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EMPLOYMENT

10/2024 – present **Associate Professor**, Department of Biomedical Engineering
Wayne State University

1/2022 – 9/2024 **Associate Professor**, Department of Biomedical Engineering,
Washington University in St. Louis

9/2022 – 9/2024 **Director**, Center for Women’s Health Engineering
Washington University in St. Louis

8/2018 – 12/2021 **Associate Professor**, Biomedical and Mechanical Engineering
Department of Engineering, East Carolina University

10/2013 – 04/2018 **University Reader in Bioengineering**,
Cambridge University Engineering Department
(*US equivalent rank of tenured Professor, promoted directly from Lecturer*)

10/2012 – 04/2018 **Fellow**, Homerton College, Cambridge

10/2006 – 9/2013 **University Lecturer in Mechanics of Biological Materials**,
Cambridge University Engineering Department
(*US equivalent rank of Assistant Professor, permanent position from 2011.*)

1/2007 – 9/2011 **Fellow**, Sidney Sussex College, Cambridge

7/2005 – 7/2006 **Research Scientist**, Center for Applied Biomechanics
Dept. of Mechanical Engineering, University of Virginia

9/2002 – 6/2005 & **Research Assistant**, University of Minnesota
8/1998 – 6/2001

11/2001 – 5/2002 **Research Scientist**, Hysitron, Inc. (Minneapolis, Minnesota)

8/1996 – 7/1997 **Research Assistant**, Michigan State University

EDUCATION

June, 2005 **Ph.D.** Biophysical Sciences and Medical Physics,
University of Minnesota

December, 1998 **M.S.** Engineering Mechanics, Michigan State University

May, 1996 **B.S.** Materials Science and Engineering, Michigan State University

ADDITIONAL CREDENTIALS

2020 – present	Associate Fellow , Homerton College, Cambridge (UK)
Expected 2026	M.S., Data Analysis and Policy , Johns Hopkins University
December, 2022	Certificate in Science Writing , Johns Hopkins University
October, 2021	Certificate in Editing , University of Chicago
July, 2010	M.A. University of Cambridge

FUNDING

Current Funding

- PI, “Digital Biomarkers for Fetal Growth Re-restriction based on Multi-Scale, Multiphysics Modeling and Machine Learning,” funded by Wellcome Leap for \$1,615,019, Co-PIs Anthony Odibo, MD, and Ulugbek Kamilov, PhD, October 2022 – September 2025.
- co-I, “Molecular and mechanical investigations to define collagen and elastic fiber homeostasis in cervical remodeling during a term and preterm pregnancy,” funded by the National Institutes of Health for \$3,915,755, WUSTL subcontract \$326,147, PI Mala Mahendroo, PhD, (UT Southwestern) and co-PI Kristin Myers, PhD, (Columbia University), 2024 – 2028.

RESEARCH SUPERVISION

Post-doc

_____	Wayne State University
2024 – present	Erin Louwagie
_____	Washington University in St. Louis
2022 – 2024	Samantha Zambuto, T-32 Scholar; <i>Assistant Professor, Mechanical Engineering, University of Kentucky, starting January 2025</i>
2022 – 2024	Adrienne Scott, T-32 Scholar; <i>Assistant Professor, Mechanical Engineering, Notre Dame University, starting August 2025</i>
_____	East Carolina University
2019 – 2021	Mohammad R. Islam; <i>now Assistant Professor at University of Texas Rio Grande Valley</i>
_____	Cambridge University
2016 – 2018	Eneko Axpe; <i>now Impossible Foods</i>
2015 – 2018	David Labonte; <i>now faculty (Senior Lecturer) at Imperial College London</i>
2010 – 2012	David Cottenden; <i>now TTP Consultants (UK)</i>

2008 – 2010 Matteo Galli; *now Director of Faculty Affairs, EPFL*
2008 – 2009 Joel Cugnoni; *now Professor, EPFL*

Ph.D.

Cambridge University

2013 – 2018 Kyata Chibalabala, Microfluidic Automation of Heavy Water Labelled Cell Division, thesis to be submitted 2024.
2014 – 2018 Yassen Abbas, Physical Factors Regulating Human Trophoblast Invasion
2013 – 2018 Annabel Butcher, Deformation and Fracture of Soft Materials for Cartilage Tissue Engineering
2014 – 2017 Romina Plitman Mayo, Oxygen Transport in the Human Placenta: A Multi-Physics Modelling Approach
2013 – 2016 Giovanni Offeddu, Biomimetic Composite Materials for Cartilage Tissue Engineering
2012 – 2018 Oliver Armitage, *ABD; now founder and Chief Scientific Officer, BIOS*
2011 – 2016 Jenna Shapiro, Hydrogel Substrate Effects on Protein Kinase A and Osteogenesis
2011 – 2014 Carolin Oefner, Human Trophoblast Invasion
2011 – 2014 Khaow Tonsomboon, Fibre-reinforced Hydrogels: Biomimetic Scaffolds for Corneal Tissue Engineering
2010 – 2013 Ching Theng Koh, Fracture of Fibrous Tissue Membranes and Biomimetic Scaffolds
2009 – 2012 Daniel Strange, Mechanics of Biomimetic Materials for Tissue Engineering of the Intervertebral Disc
2008 – 2011 Tamaryn Shean, Small-scale Mechanical Characterization of Viscoelastic Adhesive Systems
2008 – 2011 Oliver Hudson, Polymer Modification of Fast-growing Woods for Improved Mechanical Response and Sustainable Architecture

Master's

Washington University in St. Louis

2023 – 2024 Emily Sheehan (M.S., Computer Science)

East Carolina University

2020 – 2022 Mackenzie Wheeler (M.S.)
2019 – 2021 Thomas Buckner (M.S.)
2018 – 2020 Jacob Ludwick (M.S.)

Cambridge University

2015 – 2016 Ann Nguyen (M.Phil.)
2015 – 2016 Dylan Musson (M.Eng.)
2013 – 2014 Rupert Barton (M.Eng.)

2013 – 2014	Sana Waheed (M.Eng.)
2013 – 2014	Nikhila Ravi (M.Eng.)
2012 – 2013	Annabel Butcher (M.Eng.); stayed on to do Ph.D.
2012 – 2013	Manon van Thorenburg (M.Eng.)
2011 – 2012	Mark Varley (M.Eng.)
2011 – 2012	Thomas Wagner (M.Eng.)
2011 – 2012	Sarah Greasly (M.Eng.)
2011 – 2012	Tess Catherwood (M.Eng.)
2011 – 2012	Helen Brawn (M.Eng.)
2011 – 2012	Oliver Armitage (M.Phil.); stayed on to do Ph.D.
2010 – 2011	Oliver Armitage (M.Eng.); stayed on to do M.Phil.
2010 – 2011	Khaow Tonsomboon (M.Eng.); stayed on to do Ph.D.
2009 – 2010	Aran Dasan (M.Eng.)
2009 – 2010	Natasha Williams (M.Eng.)
2008 – 2009	Rosanne Furniss (M.Eng.)
2008 – 2009	Kirsty Main (M.Eng.)
2008 – 2009	Daniel Strange (M.Eng.); stayed on to do Ph.D.
2007 – 2008	Graham MacAree (M.Eng.)
2007 – 2008	Tamaryn Shean (M.Eng.); stayed on to do Ph.D.

Undergraduate

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	<u>Washington University in St. Louis</u>
2024	Sudha Anilkumar (summer REU, from University of Delaware)
2024 – present	Daedelus Chen (Computer Science)
2023	Hannah Rudewick (summer REU, from Texas A&M)
2023 – present	Abir Hamdaoui
2023 – present	Amelia Hines
2022 – present	Tista Mandal
2022 – 2023	Annie Mascot
2022	Isabelle Gilliam
2022	Kayla Brown (summer REU, from NC A&T)
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	<u>East Carolina University</u>
2021	Maycie McDougal
2021	Ethan Knorr
2020 – 2021	Lucci DeRose
2020	Ashley McCreary
2019 – 2021	Mackenzie Wheeler
2019	Dana Al Jalal (IAU, Saudi Arabia)
2019	Leena Dakhaikh (IAU, Saudi Arabia)
2019 – 2020	Jeremiah James
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	<u>Cambridge University</u>
2011	Mark Varley

2007, 2008, 2009	Wesley Chua
2009	Henry Pairaudeau
2008	Tarun Gupta
2008	Kirsty Main

TRAINEE AWARDS

Washington University in St. Louis

- Fall 2024, NSF Graduate Research Fellowship, Hannah Rudewick (Washington University in St. Louis)
- September 2023, NIH New Investigator Travel Awards for 2023 International Federation of Placenta Associations (IFPA) Meeting, Samantha Zambuto and Adrienne Scott
- Fall 2023, NSF Graduate Research Fellowship, Annabella Mascot (Stanford University)

East Carolina University

- Fall 2022, NSF Graduate Research Fellowship, Jeremiah James (Cornell University)
- Spring 2021, ECU CET Outstanding Undergraduate Researcher Awards, Jeremiah James and Mackenzie Wheeler.
- Spring 2021, Undergraduate Research and Creative Activity awards, Ethan Knorr.
- Fall 2020, Undergraduate Research and Creative Activity mini-awards, Mackenzie Wheeler, Jeremiah James, and Lucci DeRose.
- Spring 2020, Undergraduate Research and Creative Activity awards, Mackenzie Wheeler and Jeremiah James.
- Spring 2019, Research and Creative Achievement Week, Best Oral Presentation Master's level, Engineering and Technology, Jacob Ludwick.

Cambridge University

- National Research Council of Thailand Dissertation Award in Biomaterials Engineering – Excellent Level, Khaow Tonsomboon, 2019.
- DePuy Best Postgraduate Medical Engineering Project, Institution of Mechanical Engineers (London), Romina Plitman Mayo, 2018.
- SET for Britain Finalist, Yassen Abbas (2017), Jenna Shapiro (2014), Khaow Tonsomboon (2013).
- Best Oral Presentation Award, Computer Methods in Biomechanics and Biomedical Engineering, Tel Aviv, Romina Plitman Mayo, 2016.
- Best Research Image, U.S. National Institutes of Health, USA, Romina Plitman Mayo, 2016.

- Trainee Award, World Biomaterials Congress, Montreal, Giovanni Offeddu, 2016.
- YW Loke New Investigator Travel Award, IFPA, Paris, Romina Plitman Mayo, 2014.
- Cambridge Engineering Photo Competition Head of Department Prize, Khaow Tonsomboon, 2013.
- St. Catherine's College Cambridge Research Prize, Ching Theng Koh, 2012.
- Cambridge Engineering Photo Competition SEM Prize, Ching Theng Koh, 2012.
- Cambridge University Nanoscience Doctoral Training Centre Associateship, Annabel Butcher (2014), Khaow Tonsomboon (2013), Daniel Strange (2010).
- IOM3 Materials Literature Review Finalist, Jenna Shapiro (2012), Ching Theng Koh (2012), Daniel Strange (2010).

THESES EXAMINED

2024	S. Chatman, Washington University in St. Louis (BME), M.S.
2023	Z. Sun, Washington University in St. Louis (BME), Ph.D.
2023	N. Bappoo, Western Australia University, Ph.D.
2023	D. Schuftan, Washington University in St. Louis (BME), M.S.
2022	M. Nosiglia, Washington University in St. Louis (Chemistry), Ph.D.
2019	V. Myers, East Carolina University, M.S.
2018	P. De Falco, Queen Mary University of London, Ph.D.
2017	T. Sanchez Monroy, University of Manchester, Ph.D.
2016	S. Bakarich, University of Wollongong, Ph.D.
2016	A. Fotticchia, Loughborough University, Ph.D.
2015	A. Jin, Imperial College London, Ph.D.
2015	C. Litina, Cambridge (Engineering), Ph.D.
2015	J. Ashworth, Cambridge (Materials), Ph.D.
2014	R. Kurchin, Cambridge (Materials), M.Phil.
2014	M. Haghghi Abyaneh, Loughborough University, Ph.D.
2013	M. Farine, ETH Zurich, Ph.D.
2013	A.K. Miri Ramesh, McGill University, Ph.D.
2012	C. Haller, University Hospital Zurich, Ph.D.
2011	T. Oppenheim, Cambridge (Engineering), Ph.D.
2010	T. Kelby, Cambridge (Chemistry), Ph.D.
2009	E.R. Wise, Cambridge (Chemistry), Ph.D.
2008	J.A. Sanz Herrera, University of Zaragoza, Ph.D.
2008	F. Xu, Cambridge (Engineering), Ph.D.
2008	J. Gornall, Cambridge (Physics), Ph.D.
2007	K. Baxevanakis, Cambridge (Engineering), M.Phil.

PERSONAL RECOGNITION

- Fellow, American Institute for Medical and Biological Engineering, March, 2024.
- 200 Trailblazing Leaders in FemTech 2023, December, 2023.
- ECU College of Engineering and Technology Outstanding Faculty Research Award, April 2021.
- Best Lecturer Award, 2nd year undergraduates, Cambridge Engineering, 2017.
- University of Cambridge Public Engagement and Outreach finalist, 2016.
- National Research Council (USA) Post-doctoral fellowship, 2006 (declined).
- Materials Research Society Trophy Award for Best Proceedings Paper, 2005.
- American Society of Mechanical Engineers Bioengineering Division Student Paper Contest, 2nd Place, 2004.
- Society for Experimental Mechanics Student Paper Contest 3rd Place, 2001.
- National Science Foundation (USA) Graduate Research Fellowship, Spring, 1996.
- Society of Women Engineers Scholarship Awards, 1995 and 1996.
- Michigan State University College of Engineering Academic Achievement Awards, 1994, 1995, 1996.

UNIVERSITY AND COLLEGE TEACHING

	<u>Washington University in St. Louis</u>
2024	BME 4780/5780 Engineering for Women's Health (new course)
2022–3	BME 401A Senior Design Capstone
2022, 2023	BME 465/565 Biosolid Mechanics

	<u>East Carolina University</u>
2021	MENG 6210 Advanced Mechanics of Materials
2019, 2021	ENGR 4503/BIME 6700/BIME 5410 Biomimetics
2020	MENG 6350 Theory of Elasticity
2019, 2021	BIME 6700 Cell and Tissue Biomechanics
2019 – 2021	ENGR 2070 Materials and Processes
2018, 2020	BIME 6400/BIME 5400 Biomaterials
2018 – 2021	ENGR 4010/4020 Capstone

	<u>Cambridge University</u>
2016 – 2018	5R14 Experimental Methods in Mechanics (graduate)
2008 – 2018	4G4 Biomimetics
2008 – 2018	3G5 Biomaterials Lab

2011 – 2017	IA The Engineer in Society
2007 – 2017	2P8 Introduction to Bioengineering
2013 – 2014	4C9 Continuum Mechanics
2008 – 2014	1P2 Introduction to Materials, supervisions (recitation sections, 2-4 students)
2008 – 2014	3G5 Biomaterials
2009 – 2012	3P10 Advanced Topics in Manufacturing
2007	5R13 Nonlinear Mechanics (graduate)

UNIVERSITY AND COLLEGE SERVICE

	<u>Washington University in St. Louis</u>
2022 – 2024	Director, Center for Women’s Health Engineering
2022 – 2024	Biomedical Engineering Seminars Committee
2022 – 2024	Biomedical Engineering Doctoral Affairs Committee
2022 – 2024	Biomedical Engineering Diversity Committee

	<u>East Carolina University</u>
2020 – 2021	ECU Global Affairs Committee
2019	Co-Director, Biomaterials Research Cluster

	<u>Cambridge University</u>
2017 – 2018	Steering group, Women’s Staff Network, Cambridge University
2017 – 2018	Academic Board for West and Northwest Cambridge
2016 – 2018	Faculty advisor, Homerton College Engineering Society
2016 – 2018	Homerton College Council
2014 – 2018	Faculty advisor, Robogals Cambridge
2014 – 2018	Departmental Biological Safety Committee
2014 – 2018	Homerton College Fellowships Committee
2013 – 2018	Homerton College Investments Committee
2012 – 2018	Homerton College Admissions Director for Undergraduate Engineering
2008 – 2018	Director of Studies (academic advisor) for 12-18 undergraduate students
2009 – 2014	University Biosafety Committee
2008 – 2014	Departmental Biological Safety Officer
2008 – 2014	Local Officer Responsible for Safety, Bioengineering Lab
2006 – 2011	Secretary, Engineering for the Life Sciences Teaching Committee
2007 – 2009	Department Representative, Women in Science and Engineering Initiative

MEMBERSHIPS

- Associate Member, Royal Society of Medicine (2024 – present)
- Member, IEEE EMBS (2024 – present)
- Member, Biomedical Engineering Society (2019 – present)
- Member, ASME (2018 – present)

PUBLIC ENGAGEMENT AND OUTREACH

Lectures, Panels, and Broadcast

- Interview segment, HEC TV, June 2024, Training future biomedical engineers for the FemTech revolution. [HEC TV](#)
- Interview segment, STL Public Radio, December 5, 2023. [STL Public Radio](#)
- Bioengineering Studies of Pregnancy, Washington University Alumni Event, Nordic Museum, Seattle, WA, 23 May 2023.
- An Engineer's View of Human Pregnancy (Lightning Talk) SciFoo Alumni Virtual Event, May 2021. [YouTube](#).
- Reflections as a Woman in STEM, Society of Women Engineers fundraising gala, ECU-ECHI, April 2019.
- Radio/Podcast Interview, The Naked Scientists, Eggshells, bones and the buildings of tomorrow, September 2018, [The Naked Scientists](#)
- Participant, Science Foo, Googleplex, Palo Alto, CA, 22 – 24 June 2018.
- Film Clip, The future of medicine, Cambridge University, October 2017, [YouTube](#)
- Film Clip, The Hay Levels (career support for high school students), June 2017, [YouTube](#)
- Lecture, Cambridge Series: Re-thinking engineering with inspiration from nature, The Hay Festival, Hay-on-Wye, Wales, 4 June 2017.
- Film Clip, *mega.online*, Biological building blocks, May 2017, [mega.online](#)
- Lecture and Film Clip, Reducing our carbon footprint by listening to nature, TEDx Cambridge University, 11 February 2017, [YouTube](#).
- Panelist, Championing success and avoiding the echo chamber, Women in STEM Spotlight, Digital Science, London, UK, 6 October 2016. [YouTube](#)
- Participant, Science Foo, Googleplex, Palo Alto, CA, 22 – 24 July 2016.
- Lecture, Biomimetic materials: Re-thinking how we build stuff, Cambridge Science Festival, 9 March 2016.
- Panelist, Staying in science and doing science communication, how to have your cake and eat it too, Spot On London, 9 September 2013.
- Documentary Segment, NOVA (US)/Channel 4 (UK), Zeppelin Terror Attack, filmed 2012, aired 2013 – 4.
- Documentary Segment, Operation Ouch, CBBC/Maverick Productions, first aired Autumn, 2012. [BBC](#)

- Film Clip, How can robots aid scientific research? with Google and Lego, for the Google Science Fair, March 2012. [YouTube](#)
- Lecture, Collagen: It's everywhere! Hills Road 6th Form College, Cambridge, 18 October 2011.
- Lecture, When engineers meet midwives: The mother as a pressure vessel, Cambridge University 800th Anniversary Alumni Weekend, Cambridge, 26 September 2009.

Articles Authored for a General Audience

- The Conversation, Pregnancy is an Engineering Challenge, 4 June 2024, [The Conversation](#)
- Engineering Momentum Magazine, The Last Word: Birth, Winter 2023, [Magazine](#)
- Emmanuel College Alumni Magazine, Thomas Young: Polymath, bioengineer and interdisciplinary pioneer, November 2017, [emma.cam.ac.uk](#)
- The Conversation, Dreaming big with biomimetics: Could future buildings be made with bone and eggshells? 8 March 2016. [The Conversation](#)
- The Royal Society Publishing blog, Thomas Young's surprising contribution to biomechanics, 14 May 2015, [royalsociety.org](#)
- The Conversation, Artificial whiskers could inspire future instruments to aid keyhole surgery 15 August 2015. [The Conversation](#)
- The Conversation, Nature must remain at the heart of engineering solutions, 19 June 2014. [The Conversation](#)
- The Conversation, Spider silk is a wonder of nature, but it's not stronger than steel 5 June 2013. [The Conversation](#)
- Nature.com, Guest blog post on academic mentoring, June 2012. [nature.com](#)

Featured in Articles by Others

- Newspaper feature, by Linda Geddes, How digital twins may enable personalised health treatment, 12 November 2023. [The Guardian](#)
- Web Feature, by Meryl Davids Landau, AI May Be Key to Solving the Most Neglected Women's Health Issues, 10 July 2023. [National Geographic](#)
- Engineering Momentum Magazine, by Beth Miller, Improving Women's Health with Engineering, Winter 2023. [Magazine](#)
- Web Feature, New Gallery Fumi show celebrates the power of collaboration, 21 September 2021. [Wallpaper*](#)

- Interview, What You'll Find Inside Medicine Cabinets in 2030, 12 July, 2021. [Gizmodo](#)
- Newspaper Feature, The future of skyscrapers: a mile high, slimmer than ever and made from wood, The Telegraph, 30 July 2020. [telegraph.co.uk](#)
- Web Feature, ECU Researchers Examine Link Between Hurricanes, Premature Birth, 23 June 2020. [NC Public Radio WUNC.org](#)
- Personal Profile, STEM Stories, January 2020. [Geeky Girl Reality](#)
- Blog post on Bioengineering in Women's Health, July 2019, [Royal Society Publishing Blog](#)
- Lab Profile, Materials Today, Spring 2019. [Materials Today](#)
- Web Feature, I am not a Woman in Science. I am a Scientist. March 2019. [Hindawi Blog](#)
- Newspaper Feature, Miscarriage research: The bioengineers taking a fresh look at pregnancy, The Guardian, 10 November 2017, [theguardian.com](#)
- Web Feature, From conception to birth: celebrating a decade of the Centre for Trophoblast Research. July 2017 [Medium.com](#)
- Profile, Body works, CAM (Cambridge Alumni Magazine), March 2017, [issuu.com](#)
- Web Feature, Biomimicry, The Long and Short, 22 June 2016, [thelongandshort.org](#)
- Newspaper Feature, Seashells or spider silk: How nature could transform the structure of cities, The Guardian, 8 March 2016, [theguardian.com](#)
- Web Feature, Swapping steel and concrete for buildings of bone, The Memo, 7 March 2016, [thememo.com](#)
- Web feature, Walking on Eggshells: Anatomy of a Science Story by Jennifer Oullette, 26 September 2012 [Cocktail Party Physics Blog](#)
- Magazine Feature, Playful prototyping, Wired UK, July 2012. [Wired.co.uk](#)

EDITORIAL CONTRIBUTIONS

Journals

2022 – present	Associate Editor , Science Advances.
2021 – 2022	Specialty Chief Editor , Frontiers in Biomaterials (Bioinspired and Complex Materials).
2019	Special Issue Editor , Bioengineering in Women's Health parts 1 and 2, Journal of the Royal Society Interface Focus, Volume 9, Issues 4 and 5.
2017 – 2019	Editor-in-Chief , Materials Science and Engineering C
2014	Special Issue Editor , Nanobiomechanics of Living Materials, Journal of the Royal Society Interface Focus, Volume 4, Issue 2.
2006 – 2012	Principal Editor , Journal of Materials Research

- 2009 **Special Issue Editor**, Nanoindentation of Biological Materials, Journal of the Mechanical Behavior of Biomedical Materials, Volume 2, Issue 4.
- 2006 **Special Issue Editor**, Mechanics of Biological and Biomimetic Materials at Small Length Scales, Journal of Materials Research, Volume 21, No. 8.

Editorial Boards

- 2021 – present Journal of Physics: Materials (IOP)
- 2019 – present Computer Methods in Biomechanics and Biomedical Engineering
- 2016 – present Journal of Biomechanics
- 2014 – 2018 Journal of the Royal Society Interface
- 2014 – 2018 Extreme Mechanics Letters
- 2011 – present Journal of the Mechanical Behavior of Biomedical Materials
- 2011 – 2018 Acta Mechanica Sinica
- 2012 – 2018 Bioinspiration and Biomimetics

SERVICE

- Chair, Transforming Women’s Health Outcomes Through Engineering, NSF Engineering Research Visioning Alliance (2024)
- Women’s Health Innovation Opportunity Map, Report of the Innovation Equity Forum, Sponsored by the Gates Foundation and NIH (2023)
 - Subcommittee Co-Lead, Research Design and Methodologies
- Biomedical Engineering Society
 - Ethics Subcommittee (2022 – present)
 - Abstract reviewer, (2020 – present)
 - Special Session Organizer, Bioengineering in Women’s Health (2019)
- Materials Research Society
 - Chair, Proceedings Editorial Board (2011 – 2015)
 - Chair, Tutorials Review Committee segment of the Program Development Subcommittee (2011 – 2014)
 - Member, Tutorials Review Committee segment of the Program Development Subcommittee (2005 – 2011)
 - Symposium Organizer, Fall 2007 Annual Meeting, Nanoindentation and Nanotribology IV
 - Symposium Organizer, Fall 2005 Annual Meeting, Mechanical Behavior of Biological and Biomimetic Materials
- American Society for Mechanical Engineering (ASME)

- Judge, Student Paper Competition, Summer Bioengineering Meeting, 2006, 2007, 2008, 2009, 2010
 - Abstract reviewer, Summer Bioengineering Meeting, 2011, 2012, 2013
 - The Bioengineering Society (UK)
 - Founding member, Executive Committee (2008 – 2011)
 - Global Enterprise for Micro-Mechanics and Molecular Medicine (GEM4)
 - Member, Executive Committee (2007 – 13)
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PUBLICATIONS

[Google Scholar](#)

[ORCID](#)

[My NCBI/PubMed](#)

1. Oyen-Tiesma M, Atkinson J, Haut RC, A method for promoting regular exercise in rabbits involved in orthopaedics research. *Contemp. Topics in Lab. Animal Res.* 37 (1998) 77 – 80.
<https://www.ingentaconnect.com/contentone/aalas/jaalas/1998/00000037/00000006/art00008>
2. Atkinson PJ, Oyen-Tiesma M, DeCamp CE, Mackenzie CD, Haut RC, Patellar tendon augmentation after removal of its central third limits joint tissue changes. *J. Orthop. Res.* 17 (1999) 28 – 36.
DOI: 10.1002/jor.1100170106
3. Oyen-Tiesma M and Cook RF, Technique for estimating the fracture resistance of cultured neocartilage. *J. Mat. Sci. Mater. Med.* 12 (2001) 327 – 32.
DOI: 10.1023/A:1011247104621
4. Oyen ML and Cook RF, Load-displacement behavior during sharp indentation of viscoelastic-plastic materials. *J. Mater. Res.* 18 (2003) 139 – 50.
DOI: 10.1557/JMR.2003.0020
5. Lewis JL, Deloria LB, Oyen-Tiesma M, Thompson RC, Ericson M, Oegema TR, Cell death after cartilage impact occurs around matrix cracks. *J. Orthop. Res.* 21 (2003) 881 – 7.
DOI: 10.1016/S0736-0266(03)00039-1
6. Oyen ML, Calvin SE, Cook RF, Uniaxial stress-relaxation and stress-strain responses of human amnion. *J. Mater. Sci. Mater. Med.* 15 (2004) 619 – 24.
DOI: 10.1023/b:jmsm.0000026102.85071.1f
7. Oyen ML, Cook RF, Calvin SE, Mechanical failure of human fetal membrane tissues. *J. Mater. Sci. Mater. Med.* 15 (2004) 651 – 8.
DOI: 10.1023/b:jmsm.0000030205.62668.90

8. Oyen ML, Cook RF, Moody NR, Emerson JA, Indentation responses of time-dependent films on stiff substrates. *J. Mater. Res.* 19 (2004) 2487 – 97.
DOI: 10.1557/JMR.2004.0308
9. Oyen ML, Spherical indentation creep following ramp loading. *J. Mater. Res.* 20 (2005) 2094 – 2100.
DOI: 10.1557/JMR.2005.0259
10. Oyen ML, Cook RF, Stylianopoulos T, Barocas VH, Calvin SE, Landers DL, Uniaxial and biaxial mechanical behavior of human amnion. *J. Mater. Res.* 20 (2005) 2902 – 9.
DOI: 10.1557/JMR.2005.0382. *Outstanding Meeting Paper*
11. Oyen ML and Ko C-C, Examination of local variations in viscous, elastic, and plastic indentation responses in healing bone. *J. Mater. Sci. Mater. Med.* 18 (2007) 623 – 8.
DOI: 10.1007/s10856-007-2311-7
12. Oyen ML, Nanoindentation hardness measurements of mineralized tissues. *J. Biomech.* 39 (2006) 2699 – 2702.
DOI: 10.1016/j.jbiomech.2005.09.011
13. Oyen ML, Calvin SE, Landers DV, Premature rupture of the fetal membranes: Is the amnion the major determinant? *Am. J. Obstet. Gynecol.* 195 (2006) 510 – 5.
DOI: 10.1016/j.ajog.2006.02.010
14. Bembey AK, Oyen ML, Bushby AJ, Boyde A, Viscoelastic properties of bone as a function of hydration state determined by nanoindentation. *Phil. Mag.* 86 (2006) 5691 – 703.
DOI: 10.1080/14786430600660864
15. Oyen ML, Analytical techniques for indentation of viscoelastic materials. *Phil. Mag.* 86 (2006) 5625 – 41.
DOI: 10.1080/14786430600740666
16. Bembey AK, Bushby AJ, Boyde A, Ferguson VL, Oyen ML, Hydration effects on the micro-mechanical properties of bone. *J. Mater. Res.* 21 (2006) 1962 – 8.
DOI: 10.1557/jmr.2006.0237
17. Mattice JM, Lau AG, Oyen ML, Kent RW. Spherical indentation load-relaxation of soft biological tissues. *J. Mater. Res.* 21 (2006) 2003 – 10.
DOI: 10.1557/jmr.2006.0243
18. Ko C-C, Oyen ML, Fallgatter AM, Kim J-H, Douglas WH, Friction J, Hu W-S, Mechanical properties and cytocompatibility of biomimetic hydroxyapatite-gelatin nano-composites. *J. Mater. Res.* 21 (2006) 3090 – 8.
DOI: 10.1557/jmr.2006.0394

19. Bass CR, Lucas SR, Salzar RS, Oyen ML, Planchak C, Shender BS, Paskoff G, Failure properties of cervical spinal ligaments under fast strain rate deformations. *Spine* 32 (2007) E7 – 13.
DOI: 10.1097/01.brs.0000251058.53905.eb
20. Oyen ML and Bushby AJ, Viscoelastic effects in small-scale indentation of biological materials. *Int. J. Surf. Sci. Eng.* 1 (2007) 180 – 97.
DOI: 10.1504/IJSURFSE.2007.015024
21. Cook RF and Oyen ML, Nanoindentation behavior and mechanical properties measurement of polymeric materials. *Int. J. Mater. Res.* 98 (2007) 370 – 8.
DOI: 10.3139/146.101480
22. Oyen ML, Sensitivity of polymer nanoindentation creep properties to experimental variables. *Acta Mater.* 55 (2007) 3633 – 9.
DOI: 10.1016/j.actamat.2006.12.031
23. Calvin SE and Oyen ML, Microstructure and mechanics of the chorioamnion membrane with an emphasis on fracture properties. *Annals N. Y. Acad. Sciences* 1101 (2007) 166 – 85.
DOI: 10.1196/annals.1389.009
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61. Mechanically-robust composite hydrogels for tissue engineering, Oyen ML, Strange DGT, Tonsomboon K, Koh CT, Shapiro JM, Shean TAV, Galli M. National Institute of Standards and Technology (Biosystems and Biomaterials Division), Gaithersburg, MD, 25 April 2013.
62. Unravelling length- and time-scale effects in hydrated tissues, Oyen ML, Galli M, Koh CT, Shean TAV, Shapiro J, Strange DGT, Tonsomboon K. Bioengineering Department, Imperial College, London, UK, 9 July 2013.
63. Nanofiber composites as biomimetic soft tissue scaffolds, Oyen ML, Koh CT, Shapiro J, Offeddu G, Strange DGT, Tonsomboon K. Materials Research Society Fall Meeting, Boston, MA, 4 December, 2013.
64. Nanofiber composites as biomimetic soft tissue scaffolds, Oyen ML, Koh CT, Shapiro J, Strange DGT, Tomsonboon K. COMPO 2014 — International Symposium on Composite Materials, Rehovot, Israel, 1 May 2014.
65. Nanofiber composites as biomimetic soft tissue scaffolds, Oyen ML, Koh CT, Shapiro J, Strange DGT, Tomsonboon K. Newcastle University, Newcastle, UK, 27 May 2014.
66. Composite hydrogels as tissue engineering scaffolds, Oyen ML, Tonsomboon K, Strange DGT, Koh CT. World Congress of Biomechanics, Boston, MA, 8 July 2014.
67. Biomechanics of fetal membrane fracture, Oyen ML, Koh CT, Tonsomboon K. World Congress of Biomechanics, Boston, MA, 9 July 2014.
68. Mechanically robust biomimetic materials, Oyen ML, Armitage OE, Koh CT, Strange DGT, Tonsomboon K. Army Corps of Engineers Research and Development Center, Vicksburg, MS, 22 July 2014.
69. Nanofiber composites as biomimetic soft tissue scaffolds, Oyen ML, Koh CT, Shapiro J, Strange DGT, Tomsonboon K. Cambridge-Taiwan Nanoscience Workshop, Hsinchu, Taiwan, 1 October 2014.
70. Experimental variations in nanoindentation testing, Oyen ML. Workshop on Nanoindentation and its Applications, Champaign-Urbana, Illinois, 1 – 2 April 2015.
71. Nanoindentation of hydrogels and soft biological materials, Oyen ML. Workshop on Nanoindentation and its Applications, Champaign-Urbana, Illinois, 1 – 2 April 2015.

72. Hydrogel composites to mimic the stem cell niche, Oyen ML. Stem Cell Institute Research Interfaces Workshop, Cambridge, UK, 28 October 2015.
73. Nanofiber composites as biomimetic soft tissue scaffolds, Oyen ML. Cambridge Chemical Engineering and Biotechnology Dept., Cambridge (departmental seminar), UK, 12 January 2016.
74. Nanofiber composites as biomimetic soft tissue scaffolds, Oyen ML. Plasticell LLC, Stevenage, UK, 10 February 2016.
75. OyenLab research overview and eggshell biomimetics update, Oyen ML, Armitage OE, Caliskan HB, Labonte D. Army Corps of Engineers Research and Development Center, Vicksburg, MS, 18 March, 2016.
76. Nanofiber composites as biomimetic soft tissue scaffolds, Oyen ML. University of Manchester (departmental seminar), Manchester UK, 11 November 2016.
77. Biomimetics: Changing engineering practice by learning from nature, Oyen ML. King's College, Cambridge, UK, 18 November 2016.
78. Mechanically robust and biomimetic soft tissue scaffolds, Oyen ML. Soft Matter Workshop, University of Cambridge, Cambridge, UK, 16 January 2017.
79. A microfluidics assay to study invasion of human trophoblast cells, Oyen ML, Oefner C, Abbas Y, Moffet A, Burton G. University of Manchester Placental Biophysics Workshop, University of Manchester, Manchester, UK, 29 August, 2017.
80. How do we validate virtual placenta models? Oyen ML, Plitman Mayo R, Charnock-Jones S, Burton G. International Federation of Placenta Associations annual meeting, Manchester, UK, 30 August, 2017.
81. Physically robust hydrogels for biomedical applications, Oyen ML. University of Delaware Biomedical Engineering (departmental seminar), Newark, DE, 11 September 2017.
82. Poroelastic properties of biomimetic cartilage-like scaffolds, Oyen ML. Materials Research Society annual meeting, Boston, MA, 28 November 2017.
83. Physically robust hydrogels for biomedical applications, Oyen ML. Northeastern University (departmental seminar), Boston, MA, 1 December 2017.
84. Physically robust hydrogels for biomedical applications, Oyen ML. Johns Hopkins University (departmental seminar), Baltimore, MD, 17 April 2018.
85. Indentation characterization of hydrogels and biological tissues, Oyen ML, International Materials Symposium Celebrating the 50+ years Career of Brian Lawn, Brown University, 16-17 July, 2018.
86. Physically robust hydrogels for biomedical applications, Oyen ML. UNC-NC State Joint Department of Biomedical Engineering (departmental seminar), 11 January 2019.

87. Contact mechanics for characterization of hydrogel material properties, Oyen ML. STLE Annual Meeting, Nashville, TN, 23 May 2019.
88. Discrete Models of fibrous soft tissue fracture, Oyen ML. 16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE), Columbia University, New York, 14 August 2019.
89. (keynote) Identification of poroviscoelastic material properties of hydrogels, Oyen ML. 16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE), Columbia University, New York, 16 August 2019.
90. Size effects in indentation of biological tissues and hydrogels, Oyen ML. The College of New Jersey (departmental seminar), Ewing, NJ, 15 October 2019.
91. (panelist and organizer) (Bio)Engineering in Women's Health. Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 17 October 2019.
92. Biomechanical functions of the extraembryonic tissues throughout pregnancy, Columbia University (special seminar), New York City, NY, 13 November 2019.
93. Failure and fracture of hydrogels and hydrogel composites, Materials Research Society Annual Meeting, Boston, MA, 4 December 2019.
94. Physical properties of biomimetic artificial cartilage, North Carolina Cartilage and Arthritis Research Alliance (NC-CARA) meeting, Chapel Hill, NC, 6 December 2019.
95. Biomechanical functions of the extraembryonic tissues throughout pregnancy, University of Virginia (departmental seminar), Charlottesville, VA, 7 February 2020.
96. Size effects in indentation of biological tissues and hydrogels, online Biological Soft Matter Seminar Series, 18 June 2020. Available online at <https://www.youtube.com/watch?v=n7J8BsS1WxM>
97. (keynote) Characterization of physically robust hydrogels for biomedical applications, ACIS 2021 The Australian Colloid and Interface Symposium, University of Melbourne, Australia, virtual, 9 February 2021.
98. (convener/moderator) JMBBM Frontiers Webinar, Bioengineering in Women's Health. Online, 11 February 2021. Available online at: <https://www.youtube.com/watch?v=hyUS7XN5joE>
99. Biomechanical functions of the extraembryonic tissues throughout pregnancy, Arizona State University (departmental seminar), virtual, 9 April 2021.
100. Failure and fracture of hydrogels and hydrogel composites, IUTAM Symposium on Hydrogels, 24-28 May 2021. Available online: [University of Texas, link to recording](#)
101. Preterm birth associated with fibrous soft tissue fracture, Workshop: Mechanics and Mechanobiology Surrounding Tissue Failure, SB3C Virtual Meeting 14-18 June, 2021.

102. Biomechanical functions of the extraembryonic tissues throughout pregnancy, Washington University St. Louis (departmental seminar), 16 September 2021.
103. (panelist) Society for Engineering Science Fishbowl Panel Discussion on Soft Matter, 19 October 2021.
104. Biomaterials Studies of the Extra-Embryonic Fetal Support Structures – Placenta and Fetal Membranes, Biomaterials Science and Engineering to Address Unmet Needs in Women’s Health, virtual webinar 26 October, 2021.
105. Biomechanical functions of the extraembryonic tissues throughout pregnancy, Departmental Seminar, Biomedical Engineering, University of Arkansas, 5 November 2021.
106. Hydrogel-Based Biomaterials as Biomimetic Extracellular Matrices, Department of Developmental Biology, Washington University School of Medicine in St. Louis, 21 March 2022.
107. Indentation Characterization of Time-dependent Mechanical Behavior of Hydrogels, 2022 Boulder Workshop on Soft and Active Materials, virtual, 28 April 2022.
108. Biomechanical Factors in Preterm Birth, Biomedical Engineering Colloquium, Kansas University, Lawrence, Kansas, 2 May 2022.
109. Early fetal development: The role of paternal and maternal genes in regulating implantation and trophoblast invasion. World Congress of Biomechanics (Virtual), Taipei, 13 July 2022.
110. Bioengineering Factors in Preterm Birth, Biomedical Engineering Seminar, St. Louis University, St. Louis, Missouri, 12 September 2022.
111. Preterm Birth: A View from Engineering. Center for Reproductive Health Sciences Seminar, Department of Obstetrics and Gynecology, Washington University School of Medicine in St. Louis, 16 September 2022.
112. (keynote) The placenta enigma: A critical but disposable organ. Biomedical Engineering Society Annual Meeting, San Antonio, TX, 13 October 2022.
113. Global Opportunities in Women’s Health Engineering, Washington University in St. Louis, 28 October 2022.
114. (keynote) Biomaterials to Address Unmet Needs in Women’s Health, Great Plains Biomaterials Meeting, Lawrence, KS, 4 November 2022.
115. Bioengineering Factors in Preterm Birth, (departmental seminar, virtual) Florida International University, Miami, FL, 10 November 2022.
116. Applications of Nanoindentation in Tissues and Hydrogels, Washington University Institute of Materials Science and Engineering seminar, St. Louis, MO, 21 November 2022.
117. Engineering to Address Unmet Needs in Maternal Health, Cambridge FemTech Maternal Health Tech event (virtual), Cambridge, UK, 22 November 2022.
118. Bioengineering Studies of Preterm Birth, (departmental seminar, virtual), Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, 20 January 2023.

119. Bioengineering Studies of Preterm Birth, (departmental seminar), UCSD Department of Biomedical Engineering, San Diego, CA, 27 January 2023.
120. Patient-Specific Engineering Models of Pregnancy, (virtual) UnitedHealthcare, 3 February 2023.
121. Bioengineering Studies of Preterm Birth, Homerton College, Cambridge, UK, 9 March 2023.
122. Engineering tools for improving maternal and fetal birth outcomes, Global Health at Washington University: Here and Next, Brown School, Washington University, St. Louis, MO, 30 March 2023.
123. Bioengineering Studies of Preterm Birth, (departmental seminar), University of Minnesota Department of Biomedical Engineering, Minneapolis, MN, 3 April 2023.
124. Applications of Nanoindentation in Tissues and Hydrogels, (departmental seminar), Florida International University, Miami, FL, 14 April 2023.
125. Bioengineering Studies of Pregnancy, WashU Alumni Event, Nordic Museum, Seattle, 23 May 2023.
126. Biomechanics Studies of Pregnancy, Honda Research and Development, Raymond, Ohio, 26 May 2023.
127. Tissue and Interface Fracture During Childbirth, Gordon Research Conference on the Science of Adhesion, 23–28 July 2023.
128. The Virtual Pregnancy: Using Computational Models to Probe Human Reproduction, (seminar) Penn Institute for Computational Science, University of Pennsylvania, 15 September 2023.
129. (panelist) Navigating the Funding and Visibility Landscape in Women’s Health, Biomedical Engineering Society Annual Meeting, Seattle, Washington, 12 October 2023.
130. (panelist) AI and Healthcare launch event, Washington University in St. Louis, 18 October 2023.
131. Digital Twins for Pregnancy, Royal Society of Medicine (UK), London, 3 November 2023.
132. (webinar) Overcoming Bias in Designing Women’s Health Solutions, Hosted by 42T (UK), 8 November 2023.
133. (virtual) Digital Twins and Machine Learning in Pregnancy Research, with Adrienne K. Scott, Turing Center, Cambridge University, UK, 5 December 2023.
134. Decidua-Mimicking Hydrogels for the Study of Trophoblast Invasion, with Samantha Zambuto, Society for Reproductive Investigation Annual Meeting, Vancouver, Canada, 14 March 2024.
135. (introduction and panelist) Women Innovating Women’s Healthcare, Women in Innovation and Technology Symposium, Washington University School of Medicine, 11 April 2024.

136. Biomechanics at the Maternal-Fetal Interface, Wayne State University, Detroit, MI, 2 May 2024.
137. Improving Maternal and Fetal Health Outcomes by Engineering Digital Twins of Pregnancy, International Conference of the IEEE Engineering in Medicine and Biology Society, Orlando, FL, 18 July 2024.
138. The Virtual Pregnancy: Using Computational Models to Probe Human Reproduction. International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE), Vancouver, BC, Canada, 30 July 2024.