Curriculum Vitae

Date revised: January 18, 2023

1. Name, position, department

Eric M. Darling, Ph.D.
Associate Professor of Medical Science, Engineering, and Orthopaedics
Department of Pathology and Laboratory Medicine
Center for Biomedical Engineering

2. Education

05/2000	B.S. in Engineering, Harvey Mudd College
01/2005	Ph.D. in Bioengineering, Rice University Thesis title: Phenotype of passaged, zonal articular chondrocytes Advisor: Dr. Kyriacos A. Athanasiou

3. Professional appointments

2004-2009	Duke University, Surgery, Post-doctoral fellow under Dr. Farshid Guilak
2009-2015	Brown University, Assistant Professor of Medical Science
2010-2015	Brown University, Assistant Professor of Orthopaedics
2010-2015	Brown University, Assistant Professor of Engineering
2014-2015	Brown University, Manning Assistant Professor of Molecular Pharmacology, Physiology, & Biotechnology
2015-present	Brown University, Associate Professor of Medical Science, Engineering, and Orthopaedics

4. Publications (h-index, 01/2023 Google Scholar: 27 with 5,793 citations; first/corresponding author: 48/61; ORCID: 0000-0002-3932-8623)

a. Books/monographs (order of authors alphabetical)

1. Athanasiou KA, **Darling EM**, Hu JCY. (2009) “Articular Cartilage Tissue Engineering.” Morgan & Claypool Publishers: San Rafael, CA. DOI: 10.2200/S00212ED1V01Y200910TIS003
2. Athanasiou KA, **Darling EM**, Duraine GD, Hu JC, Reddi AH. (2013) “Articular Cartilage.” Taylor & Francis Group, LLC: Boca Raton, FL. IBSN: 9781439853245
3. Athanasiou KA, **Darling EM**, Duraine GD, Hu JC, Reddi AH. (2017) “Articular Cartilage, Second Edition.” CRC Press: Boca Raton, FL. DOI: 10.1201/9781315194158

b. Book chapters

1. **Darling EM**, Athanasiou KA. (2004) Bioactive scaffold design for articular cartilage engineering. *Biomedical Technology and Devices Handbook*. Ed. by J. Moore and G. Zouridakis. Chapter 21. CRC Press: Boca Raton, FL.
2. **Darling EM**, Athanasiou KA. (2013) Bioactive scaffold design for articular cartilage engineering. *Biomedical Technology and Devices Handbook*. 2nd edition. Ed. by J. Moore and D. Maitland. DOI: 10.1201/b15085-23

c. Refereed, original research journal articles

1. **Darling EM**, Hu JCY, Athanasiou KA. (2004) Zonal and topographical gene expression in articular cartilage. *J Orthop Res*. 22 (6): 1182-1187. PMID: 15475195. DOI: 10.1016/j.orthres.2004.03.001
2. **Darling EM**, Athanasiou KA. (2005) Rapid phenotypic changes in passaged articular chondrocyte subpopulations. *J Orthop Res*. 23 (2): 425-432. PMID: 15734258. DOI: 10.1016/j.orthres.2004.08.008
3. **Darling EM**, Athanasiou KA. (2005) Retaining zonal chondrocyte phenotype by means of novel growth environments. *Tissue Eng*. 11 (3/4): 395-403. PMID: 15871669. DOI: 10.1089/ten.2005.11.395
4. **Darling EM**, Athanasiou KA. (2005) Growth factor impact on articular chondrocyte subpopulations. *Cell Tissue Res*. 322: 463-473. PMID: 16047167. DOI: 10.1007/s00441-005-0020-4
5. **Darling EM**, Zauscher S, Guilak F. (2006) Viscoelastic properties of zonal articular chondrocytes measured by atomic force microscopy. *Osteoarthritis Cartilage*. 14 (6): 571-579. PMID: 16478668. DOI: 10.1016/j.joca.2005.12.003
6. **Darling EM**, Zauscher S, Block JA, Guilak F. (2007) A thin-layer model for viscoelastic, stress-relaxation testing of cells using atomic force microscopy: Do cell properties reflect metastatic potential? *Biophys J*. 92: 1784-1791. PMCID: PMC1796808. DOI: 10.1529/biophysj.106.083097
7. **Darling EM**, Topel M, Zauscher S, Vail TP, Guilak F. (2008) Viscoelastic properties of human mesenchymally-derived stem cells and primary osteoblasts, chondrocytes, and adipocytes. *J Biomech*. 41 (2): 454-464. PMCID: PMC2897251. DOI: 10.1016/j.jbiomech.2007.06.019
8. Coles J, Blum J, Jay G, **Darling EM**, Guilak F, Zauscher S. (2008) In situ friction measurement on murine cartilage by atomic force microscopy. *J Biomech*. 41 (3): 541-548. PMCID: PMC2274896. DOI: 10.1016/j.jbiomech.2007.10.013
9. **Darling EM**, Guilak F. (2008) A neural network model for cell classification based on single-cell biomechanical properties. *Tissue Eng Part A*. 14 (9): 1507-1515. PMCID: PMC2748927. DOI: 10.1089/ten.tea.2008.0180
10. **Darling EM**, Pritchett PE, Evans BA, Superfine R, Zauscher S, Guilak F. (2009) Mechanical properties and gene expression of chondrocytes on micropatterned substrates following dedifferentiation in monolayer. *Cell Molec Bioeng*. 2 (3): 395-404. PMCID: PMC2898162. DOI: 10.1007/s12195-009-0077-3
11. Yim EKF, **Darling EM**, Kulangara K, Guilak F, Leong KW. (2010) Nanotopography-induced changes in focal adhesions, cytoskeletal organization, and mechanical properties of human mesenchymal stem cells. *Biomaterials*. 31 (2010): 1299-1306. PMCID: PMC2813896. DOI: 10.1016/j.biomaterials.2009.10.037
12. **Darling EM***, Wilusz RE*, Bolognesi MP, Zauscher S, Guilak F. (2010) Spatial mapping of the biomechanical properties of the pericellular matrix of articular cartilage measured in situ via atomic force microscopy. *Biophys J*. 98: 2848-2856. PMCID: PMC2884253 (*equal contributions)
13. Gilchrist CL, **Darling EM**, Chen J, Setton LA. (2011) Extracellular matrix ligand and stiffness modulate immature nucleus pulposus cell-cell interactions. *PLoS*

One. 6 (11): e27170. PMCID: PMC3210142. DOI: 10.1371/journal.pone.0027170

14. **Darling EM**. (2011) Force scanning: A rapid, high-resolution approach for spatial mechanical property mapping. *Nanotechnology*. 22 (17): 175707. PMCID: PMC3150532. DOI: 10.1088/0957-4484/22/17/175707
*Recognized by Nanotechnology in their "Highlights 2011" Collection.
15. González-Cruz RD, Fonseca VC, **Darling EM**. (2012) Cellular mechanical properties reflect differentiation potential of adipose-derived mesenchymal stem cells. *Proc Natl Acad Sci USA*. 109 (24): E1523-9. PMCID: PMC3386052. DOI: 10.1073/pnas.1120349109
16. González-Cruz RD, **Darling EM**. (2013) Adipose-derived stem cell fate is predicted by cellular mechanical properties. *Adipocyte*. 2 (2): 87-91. PMCID: PMC3661107. DOI: 10.4161/adip.23015
17. Desai HV, Voruganti IS, Jayasuriya C, Chen Q, **Darling EM**. (2014) Live-cell, temporal gene expression analysis of osteogenic differentiation in adipose-derived stem cells. *Tissue Eng Part A*. 20(5-6): 899-907. PMCID: PMC3938923. DOI: 10.1089/ten.TEA.2013.0761
18. Beane OS, Fonseca VC, **Darling EM**. (2014) Adipose-derived stem cells retain their regenerative potential after methotrexate treatment. *Exp Cell Res*. 327 (2014): 222-233. PMCID: PMC4164584. DOI: 10.1016/j.yexcr.2014.06.015
19. Kanthilal M, **Darling EM**. (2014) Characterization of mechanical and regenerative properties of human, adipose stromal cells. *Cell Mol Bioeng*. 7 (4): 585-97. PMCID: PMC4255916. DOI: 10.1007/s12195-014-0350-y
20. Toyjanova J, Hannen E, Bar-Kochba E, **Darling EM**, Henann D, Franck C. (2014) 3D viscoelastic traction force microscopy. *Soft Matter*. 10: 8095-106. PMCID: PMC4176508. DOI: 10.1039/C4SM01271B
21. Marble HD, Sutermaster BA, Kanthilal M, Fonseca VC, **Darling EM**. (2014) Gene expression-based enrichment of live cells from adipose tissue produces subpopulations with improved osteogenic potential. *Stem Cell Res Ther*. 5 (5):145. PMCID: PMC4619280. DOI: 10.1186/scrt502
*"2014 Top Social Article" in *Stem Cell Res Ther*
22. Beane OS, Fonseca VC, Cooper LL, Koren G, **Darling EM**. (2014) Impact of aging on the regenerative properties of bone marrow-, muscle-, and adipose-derived mesenchymal stem/stromal cells. *PLoS ONE*. 9(12): e115963. PMCID: PMC4277426. DOI: 10.1371/journal.pone.0115963
23. Labriola NR, **Darling EM**. (2015) Temporal heterogeneity in single-cell gene expression and mechanical properties during adipogenic differentiation. *J Biomech*. 48 (2015): 1058-66. PMCID: PMC4380682. DOI: 10.1016/j.jbiomech.2015.01.033
24. Dingle YL, Chirila AM, Boutin ME, Livi LL, Labriola NR, Jakubek LM, Morgan JR, **Darling EM**, Kauer JA, Hoffman-Kim D. (2015) Three-dimensional neural spheroid culture: An in vitro model for cortical studies. *Tissue Eng C*. 21 (12): 1274-83. PMCID: PMC4663656. DOI: 10.1089/ten.tec.2015.0135
25. Beane OS, Darling LEO, Fonseca VC, **Darling EM**. (2016) Disparate response to methotrexate in stem versus non-stem cells. *Stem Cell Rev Reports*. 12 (3): 340-51. PMCID: PMC4880537. DOI: 10.1007/s12015-016-9645-9

26. López-Fagundo C, Livi LL, Ramchal T, **Darling EM***, Hoffman-Kim D*. (2016) A biomimetic synthetic feeder layer supports the proliferation and self-renewal of mouse embryonic stem cells. *Acta Biomater*. 39: 55-64. PMCID: PMC4905775. DOI: 10.1016/j.actbio.2016.04.047 (*Co-corresponding author)
27. Chen Y, Cossman J, Jayasuriya CT, Li X, Guan Y, Fonseca VC, Yang K, Charbonneau C, Yu H, Kanbe K, Ma P, **Darling E**, Chen Q. (2016) Deficient Mechanical Activation of Anabolic Transcripts and Post-Traumatic 1 Cartilage Degeneration in Matrilin-1 Knockout Mice. *PLoS ONE*. 11(6): E0156676. PMCID: PMC4896629. DOI: 10.1371/journal.pone.0156676
28. Sadick JS, Boutin ME, Hoffman-Kim D, **Darling EM**. (2016) Protein characterization of intracellular target-sorted, formalin-fixed cell subpopulations. *Sci Rep*. 6: 33999. PMCID: PMC5036045. DOI: 10.1038/srep33999
29. Labriola NR, Mathiowitz E, **Darling EM**. (2017) Fabricating polyacrylamide microbeads by inverse emulsification to mimic the size and elasticity of living cells. *Biomater Sci*. 5:41-45. PMCID: PMC5201106. DOI: 10.1039/c6bm00692b
30. Shah MK, Garcia-Pak IH, **Darling EM**. (2017) Influence of inherent mechanophenotype on competitive cellular adherence. *Ann Biomed Eng*. 45(8): 2036-2047. PMCID: PMC5529242. DOI: 10.1007/s10439-017-1841-5
31. Sadick JS, **Darling EM**. (2017) Processing fixed and stored adipose-derived stem cells for quantitative protein array assays. *Biotechniques*. 63(6): 275-280. PMCID: PMC5731247. DOI: 10.2144/000114620
32. Dempsey ME*, Marble HD*, Shin T, Fawzi NL, **Darling EM**. (2018) Synthesis and characterization of a magnetically active 19F molecular beacon. *ACS Bioconjug Chem*. 29(2):335-342. PMCID: PMC5821531. DOI: 10.1021/acs.bioconjchem.7b00671 (*Co-first authors)
33. González-Cruz RD, Sadick JS, Fonseca VC, **Darling EM**. (2018) Nuclear lamin protein C is linked to lineage-specific, whole-cell mechanical properties. *Cell Mol Bioeng*. 11(2):131-142. PMCID: PMC5943047. DOI: 10.1007/s12195-018-0518-y
34. Parsons AM, Ciombor M, Liu P, **Darling EM**. (2018) Regenerative potential and inflammation-induced secretion profile of human adipose-derived stromal vascular cells are influenced by donor variability and prior breast cancer diagnosis. *Stem Cell Rev Rep*. 14(4): 546–557. PMCID: PMC6014910. DOI: 10.1007/s12015-018-9813-1
35. Labriola NR, Sadick JS, Morgan JR, Mathiowitz E, **Darling EM**. (2018) Cell mimicking microparticles influence the organization, growth, and mechanophenotype of stem cell spheroids. *Ann Biomed Eng*. 46(8): 1146-1159. PMCID: PMC6039261. DOI: 10.1007/s10439-018-2028-4
36. Azagury A, Fonseca VC, Cho DY, Perez-Rogers J, Baker CM, Steranka E, Goldenshtein V, Calvao D, **Darling EM**, Mathiowitz E. (2018) Single Step Double-walled Nanoencapsulation (SSDN). *J Control Release.* 280: 11-19. PMCID: PMC5993621. DOI: 10.1016/j.jconrel.2018.04.048
37. Shah MK, Leary EA, **Darling EM**. (2019) Integration of hyper-compliant microparticles into a 3D melanoma tumor model. *J Biomech*. 82(3): 46-53. PMCID: PMC6310620. DOI: 10.1016/j.jbiomech.2018.10.018

38. Sutermaster BA, **Darling EM**. (2019) Considerations for high-yield, high-throughput cell enrichment: fluorescence versus magnetic sorting. *Sci Rep*. 9: 227 (2019). PMCID: PMC6338736. DOI: 10.1038/s41598-018-36698-1
39. Meyer K, Labriola NR, **Darling EM**, Kaehr BJ. (2019) Shape preserved transformation of biological cells into synthetic hydrogel microparticles. *Adv Biosystems.* 3(4): 1800285. PMCID: PMC7747388. DOI: 10.1002/adbi.201800285
40. Sadick JS, Crawford L, Cramer HC, Franck C, Liddelow SA, **Darling EM**. (2020) Generating cell type-specific protein signatures from non-symptomatic and diseased tissues. *Ann Biomed Eng*. 4(8): 2218-2232. PMCID: PMC7416432. DOI: 10.1007/s10439-020-02507-y
41. Sarnik SA, Sutermaster BA, **Darling EM**. (2020) Mass-Added Density Modulation for Sorting Cells Based on Differential Surface Protein Levels. *Cytometry A*. PMCID: PMC7855113. DOI: 10.1002/cyto.a.24192
42. Dubay R, Fiering J, **Darling EM**. (2020) Effect of elastic modulus on inertial displacement of cell-like particles in microchannels. *Biomicrofluidics*. 14(4): 044110. PMCID: PMC7402708. DOI: 10.1063/5.0017770
43. Gutierrez RA, Fang W, Kesari H*, **Darling EM***. (2021) Force sensors for measuring microenvironmental forces during mesenchymal condensation. *Biomaterials*. 270: 120684. PMCID: PMC7906959. DOI: 10.1016/j.biomaterials.2021.120684 (*Co-corresponding author)
44. Dempsey ME, Woodford-Berry O, **Darling EM**. (2021) Quantification of Antibody Persistence for Cell Surface Protein Labeling. *Cell Mol Bioeng*. 14:267-277. PMCID: PMC8175540. DOI: 10.1007/s12195-021-00670-3
45. Parsons AM, **Darling EM**. (2021) Temporal responsiveness of adipose-derived stem/stromal cell immune plasticity. *Exp Cell Res*. 406(1): 112738. PMID: 34270981. DOI: 10.1016/j.yexcr.2021.112738
46. Dempsey ME, Chickering GR, González-Cruz RD, Fonseca VC, **Darling EM**. (2022) Discovery of surface biomarkers for cell mechanophenotype via an intracellular protein-based enrichment strategy. *Cell Mol Life Sci*. 79(320). PMCID: Pending. DOI: 10.1007/s00018-022-04351-w
47. Stathatou P, Athanasiou C, Tsezos M, Goss J, Blackburn C, Tourlomousis F, Mershin A, Sheldon BW, Padture NP, **Darling E**, Gao H, Gershenfeld N. (2022) Lead removal at trace concentrations from water by inactive yeast cells. *Nature Comm Earth Environ*. DOI: 10.1038/s43247-022-00463-0.
48. Gutierrez RA, Fonseca VC, **Darling EM**. (2022) Chondrogenesis of Adipose-Derived Stem Cells Using an Arrayed Spheroid Format. *Cell Mol Bioeng*. DOI: 10.1007/s12195-022-00746-8

d. Refereed, review/perspective/commentary articles

1. **Darling EM**, Athanasiou KA. Articular cartilage bioreactors and bioprocesses. (2003) *Tissue Eng*. 9 (1): 9-26. PMID: 12625950. DOI: 10.1089/107632703762687492
2. **Darling EM**, Athanasiou KA. (2003) Biomechanical strategies for articular cartilage regeneration. *Ann Biomed Eng*. 31 pp. 1114-1124. PMID: 14582614. DOI:10.1114/1.1603752

3. Beane OS, **Darling EM**. (2012) Isolation, Characterization, and Differentiation of Stem Cells for Cartilage Regeneration. *Ann Biomed Eng*. 40 (10): 2079-97. PMCID: PMC3457050. DOI: 10.1007/s10439-012-0639-8
4. **Darling EM**, Di Carlo D. (2015) High-throughput assessment of cellular mechanical properties. *Ann Rev Biomed Eng*. 17:35-62. PMCID: PMC8204286. DOI: 10.1146/annurev-bioeng-071114-040545
5. Yang X, **Darling EM**, Herzog W. (2017) Functional Properties of Chondrocytes and Articular Cartilage using Optical Imaging to Scanning Probe Microscopy. *J Orthop Res*. 36(2): 620-631. PMCID: PMC5839958. DOI: 10.1002/jor.23757
6. Labriola NR, Azagury A, Gutierrez R, Mathiowitz E, **Darling EM**. (2018) Concise Review: Fabrication, customization, and application of cell mimicking microparticles in stem cell science. *Stem Cell Transl Med*. (7):232-240. PMCID: PMC5788880. DOI: 10.1002/sctm.17-0207
7. González-Cruz RD, Dahl KN, **Darling EM**. (2018) The Emerging Role of Lamin C as an Important LMNA Isoform in Mechanophenotype. *Frontiers Cell Devel Biol*. 6: 151. PMCID: PMC6224339. DOI: 10.3389/fcell.2018.00151
8. Dubay R, Urban J, **Darling EM**. (2021) Single-cell microgels for diagnostics and therapeutics. *Adv Func Mat*. PMCID pending. DOI: 10.1002/adfm.202009946

e. Non-refereed journal articles

1. **Darling EM**, Desai HV. (2012) Force Scanning for Simultaneous Collection of Topographical and Mechanical Properties. *Microscopy and Analysis*, January 2012. Volume 26, Issue 1. DOI: 10.1002/micro.235/full
2. Desai HV, **Darling EM**. (2012) Force Scanning with the MFP-3D™ AFMs: Two Capabilities In One. Application note.
3. Retraction of Desai, et al. Tissue Engineering, Part A, 19;1/2:40-48. *Tissue Eng A*. 20(5-6): 1127. PMCID: PMC4480910. DOI: 10.1089/ten.tea.2012.0127.retraction
4. Morss Clyne A, **Darling EM**, Chahine NO. (2017) Discovering the Keys: Transformative and Translational Mechanobiology. *Cell Molec Bioeng*. 10(4): 273-274. PMCID: PMC6816652. DOI: 10.1007/s12195-017-0496-5
5. Clyne AM, Marcolongo M, **Darling E**, Chahine N. (2018) Translating Mechanobiology to the Clinic: a panel discussion from the 2018 CMBE Conference. *Cell Mol Bioeng*. 11(6): 531-535. PMCID: PMC6516757. DOI: 10.1007/s12195-018-0556-5
6. Gutierrez RA, Fang W, Kesari H*, **Darling EM***. Corrigendum to "Force sensors for measuring microenvironmental forces during mesenchymal condensation" [Biomaterials 270 (2021) 120684]. *Biomaterials*. 277: 121132. PMID: 34536725. DOI: 10.1016/j.biomaterials.2021.121132

f. Abstracts

1. **Darling EM**, Hu JCY, French MM, Athanasiou KA. (2002) Zonal separation of articular cartilage. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Houston, TX.

2. **Darling EM**, Hu JCY, Athanasiou KA. (2003) Zonal and topographical gene expression in articular cartilage. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Nashville, TN.
3. **Darling EM**, Athanasiou KA. (2004) Effect of cell passaging on chondrocyte gene expression. Conference abstract. *Orthopaedic Research Society Annual Meeting.* 29:0575. San Francisco, CA.
4. **Darling EM**, Athanasiou KA. (2004) Rapid phenotypic changes in passaged articular chondrocyte subpopulations. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Philadelphia, PA.
5. **Darling EM**, Athanasiou KA. (2004) Retaining zonal chondrocyte phenotype using novel growth environments. Podium presentation. *Biomedical Engineering Society Annual Meeting*. Philadelphia, PA.
6. **Darling EM**, Athanasiou KA. (2005) Growth factor impact on chondrocyte subpopulations. Conference abstract. *Orthopaedic Research Society Annual Meeting*. 30:1354. Washington, D.C.
7. **Darling EM**, Zauscher S, Guilak F. (2006) Viscoelastic properties of zonal articular chondrocytes measured by atomic force microscopy. Podium presentation. *Orthopaedic Research Society Annual Meeting*. 31:0133. Chicago, IL.
8. **Darling EM**, Zauscher S, Block JA, Guilak F. (2007) Viscoelastic properties of chondrosarcoma cells determined by atomic force microscopy using a thin-layer, stress relaxation indentation model. New Investigator Research Award. *Orthopaedic Research Society Annual Meeting*. 32:0415. San Diego, CA.
9. **Darling EM**. (2007) The role of mechanical biomarkers in stem cell differentiation. AIMM-ASBMR John Haddad Young Investigator Award. *Advances in Mineral Metabolism-American Society for Bone and Mineral Research Young Investigator Meeting*. Snowmass, CO.
10. Yim EKF, **Darling EM**, Zauscher S, Guilak F and Leong KW. (2007) Changes in cytoskeletal structure and viscoelastic properties of hMSC induced by nanotopography. Podium presentation. *Society for Biomaterials*. Chicago, IL.
11. Zauscher S, Barthel JC, Konkar S, Sankin GN, **Darling EM**, Guilak F, Zhong P, LaMattina B. (2008) A model for studying the physical and biological response of adherent cells subjected to shock waves. Podium presentation. *JIEDDO/ARO: Traumatic Brain Injury Workshop and Project Review*. Cambridge, MA.
12. Barthel JC, Konkar S, Sankin GN, Zhong P, Zauscher S, **Darling EM**, Guilak F, Yen CF, Cheeseman B, LaMattina B. (2008) Biomechanical and biochemical cellular response due to shock waves. Bronze Award winner for best paper. 26th Army Science Conference. Orlando, FL.
13. **Darling EM**, Guilak F. (2008) A neural network model for cell classification based on single-cell biomechanical properties. Conference abstract. *North Carolina Tissue Engineering and Regenerative Medicine*. Research Triangle Park, NC.
14. Gilchrist CL, **Darling EM**, Chen J, and Setton LA. (2009) Immature nucleus pulposus cells self-assemble into cell clusters on soft laminin-rich substrates.

Conference abstract. *Orthopaedic Research Society Annual Meeting*. 34:1623. Las Vegas, NV.

15. **Darling EM**, Wilusz RE, Bolognesi MP, Zauscher S, Guilak F. (2009) Biomechanical properties of articular cartilage pericellular matrix measured *in situ* via atomic force microscopy. Podium presentation. *Orthopaedic Research Society Annual Meeting*. 34:0147. Las Vegas, NV.
16. Wilusz RE, **Darling EM**, Bolognesi MP, Zauscher S, Guilak F. (2009) The inhomogeneous mechanical properties of the pericellular matrix of articular cartilage measured in situ by atomic force microscopy. Conference abstract. *ASME Summer Bioengineering Conference*. Lake Tahoe, CA.
17. Gilchrist CL, **Darling EM**, Chen J, and Setton LA. (2009) Soft laminin-containing substrates promote nucleus pulposus cell-cell Interactions in vitro. Conference abstract. *International Society for the Study of the Lumbar Spine*. Miami, FL.
18. **Darling EM**, Pritchett PE, Evans BA, Superfine R, Zauscher S, Guilak F. (2009) The association of chondrocyte mechanical properties and phenotypic expression during cellular expansion on micropatterned substrates. Conference abstract. *Osteoarthritis Research Society International Conference*. Montreal, Canada.
19. Waller K, **Darling EM**, Jay G. (2010) AFM analysis of cartilage degradation in a rat model following ACL transection. Podium presentation. *American Society of Biomechanics*. Providence, RI.
20. **Darling EM**. (2010) A high-resolution modulus mapping approach for atomic force microscopy. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Austin, TX.
21. Waller K, **Darling EM**, Jay G. (2011) The Effect of TNF-α Inhibition on Micro- and Nano- Cartilage Stiffness in a Rat ACL Transection OA Model. Conference abstract. *Orthopaedic Research Society Annual Meeting*. 57: 2139. Long Beach, CA.
22. Zhang L, Lee H-J, Franck C, **Darling EM**, Webster TJ. (2011) Minimizing lung carcinoma cell functions on polymers by creating nanotopographies. Conference abstract. *Materials Research Society*. San Francisco, CA.
23. Labriola NR, **Darling EM**. (2011) Design of a porous filtration device to sort cells based on elastic and viscoelastic properties. Conference abstract. *BioMethods Boston Conference*. Boston, MA.
24. Beane OS, **Darling EM**. (2011) Standardizing protocol for the comparison of mesenchymal stem cell sources from a single donor. Conference abstract. *BioMethods Boston Conference*. Boston, MA.
25. Desai HV, **Darling EM**. (2011) Live cell, real-time imaging of osteogenic gene expression in MG63 cells. Conference abstract. *BioMethods Boston Conference*. Boston, MA.
26. González-Cruz RD, Fonseca VC, **Darling EM**. (2011) Stem cell mechanical biomarkers indicate differentiation potential. Podium presentation. *4th Northeast Regional IDeA Meeting*. Newport, RI.

27. Fonseca VC, González-Cruz RD, **Darling EM**. (2011) Single-cell mechanical properties as an indicator of stem cell differentiation potential. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Hartford, CT.
28. Beane OS, **Darling EM**. (2011) Analysis of adipose-derived mesenchymal stem cells between genders for therapeutic applications. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Hartford, CT.
29. Desai HV, **Darling EM**. (2011) Live-cell imaging of alkaline phosphatase mRNA during stem cell differentiation. Podium presentation. *Biomedical Engineering Society Annual Meeting*. Hartford, CT.
30. Labriola NR, **Darling EM**. (2011) Cell sorting: Exploiting elastic and viscoelastic properties. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Hartford, CT.
31. **Darling EM**, Desai HV, González-Cruz RD, Fonseca VC. (2012) Novel biomarkers for the identification of lineage-preference in mesenchymal stem cells. “Rising Star” podium presentation. *BMES-SPRBM 2012 Conference*. San Juan, Puerto Rico.
32. **Darling EM**, Labriola NR, González-Cruz RD, Fonseca VC. (2012) Cellular mechanical biomarkers for lineage-specific, stem cell enrichment. Podium presentation. *Orthopaedic Research Society Annual Meeting*. 58:0001. San Francisco, CA.
33. Cossman J, Li X, **Darling EM**, Chen Y, Guan Y, Chen Q. (2012) Matrilin-1 deficiency weakens cartilage matrix and predisposes mouse knee to osteoarthritis after destabilization. Podium presentation. *Orthopaedic Research Society Annual Meeting*. 58:0017. San Francisco, CA.
34. Beane OS, **Darling EM**. (2012) Inhibiting Non-Stem Cell Proliferation by Etoposide. Conference abstract. *Biomedical Engineering Society*. Atlanta, GA.
35. Ramchal T, Lopez-Fagundo C, Labriola N, Hoffman-Kim D, **Darling EM**. (2012) A biomimetic synthetic feeder layer supports mouse embryonic stem cell culture. Conference abstract. *Biomedical Engineering Society*. Atlanta, GA.
36. Chen Y, Guan Y, Yu H, Zhou T, **Darling EM**, Larry Mclaughlin L, Fenniri H, Webster T, Chen Q. (2012) In Vitro and In Vivo Delivery of Small RNA Self-Assembled with Rosette Nanotubes (RNTs) Conference abstract. *2012 IDeA Symposium*. Washington, D.C.
37. Chen Y, Zhou T, Rosario J, **Darling EM**, Webster TJ, Fenniri H, Chen Q. (2013) In vitro and in vivo intracellular delivery of siRNA via self-assembled nanopieces for skeleton therapeutics and diagnostics. *Orthopaedic Research Society*. 59:0400. San Antonio, TX. *NIRA overall winner.
38. **Darling EM**. (2013) Cellular mechanical biomarkers predict lineage preference in adult stem cells. Podium presentation. *Joint International Meeting of the German Society (DGZ) for Cell Biology and the German Society for Developmental Biology (GfE)* Heidelberg, Germany.
39. **Darling EM**. (2013) Molecular beacons as indicators of osteogenic differentiation in live stem cells. Podium presentation. *Stem Cells & Cell Signaling – 2013 Meeting*. Waltham, MA.

40. Desai HV, **Darling EM**. (2013) Gene expression-based enrichment of human adipose-derived stem cells for enhanced osteogenic differentiation. Conference abstract. *International Society for Stem Cell Research*. Boston, MA.
41. Kanthilal M, **Darling EM**. (2013) Characterization of molecular and mechanical phenotypes of freshly isolated lipoaspirate cells. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Seattle, WA.
42. Desai HV, **Darling EM**. (2013) Gene expression-based enrichment of human adipose-derived stem cells for enhanced osteogenic differentiation. Podium presentation. *Biomedical Engineering Society Annual Meeting.* Seattle, WA.
43. Beane OS, **Darling EM**. (2014) Disparate aging effects exist for mesenchymal stem cells derived from different tissues. *Orthopaedic Research Society Annual Meeting*. 60:0547. New Orleans, LA.
44. Beane OS, **Darling EM**. (2014) Adipose-derived stem cells retain their regenerative potential after methotrexate treatment. *Orthopaedic Research Society Annual Meeting*. 60:1106. New Orleans, LA.
45. Yu H, Chen Y, **Darling E**, Fenniri H, Chen Q. (2014) A non-invasive, early, and sensitive detection of osteoarthritis through in vivo imaging of MMP-13 mRNA levels by molecular beacon and nanopieces delivery technology. *Orthopaedic Research Society Annual Meeting*. 60:0045. New Orleans, LA.
46. **Darling EM**, Labriola NR, González-Cruz RD, Kanthilal M, Sadick JS, Fonseca VC. (2015) The intersection of gene expression and mechanical phenotype. Conference abstract. *Cellular and Molecular Bioengineering Conference*. St. Thomas, USVI.
47. González Cruz RD, Fonseca VC, Kanthilal M, Sadick JS, **Darling EM**. (2015) *LMNA* gene and lamin A protein expression serve as novel biomarkers for characterizing mechanical phenotype. Conference abstract. *Orthopaedic Research Society Annual Meeting*, Las Vegas, NV.
48. Labriola NR, **Darling EM**. (2015) Heterogeneity in the mechanical response of differentiating adipose-derived stem cells**.** Conference abstract. *Orthopaedic Research Society Annual Meeting*. Las Vegas, NV.
49. Pak I, Kanthilal M, **Darling EM**. (2015) The role of cellular mechanical properties in microenvironment-dependent behavior. *Biophysical Society 59th Annual Meeting*. Baltimore, MD.
50. Léandre V, Atherton E, Furtado S, Guennoun A, Bauer H, Chang J, Choo S, Kurial S, Lee R, Makani R, Bakhru S, **Darling E**, Chouchane L, Mathiowitz E. (2015) Polymeric, cytokine-aided cell recruitment & histological analysis. Conference abstract. *Controlled Release Society Annual Meeting*. Edinburgh, Scotland.
51. Beane OS, Fonseca VC, Darling LEO, **Darling EM**. (2015) Dihydrofolate reductase levels provide a mechanism for stem cell resistance to chemotherapy. Conference abstract. *Tissue Engineering and Regenerative Medicine International Society Meeting*. Boston, MA.
52. Kanthilal M, Pak I, **Darling EM**. (2015) Mechanophenotype influences cellular organization on mechanically and biologically engineered surfaces. Conference abstract. *Tissue Engineering and Regenerative Medicine International Society Meeting*. Boston, MA.

53. Sadick JS, Fonseca VC, Boutin ME, Hoffman-Kim D, **Darling EM**. (2015) Characterization of brain heterogeneity using a novel fixation/sorting method. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Tampa, FL.
54. González Cruz RD, **Darling EM**. (2015) Lamin A and B1 protein expression are indicative of whole-cell mechanical properties. Conference abstract. *Society for Advancing Chicanos/Hispanics & Native Americans in Science National Conference*. Washington, D.C.
55. González Cruz RD, **Darling EM**. (2016) Whole-cell mechanophenotype correlates to lamin protein and gene expression. Podium presentation. *Cellular and Molecular Bioengineering Conference*. New Orleans, LA.
56. Chen Y, Yu H, Vorrius B, **Darling E**, Chen Q. (2016) Nanopiece delivery of IL-1R siRNA into cartilage to treat post-traumatic osteoarthritis. Conference abstract. *Orthopaedic Research Society Annual Meeting*. Orlando, FL.
57. Sutermaster B, **Darling EM**. (2016) Magnetic sorting offers rapid, high-throughput isolation of ALPL+ cells from lipoaspirate. Podium presentation. *Biomedical Engineering Society Annual Meeting*. Minneapolis, MN.
58. Sadick JS, Boutin ME, Hoffman-Kim D, **Darling EM**. (2016) Protein characterization of intracellular target-sorted, formalin-fixed neuronal cell subpopulations. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Minneapolis, MN.
59. Kanthilal M, **Darling EM**. (2016) Mechanophenotype influences cellular organization and morphology. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Minneapolis, MN.
60. Sadick JS, Boutin ME, Hoffman-Kim D, **Darling EM**. (2016) Protein characterization of intracellular target-sorted, formalin-fixed neuronal cell subpopulations. Conference abstract. *The Brain Mosaic Conference*. Leuven, Belgium.
61. Labriola NR, Sadick JS, Morgan JR, Mathiowitz E, Darling EM. (2017) Microbead cellular mimics for biomedical applications. Conference abstract. *Cellular and Molecular Bioengineering Conference*. Kohala Coast, HI.
62. Sutermaster B, **Darling EM**. (2017) Magnetic sorting offers efficient isolation of osteogenic cells from stromal vascular fraction of fat. Conference abstract. *Orthopaedic Research Society Annual Meeting*. San Diego, CA.
63. Parsons AM, Ciombor M, Liu P, **Darling EM**. (2017) The influence of donor variability and medical history on adipose-derived stem cell regenerative potential. Conference abstract. *Orthopaedic Research Society Annual Meeting*. San Diego, CA.
64. Parsons AM, **Darling EM**, Liu P, Ciombor M. (2017) Human adipose-derived stem cell engraftment may be dependent on donor history. Conference abstract. *Wound Healing Society*. San Diego, CA.
65. Dempsey ME, Marble HD, Shen TL, Fawzi NL, **Darling EM**. (2017) Synthesis and characterization of a magnetically active ^{19}F molecular beacon. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Phoenix, AZ.

66. Sadick, JS, Parsons AM, **Darling EM**. (2017) Processing of fixed and stored adipose-derived stem cells for quantitative protein array assays. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Phoenix, AZ.
67. Kaehr B, Meyer K, Labriola N, **Darling E**, Latimer K. (2017) Synthetic, anisotropic polymer particles derived from cellular structures. Conference abstract. *Materials Research Society*. Boston, MA.
68. Sadick, JS, Crawford LA, Cramer HC, Franck C, **Darling EM**. (2017) Assessing neural cell heterogeneity in Alzheimer's disease systems. Conference abstract. *Development & 3-D Modeling of the Human Brain*. Cold Spring Harbor, NY.
69. Shah MK, Leary EA, **Darling EM**. (2018) Incorporation of cell mimicking microparticles into a 3D tumor model of melanoma. Conference abstract. *Cellular and Molecular Bioengineering Conference*, Key Largo, FL.
70. Mehrzad R, Parsons AM, **Darling EM**, Liu P. (2018) Adipose-derived stem cells differ significantly due to donor variability and medical history. Conference abstract. *American College of Surgeons' 2018 Clinical Congress*, Boston, MA.
71. Sutermaster B, **Darling EM**. (2018) Cell yields and sorting times: Investigating FACS vs. MACS. Conference abstract. *Advanced Biomanufacturing Special Interest Group Meeting*. Worcester, MA.
72. Gutierrez R, Labriola NR, **Darling EM**. (2018) Distribution of Polyacrylamide CMMPs within a 3D spheroid microenvironment. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Atlanta, GA.
73. Sadick JS, Crawford L, Cramer HC, Franck C, Liddelow SA, **Darling EM** (2019) FITSAR: A novel method to generate cell type-specific protein signatures in human Alzheimer's disease brain. Conference abstract. *Neural Environment in Disease: Glial Responses and Neuroinflammation*. Keystone, CO.
74. Baptista C, Azagury A, Sukhlal S, Fonseca VC, **Darling EM**, Mathiowitz E. (2019) Characterization of Insulin Loaded Poly-L-Lactic Acid Nanoparticles by Atomic Force Microscopy. Conference abstract. *Controlled Release Society*. Valencia, Spain.
75. Parsons AM, **Darling EM**. (2019) Temporal Heterogeneity of Adipose-Derived Stem Cell Immunomodulatory Capacity. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Philadelphia, PA.
76. Dubay R, Fiering J, **Darling EM**. (2019) Rapid Fabrication of a Flow-Focusing Droplet Generator to Produce Cell Mimicking Microparticles. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Philadelphia, PA.
77. Dempsey ME, Woodford-Berry O, **Darling EM**. (2019) A Method for Quantifying Antibody Persistence on a Cell Surface. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Philadelphia, PA.
78. Gutierrez R, Rahaman MM, Kesari H, **Darling EM**. (2019) In Situ Force Probes for the study of cell-Dense Neotissues. Podium presentation. *Biomedical Engineering Society Annual Meeting*. Philadelphia, PA.
79. Sarnik S, Sutermaster B, **Darling EM**. (2019) Mass-Added Density Modulation for Sorting Cells Based on Differential Surface Protein Expression. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Philadelphia, PA.
80. Sadick JS, Crawford L, Cramer HC, Franck C, Liddelow SA, **Darling EM** (2019) FITSAR: A novel method to generate cell type-specific protein signatures in

human Alzheimer's disease brain. Conference abstract. *Society for Neuroscience*. Chicago, IL.

81. **Darling EM,** Sadick JS, González Cruz RD. (Jan, 2020) Proteomic Characterization of Cell Types, Subtypes, and Phenotypes. Podium presentation. *Cellular and Molecular Bioengineering Conference*, San Juan, PR.
82. Gutierrez RA, Fang W, Kesari H, **Darling EM**. (Oct, 2020) In Situ Force Probes for the Study of Cell-Dense Neotissues. Podium presentation. *Society for Advancing Chicanos/Hispanics & Native Americans in Science National Conference*. Long Beach, CA.
83. Dubay RA, Fiering J, **Darling EM**. (Oct, 2020) High-throughput single-cell quantification of elastic modulus. Conference abstract. *MicroTAS*. Virtual conference.
84. Markovic S, Dubay RA, His P, Haroutunian NJ, Bryan CM, Griswold K, **Darling EM**, Magyar AP, Tandon V. (Oct, 2020) Droplet-based approach to high speed drug discovery. Conference abstract. *MicroTAS*. Virtual conference.
85. Dempsey ME, González-Cruz RD, Fonseca VC, **Darling EM**. (Oct, 2021) Discovery of Surface Biomarker for Cell Mechanophenotype via Intracellular Protein Enrichment Method. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Orlando, FL.
86. Parsons AM, **Darling EM**. (Oct, 2021) Temporal Responsiveness of Adipose-Derived Stem/Stromal Cell Immune Plasticity. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Orlando, FL.
87. Gutierrez RA, Fonseca VC, **Darling EM**. (Oct, 2021) Chondrogenic Differentiation of Adipose-Derived Stem Cells using Microscale Spheroids. Conference abstract. *Biomedical Engineering Society Annual Meeting*. Orlando, FL.
88. Dubay RA, Fiering J, **Darling EM**. (Oct, 2021) Ultrasonic characterization of deformable hydrogel microparticles for acoustophoresis. Conference abstract. *MicroTAS*. Virtual conference.
89. Grossman-Ponemon B, **Darling EM**, Kesari H. (Oct, 2022) An Analytical Solution for the Deformation of Force Sensors in Multicellular Assemblies. Conference abstract. *Society of Engineering Science Conference*, College Station, TX.
90. Sowers R, Urban J, Mathiowitz E, **Darling EM**. (Oct, 2022) Hyper-Compliant Polyacrylamide Microparticles for Hydrophobic Drug Delivery. Conference abstract. *Biomedical Engineering Society Annual Meeting*. San Antonio, TX.
91. Chickering GR, Dubay R, Fonseca VC, **Darling EM**. (Oct, 2022) Mechanophenotyping of Cells by a Microfluidic Constriction Device Shows Similar Patterns to CD44-Associated Elastic Moduli Distributions. Conference abstract. *Biomedical Engineering Society Annual Meeting*. San Antonio, TX.
92. Tandar C, Dubay RA, **Darling EM**, Fiering J. (Dec, 2022) Cell-Like Microparticles with Tunable Acoustic Properties for Calibrating Devices. Podium presentation. *Acoustical Society of America*, Nashville, TN.

g. Invited talks/seminars

1. Duke University Medical Center, Department of Surgery, July 2004.
2. Cornell University, Sibley School of Mechanical & Aerospace Engineering, Mar 2007.
3. Purdue University, Department of Biomedical Engineering, Mar 2007.
4. University of Texas, San Antonio, Department of Biomedical Engineering, Apr 2007.
5. University of Michigan, Department of Biomedical Engineering, Jan 2008.
6. Boston University, Department of Biomedical Engineering, Jan 2008.
7. University of California, Los Angeles, Department of Bioengineering, Jan 2008.
8. University of Minnesota, Department of Biomedical Engineering, February 2008.
9. University of Massachusetts Medical School, Department of Orthopedics, February 2008.
10. Ohio State University, Department of Biomedical Engineering, Mar 2008.
11. University of Notre Dame, Department of Aerospace & Mechanical Engineering, Mar 2008.
12. Cornell University, Department of Biomedical Engineering, Apr 2008.
13. Brown University, Department of Molecular Pharmacology, Physiology, and Biotechnology, September 2008.
14. Yale University, Department of Biomedical Engineering, Dec 2008.
15. Stanford University, Departments of Orthopaedics/Bioengineering, February 2009.
16. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Department of Orthopaedics, Oct 2009
17. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Cardiovascular Research Center, Dec 2009
18. Harvard Nanomechanics AFM Workshop, Center for Nanoscale Systems, September 2010
19. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, The Center for Restorative and Regenerative Medicine, Oct 2010
20. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Cardiovascular Research Center, Nov 2010
21. Brown University, Graduate student Biomedical Engineering Society, Dec 2010
22. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, COBRE Center for Stem Cell Biology, Mar 2011
23. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Department of Orthopaedics, September 2011
24. Brown University, Division of Biology and Medicine, Stem cell TED-ish talk, Oct 2012
25. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Cardiovascular Research Center, Oct 2012
26. Brown University, School of Engineering, IMNI Brown Bag Seminars, February 2013
27. German Society for Cell Biology, Heidelberg, Germany, Mar 2013
28. Modern Biological Imaging, Wellesley College, Wellesley, MA, Apr 2013

29. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Department of Orthopaedics, May 2013
30. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, COBRE Center for Stem Cell Biology, May 2013
31. Therapeutic Discovery Symposia, Stem Cells & Cell Signaling – 2013 Meeting, Waltham, MA, May 2013
32. Workshop on the Dynamics of Stem Cell Decision, Copenhagen, Denmark, Aug 2013
33. Biomedical Engineering Society Annual Meeting, BMES-NSF Session: Promoting and Sustaining Innovative Research in Biomedical Engineering, Seattle, Washington, September 2013
34. University of Rochester, BME Colloquium Series, Apr 2014
35. Massachusetts General Hospital, Center for Engineering in Medicine, Apr, 2014
36. New England Biomedical Engineering Conference (NEBEC), Boston, MA, Apr 2014.
37. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, COBRE Center for Stem Cell Biology and Center for Cancer Research and Development, June 2014
38. Brown University, Department of Pathology, Pathology Research Seminar, Nov 2014
39. Tissue Engineering & Bioprinting: Research to Commercialization, Boston, MA, February 9, 2015.
40. University of Kansas Medical Center, Institute for Reproductive Health and Regenerative Medicine, Kansas City, MO, September 17, 2015
41. University of Kansas, Department of Biomedical Engineering, Lawrence, KA, September 17, 2015
42. 3rd Annual Midwest Conference on Cell Therapy and Regenerative Medicine, Kansas City, MO, September 18, 2015
43. Tissue Engineering, Synthetic Biology and Bioprinting Conference, Boston, MA, Mar 18, 2016
44. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Department of Orthopaedics, February 2017
45. Orthopaedic Research Society Annual Meeting. San Diego, CA. Mar 2017
46. University of Florida, Department of Biomedical Engineering, Gainesville, FL, September 25, 2017
47. Biomedical Engineering Society Annual Meeting. Phoenix, AZ. Oct 2017
48. Rensselaer Polytechnic University, Department of Biomedical Engineering, Troy, NY, Nov 2017
49. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Department of Orthopaedics, Mar 2019
50. Draper Laboratory, Cambridge, MA, September 2019
51. Cellular and Molecular Bioengineering Special Interest Group Conference, San Juan, PR, Jan 2020.
52. National Institute of Standards and Technology, Gaithersburg, MD, Jan 2020
53. Center for Craniofacial Regeneration, University of Pittsburgh, virtual, Oct 2020

54. Rhode Island Hospital and the Warren Alpert Medical School at Brown University, Cardiovascular Research Center, virtual, Oct 2020
55. Perkin Elmer, virtual, Sept 2010

h. Work in review

i. Work in progress

j. Patents and patent disclosures

1. **Darling EM**, Labriola NR, Desai HV. Method and System for Early Stage Identification of Stem Cell Lineage. Provisional filing. US. 61/508,029. July 14, 2011. B069 P02343-US.
2. **Darling EM**, Desai HV. Methods of identifying and isolating cells using molecular beacons. US. 61/874,070. September 5, 2013. Provisional filing.
3. **Darling EM**, Marble HV. 2015. Magnetically detectable, on-off oligonucleotide. Provisional filing. Brown Tech ID 2364. Appl No. 62173055.
4. **Darling EM**, Labriola NR, Mathiowitz E. METHODS OF FABRICATING HYPER COMPLIANT POLYMER PARTICLES AND METHODS OF USE AND COMPOSITIONS. PCT/US2017/063825
5. **Darling EM**, Mathiowitz E. HYPER-COMPLIANT MICROPARTICLES FOR TRANS-BLOOD-BRAIN BARRIER DELIVERY. Provisional filing. US. 63/313,039. February 23, 2022.
6. **Darling EM**, Mathiowitz E. New Invention Disclosure. January 5, 2023. Tech ID 3298. Hyper-compliant microparticles (HCMPs) as persistent vascular carriers

7. Research grants

a. Current grants

Draper Fellowship (Dubay, R) 09/01/2018-08/31/2020
Draper Laboratory ($119,477 direct, $5,377 indirect)
Title: Brown-Draper Graduate Fellowship
Role: Mentor

CMMI 2054193 06/01/2021-05/31/2024
NSF ($274,871 direct, $125,129 indirect)
Title: Measurement of in situ mechanical forces during neotissue formation
Role: PI

RET Supplement, CMMI2054193 02/01/20122-01/31/2023
NSF ($20,000 direct, $0 indirect)
Title: Measurement of in situ mechanical forces during neotissue formation
Role: PI

b. Completed grants

F32 AR53448 09/01/2006-08/31/2007

NIH/NIAMS ($48,796 direct, $0 indirect)
Title: Stem cell characterization using atomic force microscopy
Role: PI (Duke University)

K99 AR054673 09/01/2007-08/31/2009
NIH/NIAMS ($75,170 direct, $6,014 indirect)
Title: Adult stem cell enrichment via biomechanical characterization
Role: PI (Duke University)

RIH/Brown Ortho COBRE, P20 RR024484, Pilot Project 08/01/2010-07/31/2012
NIH /NCRR ($100,000 direct, $51,751 indirect)
Title: Investigation into the effects of single-cell mechanical stimulation and perturbation
Role: Pilot project investigator

RIH/Brown Ortho COBRE, P20 RR024484, subcontract 08/01/2010-07/31/2012
NIH /NCRR ($53,548 direct, $31,593 indirect)
Title: AFM subcontract for the bioengineering core of the COBRE for Skeletal Health and Repair
Role: Subcontractor

Pathways to Independence, R00 AR054673 09/01/2009-08/31/2012
NIH/NIAMS ($454,582 direct, $277,864 indirect)
Title: Adult stem cell enrichment via biomechanical characterization
Role: PI

Pathways to Independence supplement, R00 AR054673-S1 04/01/2011-08/31/2012
NIH/NIAMS ($61,152 direct, $37,914 indirect)
Title: Adult stem cell enrichment via biomechanical characterization, diversity research supplement
Role: PI (RD González-Cruz, funded research assistant)

Salomon Award 03/01/2012-06/30/2013
Brown University ($15,000 direct, $0 indirect)
Title: Stem cell enrichment via molecular beacon technologies
Role: PI

RIH/Brown Ortho COBRE, P20 GM104937, Invest Project 08/01/2012-07/31/2013
NIH/NIGMS ($150,000 direct, $83,858 indirect)
Title: High-yield, lineage-specific enrichment of living mesenchymal stem cells
Role: Project Investigator

BIBS Pilot Project 05/01/2013-04/30/2014
Brown University ($30,000 direct, $0 indirect)
Title: Novel methods to study live-cell gene expression in patient-derived neurons
Role: Co-PI

RET Supplement, CBET1253189 02/01/2013-01/31/2014
NSF ($12,000 direct, $0 indirect)
Title: CAREER: Mechanical Biomarkers and Mesenchymal Stem Cell Differentiation
Role: PI

DEANS Award 07/01/2014-06/30/2015
Brown University ($80,000 direct, $0 indirect)
Title: Predicting post-traumatic osteoarthritis via *in vivo* biomarkers of inflammation
Role: PI (with Y. Chen)

RET Supplement, CBET 1253189 02/01/2014-01/31/2015
NSF ($12,000 direct, $0 indirect)
Title: CAREER: Mechanical Biomarkers and Mesenchymal Stem Cell Differentiation
Role: PI

RET Supplement, CBET 1253189 02/01/2015-01/31/2016
NSF ($12,000 direct, $0 indirect)
Title: CAREER: Mechanical Biomarkers and Mesenchymal Stem Cell Differentiation
Role: PI

RIH/Brown Ortho COBRE, P20 GM104937, subcontract 08/01/2012-07/31/2017
NIH/NIGMS ($190,664 direct, $119,002 indirect)
Title: Core B Bioengineering: AFM subcontract for the bioengineering core of the COBRE for Skeletal Health and Repair Phase II
Role: Subcontractor

Diversity supplement, R01 AR063642-S1 06/01/2015-08/31/2017
NIH/NIAMS ($61,152 direct, $37,914 indirect)
Title: High-yield, lineage-specific enrichment of living mesenchymal stem cells
Role: PI (RD González Cruz, funded graduate student)

CAREER Award, CBET 1253189 02/01/2013-01/31/2018
NSF ($262,625 direct, $139,167 indirect)
Title: CAREER: Mechanical Biomarkers and Mesenchymal Stem Cell Differentiation
Role: PI

Diversity supplement, R01 AR063642-S1 09/01/2017-08/31/2018
NIH/NIAMS ($50,701 direct, $20,645 indirect)
Title: High-yield, lineage-specific enrichment of living mesenchymal stem cells
Role: PI (R Gutierrez, funded graduate student)

EAGER: Biomanufacturing , CBET 1547819 09/01/2015-08/31/2017
NSF ($203,403 direct, $80,970 indirect)
Title: EAGER: Biomanufacturing: Gene expression-based standardization of stem cells
Role: PI

Salomon Award 03/01/2017-06/30/2018
Brown University ($15,000 direct, $0 indirect)
Title: Visualizing gene expression in MRI
Role: PI

Biomedical research program, R01 AR063642 09/01/2013-08/31/2018
NIH/NIAMS ($1,062,500 direct, $552,801 indirect)
Title: High-yield, lineage-specific enrichment of living mesenchymal stem cells
Role: PI

Seed Award 01/01/2019-06/30/2020
Brown University ($85,000 direct, $0 indirect)
Title: Probing the role of mechanical forces in tissue assembly using in situ force sensors
Role: PI

Data Science Initiative 03/01/2020-02/29/2021
Brown University ($15,000 direct)
Title: Machine Learning for Small Data -omic Problems: Identifying the Immunosuppressive Proteomic Signature for Adipose-Derived Stem Cells
Role: PI and Mentor (Parsons, A)

RIH/Brown Ortho COBRE, P30 GM122732, subcontract 08/01/2018-07/31/2023
NIH/NIGMS ($266,636 direct, $166,648 indirect)
Title: Core B Bioengineering: AFM subcontract for the bioengineering core of the COBRE for Skeletal Health and Repair Phase III
Role: Subcontract PI

c. Proposals pending

Cycling

8. Service

a. To the University

Graduate program trainer: Biomedical Engineering (BME)
Biotechnology (Biotech)
Molecular Pharmacology and Physiology (MPP)
Therapeutic Sciences (TSGP)

PhD Thesis Committee: (*Chair)
Hafithe AlGhosain (BME)*, Advisor: Lee
Dan Cho (ABC ‘12), Advisor: Mathiowitz
Christina Bailey (BME ‘19)*, Advisor: Tripathi and Shukla
Christopher Baker (Biotech ‘17), Advisor: Mathiowitz
Cameron Baptista (BME ‘22), Advisor: Mathiowitz
Olivia Beane (BME ‘16), Advisor: **Darling**
Alison Biercevicz (BME ‘15), Advisor: Fleming

David Borton (BME ‘12), Advisor: Nurmikko
Graylen Chickering (BME), Advisor: **Darling**
Megan Dempsey (BME ‘21), Advisor: **Darling**
Yu-Ting Dingle (BME ‘15), Advisor: Hoffman-Kim
Elizabeth Drewniak (BME ‘10), Advisor: Crisco
Ryan Dubay (BME), Advisor: **Darling**
Elisabeth Evans (Biotech ‘19), Advisor: Hoffman-Kim
Rafael González Cruz (BME ‘18), Advisor: **Darling**
Robert Gutierrez (BME ‘21), Advisor: **Darling**
Brian Holt (BME ‘10), Advisor: Morgan
Mark Homer (BME ‘14), Advisor: Hochberg
Caitlin Hopkins (Biotech)*, Advisor: Morgan
Alex Hruska (BME), Advisor: Wong
Manisha (Kanthilal) Shah (BME ‘18), Advisor: **Darling**
Nicholas Labriola (BME ‘17), Advisor: **Darling**
Katherine Larson (BME ‘17), Advisor: Jay
Verida Leandre (Biotech, left program), Advisor: Mathiowitz
Susan Leggett (Pathobio ’18), Advisor: Wong
Cristina Lopez-Fagundo (BME ‘13), Advisor: Hoffman-Kim
Jing Lu (BME ’10), Advisor: Webster
Hetal Marble (MPP ‘17), Advisor: **Darling**
Adrienne Parsons (Biotech ‘21), Advisor: **Darling**
Julie Richardson (BME ‘12), Advisor: Hoffman-Kim
Jessica Sadick (Biotech ‘18), Advisor: **Darling**
Alysha Simmons (Pathobio ‘20), Advisor: Wong and Kane
David Stout (BME ‘14), Advisor: Franck
Sylvia Sarnik (BME, ScM ‘21), Advisor: **Darling**
Michael Susienka (BME ‘17), Advisor: Morgan
Bryan Sutermaster (BME ‘19), Advisor: **Darling**
Jacquelyn Youssef (BME ‘11), Advisor: Morgan
Kimberly Waller (BME ‘13), Advisor: Jay
Jingjing Wang (BME ‘14), Advisor: Tripathi
Botai Xuan (MPP ‘20)*, Advisor: Dawson
Ahbid Zein-Sabatto (BME), Advisor: Lee and Hoffman-Kim

ScM Thesis Committee:

Catherine Bautista (BME ’15), Advisor: Bilgen
Victoria Goldenschtein (BME ’17), Advisor: Mathiowitz
Carder Jones (Biotech ’21), Advisor: Mathiowitz
Erica Kahn (BME ‘16), Advisor: Bilgen
Manisha Kanthilal (BME ’13), Advisor: **Darling**
Peter Lam (BME ’17), Advisor: Y. Chen
Bella Okiddy (BME ’16), Advisor: **Darling**
Adrienne Parsons (Biotech ‘17), Advisor: **Darling**
Mandy Pereira (Biotech ‘14), Advisor: Quesenberry
Talisha Ramchal (Biotech ‘11), Advisor: Hoffman-Kim
Anyaa Shah (Biotech ’22), Advisor: Mathiowitz

Raj Sharan (Biotech ’22), Advisor: Mathiowitz
Elaine Steranka (BME ’17), Advisor: Mathiowitz
Sean Weyland (BME ’21), Advisor: **Darling**

Honors Thesis Committee: Elizabeth Bixler (ScB, BME ’18), Advisor: **Darling**
Bevan Bsharah (ScB, BME), Advisor: **Darling**
Aaron Chiou (ScB, BME ’14), Advisor: **Darling**
Eunice Cho (ScB, BIOL ’14), Advisor: **Darling**
Theresa Clothier (ScB, ChME ’15), Advisor: Shukla
Eugenia Gurvich (ScB, BME ’13), Advisor: Franck
Erin Hannen (ScB, BME ‘12), Advisor: Franck
Corey Holman (ScB, BIOL ’16), Advisor: **Darling**
Keenan Line (ScB, BME ’18), Advisor: **Darling**
Mary Lou (ScB, BIOL), Advisor: Wong
Noa Nessim (ScB, BIOL ’13), Advisor: **Darling**
Jenna Norton (ScB, BME ‘15), Advisor: Shukla
Iris Pak (ScB, BME ’15), Advisor: **Darling**
Talisha Ramchal (ScB, BIOL ‘11), Advisor: Hoffman-Kim
Kylen Soriano (ScB, BIOL ’18), Advisor: Dawson
Rob Stefani (ScB, BME ’10), Advisor: Mathiowitz
Libby Stein (ScB, BIOL ’15), Advisor: **Darling**
Clara Tandar (ScB, BIOL), Advisor: **Darling**
Joseph Urban (ScB, BME ’21), Advisor: **Darling**
Indu Voruganti (ScB, BIOL ’12), Advisor: **Darling**

Graduate Program Committees: Biomedical Engineering (2010-2021)
Biotechnology (2015-2020)

Junior Faculty Mentees: Nicholas Fawzi (Associate Professor, Brown)
Michelle Dawson (Assistant Professor, Brown)

09/2010-06/2019	Graduate Program Director, Biomedical Engineering
12/2014-present	BME Executive Committee
8/2015-present	COBRE Flow Cytometry Core, Steering Committee
01/2011	Member of Brown University panel for “Navigating the Publication Process”
05/2011	Member of Sheridan Center panel for “Preparing for Your First Year After Graduate School”
09/2011	Member of Brown University panel for “How to Negotiate an Academic Job Offer”
04/2012	Member of Brown University panel for “Planning Your Senior Year”
03/2013,2014	Member of Brown University panel for “NSF CAREER workshop”
11/2013	Member of Research@Brown focus group

2014-16	Member, Research Advisory Board, OVPR Brown University
2014-17	Member, MPPB seminar speaker selection committee
2015-17	Evaluator for Young Scholars Conference presentation
2017-18	Reviewer, Brown University Salomon Awards
2018	Plastic Surgery Search Committee for Research Faculty
2019-21	Reviewer, Brown University Seed Awards
2019-21	First-year and Sophomore Advising
2020	Orthopaedics Search Committee for Research Faculty
2021	Member, Brown Institute for Biology, Engineering, and Medicine (I-BEAM) formation committee
11/2021	Completion, Advance-CTR Mentoring Training Program

b. To the profession

2000-present	Member of Biomedical Engineering Society
2004-present	Member of Orthopaedic Research Society
2003-present	Reviewer for *Acta Biomaterialia, Advanced Materials, American Journal of Physiology: Cell Physiology, Annals of Biomedical Engineering, Arthritis and Rheumatism, Biomechanics and Modeling in Mechanobiology, Biophysical Journal, Biotechnology Progress, Bone, e Cells and Materials, Journal of Biomechanical Engineering, Journal of Biomechanics, Journal of Biomedical Materials Research, Journal of Functional Biomaterials, Journal of Orthopaedic Research, Microsystems & Nanoengineering, Nature Biomedical Engineering, Nature Communications, Osteoarthritis & Cartilage, PLoS ONE, Stem Cell Research & Therapy, Scientific Reports, Tissue Engineering, Tissue Engineering and Regenerative Medicine*
2009-present	Associate Editor, *Annals of Biomedical Engineering*
2011,13,15-22	Abstract reviewer and/or session chair for Biomedical Engineering Society Conference
04/2012	External grant reviewer for the Biotechnology and Biological Sciences Research Council, United Kingdom
04/2013	External grant reviewer for Wayne State University
2013-14,18	Abstract reviewer for Orthopaedic Research Society Conference
10/2013	Editorial Committee for Volume 17 (2015) of the *Annual Reviews in Biomedical Engineering*
03/2014	*Ad hoc* reviewer on NIH Special Emphasis Panel (ZRG1 CB-J 55)
08/2014	External grant reviewer for CCNY-MSKCC, U54 Partnership
2015-18	Council member, BMES Cellular and Molecular Bioengineering SIG
12/2015,16	*Ad hoc* reviewer on NIH/NIBIB study section (2016/01 ZEB1 OSR-E (J1) S meeting)
2016,17,21	Reviewer for CMBE SIG Rising Star Award
01/2018	Conference Co-Chair, Cellular and Molecular Bioengineering Conference in Key Largo, FL
11/2018	*Ad hoc* reviewer for Orthoregeneration Network, Kick-starter grants
09/2019	*Ad hoc* reviewer on NSF/EMBS CAREER Award study section

05/2021	*Ad hoc* reviewer on NSF/EMBS study section
09/2021	*Ad hoc* reviewer for Engineering and Physical Sciences Research Council, UK.
08/2022	*Ad hoc* reviewer for Swiss National Science Foundation
11/2022	*Ad hoc* reviewer for National Science Foundation, Biomaterials CAREER panel

c. To the community

2011-17	Lab participation in the annual Vartan Gregorian/Martin Luther King Jr. Elementary School Science Conference (Providence, RI)
02/2012	Presented current research topics to the Biomedical Club at the Wheeler School in Providence, RI
Summers 2014-16	NSF Research Experience for Teachers in Darling Lab
Summers 2022-23	NSF Research Experience for Teachers in Darling Lab

9. Academic honors

a. Awards

2007	Orthopaedic Research Society's New Investigator Recognition Award Finalist
2007	AIMM-ASBMR John Haddad Young Investigator Award
2007	NIH/NIAMS Pathway to Independence Award (K99/R00)
2008	Duke University, Kewaunee Post-Doctoral Achievement Award
2008	26th Army Science Conference, Bronze Award for best paper
2010	Award for Editorial Excellence, *Annals of Biomedical Engineering*
2012	Rising Star, BMES-SPRBM Conference on *Cellular and Molecular Bioengineering*
2012	*Nanotechnology* '2011 Highlights' collection article
2012	Salomon Award, Brown University
2013	NSF CAREER Award
2013	Department of Bioengineering Outstanding Graduate Alumnus Award, Rice University
2014	Manning Assistant Professor chair, Brown University
2017	Salomon Award, Brown University
2019	*Acta Biomaterialia* Reviewer Excellence Award for 2018
2019	Seed Award, Brown University

b. Press releases and publicity

04/2011	Nanotechweb.org, Lab Talk. "Force scanning: quick maps and measurements of living cells."
05/2012	Brown University, News and Events. "Physical properties predict stem cell outcome." Also covered at BioWorld.com, among others.
09/2012	Brown University, News and Events. "Beacons light up stem cell transformation." Also covered at AZOnano.com, among others.
09/2012	Brown Daily Herald. "Biology prof finds methods of identifying usable stem cells."
02/2013	Brown University, News and Events. "Three win NSF CAREER awards."

07/2014 Brown University, News and Events. "Stem cell type resists chemo drug.http://news.brown.edu/shorts/2013/02/three-win-nsf-career-awards" Also covered at FirstWordPharma.com, CIRM, MedicalWebTimes.com, among others.
10/2014 Brown University, News and Events. "A new way to extract bone-making cells from fat tissue." Also covered at Science360 News (NSF Top Story), ScienceDaily, CIRM, The Economic Times, among others.
03/2015 GEN: Genetic Engineering & Biotechnology News. "A Dynamic View of Gene Expression."
05/2016 Brown University, News and Events. "Advance could help grow stem cells more safely."
02/2021 Brown University, News from Brown. "Tiny sensor technique reveals cellular forces involved in tissue generation."

8. Teaching

a. Lead/co-lead instructor

BIOL 1140, Tissue Engineering *(2011, Spring)*

Description: This course explores the current principles, tools, and methodologies in the field of tissue engineering. Students evaluate journal articles from the scientific literature and discuss the process of experimentation with guest authors. Writing assignments, oral presentations, and peer critiques emphasize the development of writing, oral communication, and critical thinking skills.

Students: 17 enrolled (62 on initial waitlist)
Feedback: Course effectiveness – 2.12, Instructor effectiveness – 2.06

BIOL 2230/40, Biomedical Engineering and Biotechnology Seminar *(2009-present Fall/Spring)*

Description: This mandatory seminar course for graduate students in the Biomedical Engineering and Biotechnology programs provides a weekly forum for students to present their research to peers and faculty. Students also receive training in how to host seminar speakers and be an engaged audience. As a regular co-instructor in this course, my role is to ask presenters rigorous questions about their research and provide constructive feedback to improve both presentation skills and science. (*New scoring system instituted in AY19-20: 5-best, 1-worst)

2011-2014
Feedback (Fall 2011): Course – 2.21, Instructor – 1.83
Feedback (Spring 2012): Course – 2.38, Instructor – 1.75
Feedback (Fall 2012): Course – 1.63, Instructor – 1.40
Feedback (Spring 2013): Course – 1.78, Instructor – 1.63
Feedback (Fall 2013): Course – 2.00, Instructor – 1.50
Feedback (Spring 2014): Course – 2.00, Instructor – 1.83
Feedback (Fall 2014): Course – 2.18, Instructor – 1.64
Feedback (Fall 2015): Course feedback not collected by BioMed
Feedback (Fall 2016): 104 students. Course – 2.35, Instructor – 1.68
Feedback (Fall 2017): 51 students. Course – 2.35, Instructor – 2.0
Feedback (Fall 2018): 41 students (+16 audit). Course – 1.86, Instructor – 1.43
Feedback (Fall 2019): 42 students (+17 audit). Course – 2.85, Instructor – 3.42

Feedback (Fall 2020): 27 students. Course – 3.68, Instructor – 4.58
Feedback (Fall 2021): 24 students. Course – 3.67, Instructor – 4.40
Feedback (Fall 2022): 18 students. Course – 3.62, Instructor – 4.36

BIOL 1150, Stem Cell Engineering *(2011-present)*
Description: This course examines the role of stem cells in development, tissue homeostasis, and wound healing, as well as how they have been used for tissue engineering and cell-based regeneration therapies. The course is divided into two major topic areas: stem cell biology and biomedical applications. The first third of the course focuses on the biological aspects of stem cells, while the remaining portions highlight the practical use of these cells for improving health and well being. A lab is included as part of this course to provide hands-on training in how to isolate, culture, and differentiate adult stem cells in a laboratory setting. Beginning in Spring 2017, the course adopted an inverted format. Pre-recorded lectures are watched by the students before class, with in-person sessions concentrated on answering questions, discussing lecture concepts, and active learning exercises. (*New scoring system instituted in AY19-20: 5-best, 1-worst; mean/median shown)

Fall 2011
Students: 20 enrolled, full cap (93 contacted instructor with interest in course)
Feedback: Course effectiveness – 1.60, Instructor effectiveness – 1.45
Spring 2013
Students: 17 enrolled (52 contacted instructor with interest in course)
Feedback: Course – 1.60, Instructor – 1.10
Spring 2014
Students: 20 enrolled, full cap (87 contacted instructor with interest in course)
Feedback: Course – 1.67, Instructor – 1.42
Spring 2015
Students: 20 enrolled, full cap (75 contacted instructor with interest in course)
Feedback: Course – 2.17, Instructor – 1.94
Spring 2017
Students: 16 enrolled, full cap (40 contacted instructor with interest in course)
Feedback: Course – 1.50, Instructor – 1.40
Spring 2020
Students: 5 enrolled (15 contacted instructor with interest in course)
*Feedback: Course – 5/5, Instructor – 5/5
Spring 2021
Students: 7 enrolled (46 with interest in course)
Feedback: Course – 4/5, Instructor – 4.25/5
Spring 2022
Students: 8 enrolled (20 with interest in course)
Feedback: Course – 4.71/5, Instructor – 4.43/5

b. Guest lecturer

2009/11, Fall ENGN 2910K, Cell Mechanics, Instructor: Christian Franck, PhD
2010-12, Fall BIOL 2130, Techniques in Molecular & Cellular Science, Instructor: Jeffrey Morgan, PhD

2010, Fall	BIOL 2110, Drug and Gene Delivery, Instructor: Edith Mathiowitz, PhD
2011, Spring	BIOL 1100, Cell Physiology and Biophysics, Instructor: Julie Kauer, PhD
2012, Spring	BIOL 2940A, Molecular Pharmacology and Physiology Seminar, Instructor: Diana Horrigan, PhD
2009-12, Fall	"Guest artist" in BIOL 1140, Tissue Engineering, Instructor: Diane Hoffman-Kim, PhD
2012-14	Warren Alpert School of Medicine, Bionic Human Pre-clinical Electives speaker series
2014, Fall	ENGN 1490, Biomaterials, Instructor: Ian Wong, PhD

9. Students

a. Graduate students (15 multi-year as primary mentor)

01/2010-04/2010	Dana Lord, rotation student, PhD, MPP
09/2010-09/2015	Olivia S. Beane, PhD, BME (5 yrs)
09/2010-09/2016	Hetal D. Marble (Desai), PhD, MPP (6 yrs)
09/2010-12/2016	Nicholas R. Labriola, PhD, BME (6.25 yrs)
09/2011-01/2018	Manisha Shah (Kanthilal), ScM/PhD, BME (1.75/4.5 yrs)
09/2012-03/2018	Rafael D. González Cruz, PhD, BME (6.4 years)
09/2012-12/2018	Bryan A. Sutermaster, PhD, BME (Sidney Frank Fellow, 6.25 yrs)
09/2013-06/2018	Jessica S. Sadick, ScM/PhD, Biotech (NSF Fellow, 1/5.25 yrs)
07/2015-05/2016	Bella Okiddy, ScM, BME (1.75 yrs)
09/2015-08/2021	Adrienne M. Parsons, ScM/PhD, Biotech (1.75/4 yrs)
06/2016-12/2021	Robert A. Gutierrez, PhD, BME (NSF Fellow, 5.5 yrs)
09/2016-06/2021	Megan E. Dempsey, PhD, BME (4.75 yrs)
09/2017-12/2017	Bradyn Jasper, ScM, Biotech (1.75 yrs)
09/2018-present	Ryan A. Dubay, PhD, BME (Draper Fellow, 4.5 yrs)
09/2018-06/2020	Sylvia A. Sarnik, ScM, BME (Sidney Frank Fellow, 2 yrs)
09/2019-06/2020	Matthew R. Figucia, ScM, BME (1.75 yrs)
09/2019-08/2021	Sean P. Weyland, ScM, BME (2.25 yrs)
09/2020-01/2023	Solhee Kim, non-thesis ScM, BME (2.25 yrs)
09/2021-present	Graylen Chickering, PhD, BME (GFSD Fellow, TBD yrs)
09/2021-01/2022	Rebeka Sowers, ScM, Biotech
09/2022-present	Marta Rodriguez Navas, ScM, BME
09/2022-present	Oliver Nicholas, ScM, Biotech
09/2022-present	Aishwarya Bose, ScM, BME

b. Undergraduate students (18 multi-year as primary mentor)

08/2009-05/2010	Erin Hannen, sophomore, BME
01/2010-05/2010	Kian Adabi, sophomore, BIOL (UTRA recipient, declined)
01/2010-05/2010	Edward Horton, sophomore, BIOL
06/2010-08/2010	Ghansham (Chris) Ramkhellawan, junior, University of Miami (Leadership Alliance)
09/2010-12/2012	Michael Pico, sophomore-senior, BIOL
09/2011-12/2011	Edward (Joe) Goldberg, senior, BME
01/2011-05/2012	Indu Voruganti, junior-senior, BIOL (UTRA recipient, Honors thesis)

06/2011-05/2013	Noa Nessim, junior-senior, BIOL (UTRA recipient, Honors thesis)
06/2012-08/2012	Robert Gutierrez, junior, Santa Barbara City College (Leadership Alliance)
06/2012-05/2014	Aaron Chiou, junior-senior, BME (UTRA recipient, Honors thesis)
09/2012-05/2014	Eunice Cho, junior-senior, BIOL (UTRA recipient, Honors thesis)
09/2013-12/2013	Eric Tung, junior, BIOL
09/2013-05/2015	Iris Garcia-Pak, junior-senior, BME (UTRA recipient, Honors thesis)
09/2013-05/2015	Libby Stein, junior-senior, BIOL (UTRA recipient, Honors thesis)
09/2013-05/2015	Bella Okiddy, junior-senior, BME (UTRA recipient)
09/2014-12/2014	Allison Silverman, sophomore, NEUR
09/2014-04/2015	Juliette Randazza, sophomore, BIOL
09/2014-05/2016	Corey Holman, junior-senior, BIOL (UTRA recipient, Honors thesis)
09/2015-05/2018	Keenan Line, sophomore-senior, BME (Honors thesis)
09/2016-05/2018	Elizabeth Bixler, junior-senior, BME (UTRA recipient, Honors thesis)
09/2017-05/2019	Olivia Woodford-Berry, junior-senior, BIOL (UTRA recipient, Honors thesis)
09/2018-12/2019	Rea Yoh, sophomore-junior, BIOL
09/2018-05/2021	Joseph Urban, sophomore-senior, BME (UTRA recipient, Honors thesis, Domenico A Ionata Award winner)
09/2019-05/2022	Bevan Bsharah, sophomore-senior, BME
09/2021-present	Clara Tandar, first-year-, BIOL
09/2022-present	Rhea Rasquinha, sophomore-, BME
09/2022-present	Tamsin Weissberg, senior-5th year, BME

c. Post-doctoral researchers

01/2017-09/2018	Nicholas Labriola (Smith & Nephew)