare with Sensors: Unfolding the Metrics of Physician Expertise." Wearable Tech + Digital Health + NeuroTech Silicon Valley – Stanford, CA, February 26, 2018
- 2018 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" University of Toledo Department of Surgery Grand Rounds – Toledo, OH, February 28, 2018
- 2018 Presenter: "Tech-based Innovation and Entrepreneurship in Academia: An exciting and cautionary tale" University of Wisconsin Department of Biomedical Engineering – Madison, WI March 9, 2018
- 2018 Panelist: "Ask a Surgeon: An Open Q&A Exploring Haptics in Surgery" IEEE Haptics Symposium – San Francisco, CA, March 28, 2018
- 2018 Presenter: "Use of Cognitive Task Analysis as Design Requirements for Educational Tools in Surgery" Stanford University Graduate School of Education – Stanford, CA, May 11, 2018
- 2018 Moderator: "Digital Health and Technology" Big Data in Precision Health Conference – Stanford, CA, May 24, 2018
- 2018 Presenter: "How is AI Turning Wearables into Meaningful Clinical Information?" AI in Healthcare Summit 2018 – San Francisco, CA, June 11, 2018
- 2018 Presenter: "Quantifying Expert Strategies Using Sensors: A Close Look at Clinical Procedural Skills" Stanford-Surgery Policy Improvement Research & Education Center (S-Spire) – Stanford, CA, June 11, 2018
- 2018 Panelist: AI in Medicine: Inclusion and Equity (AiMIE) – Stanford, CA, August 22, 2018
- 2018 Presenter: "What Can Sensors Tell Us About Surgical Skills?" 92nd Meeting of the Halsted Society – Stanford, CA, September 6, 2018
- 2018 Presenter: "Use of simulation and sensor technology to quantify procedural skills: Are we there yet?" Endowed Rhoads Symposium, York Hospital – York, PA, September 21, 2018.
- 2018 Presenter: "The role of new technology and data in the objective assessment of performance in GME training and initial and continuing certification" American Board of Medical Specialties Invited Symposium



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for Advancing the Assessment of Surgical Skills in Initial and Continuing Certification – Las Vegas, NV, September 23, 2018

Invited Educator (International):

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| 2003 | Presenter: Using the Pelvic Exam Simulator for Research in Student and Patient Education - Linkoping University Hospital – Sweden |
| 2011 | Speaker: “Building a Career Pathway: opportunities, obstacles and getting past them”. RACS Annual Scientific Congress. May 2011. Adelaide Australia |
| 2011 | Chair: “History, Balance and the Future”. RACS Annual Scientific Congress. May 2011, Adelaide Australia |
| 2011 | Speaker: “Trauma Training – Teaching the Teacher”. RACS Annual Scientific Congress. May 2011, Adelaide Australia |
| 2011 | Co-Chair: “Cutting Edge Tech”. RACS Annual Scientific Congress. May 2011, Adelaide Australia |
| 2011 | Speaker: “A Career in Surgery: What they don’t tell you”. RACS Annual Scientific Congress. May 2011, Adelaide Australia |
| 2011 | Speaker: “Surgical Simulation Training for the 21 st Century.” RACS Annual Scientific Congress. May 2011, Adelaide Australia |
| 2012 | Presenter: Columbian Surgical Society - 38 th Annual Congress: Advances in Surgery - “Use of Simulation Technology to Assess Errors in Intra-Operative Decision Making” Cali, Columbia, August 22-25, 2012 |
| 2012 | Presenter: Columbian Surgical Society - 38 th Annual Congress: Advances in Surgery “Training the Master Surgeon: Does Simulation Technology Have a Role?” Cali, Columbia, August 22-25, 2012 |
| 2012 | Presenter: Columbian Surgical Society - 38 th Annual Congress: Advances in Surgery “Choosing the Right Technology for Your Simulation Training Center” Cali, Columbia, August 22-25, 2012 |
| 2015 | Presenter: “The Validity and Reliability of Performance Measures, Checklists vs. Computer Generated Metrics.” Medical Simulation Symposium. Christchurch, New Zealand. April 28, 2015 |
| 2015 | Presenter: “What is the Difference Between Using Simulation for Teaching vs. Assessment – Manpower Needs, Cost and Learner |



- Motivation” Medical Simulation Symposium. Christchurch, New Zealand. April 28, 2015
- 2015 Presenter: “Use of Simulation for Formative or Summative Assessment; Where We Are Against Where We Should Be.” Medical Simulation Symposium. Christchurch, New Zealand. April 28, 2015
- 2015 Presenter: “Military Uses of Simulation in Training.” Medical Simulation Symposium. Christchurch, New Zealand. April 28, 2015
- 2015 Presenter: “Educational Research.” Developing a Career in Academic Surgery Course. Perth, Australia. May 4, 2015
- 2015 Presenter: “Signatures: Drawing Meaning for Clinical Skills Performance Using Sensors and Motion Tracking Technology.” RACS Annual Scientific Congress. Perth, Australia. May 5, 2015
- 2015 Presenter: “Role of Simulation: Potential Impact on Training and Assessment.” RACS Annual Scientific Congress. Perth, Australia. May 6, 2015
- 2015 Presenter: “Issues in Surgical Training.” RACS Annual Scientific Congress. Perth, Australia. May 7, 2015
- 2016 Discussant: “Round Table Discussion: Medical Technologies.” Simnovate International Summit – Montreal, Canada, May 5, 2016
- 2016 Panelist: “This House Believes that Innovation in Health Care is too Costly.” Simnovate International Summit – Montreal, Canada, May 5, 2016
- 2016 Presenter: “Is Indecisiveness Linked to Hand Movements in Performing Laparoscopic Ventral Hernia Repair?” Surgical Data Science Meeting – Heidelberg, Germany, June 20, 2016
- 2016 Moderator: What are the incentives for the medical profession to support data science?” Surgical Data Science Meeting – Heidelberg, Germany, June 20, 2016
- 2016 Presenter: “Educational Challenges.” WHO Global Consultation “Setting Priorities for Global Patient Safety” – Florence, Italy, September 26, 2016
- 2016 Chair: “Global Patient Safety and Quality Initiatives.” WHO Global Consultation “Setting Priorities for Global Patient Safety” – Florence, Italy, September 28, 2016



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- 2016 Presenter: "Simulation and Performance Improvement: Reality or Misadventure?" SIM-one SIM Expo – Toronto, Canada, October 7, 2016
- 2017 Presenter: "Educational Challenges and Opportunities for Evaluating Physician Competency." The International Society for Quality in Health Care (ISQua) Education Committee Webinar – Webinar, April 17, 2017
- 2018 Presenter: "Signatures: What can Sensors and Motion Tracking Technology Tell us about Technical Skills Performance?" Medical Council of Canada's Joint meeting of the Research Advisory Committee (RAC) and Research and Development (R&D) Committee – Ottawa, ON via Skype, January 31, 2018

Service Activities

Professional and Scientific Service:

National Institutes of Health Permanent Study Section Member
Bioengineering, Technology and Surgical Sciences (BTSS) – 2011-2017

Editorial Boards

American Educational Research Journal (Ranking 3/216 in Education Research) – 2014-2016
BMJ Simulation and Technology Enhanced Learning Editorial Board – 2014-Present

Invited Reviewer

American Institute of Biological Sciences
American Journal of Surgery
Annals of Surgery
Computers in Biology and Medicine
Journal of the American College of Surgeons
Journal of the American Medical Association (JAMA)
JAMA Surgery
The Journal of Continuing Education in the Health Professions
Journal of Medical Education
Journal of Medical Systems
Journal of Simulation and Healthcare
Journal of Surgical Education
Journal of Surgical Research
MedEd Portal-AAMC
Plastic and Reconstructive Surgery
Production & Manufacturing Research
Surgery
Surgical Endoscopy
Surgical Innovation



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Teaching & Learning in Medicine
Transactions on Haptics
Transactions on Information Technology in BioMedicine

Abstract Reviews

Research in Medical Education – AAMC – 2005
Society for Medical Simulation – 2005
Medicine Meets Virtual Reality – 2005, 2006, 2008, 2012, 2013, 2014, 2015
American College of Surgeons Clinical Congress – 2011, 2013

Fellowship Reviews

American College of Surgeons Accredited Education Institutes Fellowship Accreditation – 2016

NIH Grant Reviews

National Institutes of Health Study Section Reviewer – ZRG1-SBiB-Q50 - 2007
National Institutes of Health Study Section Reviewer – ZRG1 HDM-P (58) – 2009
National Institutes of Health Study Section Reviewer – NIBIB BTSS – 2010, 2015, 2016, 2017
National Institutes of Health – NIDDK Kidney, Urologic and Hematologic Diseases D Sub-Committee Program Reviewer – June 2016
National Institutes of Health Study Section Reviewer – DIRH – October 2016
National Institutes of Health Study Section Reviewer – SAT – September 2017

Other Grant Reviews

Telemedicine & Advanced Technology Research Center – 2002 - 2008
National Board of Medical Examiners Stemmler Fund – 2002, 2005, 2007
UW Institute for Clinical and Translational Research (ICTR) Advancing Health Equity and Diversity (AHEAD) Pilot Awards Program Reviewer – UW Hospital – 2015
Department of Defense – Joint Warfighter Medical Research Program (JWMRP) Reviewer – May 2016
University of Missouri Research Board Peer Reviewer – December 2016, May 2017
Society for Surgery of the Alimentary Tract (SSAT) / Society of Black Academic Surgeons (SBAS) Resident/Fellow Research Award Reviewer – January 2017

Research Portfolio Reviews

2005	West Coast Medical Skills/Distance Learning Portfolio -Telemedicine & Advanced Technology Research Center Product Line Review, Marina Del Rey, CA
2007	Medical Modeling and Simulation Portfolio- Telemedicine & Advanced Technology Research Center Product Line Review, San Antonio, TX
2009	Medical Modeling and Simulation Portfolio- Telemedicine & Advanced Technology Research Center Product Line Review, Long Beach, California



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2012 Medical Modeling and Simulation Portfolio- Telemedicine & Advanced
Technology Research Center Product Line Review, Frederick, MD

Professional Public Service/Philanthropy:

1989 Howard University Summer Health Careers Program Tutor
1997 Stanford University Summer Health Careers Program Mentor
2006 Established & Funded the Pugh-Leffall Summer Fellowship Program,
Howard University, College of Medicine
2007 Chicago High School for the Agricultural Sciences Mentor, 2007-Present
2007 Northwestern Oncofertility Saturday Academy Mentor, 2007-Present
2008 Museum of Science and Industry – President’s Council, 2008-Present
2009 Northwestern Memorial Hospital Medical Explorers Mentor
2012 AVID/TOPS Mentor – Boys & Girls Club of Dane County, 2012 – Present

2013 University of Wisconsin, Madison Surgery Residents for Diversity Mentor,
2013 - Present
2015 Harvard College of Future Surgeons (HCFS) Mentor
2015 University of Wisconsin, Women in Science and Engineering (WISE)
Mentor
2016 Association for Surgical Education Surgical Education Research
Fellowship (SERF) Advisor
2016 American College of Surgeons Women in Surgery Mentor
2017 African American Women’s Business and Careers (AWBC) Advisory Board
Member
2018 Alpha Omega Alpha Honor Medical Society Member