Brendon M. Baker, PhD

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EDUCATION

2005 – 2010	**University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA** Ph.D., Departments of Bioengineering and Orthopaedic Surgery (August 2010) Advisor: Dr. Robert L. Mauck, Ph.D.
2001 – 2005	**Columbia University, School of Engineering and Applied Science, New York, NY** B.S., Biomedical Engineering (May 2005)

ACADEMIC POSITIONS AND EMPLOYMENT

2016 –	**Engineered Microenvironments and Mechanobiology Lab** **Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI** *Assistant Professor*
2010 – 2016	**Tissue Microfabrication Lab (Advisor: Christopher S. Chen, MD PhD)** **Department of Bioengineering, University of Pennsylvania, Philadelphia, PA** **Department of Biomedical Engineering, Boston University, Boston, MA** *Postdoctoral Fellow*
2005 – 2010	**McKay Orthopaedic Research Laboratory (Advisor: Robert L. Mauck, PhD)** **Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA** *Graduate Research Assistant* Dissertation: Meniscus tissue engineering with nanofibrous scaffolds
2003 – 2005	**Cardiac Biomechanics Group (Advisor: Jeffrey W. Holmes, MD PhD)** **Department of Biomedical Engineering, Columbia University, New York, NY** *Undergraduate Research Assistant*
Summers 2003-2005	**Department of Immunopharmacology (Advisor: Martin Hegen, PhD)** **Department of Inflammation (Advisor: Lih-Ling Lin, PhD)** **Wyeth Pharmaceuticals: Research and Development, Cambridge, MA** *Research Intern II, III, IV*

GRANTS AND FELLOWSHIPS

2020 -	RECODE: Harnessing Stem Cell Heterogeneity to Navigate Lineage Specification and Maturity in Real Time (NSF2033654, co-PI)
2020 -	Biomimetics of for craniofacial regeneration (NIH R01 DE022327, co-I)
2020 -	“Microvascular integration to drive the maturation and function of hPSC-derived islet grafts” (JDRF 1-INO-2020-916-A-N, PI)
2019 -	“Nanosystems Engineering Research Center for Directed Multiscale Assembly of Cellular Metamaterials with Nanoscale Precision: CELL-MET” (NSF 1647837, co-I)
2018 - 2020	“Dissecting stem cell-mediated reversion of fibrotic tissue” (U-M Mcubed 3.0, co-PI)
2017 - 2019	“Mechanics of fibrosis in 3D biomimetic extracellular matrices” Pathway to Independence Award (R00 HL124322, PI)
2015 - 2016	“Mechanics of fibrosis in 3D biomimetic extracellular matrices” Pathway to Independence Award (K99 HL124322, PI)
2012 - 2014	“Engineered fibrillar matrices to study directed cell migration” Ruth L. Kirschstein National Research Service Award (F32 EB014691, PI)
2007 - 2010	National Science Foundation Graduate Research Fellowship
2006 - 2007	Graduate Assistance in Areas of National Need Fellowship in Bioengineering

HONORS AND AWARDS

2020	University of Michigan Endowment of Basic Sciences Accelerator Award

2019	Invitee to NSF Square-Table Meeting on Programmable Interfaces
2019	NIH Intercellular Interactions (ICI) Study Section, Ad hoc member
2015	Keystone Symposia Future of Science Fund Scholarship
2015	Boston University Professional Development and Postdoctoral Affairs Travel Award
2014	Gordon Research Conference: Signal Transduction by Engineered ECMs Poster Award
2014	Gordon Research Seminar: Signal Transduction by Engineered ECMs Travel Award
2014	BMES: Cellular and Molecular Bioengineering Student/Fellow Travel Award
2011	MBL Computational Image Analysis in Cellular and Developmental Biology Scholarship Award
2010	6th World Congress on Biomechanics Student Travel Award
2010	3rd Place in Ph.D. Student Paper Competition, ASME Summer Bioengineering Conference
2010	Gordon-Kenan Research Seminar: Signal Transduction by Engineered ECMs Student Travel Award
2010	University of Pennsylvania Graduate and Professional Student Assembly Travel Grant
2009	BMES Graduate Research Award
2008	2nd Place in Student Paper Competition, Penn Center for Musculoskeletal Disease Symposium
2007	2nd Place in M.S. Student Paper Competition, ASME Summer Bioengineering Conference
2006	1st Place in Student Paper Competition, Penn Center for Musculoskeletal Disease Symposium
2006	University of Pennsylvania Graduate Student Associations Council Travel Grant
2005	Magna Cum Laude, Columbia University
2005	Tau Beta Pi National Engineering Honor Society
2001-2005	Dean's List, Columbia University

PATENTS

1. Mauck RL, Burdick JA, **Baker BM**, "Tunable Fibrous Composites with Temporally Controlled Properties." Disclosure filed July 22, 2008 through UPenn Center for Technology Transfer.

2. Mauck RL and **Baker BM**, "Direct Electrospinning of Anatomic Form for a Meniscus Implant." Disclosure filed November 26, 2008, Provisional Patent Application filed September 18, 2009 through UPenn Center for Technology Transfer.

3. Mauck RL, Burdick JA, Ionescu L, **Baker BM**, "Microsphere/Nanofiber Composites For Delivery Of Drugs, Growth Factors, And Other Agents." Disclosure filed February 25, 2009, Provisional Patent Application filed through UPenn Center for Technology Transfer, International PCT Patent Application No. PCT/US2010/023674 claiming priority to USSN 61/154,336 filed February 21, 2010 (Ref: UPN-5471 or Ref: V5080).

4. Mauck RL, Huang AH, **Baker BM**, "Mechanical Stimulation of Mesenchymal Stem Cells for Cartilage Tissue Engineering," Disclosure filed June 16th, 2010 through UPenn Center for Technology Transfer.

5. Mauck RL, Fisher MB, **Baker BM**, Silverstein AM, Burdick JA, "Aligned Fibrous Materials with Spatially Varying Fiber Orientation and Related Methods," Provisional patent filed through UPenn Center for Technology Transfer, United States Patent Application No. 13/422,027 filed March 16th, 2012.

PUBLICATIONS

Google Scholar: 6277 total citations, h-index: 29 (as of September 2020)

ORIGINAL RESEARCH ARTICLES (* indicates authors contributed equally)

1. Matera DL, DiLillo KM, Smith MR, Davidson CD, Parikh R, Said M, Wilke CA, Lombaert IM, Arnold KB, Moore BB, **Baker BM**. "Microengineered 3D pulmonary interstitial mimetics highlight a critical role for matrix degradation in idiopathic pulmonary fibrosis," *Science Advances,* doi.org/10.1126/sciadv.abb5069.

2. Davidson CD, Jayco DKP, Wang WY, Shikanov A, **Baker BM**. "Fiber crimp confers matrix mechanical nonlinearity, regulates endothelial cell mechanosensing, and promotes microvascular network formation," *Journal of Biomechanical Engineering*, 2020 (in press).

3. Li X, Zhang W, Wang WY, Wu X, Li Y, Tan X, Matera DL, **Baker BM**, Paulus YM, Fan X, Wang X. "Optical coherence tomography and fluorescence microscopy dual-modality imaging for in vivo single-cell tracking with nanowire lasers," *Biomedical Optics Express*, 2020, 11(7): 3659-3672.

4. Huber AK, Patel N, Pagani CA, Marini S, Padmanabhan K, Matera DL, Said M, Hwang C, Hsu GC, Poli AA, Strong AL, Visser ND, Greenstein JA, Nelson R, Li S, Longaker MT, Tang Y, Weiss SJ, **Baker BM**, James AW, Levi B. "Immobilization after injury alters extracellular matrix and stem cell fate," *Journal of Clinical Investigation*, 2020. doi: 10.1172/JCI136142.

5. Aliabouzar M, Davidson CD, Wang WY, Kripfgans OD, Franceschi RT, Putnam AJ, Fowlkes JB, **Baker BM**, Fabiilli ML. "Spatiotemporal control of micromechanics and microstructure in acoustically-responsive scaffolds using acoustic droplet vaporization," Soft Matter, 2020, 16(28): 6501-6513.

6. Wang WY, Lin D, Jarman EH, Polacheck WJ, **Baker BM**. "Functional angiogenesis requires microenvironmental cues balancing endothelial cell migration and proliferation," *Lab on a Chip*, 2020, 20: 1153-1166. DOI: https://doi.org/10.1039/C9LC01170F. PMCID: pending.

7. Davidson CD, Jayco DKP, Matera DL, DePalma SJ, Hiraki HL, Wang WY, **Baker BM**. "Myofibroblast activation in synthetic fibrous matrices composed of dextran vinyl sulfone," *Acta Biomaterialia*, 2020, 105: 78-86. DOI: 10.1016/j.actbio.2020.01.009. PMID: 31945504.

8. Huang AH, Watson SS, Wang L, **Baker BM**, Akiyama H, Brigande JV, Schweitzer R. "Requirement for Scleraxis in the recruitment of mesenchymal progenitors during embryonic tendon elongation," *Development*, 2019, Oct 4;146(20). pii: dev182782. DOI: 10.1242/dev.182782. PMCID: PMC6826031

9. Matera DL, Wang WY, Smith MR, Shikanov A, **Baker BM**. "Fiber density modulates cell spreading in 3D interstitial matrix mimetics," *ACS Biomaterials Science & Engineering.* 2019, 5, 6, 2965–2975. DOI: 10.1021/acsbiomaterials.9b00141.

10. Davidson MD, Song KH, Lee MH, Llewellyn J, Du Y, **Baker BM**, Wells RG, Burdick JA. "Engineered fibrous networks to investigate the influence of fiber mechanics on myofibroblast differentiation," *ACS Biomaterials Science & Engineering*. 2019, 5, 8, 3899–3908. DOI: 10.1021/acsbiomaterials.8b01276.

11. Wang WY, Davidson CD, Lin D, **Baker BM**. "Actomyosin contractility-dependent matrix stretch and recoil induces rapid cell migration," *Nature Communications*. 2019. 10, Article number: 1186. DOI: 10.1038/s41467-019-09121-0. PMCID: PMC6414652.

12. Davidson CD, Wang WY, Zaimi I, Jayco DKP, **Baker BM**. "Cell force-mediated matrix reorganization underlies multicellular network assembly," *Scientific Reports*. 2019 9(1):12. DOI: 10.1038/s41598-018-37044-1. PMCID: PMC6327038.

13. Wang WY, Pearson AT, Kutys ML, Choi CK, Wozniak MA, **Baker BM,** Chen CS. "Extracellular matrix alignment dictates the organization of focal adhesions and directs uniaxial cell migration," *APL Bioengineering.* 2018 Dec 1;2(4):046107. DOI: 10.1063/1.5052239. PMCID: PMC6481732. [**Cover article**]

14. Trappmann B*, **Baker BM***, Polacheck WJ, Choi CK, Burdick JA, Chen CS. "Matrix degradability controls multicellularity of 3D cell migration," *Nature Communications.* 2017 Aug 29;8(1):371. DOI: 10.1038/s41467-017-00418-6. PMCID: PMC5575316.

15. Toyama T, Looney AP, **Baker BM**, Stawski L, Haines P, Simms R, Szymaniak AD, Varelas X, Trojanowska M. "Therapeutic targeting of TAZ and YAP by dimethyl fumarate in systemic sclerosis fibrosis," *Journal of Investigative Dermatology*. 2018 Jan 1;138(1):78-88. DOI: 10.1016/j.jid.2017.08.024. PMCID: PMC5742036.

16. Cao X, Ban E, **Baker BM**, Lin Y, Burdick JA, Chen CS, Shenoy VB. "Multiscale model predicts increasing focal adhesion size with decreasing stiffness in fibrous matrices," *Proceedings of the National Academy of Science*. 2017 Jun 6;114(23):E4549-E4555. DOI: 10.1073/pnas.1620486114. PMCID: PMC5468675.

17. Heo SJ, Driscoll TP, Thorpe SD, Nerurkar NL, **Baker BM**, Yang MT, Chen CS, Lee DA, Mauck RL. "Differentiation alters stem cell nuclear architecture, mechanics, and mechano-sensitivity," *eLife*. 2016 Nov 30;5. pii: e18207. DOI: 10.7554/eLife.18207. PMCID: PMC5148611.

18. **Baker BM***, Trappmann B*, Wang WY, Sakar MS, Kim IL, Shenoy VB, Burdick JA, Chen CS. "Cell-mediated fibre recruitment drives extracellular matrix mechanosensing in engineered fibrillar microenvironments," *Nature Materials.* 2015 14:1262-1268. DOI: 10.1038/nmat4444. PMCID: PMC4654682. [**Highlighted in Extracellular Matrix News**]

19. Abhilash AS, **Baker BM**, Trappmann B, Chen CS, Shenoy VB. "Remodeling of Fibrous Extracellular Matrices by Contractile Cells: Predictions from Discreet Fiber Network Simulations," *Biophysical Journal.* 2014 107:1829-1840. PMCID: PMC4213674.

20. Blakely BL, Dumelin CE, Trappmann B, McGregor LM, Choi CK, Anthony PC, Deusterberg VK, **Baker BM**, Block SM, Liu DR, Chen CS. "A DNA-based Molecular Probe for Optically Reporting Cellular Traction Forces," *Nature Methods*. 2014 11(12):1229-1232. PMCID: PMC4247985.

21. Rodriguez NM, Desai RA, Trappmann B, **Baker BM**, Chen CS. "Micropatterned multicolor dynamically adhesive substrates to control cell adhesion and multicellular organization," Langmuir. 2014 11;30(5):1327-35. PMCID: PMC3983373.

22. Wozniak MA, **Baker BM**, Chen CS, Wilson KL. "The emerin-binding transcription factor Lmo7 is regulated by association with p130Cas at focal adhesions," *PeerJ.* 2013 20;1:e134. PMCID: PMC3757464.

23. Wang C, **Baker BM**, Chen CS, Schwartz MA. "Endothelial cell sensing of flow direction," *Arteriosclerosis, Thrombosis, and Vascular Biology.* 2013 33(9):2130-6. PMCID: PMC3812824.

24. **Baker BM**, Trappmann B, Stapleton SC, Toro E, Chen CS. "Microfluidics embedded within extracellular matrix to define vascular architectures and pattern diffusive gradients," *Lab on a Chip.* 2013 13(16):3246-52. PMCID: PMC4082768. [**Highlighted in Extracellular Matrix News**]

25. Kim IL, Khetan S, **Baker BM**, Chen CS, Burdick JA. "Fibrous Hyaluronic Acid Hydrogels that Direct MSC Chondrogenesis through Mechanical and Adhesive Cues", *Biomaterials.* 2013 34(22):5571-80. PMCID: PMC3652578.

26. **Baker BM**, Shah RP, Silverstein AM, Esterhai JL, Burdick JA, Mauck RL. "Sacrificial nanofibrous composites provide instruction without impediment and enable functional tissue formation," *Proceedings of the National Academy of Science.* 2012 109(35):14176-81. PMCID: PMC3435214. [**Featured in This Week in PNAS, Channel 6 ABC Action News, The Philadelphia Inquirer, Extracellular Matrix News, Material Research Society's Materials360 Online, SciBX's The Distillery, Patexia**]

27. Miller JS, Stevens KR, Yang MT, **Baker BM**, Nguyen DH, Cohen DM, Toro E, Chen AA, Galie PA, Yu X, Chaturvedi R, Bhatia SN, Chen CS. "Rapid casting of patterned vascular networks for perfusable engineered three-dimensional tissues," *Nature Materials*. 2012 11(9):768-74. PMCID: PMC3586565.

28. Huang AH, **Baker BM**, Ateshian GA, Mauck RL. "Sliding contact loading enhances the tensile properties of mesenchymal stem-cell seeded hydrogels," *European Cells and Materials*. 2012 24:29-45. PMID: 22791371.

29. Gee AO, **Baker BM**, Silverstein AM, Montero G, Esterhai JL, Mauck RL. "Fabrication and evaluation of biomimetic-synthetic nanofibrous composites for soft tissue regeneration," *Cell and Tissue Research.* 2012 347(3):803-13. PMID: 22287042.

30. Heo SJ, Nerurkar NL, **Baker BM**, Shin JW, Elliott DM, Mauck RL. "Fiber stretch and reorientation modulates mesenchymal stem cell morphology and fibrous gene expression on oriented nanofibrous microenvironments," *Annals of Biomedical Engineering*. 2011 39(11):2780-90. PMCID: PMC3236508.

31. **Baker BM**, Shah RP, Silverstein AM, Mauck RL. "Dynamic tensile loading improves the functional properties of mesenchymal stem cell-laden nanofiber-based fibrocartilage," *Tissue Engineering: Part A.* 2011 17(9-10):1445-55. PMCID: PMC3079166.

32. Nathan AS, **Baker BM**, Nerurkar NL, Mauck RL. "Mechano-topographic modulation of stem cell nuclear shape on nanofibrous scaffolds," *Acta Biomaterialia*. 2011 7(1):57-66. PMCID: PMC2967658.

33. Nerurkar NL, Sen S, **Baker BM**, Elliott DM, Mauck RL. "Dynamic culture enhances stem cell infiltration and modulates extracellular matrix production on aligned electrospun nanofibrous scaffolds," *Acta Biomaterialia.* 2011 7(2):485-91. PMCID: PMC2994961.

34. **Baker BM**, Nathan AS, Gee AO, Mauck RL. "The influence of an aligned nanofibrous topography on human mesenchymal stem cell fibrochondrogenesis," *Biomaterials.* 2010 31(24):6190-200. PMCID: PMC2884056.

35. Nerurkar NL, **Baker BM**, Sen S, Wible EW, Elliott DM, Mauck RL. "Nanofibrous biologic laminates replicate the form and function of the annulus fibrosus," *Nature Materials.* 2009 8(12):986-92 [**Selected for cover art, December 2009**]. PMCID: PMC3415301.

36. **Baker BM**, Nerurkar NL, Burdick JA, Elliott DM, and Mauck RL. "Fabrication and modeling of dynamic multi-polymer nanofibrous scaffolds," *Journal of Biomechanical Engineering.* 2009 131(10):101012. PMCID: PMC2830731. [**Selected for cover art, October 2009**]

37. **Baker BM**, Nathan AS, Huffman GR, Mauck RL. "Tissue engineering with meniscus cells derived from surgical debris," *Osteoarthritis and Cartilage.* 2009 17(3):336-45. PMCID: PMC2672194.

38. **Baker BM**, Gee AO, Metter RB, Nathan AS, Marklein RA, Burdick JA, Mauck RL. "The potential to improve cell infiltration in composite fiber-aligned electrospun scaffolds by the selective removal of sacrificial fibers," *Biomaterials.* 2008 29(15):2348-58. PMCID: PMC2292637.

39. Tan AR, Ifkovits JL, **Baker BM**, Brey DM, Mauck RL, Burdick JA. "Electrospinning of photocrosslinked and degradable fibrous scaffolds," *Journal of Biomedical Materials Research A*. 2008 87(4):1034-43.

40. **Baker BM**, Mauck RL. "The effect of nanofiber alignment on the maturation of engineered meniscus constructs," *Biomaterials*. 2007 28(11):1967-77. PMCID: PMC1847368.

REVIEWS AND COMMENTARIES

1. Sakar MS, **Baker BM**. "Engineering control over 3D morphogenesis by tissue origami," *Developmental Cell*, 2018, 138(1):78-88.

2. **Baker BM**, Chen CS. "Deconstructing the third dimension: How 3D culture microenvironments alter cellular cues," *Journal of Cell Science*, 2012, 125(13):3015-24. PMCID: PMC3434846.

3. **Baker BM**, Handorf AM, Ionescu LC, Li W-J, Mauck RL. "New directions in nanofibrous scaffolds for soft tissue engineering and regeneration," *Expert Review of Medical Devices*, 2009, 6(5):515-32. PMCID: PMC2828681.

4. **Baker BM**, Gee AO, Sheth NP, Huffman GR, Sennett BJ, Schaer TP, Mauck RL. "Meniscus tissue engineering on the nanoscale: from basic principles to clinical application," *Journal of Knee* Surgery, 2009, 22(1):45-59.

5. Mauck RL, **Baker BM**, Nerurkar NL, Burdick JA, Li WJ, Tuan RS, Elliott DM. "Engineering on the straight and narrow: the mechanics of nanofibrous assemblies for fiber-reinforced tissue regeneration," *Tissue Engineering: Part B*, 2009, 15(2):171-93. PMCID: PMC2817663.

ABSTRACTS AND CONFERENCE PRESENTATIONS

1. DePalma SJ, Davidson CD, Stis AE, Helms AS, **Baker BM**. "Compliant and aligned fibrous matrices promote iPSC-derived cardiomyocyte organization and function," *2019 BMES Annual Meeting,* Virtual Meeting, October 14-17, pre-recorded presentation.

2. Matera DL, Davidson CD, Lee A, Said M, **Baker BM**. "Protease activity and matrix fibers drive 3D myofibroblast differentiation in synthetic fibrous hydrogels," *2019 BMES Annual Meeting,* Virtual Meeting, October 14-17, pre-recorded presentation.

3. Wang WY, Davidson CD, Lin D, Jarman EH, Matera DL, **Baker BM**. "Fiber alignment and density regulate endothelial tip cell formation and guide sprout directionality," *2019 BMES Annual Meeting,* Virtual Meeting, October 14-17, pre-recorded presentation.

4. Davidson CD, Jayco DKP, Wang WY, Shikanov A, **Baker BM**. "Fiber crimp confers matrix mechanical nonlinearity, regulates endothelial cell mechanosensing, and promotes microvascular network formation," *2019 BMES Annual Meeting,* Virtual Meeting, October 14-17, pre-recorded presentation.

5. Hiraki HL, Matera DL, Wang WY, Zarouk A, Argento A, Berris R, **Baker BM**. "Dissecting matrix determinants in cell migration mode and apoptotic resistance in a tunable stromal mimetic," *2019 BMES Annual Meeting,* Virtual Meeting, October 14-17, pre-recorded presentation.

6. DiLillo K, Matera DL, **Baker BM**, Arnold KB. "A unique inflammatory signature differentiates biochemical and biomechanical fibrotic cues," *2019 BMES Annual Meeting,* Virtual Meeting, October 14-17, pre-recorded presentation.

7. Davidson CD, Jayco DKP, Shikanov A, **Baker BM**. "Fibrous matrices with tunable nonlinear mechanics via functionalization with hydrophilic peptides," *2020 Summer Biomechanics, Bioengineering and Biotransport Conference,* Virtual Meeting, June 17-20, pre-recorded presentation.

8. DePalma SJ, Stis AE, Passariello D, Davidson CD, Helms AS, **Baker BM**. "Compliant and aligned fibrous matrices promote cardiac maturation," *2020 Summer Biomechanics, Bioengineering and Biotransport Conference,* Virtual Meeting, June 17-20, pre-recorded presentation.

9. Matera DL, DiLillo K, Davidson CD, Said M, Wilke CA, Arnold KB, Moore BB, **Baker BM**. "Protease signaling and matrix fibers drive myofibroblast differentiation in 3D interstitial tissue mimetics," *2020 Summer Biomechanics, Bioengineering and Biotransport Conference,* Virtual Meeting, June 17-20, remote presentation, * 2nd place PhD student paper competition.

10. Wang WY, Davidson CD, Lin D, Jarman EH, Matera DL, **Baker BM**. "Fiber alignment and density regulate endothelial tip cell activation and guide sprout directionality," *2020 Summer Biomechanics, Bioengineering and Biotransport Conference,* Virtual Meeting, June 17-20, pre-recorded presentation.

11. Hiraki HL, Matera DL, **Baker BM**. "Control over 3D cell migration mode via tuning of stromal fibrous architecture," *2020 Summer Biomechanics, Bioengineering and Biotransport Conference,* Virtual Meeting, June 17-20, pre-recorded presentation.

12. Wang WY, Davidson CD, Lin D, **Baker BM**. "Actomyosin contractility-dependent matrix stretch and recoil induces rapid cell migration," *2019 ASCB | EMBO Annual Meeting*, Washington, DC, December 7-11, podium.

13. Davidson CD, **Baker BM**. "Intercellular mechanical communication via cell force transmission in synthetic fibrous microenvironments," *2019 BMES Annual Meeting*, Philadelphia, PA, Oct 16-19, 2019, podium.

14. Davidson CD, Jayco DKP, Matera DL, Wang WY, **Baker BM**. "Myofibroblast activation in synthetic fibrous matrices composed of dextran vinyl sulfone," *2019 BMES Annual Meeting*, Philadelphia, PA, Oct 16-19, 2019, poster.

15. Matera DL, Smith MR, Moore BB, **Baker BM**. "Matrix fibers promote myofibroblast activation and macrophage recruitment in a 3D stromal mimetic," *2019 BMES Annual Meeting*, Philadelphia, PA, Oct 16-19, 2019, podium.

16. Wang WY, Lin D, Jarman EH, Polacheck WJ, **Baker BM**. "Functional angiogenesis requires microenvironmental balancing of endothelial cell migration and proliferation," *2019 BMES Annual Meeting*, Philadelphia, PA, Oct 16-19, 2019, podium.

17. Hiraki HL, Matera DL, **Baker BM**. "Fiber reinforcement drives multicellularity and depth of cell invasion," *2019 BMES Annual Meeting*, Philadelphia, PA, Oct 16-19, 2019, podium.

18. Li X, Zhang W, Wang WY, Wu X, Tian X, **Baker BM**, Wang X, Fan X. "Optical coherence tomography and fluorescence microscopy dual-modality imaging for single cell tracking with nanowire lasers," *2020 SPIE Photonics West*, San Francisco, CA, February 1-6, 2020, podium.

19. Davidson CD, **Baker BM**. "A micropatterning approach to study cellular communication via mechanical forces in fibrous microenvironments," *2019 Summer Biomechanics, Bioengineering and Biotransport Conference*, Seven Springs, PA, June 25-28, podium, * 2nd place PhD student paper competition.

20. Davidson CD, Jayco DKP, Matera DL, Wang WY, **Baker BM**. "Myofibroblast activation in synthetic fibrous matrices composed of dextran vinyl sulfone," *2019 Summer Biomechanics, Bioengineering and Biotransport Conference*, Seven Springs, PA, June 25-28, poster.

21. Matera DL, **Baker BM**. Extracellular matrix microstructure modulates myofibroblast differentiation within 3D fibrous microenvironments in vitro," *2019 Summer Biomechanics, Bioengineering and Biotransport Conference*, Seven Springs, PA, June 25-28, poster.

22. Davidson CD, Wang WY, **Baker BM**. **"**Cell-mediated matrix recruitment underlies endothelial cell network formation," *2019 Cellular and Molecular Bioengineering Conference*, San Diego, CA, January 2-6, 2019, podium.

23. Wang WY, Davidson CD, Lin D, **Baker BM**. "Actomyosin contractility-dependent matrix stretch and recoil induces rapid cell migration," 8*th World Congress on Biomechanics*, Dublin, Ireland, July 8-12, 2018, podium.

24. Davidson CD, Wang WY, **Baker BM**. "Cell-mediated matrix recruitment underlies endothelial cell network formation," 8*th World Congress on Biomechanics*, Dublin, Ireland, July 8-12, 2018, poster.

25. Matera DL, Wang WY, Smith M, **Baker BM.** "Fiber-reinforcement of hydrogels promotes cell spreading and migration in 3D," 8*th World Congress on Biomechanics*, Dublin, Ireland, July 8-12, 2018, podium.

26. Lawera NG, Kubiak CA, Sabbagh SW, Thieu V, Singh M, Nadarajan V, Vittert AB, Wang WY, Moon JD, **Baker BM**, Cederna PS, Kemp SWP. "Autologous Unpurified Adipose Tissue Enhances Peripheral Nerve Regeneration

through 20 mm Autografts," *Plastic Surgery Research Council Annual Meeting,* Birmingham, AL, May 17-19, 2018. (Poster).

27. Matera DL, **Baker BM**. "Fiber-reinforcement of hydrogels promotes cell spreading and migration in 3D," *2018 Society for Biomaterials Annual Meeting*, Atlanta, GA, April 11-14, 2018, podium.

28. Davidson CD, Wang WY, Chu VM, **Baker BM**. "Force propagation through fibrous matrices modulates endothelial cell network formation," *2018 Society for Biomaterials Annual Meeting*, Atlanta, GA, April 11-14, 2018, podium.

29. Wang WY, Davidson CD, **Baker BM**. "Matrix elasticity defines cell migration modes in aligned fibrous microenvironments," *2018 Society for Biomaterials Annual Meeting*, Atlanta, GA, April 11-14, 2018, podium.

30. Cao X, Ban E, **Baker BM**, Lin Y, Burdick JA, Chen CS, Shenoy VB. "Multi-scale model predicts focal adhesion size with decreasing stiffness in fibrous matrices," *2017 BMES Annual Meeting,* Phoenix, AZ, Oct 11-14, 2017, podium.

31. Wang WY, **Baker BM**. "The influence of matrix stiffness on directed cell migration in aligned fibrous microenvironments," *2017 Summer Biomechanics, Bioengineering, and Biotransport Conference,* Tuscson, AZ, June 21-25, 2017, podium.

32. Cao X, Ban E, **Baker BM**, Lin Y, Burdick JA, Chen CS, Shenoy VB. "A multi-scale model predicts focal adhesion size with decreasing stiffness in fibrous matrices," *2017 Summer Biomechanics, Bioengineering, and Biotransport Conference,* Tuscson, AZ, June 21-25, 2017, podium.

33. **Baker BM**, Trappmann B, Burdick JA, Chen CS. "Non-swelling microfluidic hydrogels reveal that matrix degradability controls collectivity of angiogenic invasion," *2017 Society for Biomaterials Annual Meeting*, Minneapolis, MN, April 5-8, 2017, podium.

34. **Baker BM**, Trappmann B, Burdick JA, Chen CS. "Non-swelling microchanneled hydrogels reveal that matrix degradability controls cell invasion mode," *2016 BMES Annual Meeting,* Minneapolis, MN, October 5-8, 2016, podium.

35. Cao X, Ban E, **Baker BM**, Burdick JA, Chen CS, Shenoy VB. "A chemo-mechanical model for cell-mediated fiber recruitment, focal adhesion growth and extracellular matrix mechanosensing in fibrillar microenvironments," *2016 BMES Annual Meeting,* Minneapolis, MN, October 5-8, 2016, podium.

36. **Baker BM**, Trappmann B, Burdick JA, Chen CS Non-swelling micromolded hydrogels reveal that matrix degradability controls multicellularity of cell invasion. *2016 Summer Biomechanics, Bioengineering, and Biotransport Conference,* National Harbor, MD, June 29 – July 2, 2016, podium.

37. **Baker BM**, Trappmann B, Wang WY, Sakar MS, Kim IL, Shenoy VB, Burdick JA, Chen CS. "Cell-mediated fiber recruitment drives extracellular matrix mechanosensing in engineered fibrillar microenvironments," *Keystone Symposia: Fibrosis: From Basic Mechanisms to Targeted Therapies/Stromal Cells in Immunity*, Keystone, CO, February 7-11, 2016, podium.

38. **Baker BM**, Trappmann B, Wang WY, Sakar MS, Kim IL, Shenoy VB, Burdick JA, Chen CS. "Cell-mediated fiber recruitment drives extracellular matrix mechanosensing in engineered fibrillar microenvironments," *BMES: Cellular and Molecular Bioengineering Conference*, St. John, USVI, January 6-10, 2015, poster.

39. **Baker BM**, Trappmann B, Nair AS, Kim IL, Burdick JA, Shenoy VB, Chen CS. "Engineered Fibrillar Microenvironments for the Study of Mesenchymal Stem Cell Mechanosensing," *Proceedings of the 2014 BMES Annual Meeting*, San Antonio, TX, October 22-25, podium.

40. **Baker BM**, Trappmann B, Kim IL, Burdick JA, Chen CS. "Mesenchymal Stem Cell Mechanosensing in Engineered Fibrillar Microenvironments," 7th *World Congress on Biomechanics*, Boston, MA, July 6-11, 2014, podium.

41. Trappmann B, **Baker BM**, Chen CS. "Mechanical regulation of mesenchymal stem cells in synthetic extracellular matrices," 7th *World Congress on Biomechanics*, Boston, MA, July 6-11, 2014, podium.

42. **Baker BM**, Trappmann B, Kim IL, Burdick JA, Chen CS. "Mesenchymal Stem Cell Mechanosensing in Engineered Fibrillar Microenvironments," *Transactions of the 60th Annual Meeting of the Orthopaedic Research Society*, New Orleans, LA, March 15-18, 2014, podium.

43. **Baker BM**, Trappmann B, Kim IL, Burdick JA, Chen CS. "Mesenchymal Stem Cell Mechanosensing in Engineered Fibrillar Microenvironments," *BMES: Cellular and Molecular Bioengineering Conference*, La Jolla, CA, January 7-11, 2014, podium.

44. **Baker BM**, Chen CS. "ECM Alignment Polarizes Focal Adhesions and Directs Cell Migration," *Proceedings of the 2013 BMES Annual Meeting*, Seattle, WA, September 25-28, podium. [**Nominated as a top presentation in the Biomechanics Track**]

45. **Baker BM**, Trappmann B, Kim IL, Burdick JA, Chen CS. "Engineered Fibrillar Microenvironments with Controllable Architecture and Mechanics for Studying Cellular Stiffness Sensing," *Proceedings of ASME 2013 Summer Bioengineering Conference*, Sunriver, OR, June 26-29, 2013, paper #14804, podium.

46. Kim IL, Khetan S, **Baker BM**, Chen CS, Burdick JA. "Tunable Electrospun Hyaluronic Acid Scaffolds to Mimic the Microenvironment of Articular Cartilage," *Society for Biomaterials,* Boston, MA, April 10-13, 2013, podium.

47. **Baker BM**, Trappmann B, Stapleton SC, Nguyen DH, Toro E, Chen CS. "Microfluidic channels patterned within collagen for the study of effector transport in 3D ECM," *Gordon-Kenan Research Conference: Signal Transduction by Engineered Extracellular Matrices,* Biddeford, ME, July 8-13, 2012*,* poster.

48. **Baker BM**, Choi CK, Trappmann B, Chen CS. "Engineered Fibrillar Extracellular Matrices for the Study of Directed Cell Migration," *Proceedings of ASME 2012 Summer Bioengineering Conference*, Fajardo, PR, June 20-23, 2012, paper #80943, podium.

49. **Baker BM**, Qu F, Silverstein AM, Mauck RL. "Functional Human MSC Fibrochondrogenesis on Aligned Nanofibrous Scaffolds via Combined Exposure to FGF/TGF," *Transactions of the 57th Annual Meeting of the Orthopaedic Research Society*, Long Beach, CA, January 13-16, 2011, 36:1886, poster.

50. **Baker BM**, Shah RP, Silverstein AM, Zachry T, Qu F, Schenker M, Esterhai J, Mauck RL. "Instruction Without Impediment: Tunable Fibrous Scaffolds for Engineering Dense Connective Tissues," *Transactions of the 57th Annual Meeting of the Orthopaedic Research Society*, Long Beach, CA, January 13-16, 2011, 36:116, podium.

51. Heo SC, Nerurkar NL, **Baker BM**, Mauck RL. "Fibrochondrogenesis Attenuates Stretch-Induced Nuclear Deformation on Aligned Nanofibrous Electrospun Scaffolds," *Transactions of the 57th Annual Meeting of the Orthopaedic Research Society*, Long Beach, CA, January 13-16, 2011, 36:2187, poster.

52. Heo SC, Nerurkar NL, **Baker BM**, Mauck RL. "Microstructure Dictates Stretch-Induced Cell and Nucleus Reorganization on Aligned Nanofibrous Scaffolds," *Transactions of the 57th Annual Meeting of the Orthopaedic Research Society*, Long Beach, CA, January 13-16, 2011, 36:231, podium.

53. Qu Feini, **Baker BM**, Esterhai J, Mauck RL. "Enzymatic Delivery from Functionalized Sacrificial Nanofibers for Tissue Repair and Regeneration," *Transactions of the 57th Annual Meeting of the Orthopaedic Research Society*, Long Beach, CA, January 13-16, 2011, 36:269, podium.

54. **Baker BM**, Shah RP, Huang AH, Mauck RL. "Dynamic Tensile Stimulation of MSC-Seeded Nanofibrous Constructs," *6th World Congress on Biomechanics*, Singapore, August 1-6, 2010, podium.

55. Huang AH, Farrell MJ, **Baker BM**, Kim MW, Mauck RL. "Mechanical Stimulation Enhances Functional Mesenchymal Stem Cell Chondrogenesis," *6th World Congress on Biomechanics*, Singapore, August 1-6, 2010, podium.

56. **Baker BM**, Shah RP, Silverstein AM, Mauck RL. "Tunable Nanofibrous Composites with Sacrificial Content Enhance Cell Colonization and Functional Tissue Formation," Gordon-Kenan Research Conference: Signal Transduction by Engineered Extracellular Matrices, Biddeford, ME, June 27-July 2, 2010, poster.

57. **Baker BM**, Shah RP, Mauck RL. "Dynamic Tensile Loading Improves the Mechanical Properties of MSC-Laden Aligned Nanofibrous Scaffolds," *Proceedings of ASME 2010 Summer Bioengineering Conference*, Naples, FL, June 16-19, paper #19447, podium.

58. **Baker BM**, Silverstein AM, Shah RP, Mauck RL. "Engineering the Functional Maturation of Nanofiber-Based Human Meniscus Tissue," *Proceedings of ASME 2010 Summer Bioengineering Conference*, Naples, FL, June 16-19, paper #19685, poster.

59. Huang AH, **Baker BM**, Ateshian GA, Mauck RL. "Sliding Contact Loading Improves the Tensile Properties of MSC-Based Engineered Cartilage," *Proceedings of ASME 2010 Summer Bioengineering Conference*, Naples, FL, June 16-19, 2010, paper#19292, podium.

60. **Baker BM**, Shah RP, Silverstein AM, Mauck RL. "Dynamic Tension Improves the Mechanical Properties of Nanofiber-Based Engineered Meniscus Constructs," *Transactions of the 56th Annual Meeting of the Orthopaedic Research Society*, New Orleans, LA, March 6-9, 2010, 35:179, podium.

61. **Baker BM**, Silverstein AM, Shah RP, Mauck RL. "Matrix Deposition Modulates Dynamic Mechanical Behavior of Nanofiber-Based Fibrocartilage," *Transactions of the 56th Annual Meeting of the Orthopaedic Research Society*, New Orleans, LA, March 6-9, 2010, 35:1312, poster.

62. Nathan AS, **Baker BM**, Nerurkar NL, Mauck RL. "Time-Dependent and Anisotropic Nuclear Deformations on Aligned Nanofibrous Scaffolds," *Transactions of the 56th Annual Meeting of the Orthopaedic Research Society*, New Orleans, LA, March 6-9, 2010, 35:105, podium.

63. Huang AH, **Baker BM**, Ateshian GA, Mauck RL. "Sliding Contact Enhances Mesenchymal Stem Cell Chondrogenesis in 3D Culture," *Transactions of the 56th Annual Meeting of the Orthopaedic Research Society,* New Orleans, LA, March 6-9, 2010, 35:315, podium.

64. Gee AO, **Baker BM**, Montero G, Silverstein AM, Mauck RL. "Fabrication and Evaluation of Biomimetic-Biosynthetic Nanofibrous Composites," *Transactions of the 56th Annual Meeting of the Orthopaedic Research Society*, New Orleans, LA, March 6-9, 2010, 35:1288, poster.

65. Nerurkar NL, Sen S, **Baker BM**, Zachary TL, Elliott DM, Mauck RL. "Dynamic Culture Enhances Stem Cell Ingress and Extracellular Matrix Deposition on Electrospun Nanofibrous Scaffolds," *Transactions of the 56th Annual Meeting of the Orthopaedic Research Society*, New Orleans, LA, March 6-9, 2010, 35:1277, poster.

66. DeCoons RM, Shah RP, Gee AO, **Baker BM**, Guevara JL, Modesto RB, Schaer TP, Mauck RL. "*In vivo* Meniscus Repair with Anatomic Nanofibrous Scaffolds: A Preliminary Report," *Transactions of the 56th Annual Meeting of the Orthopaedic Research Society*, New Orleans, LA, March 6-9, 2010, 35:1308, poster.

67. **Baker BM**, Silverstein AM, Mauck RL. "Engineering Dense Connective Tissues via Anisotropic Nanofibrous Scaffolds with High Sacrificial Fiber Content," *Proceedings of the ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology*, Houston, TX, February 7-10, 2010, paper #13371, podium.

68. **Baker BM**, Nathan AS, DeCoons RM, Gee AO, Mauck RL. "Human Meniscus Fibrochondrocytes Yield Superior Tissue Compared to Donor-Matched Mesenchymal Stem Cells on Nanofibrous Scaffolds," *Proceedings of the 2009 BMES Annual Meeting*, Pittsburgh, PA, October 7-10, 2009, paper #1325, podium, awarded graduate research award.

69. **Baker BM**, Montero G, Mauck RL. "Removal of Sacrificial Fibers Enhances Long Term Cell and Matrix Distribution in Aligned Nanofibrous Scaffolds," *Proceedings of ASME 2009 Summer Bioengineering Conference*, Lake Tahoe, CA, June 17-21, paper #206856, podium.

70. Nathan AS, **Baker BM**, Mauck RL. "Cytoskeletal Control of Mesenchymal Stem Cell Nuclear Deformation on Nanofibrous Scaffolds," *Proceedings of ASME 2009 Summer Bioengineering Conference*, Lake Tahoe, CA, June 17-21, paper #206855, 1st place in student poster competition.

71. **Baker BM**, Nerurkar NL, Burdick JA, Elliott DM, Mauck RL. "Instilling Time-Dependent Behavior in Electrospun, Multi-Polymer Nanofibrous Composites," *Transactions of the 55th Annual Meeting of the Orthopaedic Research Society*, Las Vegas, NV, February 22-25, 2009, 34:473, poster.

72. **Baker BM**, Gee AO, Nathan AS, Mauck RL. "Meniscus Tissue Engineering with Fibrochondrocytes and MSCs from Osteoarthritic Donors," *Transactions of the 55th Annual Meeting of the Orthopaedic Research Society*, Las Vegas, NV, February 22-25, 2009, 34:1293, poster.

73. Nathan AS, **Baker BM**, Mauck RL. "Static Deformation Modulates Stem Cell Architecture and Morphology on Aligned Nanofibrous Scaffolds" *Transactions of the 55th Annual Meeting of the Orthopaedic Research Society*, Las Vegas, NV, February 22-25, 2009, 34:1293, podium.

74. **Baker BM**, Nerurkar NL, Burdick JA, Mauck RL. "The Temporal Behavior of Electrospun, Multi-Polymer Nanofibrous Composites," *Proceedings of TERMIS-NA 2008 Conference*, San Diego, CA, December 7-11, paper #574, podium.

75. **Baker BM**, Nerurkar NL, Burdick JA, Elliott DM, Mauck RL. "Fabrication and Modeling of an Electrospun Tri-Polymer Composite for the Engineering of Fibrous Tissues," *Proceedings of ASME 2008 Summer Bioengineering Conference*, Marco Island, FL, June 25-29, paper #193174, podium.

76. Gee AO, **Baker BM**, Mauck RL. "Mechanics and Cytocompatibility of Genepin Crosslinked Type I Collagen Nanofibrous Scaffolds," *Proceedings of ASME 2008 Summer Bioengineering Conference*, Marco Island, FL, June 25-29, paper #193220, poster.

77. **Baker BM**, Nathan AS, Mauck RL. "Tensile Loading Modulates Collagen Gene Expression in MSC-Laden Nanofibrous Scaffolds," *Transactions of the 54th Annual Meeting of the Orthopaedic Research Society*, San Francisco, CA, March 2-5, 2008, 33:1465, poster.

78. **Baker BM**, Gee AO, Jennings MW, Nathan AS, Huffman GR, Mauck RL. "Engineering Anatomically-Shaped Meniscus Constructs: Biologic and Mechanical Integration," *Transactions of the 54th Annual Meeting of the Orthopaedic Research Society*, San Francisco, CA, March 2-5, 2008, 33:1460, poster.

79. **Baker BM**, Gee AO, Marklein RA, Nathan AS, Burdick JA, Mauck RL. "Tuning Nanofibrous Scaffold Mechanics and Porosity to Promote Cell Infiltration," *Transactions of the 54th Annual Meeting of the Orthopaedic Research Society*, San Francisco, CA, March 2-5, 2008, 33:132, podium.

80. **Baker BM**, Nathan AS, Huffman GR, Mauck RL. "Structure-Function Correlations of Young and Aged Human Fibrochondrocyte-Seeded Engineered Meniscus Constructs," *Transactions of the 54th Annual Meeting of the Orthopaedic Research Society*, San Francisco, CA, March 2-5, 2008, 33:321, podium.

81. **Baker BM**, Nathan AS, Sheth NP, Huffman GR, Mauck RL. "Autologous Human Fibrochondrocytes from Meniscectomy Debris are a Potent Cell Source for Meniscus Tissue Engineering," *Proceedings of ASME 2007 Summer Bioengineering Conference*, Keystone, CO, June 20-24, paper #176525, 2nd prize in student poster competition.

82. **Baker BM**, O'Connell GD, Sen S, Nathan AS, Elliott DM, Mauck RL. "Multi-Lamellar and Multi-Axial Maturation of Cell-Seeded Fiber-Reinforced Tissue Engineered Constructs," *Proceedings of ASME 2007 Summer Bioengineering Conference*, Keystone, CO, June 20-24, paper #176434, podium.

83. O'Connell GD, Sen S, **Baker BM**, Mauck RL, Elliott DM. "Biaxial Mechanics of Native and Engineered Fiber-Reinforced Musculoskeletal Tissues," *Proceedings of ASME 2007 Summer Bioengineering Conference*, Keystone, CO, June 20-24, paper #176540, podium.

84. Metter RB, **Baker BM**, Burdick JA, Mauck RL. "Enhanced Cellular Infiltration with Removal of Sacrificial Fibers from a Dual-Polymer Nanofibrous Scaffold," *Proceedings of ASME 2007 Summer Bioengineering Conference*, Keystone, CO, June 20-24, paper #176487, poster.

85. Tan AR, Ifkovits JL, **Baker BM**, Mauck RL, Burdick JA. "Electrospinning of Photopolymerizable Poly(Beta-Amino Ester) Networks for Fibrous Tissue Engineering," *Proceedings of ASME 2007 Summer Bioengineering Conference*, Keystone, CO, June 20-24, paper #176206, poster.

86. **Baker BM**, Tan AR, Metter RB, Nathan AS, Mauck RL. "Nanofiber Alignment Enhances the Development of Engineered Meniscus Constructs," *Transactions of the 53rd Annual Meeting of the Orthopaedic Research Society*, San Diego, CA, February 11-14, 2007, 32:779, poster.

87. Sheth NP, **Baker BM**, Nathan AS, Mauck RL. "Biologic Integration of Fiber-Aligned Nanofibrous Scaffolds with Native Meniscus," *Transactions of the 53rd Annual Meeting of the Orthopaedic Research Society*, San Diego, CA, February 11-14, 2007, 32:780, poster.

88. Nerurkar NL, **Baker BM**, Chen CY, Elliott DM, Mauck RL. "Engineering of Fiber-Reinforced Tissues with Anisotropic Biodegradable Nanofibrous Scaffolds," *IEEE-EMBS Meeting*, New York, NY, August 30-September 3, 2006, pp. 787-790, podium.

89. **Baker BM**, Sheth NP, Mauck RL. "Maturation of MFC- and MSC-Laden Nanofibrous Scaffolds for Meniscus Tissue Engineering," *University of Pennsylvania IME Symposium*, Philadelphia, PA, May 19, 2006, pp. 47, poster.

90. **Baker BM**, Sheth NP, and Mauck RL. "Maturation of MFC- and MSC-Laden Nanofibrous Scaffolds for Meniscus Tissue Engineering," *Proceedings of ASME 2006 Summer Bioengineering Conference*, Amelia Island, FL, June 21-25, paper #157580, podium.

PROFESSIONAL ACTIVITIES AND SERVICE

Ad Hoc Journal Reviewer	*Nature Materials, Nature Communications, Biomaterials, Tissue Engineering, iScience, Integrative Biology, Scientific Reports, Acta Biomaterialia, European Cells and Materials, ACS Biomaterials Science and Engineering, APL Bioengineering, Journal of Biomedical Materials Research, Chemical Society Reviews, Sensors, Macromolecular Bioscience, Biomedical Microdevices, Applied Biochemistry and Biotechnology, Osteoarthritis and Cartilage, Biomicrofluidics, Journal of Applied Polymer Science, Langmuir, Annals of Biomedical Engineering, PLoS ONE, Journal of Biomechanical Engineering, Stem Cells Reviews and Reports, Colloids and Surfaces, Journal of Orthopaedic Research, Journal of Biomaterials Science, Biomacromolecules, The American Journal of Sports Medicine, Journal of Visualized Experiments*
2019, 2020	Reviewer, Department of Defense: Science, Mathematics, and Research for Transformation (SMART) Scholarship Program

2018	Student Paper Competition PhD Level Session Chair, "Musculoskeletal Biomechanics," 8th *World Congress of Biomechanics,* Dublin, Ireland
2017	Session Chair, "The Cellular Microenvironment," *2017 Summer Biomechanics, Bioengineering and Biotransport Conference*, Tucson, AZ.
2016	Session Chair, "The Cellular Microenvironment," *2016 Summer Biomechanics, Bioengineering and Biotransport Conference*, Snowbird, UT
2015	Session Chair, "The Cellular Microenvironment," *2015 Summer Biomechanics, Bioengineering and Biotransport Conference*, Snowbird, UT
2015 -	Summer Biomechanics, Bioengineering, and Biotransport Conference Foundation (Member, Reviewer)
2014	Abstract reviewer for the *7th World Congress of Biomechanics*
2013	Session Chair, "Biomaterial Design I," *2013 BMES Annual Meeting*, Seattle, WA
	Session Chair, "Intelligent Biomaterials," *2013 BMES Annual Meeting*, Seattle, WA
2011-2013	Abstract reviewer for the American Society of Mechanical Engineers Summer Bioengineering Conference
2009 - 2011	Associate Member of the Orthopaedic Research Society
2009 -	Member of the Biomedical Engineering Society
2007 - 2009	Sponsored Member of American Association for the Advancement of Science
2006 -	Member of the American Society of Mechanical Engineers
2005 - 2006	Board Member of Graduate Association of Bioengineers, University of Pennsylvania
2003 - 2005	Biomedical Engineering Society, Columbia University

DEPARTMENTAL SERVICE

2016 - 2019	Graduate School Admissions Committee, Biomedical Engineering, University of Michigan (committee member)
2017 - 2019	Summer Undergraduate Research Experience (SURE) and Summer Research Opportunity Program (SROP), Biomedical Engineering, University of Michigan (faculty lead)
2016 - 2019	Medical Scientist Training Program (MD/PhD) Admissions, University of Michigan School of Medicine (reviewer)
2017-2018	Research Administration Advisory Committee, Biomedical Engineering, University of Michigan (member)
2017	University of Michigan Society for Biomaterials: Biomaterials Day Faculty Panel (panelist)

INVITED TALKS

1. "Physical remodeling of the local fibrous matrix during cell spreading, migration, and multicellular assembly," Michigan Biophysics Journal Club, University of Michigan, Ann Arbor, MI, December 12, 2018.

2. "Dynamic remodeling of the immediate physical microenvironment during cell spreading, migration, and invasion," Department of Mechanical Engineering, University of Michigan, Ann Arbor, MI, March 28, 2018.

3. "Dynamic remodeling of the immediate physical microenvironment during cell spreading, migration, and angiogenic invasion," Department of Bioengineering, University of Illinois at Chicago, Chicago, IL, December 8, 2017.

4. "Physical remodeling of the local matrix during mesenchymal cell migration and endothelial network assembly," Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan, November 14, 2017.

5. "The influence of matrix stiffness on directed cell migration in aligned fibrous microenvironments," International Union of Materials Research Society - International Conference in Asia, Taipei, Taiwan, November 6, 2017.

6. "Physical remodeling of the local matrix during mesenchymal cell migration and endothelial network assembly," Department of Bioengineering, Temple University, Philadelphia, PA, September 22, 2017.

7. "Cellular mechanosensing in fibrous and 3D synthetic microenvironments," Institute of Bioengineering, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, June 17, 2016.

8. “Cellular mechanosensing in fibrous and 3D synthetic microenvironments,” Laboratoire des Matériaux et du Génie Physique, Institut Polytechnique de Grenoble, Grenoble, France, June 15, 2016.

9. “Cell-mediated fiber recruitment drives extracellular matrix mechanosensing in engineered fibrillar microenvironments,” Quantitative Cell Biology Cytoskeletal Mechanics Workshop, Chicago, IL, October 23, 2015.

10. “Cell-mediated fiber recruitment drives extracellular matrix mechanosensing in engineered fibrillar microenvironments,” Soft Matter Agora Seminar Series, Boston University, September 11, 2014.

11. “Cell traction induced fiber recruitment drives extracellular matrix mechanosensing in engineered fibrillar microenvironments,” McKay Orthopaedics Research Laboratory, University of Pennsylvania, July 25, 2014.

12. “Mesenchymal Stem Cell Mechanosensing in Engineered Fibrillar Microenvironments,” 7th World Congress on Biomechanics, Boston, MA, July 9, 2014.

13. “Mesenchymal Stem Cell Mechanosensing in Engineered Fibrillar Microenvironments,” Gordon Research Seminar: Signal Transduction by Engineered Extracellular Matrices, University of New England, Biddeford, ME, July 5, 2014.

14. “Tunable Nanofibrous Composites with Sacrificial Content Enhance Cellular Colonization and Functional Tissue Formation,” Gordon Research Seminar: Signal Transduction by Engineered Extracellular Matrices, June 26, 2010.

TEACHING AND MENTORING EXPERIENCE

Advising and mentoring

2016 - **Engineered Microenvironments and Mechanobiology Lab, Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI**

Postdoctoral Fellows:

Jitendra Pant, PhD (2020 - present)

PhD students:

Rahasudha Kannan (PhD co-advisor, 2020 - present)
Robert Kent III (PhD advisor, 2020 - present)
Harrison Hiraki (PhD advisor, 2018 - present)
Samuel DePalma (PhD advisor, 2018 - present)
William Wang (PhD advisor, 2016 - present)
Daniel Matera (PhD advisor, 2016 - present)
Christopher Davidson (PhD advisor, 2016 - present)

Masters students:

Todd Maslyk (MS advisor, 2016 - 2017)
Vivian Chu (MS advisor, 2016 - 2017)
Jin Pan (MS advisor, 2017 - 2018)

Undergraduate students:

Zakhar Frolov (UROP advisor, 2020 - present)
Austin Stis (BME490 advisor, 2019 - present)
Alex Zarouk (BME490 advisor, 2019 - present)
Anna Argento (BIOPHYS 399 advisor, F2019)
Jordan Kamen (BME490 advisor, 2019 - present)
Evan Jarman (UROP advisor, 2019 - present)
Mohamed Said (UM SMART advisor, 2019 - present)
Daphne Lin (UROP advisor, 2017 - present)
Makenzee Smith (UROP advisor, 2017 - present)
Danica Jayco (UROP advisor, 2017 - present)

2016 - **Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI**

Kristen Loesel (PhD Thesis Committee Member, 2020 - present)
Emily Margolis (PhD QE Cognate, 2019)
Nicholas Schott (PhD QE Chair, 2019)
Hina Aftab (MS Thesis Committee Member, 2019)
Ben Juliar (PhD Thesis Committee Member, 2018 - present)
Meghan Capeling (PhD QE Committee Member, 2018)

Caymen Novak (PhD Thesis Committee Member, 2016 - 2019)
Claire Tomaszewski (PhD QE Chair, 2018 - present)
Eric Hobson (PhD QE Committee Member, 2017)
Kenneth Ho (PhD Thesis Defense Committee Cognate, 2018)
Richard Youngblood (PhD QE Cognate, 2017)

2013 - 2015 **Tissue Microfabrication Lab, Boston University, Boston, MA**
Mentor to undergraduate research assistant (William Wang)

2006 - 2010 **McKay Orthopaedic Research Laboratory, University of Pennsylvania, Philadelphia, PA**
Mentor to undergraduate research assistants (Andrea Tan, Ashwin Nathan, Robert Metter, Giana Montero, Amy Silverstein)

Teaching

Winter 2020 **BME231 – Introduction to Biomechanics (91 students)**
Winter 2020 **ME450 – Capstone Design (Design team advisor, 6 students)**
Winter 2020 **BME500 - Biomedical Engineering Seminar (30 students)**
Winter 2019 **BME231 – Introduction to Biomechanics (136 students)**
Winter 2018 **BME231 – Introduction to Biomechanics (104 students)**
Winter 2018 **BME500 – Biomedical Engineering Seminar (35 students)**
Fall 2017 **BME500 – Biomedical Engineering Seminar (64 students)**
Winter 2017 **BME500 – Biomedical Engineering Seminar (47 students)**
Fall 2016 **BME500 – Biomedical Engineering Seminar (47 students)**
2014 - 2015 **BE465/BE466 – Senior Design, Boston University, Boston, MA**
Technical advisor to senior design team (William Y. Wang, James Kugler)
Spring 2008 **BE512 – Bioengineering III: Biomaterials, University of Pennsylvania, Philadelphia, PA**
Spring 2007 *Teaching assistant*
Spring 2007 **BE99 – Independent Study in Bioengineering, University of Pennsylvania, Philadelphia, PA**
Teaching assistant
Spring 2007 **BE490/BE492 – Research in Bioengineering/Biomedical Science, University of Pennsylvania, Philadelphia, PA**
Teaching assistant