

Curriculum Vitae - Michelle R. Dawson, Ph.D.

Assistant Professor of Medical Science
Department of Molecular Biology, Cell Biology, and Biochemistry (MCB)
Brown University

Mailing Address: 171 Meeting St. Box G-B 316, Providence, RI 02912

Phone: (401) 863-6829

Email: michelle_dawson@brown.edu

Brown Website: <https://www.dawsoncellbiophysics.com>

Faculty Profile: <https://vivo.brown.edu/display/mdawson2>

Twitter: @DawsonStemCell, @CellBiophysics

Linkedin: <https://www.linkedin.com/in/michelle-r-dawson-a6a7351/>

Google Scholar: https://scholar.google.com/citations?user=_u4XID0AAAAJ&hl=en

ACADEMIC APPOINTMENTS

Assistant Professor, July 2016 – current

Molecular Biology, Cell Biology, and Biochemistry, Brown University

School of Engineering, Brown University

Faculty Trainer: Therapeutics, MCB, BME, PLM, MMI, BR RTP, Biology of Aging

Assistant Professor, November 2008 – June 2016

School of Chemical & Biomolecular Engineering, Georgia Institute of Technology (GT)

Faculty appointments: Petit Institute for Bioengineering & Bioscience, Bioengineering Graduate Program, Wallace H. Coulter Department of Biomedical Engineering, School of Biology

Postdoctoral Research Fellow, June 2005 – October 2008

Massachusetts General Hospital, Harvard Medical School, and Edwin L. Steele Lab

Advisor: Rakesh K. Jain

EDUCATION

Ph.D. Chemical and Biomolecular Engineering, January 2000 – May 2005

Johns Hopkins University, Baltimore, MD, May 2005. Advisor: Justin Hanes.

Ph.D. Thesis: Mucosal Barriers to Non-Viral Gene Delivery in the Cystic Fibrotic Lung.

B.S. Biomedical Engineering, Louisiana Tech University, Ruston, LA, May 1999

PUBLICATIONS

MY STUDENTS AND POSTDOCS ARE HIGHLIGHTED IN *BLUE ITALICS*

Books and Special Issues

1. Dawson M (2022). Special Issue: Molecular and Cellular Heterogeneity in an Evolving Tumor Landscape: When Diversity Gives Rise to Aggressive and Drug Resistant Cells. Cancers. Guest edited by Michelle Dawson.

2. [Dawson M](#) (2023). Engineering and Physical Approaches to Cancer. Series: Current Cancer Research. ISBN-13: 9783031228018. Springer International Publishing. Co-Edited by Michelle Dawson and Ian Wong.

Refereed Book Chapters

1. [Mejia Pena C](#), [Lee A](#), [Frare M](#), [Ghosh D](#), [Dawson M](#) (2023). Hallmarks of an aging and malignant tumor microenvironment and the rise of resilient subpopulations. Engineering and Physical Approaches to Cancer. Book Series: Current Cancer Research. Springer Publishing. Co-Edited by Michelle Dawson and Ian Wong.
2. [Dawson M](#), [Xuan B](#), [Hsu J](#), [Ghosh D](#) (2020). Force balancing ACT-IN the Tumor Microenvironment: Cytoskeletal Modifications in Cancer and Stromal Cells to Promote Malignancy. IRCMB: Actin Cytoskeleton in Cancer Progression and Metastasis – Part B Volume 356. Edited by Clement Thomas and Lorenzo Galluzzi, Elsevier Publishing.
3. [Ghosh D](#), [Dawson M](#) (2018). Microenvironment Influences Cancer Cell Mechanics from Tumor Growth to Metastasis. Biomechanics in Oncology, 69-90. Advances in Experimental Medicine and Biology, Volume 1092. Edited by Konstantopoulos, Dong, and Kuhn. Springer Publishing.
4. [Dawson M](#), [Ghosh D](#) (2016). Mucosal Barriers. Drug Delivery Across Physiological Barriers. Edited by Silvia Muro 155-180, Pan Stanford Publishing.
5. [Dawson M](#), Tseng Y, Lee J, [McAndrews K](#) (2014). Intracellular Particle Tracking Rheology. Handbook of Imaging in Biological Mechanics. Edited by Corey Neu and Guy Genin, 381-388, CRC Press.
6. Hanes J, [Dawson M](#), Har-el Y, Suh J, Fiegel J (2003). Gene delivery to the lung. Pharmaceutical Inhalation Aerosol Technology, Edited by AJ Hickey, 2nd Ed., 489-539. Marcel Dekker Incorporated.

Refereed Review Articles

1. [Lee A](#), [Koh L](#), [Dawson M](#) (2022). Review: The Role of Exosome Heterogeneity in Epithelial Ovarian Cancer. Advances in Cancer Biology-Metastasis, 100040.
2. [Lee A](#), [Mejia Pena C](#), [Dawson M](#) (2022). Review: Differences between the Secretomes of Chemo-refractory and Chemo-resistant Ovarian Cancer Populations. Cancers 14 (6), 1418.
3. [Xuan B](#), [Ghosh D](#), [Dawson M](#) (2021). Contribution of the Distinct Biophysical Phenotype of PGCCs to Cancer Progression. Seminars in Cancer Biology, S1044-579X (21), 00144-9.

Refereed Research Articles

1. [Howes A](#), [Dea N](#), [Ghosh D](#), Krishna K, Wang Y, [Morrison B](#), Toussaint C, [Dawson M](#) (2023). Temporal Probing of Stress-Induced Premature Senescent Extracellular Matrix Remodeling of the Lung. Under review for Science Advances.
2. [Mejia Pena C](#), [Skipper T](#), [Hsu H](#), [Schechter I](#), [Ghosh D](#), [Dawson M](#) (2023). Paclitaxel Induced Metabolic Reprogramming of HGSOc in a Spatiotemporally Regulated 3D Model. Pending minor revisions for Scientific Reports.
3. [Lee A](#), [Ghosh D](#), [Koh I](#), [Dawson M](#) (2023). Senescence-Associated Exosomes Transfer MiRNA-Induced Fibrosis to Neighboring Cells. In press for Aging. <https://doi.org/10.18632/aging.204539>.
4. [Xuan B](#), [Ghosh D](#), [Jiang J](#), [Shao R](#), [Dawson M](#) (2020). Vimentin Filaments Drive Migratory Persistence in Polyploid Cancer Cells. Proceedings of the National Academy of Sciences 117 (43), 26756-65.
5. [Lee AH](#), [Ghosh D](#), [Quach N](#), [Schroeder D](#), [Dawson M](#) (2020). Ovarian Cancer Exosomes Trigger Differential Biophysical Response in Tumor-Derived Fibroblasts. Scientific Reports 10 (1), 1-16.

6. *Ghosh D, Mejia Pena C, Quach N, Xuan B, Lee A, Dawson M* (2020). Senescent mesenchymal stem cells remodel extracellular matrix driving breast cancer cells to a more-invasive phenotype. *Journal of Cell Science* 133 (2):1-12.
7. *Quach N, Kaur, S, Eggert M, Ingram L, Ghosh D, Sheth S, Nagy T, Dawson M, Arnold R, Cummings B* (2019). Paradoxical Role of Glypican-1 in Prostate Cancer Cell and Tumor Growth. *Scientific Reports* 9 (1), 1-15.
8. *Xuan B, Ghosh D, Cheney E, Clifton E, Dawson M* (2018). Dysregulation in Actin Cytoskeletal Organization Drives Increased Stiffness and Migratory Persistence in Polyploid Giant Cancer Cells. *Scientific reports* 8 (1), 1-13.
9. *Ali M, Wu Y, Ghosh D, Do B, Chen K, Dawson M, Fang N, Sulchek T, El-Sayed M* (2017). Gold Nanoparticles trapped at Nucleus Membrane Enhance the Nuclear Stiffness Causing Inhibition of Cancer Cell Migration, Invasion, and Motility by Modifying Nuclear Lamin A/C Protein. *ACS Nano* 11: 3716-26.
10. *Ghosh D, McGrail D, Dawson M* (2017). TGF- β 1 Pretreatment Improves the Function of Mesenchymal Stem Cells in the Wound Bed. *Microenvironment Derived Stem Cell Plasticity. Frontiers in Cell and Developmental Biology* 5: 28.
11. *McAndrews K, Yi J, McGrail D, Ravikumar N, Dawson M* (2015). Mesenchymal Stem Cells Induce Directional Migration of Invasive Breast Cancer Cells through TGF- β . *Scientific Reports* 5: 16,941.
12. *McGrail D, Patel K, Khambati N, Pithadia K, Dawson M* (2015). Utilizing Temporal Variations in Chemotherapeutic Response to Improve Breast Cancer Treatment Efficacy. *AIMS Bioengineering* 2(4): 310-23.
13. *McGrail D, McAndrews K, Brandenburg C, Ravikumar N, Kieu Q, Dawson M* (2015). Osmotic regulation is required for cancer cell survival under solid stress. *Biophysical Journal* 109(7): 1334-7.
14. *McAndrews K, Yi J, McGrail D, Dawson M* (2015). Enhanced Adhesion of Stromal Cells to Invasive Cancer Cells Regulated by Cadherin 11. *ACS Chemical Biology* 10(8):1932–38.
15. *McGrail D, Kieu Q, Iandoli J, Dawson M* (2015). Actomyosin Tension as a Determinant of Metastatic Cancer Mechanical Tropism. *Physical Biology* 12(2):026001. Featured article.
16. *McGrail D, Qi M, Khambhati N, Patel, K, Dawson M* (2015). Alterations in Ovarian Cancer Cell Adhesion Drive Taxol Resistance by Increasing Microtubule Dynamics in a FAK-dependent Manner. *Scientific Reports* 5:9529.
17. *McGrail D, Kieu M, Mezencev R, McDonald J, Dawson M* (2015). SNAIL-induced epithelial-to-mesenchymal transition produces concerted biophysical changes from altered cytoskeletal gene expression. *FASEB J* 29(4):1280-9.
18. *Datla S, McGrail D, Lyle A, Pounkova L, Hilenski1 L, Dawson M, Lassègue B, and Griendling K* (2014). Poldip2 Controls Vascular Smooth Muscle Cell Migration by Regulating Focal Adhesion Turnover and Polarization. *Applied Journal of Physiology* 307 (7): H945-57.
19. *McAndrews K, McGrail D, Quach N, Dawson M* (2014). Spatially coordinated changes in intracellular rheology and extracellular force exertion during mesenchymal stem cell differentiation. *Physical Biology* 11: 056004.
20. *McAndrews K, Kim F, Lam T, McGrail D, Dawson M* (2014). Architectural and Mechanical Cues Direct Mesenchymal Stem Cell Interactions with Cross-Linked Gelatin Scaffolds. *Tissue Engineering Part A*, 20(23-24):3252-60.
21. *McGrail D, Kieu Q, Dawson M* (2014). The Malignancy of Metastatic Ovarian Cancer Cells is Increased on Soft Matrices Through a Mechanosensitive Rho-ROCK Pathway. *Journal of Cell Science* 127, 2621-2626. Featured on the Cover.

22. [Ghosh D](#), Lilli L, [McGrail D](#), Matyunina L, McDonald J, [Dawson M](#) (2014). TGF- β 1 Induced Stiffening of Mesenchymal Stem Cells Depends on PDGF-BB Signaling, *Stem Cells and Development* 23(3): 245-61.
23. Don-Salu-Hewage1 A; Chan A; [McAndrews K](#); Chetram M; [Dawson M](#); Bethea D; Hinton C (2013). Cysteine (C)-X-C Receptor 4 Undergoes Transportin 1-Dependent Nuclear Localization and is Functional at the Nucleus of Metastatic Prostate Cancer Cells, *PLoS ONE* 7 (8): e57194.
24. [McGrail D](#), [McAndrews K](#), [Dawson M](#) (2013). Biomechanical Analysis Predicts Decreased Human Mesenchymal Stem Cell Function before Molecular Differences, *Experimental Cell Research* 319: 684-696.
25. [McGrail D](#), [Ghosh D](#), [Quach N](#), [Dawson M](#) (2012). Differential Mechanical Response of Mesenchymal Stem Cells and Fibroblasts to Tumor-Secreted Soluble Factors, *PLoS ONE* 7 (3): e33248.
26. Suk, JS, Lai S, [Dawson M](#), Boylan, N, Boyle M, Hanes J (2011). Rapid transport of muco-inert nanoparticles in CF sputum treated with NAC, *Nanomedicine* 6 (2): 365-75.
27. [Dawson M](#), Chae S, Jain RK, Duda D (2011). Cell Lineage-dependent Effects of Bone Marrow Stromal Cells on Tumor Progression, *American Journal of Cancer Research* 1(2):144-154.
28. Kozin, SV, Kamoun, WS, Huang, Y, [Dawson, M](#), Jain, RK, Duda, DG (2010). Rapid macrophage infiltration after local irradiation facilitates tumor re-growth whereas TEMs and not EPCs recruitment facilitates relapse of irradiated tumors, *Cancer Research* 70(14): 5679-85.
29. [Dawson M](#), Duda D, Chae S, Fukumura D, Jain RK (2009). VEGFR1 activity modulates myeloid cell infiltration in growing lung metastases but is not required for spontaneous metastasis formation, *PLoS ONE* 4(9): e6525.
30. Tang B, [Dawson M](#), Lai S, Wang YY, Suk, JS, Yang M, Zeitlin P, Boyle M, Fu J, Hanes J (2009). Biodegradable polymer nanoparticles that rapidly penetrate the human mucus barrier, *Proceedings of the National Academy of Sciences* 106(46):19268-73. Featured on the Cover (>407 citations).
31. [Dawson M](#), Duda D, Fukumura D, Jain RK (2009). VEGFR1-activity independent metastasis formation, *Nature* 461: E4.
32. Perentes JY, McKee TD, Ley CD, Mathiew H, [Dawson M](#), Padera TP, Munn LL, Jain RK, Boucher Y. In vivo imaging of extracellular matrix remodeling by tumor-associated fibroblasts, *Nature Methods*, 6(2):143-5 (2009).
33. Suh J, [Dawson M](#), Hanes J. (2005). Real-time particle tracking: Applications to drug and gene delivery, *Advanced Drug Delivery Reviews* 57:63-78.
34. [Dawson M](#), Krauland E, Wirtz D, Hanes J. (2004). Transport of polymeric nanoparticle gene carriers in gastric mucus, *Biotechnology Progress*, 20(3):851-857.
35. [Dawson M](#), Wirtz D, and Hanes J. (2003). Enhanced viscoelasticity of human cystic fibrotic sputum correlates with increasing microheterogeneity in particle transport, *Journal of Biological Chemistry*, 278:50393-50401.

Abstracts (National/International Meetings)

1. [Dawson M](#), [Mejia Pena C](#), [Lee A](#), [Perricone M](#), [Ghosh D](#) (2022). Biomechanics of Therapy Induced Senescence and the Evolving Tumor Microenvironment. Texas A&M's Society of Engineering and Science Meeting. Mechanobiology of Disease Symposium. October 16-19, 2022 (in person).
2. [Lee A](#), [Ghosh D](#), [Dawson M](#) (2021). miRNA Content of Senescence-Associated Exosomes Promotes Myofibroblast Differentiation in MSCs via TGF-B Pathway Alterations. American Society for Cell Biology (ASCB) Annual Conference. Dec 2021 (virtual).

3. [Lee A](#), [Ghosh D](#), [Dawson M](#) (2021). Heterogenous Exchange of Epithelial Ovarian Cancer Cell Exosomes Plays Unique Role in Metastasis. Biomedical Engineering Society (BMES) Annual Conference. Oct 2021 (virtual).
4. [Mejia Pena C](#), [Skipper T](#), [Hsu J](#), [Dawson M](#) (2021). Development of a Novel 3D Organoid Model to Investigate the Role of Matrix Remodeling on Ovarian Cancer Progression and Metastasis. Experimental Biology Conference. April 2021 (virtual).
5. [Lee A](#), [Ghosh D](#), [Dawson M](#) (2021). Senescence-Associated Exosome Exchange Activates Myofibroblast Phenotype in Mesenchymal Stem Cells. Experimental Biology (American Society for Biochemistry and Molecular Biology). April 2021 (virtual).
6. [Mejia Pena C](#), [Skipper T](#), [Hsu J](#), [Schechter I](#), [Dawson M](#) (2021). "Investigating Ovarian Cancer Progression within a Spatially and Temporally Controlled Organoid Model". New England Science Symposium poster. April 2021 (virtual).
7. [Lee A](#), [Ghosh D](#), [Quach N](#), [Dawson M](#) (2020). Heterogeneity in Ovarian Cancer Exosomes Orchestrates Diverse Biophysical Changes in Tissue Fibroblasts to Trigger Malignancy, November 16, 2020, American Society for Extracellular Vesicles (virtual).
8. [Lee A](#), [Ghosh D](#), [Quach N](#), [Schroeder D](#), [Dawson M](#) (2020). Single-Cell Derived Exosome Heterogeneity Promotes Invasive Fibroblast Phenotype in Epithelial Ovarian Cancer, October 18, 2020, Carnegie Mellon Forum on Biomedical Engineering and Annual Symposium of International Academy of Medical and Biological Engineering (AL Poster).
9. [Mejia Pena C](#), [Skipper T](#), [Hsu J](#), [Schechter I](#), [Dawson M](#) (2020). Investigating Ovarian Cancer Progression within a Spatially and Temporally Controlled Organoid Model, June 24, 2020, Virtual New England Science Symposium (CM Poster).
10. [Lee A](#), [Ghosh D](#), [Quach N](#), [Dawson M](#) (2020). Heterogeneity in Ovarian Cancer Exosomes Orchestrates Diverse Biophysical Changes in Tissue Fibroblasts to Trigger Malignancy, June 24, 2020, Virtual New England Science Symposium (AL Presentation, 3rd Place Oral Presentation Award).
11. [Ghosh D](#), [Quach N](#), [Mejia Pena C](#), [Xuan B](#), [Lee A](#), [Dawson M](#) (2019). Mesenchymal Stem Cell Aging and Senescence Associated Extracellular Matrix Contributions to Breast Cancer Progression, October 16-19, 2019, Philadelphia, PA. Biomedical Engineering Society Annual Meeting (DG Presentation).
12. [Xuan B](#), [Ghosh D](#), [Jiang J](#), [Dawson M](#) (2019). Targeting Chemoresistant PGCCs through Disruption of Osmotic Stress Response, October 16-19, 2019, Philadelphia, PA. Biomedical Engineering Society Annual Meeting (BX Presentation).
13. [Lee A](#), [Ghosh D](#), [Quach N](#), [Dawson M](#) (2019). Ovarian Cancer Exosome Heterogeneity Differentially Triggers Biophysical Changes in Ovarian Cancer Stromal Cells, October 16-19, 2019, Philadelphia, PA. Biomedical Engineering Society Annual Meeting (AL Presentation).
14. [Mejia Pena C](#), [Hsu J](#), [Skipper T](#), [Dawson M](#) (2019). Development of a Novel 3D Organoid Model to Investigate the Role of Matrix Remodeling on Ovarian Cancer Progression and Metastasis, October 16-19, 2019, Philadelphia, PA. Biomedical Engineering Society Annual Meeting (CMP Presentation).
15. [Skipper T](#), [Mejia Pena C](#), [Dawson M](#) (2019). Modeling the Ovarian Cancer Microenvironment with Alginate-Gelatin Microspheres, October 16-19, 2019, Philadelphia, PA. Biomedical Engineering Society Annual Meeting (TS Presentation).
16. [Beland M](#), [Ghosh D](#), [Dawson M](#) (2019). Combining Shear Wave Ultrasound Elastography and Single Cell Biophysical Analysis to Highlight Differences in Tumor Phenotype and Heterogeneity. Radiological Society of North America Annual Meeting (MB Presentation).

17. [Mejia Pena C](#), [Hsu J](#), [Skipper T](#), [Dawson M](#) (2019). Development of a Novel 3D Organoid Model to Study Epithelial Ovarian Cancer Growth and Matrix Invasion, April 6, 2019, Boston, MA. New England Science Symposium (CMP Poster Presentation).
18. [Ghosh D](#), [Quach N](#), [Mejia Pena C](#), [Xuan B](#), [Lee A](#), [Dawson M](#) (2019). Mesenchymal Stem Cell Aging and Senescence Associated Extracellular Matrix Contributions to Breast Cancer Progression, February 9-10, 2019, Galveston, TX. Gordon Research Conference: Physics of Cancer (MD Podium Presentation).
19. [Dawson M](#), [Ghosh D](#) (2018). Cellular Senescence Alters Tumor Microenvironment Interactions Forcing Cancer Progression. Gordon Research Conference: Signal Transduction by Engineered Extracellular Matrices, July 22-27, 2018, Andover, NH (MD Poster Presentation).
20. [Dawson M](#), [Ghosh D](#), [Xuan B](#) (2018). Biophysics of Giant Polyploid Cancer Cells that Form in an Aging Tumor Stroma. Cellular and Molecular Bioengineering (CMBE) Conference, January 2-6, 2018, Key Largo, FL (MD Poster Presentation).
21. [Dawson M](#), [Xuan B](#), [Ghosh D](#) (2018). Biophysics of polyploid cancer cells in an aging stroma. Cancer Research 78 (13 Supplement), 1315-1315 (MD Poster Presentation).
22. [Bedoya S](#), [Ghosh D](#), [Dawson M](#) (2018). Mechanosensitivity Analysis of Breast Cancer Tumor Cells from Needle Biopsy. FASEB JOURNAL 32, 1 (SB Poster Presentation).
23. [Quach N](#), [Eggert M](#), [Ghosh D](#), [Dawson M](#), [Arnold R](#), [Cummings B](#) (2017). Glypican-1: A tumor suppressor or an oncogene in human bone metastatic prostate cancer cells. Cancer Research 77 (13 Supplement), 4465-4465 (NQ Poster presentation).
24. [Dawson M](#) (2016). Modeling the tumor microenvironment with nanostructured material. Nanotechnology in medicine: from molecules to humans. ECI Symposium Series (MD Podium presentation).

56 abstracts prior to joining Brown faculty

Abstracts (Local Meetings)

1. [Lee A](#), [Ghosh D](#), [Dawson M](#) (2021). Exosomes: Potent Vehicles that Play Impactful Roles in Epithelial Ovarian Cancer. Invited Student Speaker. 2021 Center for Biomedical Engineering (CBME) Retreat. May 2021 (virtual).
2. [Lee A](#), [Ghosh D](#), [Dawson M](#) (2020). Exosomes Mediate Biophysical Changes in the Ovarian Cancer Tumor Microenvironment, August, 2020, Stem Cells and Aging Center for Biomedical Research Excellence (COBRE) at Brown University (AL Presentation).
3. [Mejia Pena C](#), [Skipper T](#), [Hsu J](#), [Dawson M](#) (2019). Development of a Novel 3D Organoid Model to Investigate the Role of Matrix Remodeling on Ovarian Cancer Progression and Metastasis. Annual Nabrit Conference for Early Career Scholars, Brown University (CMP Poster).
4. [Mejia Pena C](#), [Dawson M](#) (2019). Development of a novel 3D organoid model to study epithelial ovarian cancer growth and matrix invasion. Molecular Biology, Cell Biology, and Biochemistry, Brown University (CMP Podium).
5. [Mejia Pena C](#), [Dawson M](#) (2018). Development of a novel 3D organoid model to study epithelial ovarian cancer growth and matrix invasion. Molecular Biology, Cell Biology, and Biochemistry, Brown University (CMP Poster).
6. [Hsu J](#), [Mejia Pena C](#), [Lee A](#), [Quach N](#), [Ghosh D](#), [Dawson M](#) (2018). Characterizing Putative Epithelial-to-Mesenchymal Transition Phenotype of Ovarian Cancer Spheroids in Three-Dimensional Hydrogel Scaffolds. Brown Summer Research Symposium, Brown University.
7. [Gibbs S](#), [Quach N](#), [Dawson M](#) (2018). Enhancing Therapeutic Efficacy of Platinum Based Drugs by Pharmacologically Inhibiting PARP in Ovarian Cancer. Brown Summer Research Symposium, Brown University.

8. [Mejia Pena C](#), [Dawson M](#) (2017). Pathways to Chemoresistant Ovarian Cancer: Microenvironmental Regulation of FAK-Based Adhesion. Molecular Biology, Cell Biology, and Biochemistry, Brown University.
9. [Clifton E](#), [Xuan B](#), [Ghosh D](#), [Dawson M](#) (2017). SASP-induced polyploidy and nuclear enlargement: a potential system of chemotherapeutic resistance. Brown Summer Research Symposium, Brown University.
10. [Soriano K](#), [Ghosh D](#), [Dawson M](#) (2017). Effects of Substrate Elasticity on Malignancy and Chemotherapeutic Resistance. Brown Summer Research Symposium, Brown University.
11. [Skipper T](#), [Ghosh D](#), [Dawson M](#) (2017). Alginate hydrogels for 3-D cell culture applications. Brown Summer Research Symposium, Brown University.
12. [Acero S](#), [Ghosh D](#), [Dawson M](#) (2017). Mechanosensitivity analysis of breast cancer tumor cells from needle biopsy. Brown Summer Research Symposium, Brown University.
13. [Xuan B](#), [Ghosh D](#), [Dawson M](#) (2017). Investigating the Effect of the Senescence Associated Secretory Phenotype on Tumor Progression. First Year Molecular Pharmacology and Physiology Talks, Brown University.

24 abstracts prior to moving to Brown University

Other Publications and Creative Products

1. **Press**, Boston University Center for Multiscale & Translational Mechanobiology, Rising Star Faculty, Dr. Michelle Dawson. June 7, 2022.
2. **Research Highlights**, Brown researchers pinpoint protein important to enlarged, chemoresistant cancer cells, The Brown Daily Herald. Picked up by social media. November 16, 2020.
3. **Research Highlights**, Study discovers potential target for treating aggressive cancer cells, Brown.edu. Brown researchers pinpoint protein important to enlarged, chemoresistant cancer cells, The Brown Daily Herald. Picked up by social media. October 22, 2020.
4. **Research Highlight**, Cellular senescence and breast cancer – a role for ECM remodelling? Journal of Cell Science 2020 133: e0202. January 23, 2020.
5. **Press Release**, Article featured in Brown Medicine, Brown Daily Herald, BioPortfolio, EurekAlert, R&D, Science Daily, Long Room, Drug Discovery and Development, Medical News, and so forth, Article titled, “Dysregulation in Actin Cytoskeletal Organization Drives Increased Stiffness and Migratory Persistence in Polyploidal Giant Cancer Cells.” August 9, 2018.

External presentations

1. **Invited talk**, [California State University](#), Biology Graduate Student Seminar, Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. April, 2023 (in-person).
2. **Invited talk**, [Arizona State University](#), Chemical Engineering Graduate Student Seminar, Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. March, 2023 (in-person).
3. **Invited talk**, [American Association of Cancer Research Special Meeting: Aging and Cancer](#), Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. San Diego, CA. November 20, 2022 (in-person).
4. **Invited talk**, [AIChE Annual Meeting](#), Regenerative Medicine Society, Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. Phoenix, Arizona. November 14, 2022 (in-person).
5. **Invited talk**, [Michigan Technological University](#), Chemical Engineering Graduate Student Seminar, Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. November 4, 2022 (in-person).

6. **Invited talk**, University of Nebraska Lincoln, Chemical and Biomolecular Engineering Graduate Student Seminar, Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. October 28, 2022 (in-person).
7. **Invited talk**, University of North Texas, BMEN Graduate Student Seminar, Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. October 20, 2022 (virtual).
8. **Invited talk**, Christopher Newport University, Molecular Biology and Chemistry Seminar, Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. October 20, 2022 (virtual).
9. **Invited talk**, Johns Hopkins Medical School, Center for Nanomedicine at the Wilmer Eye Institute, CNM Special Seminar, Physical and Metabolic Landscapes of Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment. October 11, 2022 (virtual).
10. **Invited talk**, Ohio University, Basic and Translational Research Seminar, Biomechanics of Therapy Induced Senescence and the Evolving Tumor Microenvironment. October 5, 2022 (virtual).
11. **Invited talk**, Northeastern University, Department of Pharmaceutical Sciences, Physical and Metabolic Landscapes of Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment, October 13, 2022 (in person).
12. **Keynote invited talk**, Society of Engineering Science Annual Technical Meeting, Biomechanics and Mechanobiology Symposium at Texas A& M University, Section: Mechanobiology of Disease. October 18, 2022 (in person).
13. **Invited talk** (*Mejia Pena C*), Postdoc recruitment event, Memorial Sloan Kettering Cancer Center, "Development of a Novel 3D Organoid Model to Investigate the Role of Matrix Remodeling on Ovarian Cancer Progression and Metastasis" February 2021.
14. **Invited talk**, International Cancer Research Symposium, Physical and Metabolic Landscape of Polyploidal Giant Cancer Cells. December 14, 2021 (virtual).
15. **Invited talk**, Johns Hopkins University Bloomberg School of Public Health, Department of Biochemistry and Molecular Biology Seminar, Baltimore, MD. Polyploidal Giant Cancer Cell Metabolism. November 15, 2021 (virtual).
16. **Invited talk**, Boston University, Multiscale and Translational Mechanobiology Symposium. Rising Star Talk: Metabolic Reprogramming Drives Physical Alterations in Invasive Cancer Cells, November 5, 2021 (in person).
17. **Invited talk**, Texas A&M University, Graduate Student Biomedical Engineering Seminar, College Station, TX. Using Physical Models of the Tumor Microenvironment to Identify Invasive Cancer Cells. January 28, 2021 (virtual).
18. **Invited talk**, AIChE Annual Meeting, Area 15D/E Engineering Fundamentals in Life Sciences, Cancer Bioengineering. Using Physical Models of the Tumor Microenvironment to Identify Invasive Cancer Cells. November 16-20, 2020 (virtual).
19. **Invited talk**, Howard University College of Medicine, Department of Physiology and Biophysics Seminar, Washington, DC. Using Physical Models of the Tumor Microenvironment to Identify Invasive Cancer Cells. October 12, 2020 (virtual).
20. **Invited panelist**, 6th Annual Research Breakfast, American Cancer Society Cancer Action Network of Rhode Island, Providence, RI. November 15, 2019.
21. **Invited panelist**, Writing Successful Grant Proposals in STEM, Conference of the Ford Fellows, San Juan, Puerto Rico. October 5, 2019.
22. **Invited talk**, University of Vermont, Graduate Student Biomedical Engineering Seminar, Burlington, VT. Physical Models of the Tumor Microenvironment Reveal Rare Subpopulations of Invasive Cells. April 12, 2019.

23. **Invited talk**, University of Rhode Island, Amgen Seminar Series in Chemical Engineering, West Greenwich, RI. Tumor Microenvironment Interactions: Forcing Cancer Progression. February 22, 2018.
24. **Invited participant**, UC San Diego NSF INCLUDES Conference, San Diego, CA. Collective Impact as a Pathway to Reinvigorate Broadening Participation in STEM, January 20-22, 2017.
25. **Invited talk**, 2016 Engineering Conference International (ECI), Vienna, Austria. Conference Theme: Nanotechnology in Medicine - From Molecules to Humans. Session 6: Nanostructures for Cell Adhesion, Growth, Motility, and Differentiation. Modeling the Tumor Microenvironment with Nanostructured Materials. July 7, 2016.

28 talks prior to moving to Brown University

Internal presentations

1. **Invited talk**, Breast Cancer Translational Research Disease Group, Physical and Metabolic Landscapes of Therapy Induced Senescence and Polyploidy in an Evolving Tumor Microenvironment, Providence, RI. October 14, 2022
2. **Invited talk**, Gynecological Cancer Translational Research Disease Group, Polyploidal Giant Cancer Cells Metabolic Reprogramming. Brown University, Providence, RI. December 9, 2021.
3. **Invited talk**, Breast Cancer Translational Research Disease Group, Breast Cancer Tumor Microenvironment Interactions Forcing Cancer Progression. Brown University, Providence, RI. September 10, 2019.
4. **Invited talk**, Gynecological Cancer Translational Research Disease Group, Ovarian Tumor Microenvironment Interactions Forcing Cancer Progression. Brown University, Providence, RI. November 11, 2019.
5. **Invited short talk**, Undergraduate Research and 5th Year Master's Opportunities in Cellular and Molecular Therapeutics, MPP DIAP Committee Event, Brown University, Providence, RI. October 25, 2019.
6. **Invited talk**, 2019 MCB Graduate Program Retreat, Tumor Microenvironment and Cancer Progression. August 30, 2019.
7. **Invited talk**, Cancer Biology Group Meeting, Tumor Microenvironment Interactions Forcing Cancer Progression. September 13, 2019.
8. **Invited talk**, Breast Cancer Translational Research Disease Group, Biophysical Analysis of Patient Tumor Samples. September 10, 2019.
9. **Invited talk**, Stem Jazz, Tumor Microenvironment Interactions: Stromal Cell Aging and Breast Cancer Progression. December 6, 2018.
10. **Invited talk**, 2018 MCB Fall Seminar Series, Tumor Microenvironment Interactions: Forcing Cancer Progression. November 28, 2018.
11. **Invited talk**, BIOL 0100 Guest Speaker, Biophysics of Polyploidal Giant Cancer Cells, November 1, 2018.
12. **Research overview**, 2018 Molecular Cell Biology Faculty on Parade, Using Single Cell Biophysics to Understand Cancer. October 4, 2018.
13. **Research overview**, 2018 Molecular Pharmacology and Physiology Breakfast Talk, Dawson Cell Biophysics Lab. October 24, 2018.
14. **Invited talk**, 2018 Women & Infants Pathology Department Seminar, Tumor Microenvironment Interactions: Forcing Cancer Progression. March 27, 2018.

15. **Invited talk**, 2018 Ovarian Cancer Research Group Seminar (working group includes researchers and clinicians from Brown University, Rhode Island Hospital, and Women & Infants Hospital), Tumor Microenvironment Interactions: Forcing Cancer Progression. February 26, 2018.
16. **Invited talk**, 2018 MCB Fall Seminar Series, Tumor Microenvironment Interactions: Forcing Cancer Progression. November 28, 2018.
17. **Research overview**, 2017 Molecular Cell Biology Faculty on Parade, Using Single Cell Biophysics to Understand Cancer. October 24, 2017.
18. **Research overview**, 2017 Molecular Pharmacology and Physiology Breakfast Talk, Dawson Cell Biophysics Lab. September 19, 2017.
19. **Invited talk**, 2017 Biology of Aging Retreat, Biophysics of Giant Polyploid Cancer Cells in an Aging Stroma, November 4, 2017.
20. **Invited talk**, 2017 Graduate Students of Color Orientation, Focusing Your Professional Activities to Build a Strong CV, August 28, 2017.
21. **Invited talk**, 2017 Molecular Pharmacology and Physiology Graduate Program Retreat, Biophysics of Cancer Progression. May 3, 2017.
22. **Research overview**, 2016 Molecular Cell Biology Faculty on Parade, Using Single Cell Biophysics to Direct Therapy. October 25, 2016.
23. **Invited talk**, 2016 BME Fall Seminar Series, Mechanics and Malignancy: Biophysics of Cancer. October 27, 2016.
24. **Invited talk**, 2016 Rhode Island Hospital Orthopaedics Research Seminar, Using Single Cell Biophysical Analysis to Understand Cancer. October 26, 2016.
25. **Invited talk**, 2016 MMI Fall Seminar Series, Mechanics and Malignancy: Biophysical Approach to Understanding Cancer. September 29, 2016.
26. **Invited talk**, 2016 MCB Fall Seminar Series, Using Single Cell Biophysics to Understand Cancer. September 28, 2016.
27. **Invited talk**, 2016 Rhode Island Hospital Pathology Seminar Series, Using Single Cell Biophysics to Understand Cancer. September 27, 2016.
28. **Research overview**, 2016 Pathobiology Faculty on Parade, Dawson Cell Biophysics and Engineering Lab. September 21, 2016.
29. **Research overview**, 2016 Molecular Pharmacology and Physiology Breakfast Talk, Dawson Cell Biophysics and Engineering Lab. September 14, 2016.

Other Scholarly and Creative Accomplishments

US Patent: Hanes J, Dawson M, Wirtz D, Fu J, Krauland E, Drugs and gene carrier particles that rapidly move through mucus barriers. Application number 10,587,512 (submitted in 2005). Patent Number 8,957,034 (finalized in 2015). Patent 15988615 (published in 2018).

Honors and Awards

Rising Star Faculty Member, CMTM Symposium, 2021

American Association for Cancer Research Minority and Minority Serving Institution Faculty Scholar in **Cancer Research Award**, 2018

Women in Engineering (WIE) **Teaching Excellence Award**, 2013

Georgia Tech Junior Faculty Outstanding Undergraduate **Research Mentor Award**, 2013

Georgia Cancer Coalition **Breast Cancer Research Award**, 2009

Carl Storm Minority Fellowship for Gordon Research Conference Attendance, 2007

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Ford Foundation **Postdoctoral Minority Fellowship**, 2006
CRS-Capsugel/Pfizer Innovative Aspects of Oral **Drug Delivery Award**, 2004
Science and Engineering Education Scholars Program Travel Award, 2004
Biophysical Society FASEB MARC Travel Award, 2003
International Society for Aerosol Medicine Student **Research Award**, 2003
Achievement Rewards for College Students **Fellowship**, 2000-01
Ford Foundation **Predocctoral Minority Fellowship**, 2001-04
National Science Foundation **Graduate Research Fellowship**, 2001-05
Louisiana Tech Biomedical Engineering **Outstanding Senior Award**, 1999

Grants and Contracts – Brown University (Total Funding External/Internal: \$2.5M/\$0.15M)

Project Title: Lipid Metabolism Switch Triggers Invasive and Chemoresistant Epithelial Ovarian Cancer Phenotype (1R01CA266415-01A1)

Funding Source: National Institutes of Health

Total Funding Awarded and For Your Portion of the Project: \$1,760,000, Role: PI

Period of Contract: 08/09/22-08/09/27, Candidate's Share: 100%

Project Title: Collaborative Research: A Digital Manufacturing Platform to Democratize Biological Tissue Access Using Smart Two-Photon Polymerization (2043243)

Funding Source: National Science Foundation

Total Funding Awarded and For Your Portion of the Project: \$500,000/\$250,000, Role: Co-PI

Period of Contract: 05/01/21-04/30/24, Candidate's Share: 50%

Project Title: Standard Award: Investigating the Biophysics of Giant Polyploid Cancer Cells in an Aging Tumor Stroma (1825174)

Funding Source: National Science Foundation

Total Funding Awarded and For Your Portion of the Project: \$350,000, Role: PI

Period of Contract: 08/15/18-07/31/22, Candidate's Share: 100%

Project Title: Research Supplement - Investigating the Biophysics of Giant Polyploid Cancer Cells in an Aging Tumor Stroma (2133460)

Funding Source: National Science Foundation

Total Funding Awarded and For Your Portion of the Project: \$99,259, Role: PI

Period of Contract: 08/01/21-11/30/22, Candidate's Share: 100%

Project Title: REU Supplement - Investigating the Biophysics of Giant Polyploid Cancer Cells in an Aging Tumor Stroma (006188)

Funding Source: National Science Foundation

Total Funding Awarded and For Your Portion of the Project: \$8000, Role: PI

Period of Contract: 08/01/21-07/31/22, Candidate's Share: 100%

Project Title: Molecular and Mechanical Regulators of the Metastatic Niche and Ovarian Cancer Metastasis (005756)

Funding Source: COBRE, Lifespan Center for Cancer Research Development

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Total Funding Awarded and For Your Portion of the Project: \$50,000, Role: PI
Period of Contract: 10/1/2017 – 6/30/2018, Candidate's Share: 100%

Project Title: Role of Senescence Associated Extracellular Vesicles in Radiation-Induced Pulmonary Fibrosis
Funding Source: Research Seed Funds, Office of Vice President for Research, Brown University
Total Funding Awarded and For Your Portion of the Project: \$30,000, Role: PI
Period of Contract: 2/21/2021 – 7/01/2022, Candidate's Share: 100%

Project Title: Clinical Relevance of Polyploid Giant Cancer Cells and Biomarker Identification
Funding Source: Cancer Center at Brown University Pilot Project Award
Total Funding Awarded and For Your Portion of the Project: \$25,000, Role: PI
Period of Contract: 01/1/21-12/1/21, Candidate's Share: 100%

Project Title: Development of a 3D Organoid Culture Model to Identify Drivers of Cancer Progression
Funding Source: OVPR Grant Resubmission Funds (for NSF resubmission to EBMS)
Total Funding Awarded and For Your Portion of the Project: \$15,000, Role: PI
Period of Contract: 08/1/18-08/1/19, Candidate's Share: 100%

Project Title: Using Single Cell Biophysics and Shear Wave Ultrasound Elastography to Measure Cancer Mechanics Across Multiple Length Scales
Funding Source: Research Seed Funds, Office of Vice President for Research, Brown University
Total Funding Awarded and For Your Portion of the Project: \$50,000/\$25,000, Role: Co-PI
Period of Contract: 1/26/2017 – 6/30/2018, Candidate's Share: 50%

NIH/NCI TRAINING

NRMN SETH Grant Writing Workshop: In-person workshop at NIH followed by 6-month grant writing working group and mock study section, 2020.

NCI Division of Cancer Biology New Grantee Workshop, January 11-12, 2023.

NCI Awardee Skills Development Workshop: Immuno-Oncology for Translational Research Short Course, January 25, 2023.

NCI Awardee Skills Development Workshop: UPENN-CHOP Cell and Gene Delivery Toolkit 5-DAY Workshop, Fridays from 12-3 pm, February 17th – March 10th, 2023.

SOCIETAL AND POLICY IMPACTS

1. **K12 Outreach at Brown University:** Presented research to 30 advanced 12th grade science students from science cooperative in upstate New York. The program title is Questar III New Visions Medical Program. Title of presentation: "Biophysics and Medicine." Follow-up activities developed through D2D (described below) were shared with the teachers. The presentation was held at Brown University on December 16, 2016.

TEACHING

1. BIOL 1810: 21st Century Applications in Cell and Molecular Biology (Brown University)

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Spring 2023: **62 students enrolled**

2. BIOL 1810: 21st Century Applications in Cell and Molecular Biology (Brown University)
Spring 2021: 30 students (**4.5/5** instructor effectiveness score, 5 being the highest)
3. BIOL 1810: 21st Century Applications in Cell and Molecular Biology (Brown University)
Spring 2020: 25 students (**4.5/5** instructor effectiveness score, 5 being the highest)
4. BIOL 0810: Applied Cell and Molecular Biology (Brown University)
Spring 2019, 13 students (scoring system was flipped – 2/5 but 1 was very effective and 5 lowest).
5. BIOL 0810: Applied Cell and Molecular Biology (Brown University)
Spring 2018, 3 students (scoring system was flipped – 1.5/5, 1 was highest).

GUEST LECTURES

1. BIOL 0100 Guest Speaker.
Title of presentation: “Biophysics of Polyploid Giant Cancer Cells.”
2. BIOL 2910 Guest Speaker (2019, 2020, 2021)
Title of presentation: “Successful NSF and Ford Fellowship Applications.”
3. BIOL 1050/2050 Guest Speaker (2021, 2022)
Title of presentation: “Extracellular Matrix Biology”
4. Warren Alpert Medical School Workshop for Continuing Medical Education (ACCME). Presented talk in Rhode Island Women’s Health Summit, Not Your Grandma’s Mammogram – Update on Breast Health for 2022. Title: “Senescence-Associated Extracellular Matrix Modifications in Breast Cancer.” May 25, 2022.
5. Presented research to 30 advanced 12th grade science students from science cooperative in upstate New York. Questar III New Visions Medical Program.
Title of presentation: “Biophysics and Medicine.”

MENTORING AT BROWN UNIVERSITY

Graduate Students

1. *Botai Xuan*, PhD student
Department: Molecular Pharmacology, Physiology, and Biotechnology
Project: Polyploid Giant Breast Cancer Cells that Drive Paclitaxel Resistance
Joukowsky Outstanding Dissertation Award, 2020
Thesis Defense: Graduated and working in industry
2. *Carolina Mejia Pena*, PhD student
Department: Molecular Biology, Cell Biology, and Biochemistry
Project: 3D Model of Chemoresistant Ovarian Cancer Metabolism
Thesis Defense: Graduated and staying for 1-year postdoc
3. *Amy Lee*, PhD student
Department: Biomedical Engineering
Project: Exosome-Mediated Interactions in Ovarian Cancer Metastasis
Thesis Defense: Graduated and accepted postdoc in Robert Langer’s lab at MIT
4. *Andrew Howes*, PhD student (co-advisee)
Department: Biotechnology
Fourth year PhD candidate (co-advised with Kimani Toussaint)
Project: Non-Linear Optics of 3D Collagen Matrices in Fibrotic Tissues

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Expected Graduation: 2023

5. *Crystal Vargas*, ScM student
Department: Biotechnology
ScM Student (2023 graduate)
Project: Senescence Associated Secretory Phenotype and Breast Cancer Polyploidal Cells.
6. *Difei Xu*, ScM student
Department: Biotechnology
ScM Student (2023 graduate)
Project: Metabolic and Treatment Stress Effects on Ovarian Cancer Paclitaxel Resistance
7. *Braxton Morrison*, ScM student
Department: Biomedical Engineering
5th Year ScM student (2022 graduate)
Project: Epithelial Ovarian Cancer Progression through Exosome Transfer from Polyploidal Giant Cells
8. *Devin Schroeder*, ScM student
Department: Biotechnology
ScM student (2021 graduate)
Project: Epithelial Ovarian Cancer Progression Mediated through Exosome Transfer
9. *Mateo Frare*, ScM student
Department: Biomedical Engineering
ScM student (2021 graduate, working in industry)
Project: Tissue Derived Soluble Factors Direct Metaplastic Breast Cancer
10. *Zhan Wu*, ScM student
Department: Biomedical Engineering
ScM student (2019 graduate, in PhD program)
Project: Using Single Cell Biophysics to Predict Breast Cancer Drug Response

Rotation Students

1. *Shade Rodriguez*, PhD rotation
Department: Pathobiology
Rotation/temporary student (Summer, Fall 2022)
Project: Inflammatory Ovarian Cancer Tumor Microenvironment
2. Andrew Nunez, PhD rotation student
Department: Molecular Biology, Cell Biology, and Biochemistry
Rotation student (Spring 2022)
Project: BRCA1 Expression in Breast Cancer Polyploidal Giant Cancer Cells
3. Dominique Pablito, PhD rotation student
Department: Molecular Biology, Cell Biology, and Biochemistry
Rotation student (Summer 2021)
Project: Isolation of Polyploidal Giant Cancer Cells in Ovarian Cancer
4. Sorel Ounkap Yimga, PhD rotation student
Department: Molecular Biology, Cell Biology, and Biochemistry
Rotation student
Project: Biophysics of Polyploidal Giant Cancer Cells in Ovarian Cancer
5. Jiwon Seo, PhD rotation student
Department: Molecular Biology, Cell Biology, and Biochemistry

Rotation Student

Project: Using Biophysical Models to Understand Chemoresistant Ovarian Cancer

6. Blessing Akobundu, PhD rotation student

Department: Molecular Pharmacology, Physiology, and Biotechnology

Rotation student

Project: Stromal Cell Interactions in Radiation Resistant Prostate Cancer

7. Chyna Gray, PhD rotation student

Department: Molecular Biology, Cell Biology, and Biochemistry

Rotation student

Project: Cancer Treatment Resistance and Elements of the Tumor Microenvironment

Undergraduate Students

1. *Ivy Koh*, Biochemistry and Molecular Biology, Expected Graduation May 2024. Undergraduate thesis: *Radiation induced senescence associated secretory phenotype exchange through extracellular vesicles*. Received Fall 2022 UTRA for her research.
2. *Nova Dea*, Biomedical Engineering, Expected Graduation May 2024. Undergraduate thesis: *Extracellular matrix remodeling in pulmonary fibrosis and metastasis*. Received Spring 2023 UTRA for her research.
3. *Ilexa Schechter*, Biochemistry and Molecular Biology, Graduated May 2022. Undergraduate thesis: *Tumor organoid models of epithelial ovarian cancer for drug studies*. Research Assistant at Pfizer.
4. *Matthew Perricone*, Biochemistry and Molecular Biology, Graduated May 2022. Undergraduate thesis: *lipid droplet quantification in chemotherapy resistant epithelial ovarian cancer polyploid cells*. *2022 Elizabeth Leduc Prize in Cell and Molecular Biology*. Finishing NSF REU work before starting graduate school at in Cancer Immunology Program at University of Michigan.
5. *Braxton Morrison*, Computational Studies, Graduated May 2022. Undergraduate thesis: *Exosome transfer of microRNAs triggers biophysical alterations in invasive epithelial ovarian cancer cells*. ScM student.
6. *Allison Lin*, Biochemistry and Molecular Biology, Graduated May 2021. Undergraduate thesis: *Lipid droplet metabolism alters chemotherapy response in epithelial ovarian cancer*. Completed postbac at Mt. Sinai before starting medical school at Columbia University.
7. *Rachelle Shao*, Biochemistry and Molecular Biology, Graduated May 2021. Currently she is Research Assistant at Pennell Chemical and Environmental Engineering Lab, Brown University.
8. *Andrew Kopplin*, Biochemistry and Molecular Biology, Graduated May 2021.
9. *Devin Schroeder*, Biochemistry and Molecular Biology, Graduated May 2020. Graduated in 2020 and stayed for 1-year biotechnology master's program. Thesis: *Role of hsa-mir-200b in ovarian cancer cell proliferation and migration*.
10. *Emily Cheney*, Biology: Physiology and Biotechnology Track, Graduated May 2019. Undergraduate thesis: *Establishing markers for cellular senescence in irradiated lung fibroblasts*. Completed postbac at Dana-Farber Cancer Institute before starting medical school at Mount Sinai.
11. *Kylen Soriano*, Health and Human Biology (Pre-Med), Graduated May 2019. Undergraduate thesis: *TGFB and hypoxia induced epithelial-mesenchymal transition effects on ovarian cancer mechanosensitivity*. Completed postbac at Mount Sinai before starting medical school at UCSF.
12. *Elizabeth Clifton*, Applied Mathematics and Biology, Graduated May 2019. Undergraduate thesis: *Polyploidal giant cancer cells and their role in aging and chemotherapeutic resistance*. Worked as an EMT before starting medical school at Mount Sinai.
13. *Jeffrey Hsu*, Biochemistry, Graduated May 2019. Undergraduate thesis: *Mesenchymal stem cell-secreted TGF- β facilitates EMT in ovarian cancer progression through cytoskeletal and nuclear reorganization*. Completed postbac at Broad Institute before going on to MD-PhD program at the University of Virginia School of Medicine.

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14. *Thomas Skipper*, Biomedical Engineering, Graduated May 2019. Undergraduate thesis: *Modeling ovarian cancer microenvironments using alginate-gelatin microspheres*. Completed postbac at Broad Institute before starting MD-PhD program at Geisel School of Medicine at Dartmouth.
15. *Joy Jiang*, Biochemistry and Molecular Biology, Graduated May 2019. Undergraduate thesis: *Differences in cytoskeletal biophysics to explain heterogeneity in polyploid giant breast cancer cell populations*. Completed Stanford University for Cancer Research Education and Summer Training Program (CREST) before starting medical school at Mount Sinai.
16. *Oksana Goretaya*, Chemical Biology, Graduated May 2017. Currently an EMT in Kentucky.

Postdocs

1. *Deepraj Ghosh*, Postdoctoral research assistant (2017-2021), Project: tumor microenvironment interactions forcing cancer progression - stromal cell aging and breast cancer progression. Promoted to Research Assistant Professor – January 2021. *He has been stuck in India for almost 6 months but still working remotely*.
2. *Nhat Quach*, BRRTP postdoctoral fellow, 2018-2021. Project: elucidating the role of cytosolic phospholipase A2 in preparing the niche for lung cancer development. Currently working in R&D at Merck.

Health and Human Biology, Concentration Advisor

1. Parisa Afsharian
2. Alice Bai
3. Jared Hunter
4. Simran Singh
5. Alyssa Steinbaum

Other mentees

1. *Synphane Gibbs*, 2019 Leadership Alliance Summer Undergraduate Student, Currently PhD Student at University of Virginia.
2. *Santiago Acero Bedoya*, 2018 Leadership Alliance Summer Undergraduate Student, Currently PhD Student at University of Chicago.

STUDENTS MENTORED AT GEORGIA TECH (GT)

GT Graduate Students (5)

Ph.D. *Deepraj Ghosh, Kathleen McAndrews, Daniel McGrail* (ALL IN FACULTY POSITIONS)
M.S. *Kevin Rodriguez, Russell Jampol* (BOTH WENT TO INDUSTRY)

GT Undergraduate Students (43)

Ryan Amos, Jake Childs, Daniel McGrail, Lauren Sanders, Divine Edem, Sarah McNew, David Boney, Clint Cheng, Eric Lin, Tanisha Bilups, Michelle Park, Christine Hang, Hasan Khosravi, Jae Shin, Virginia Lin, Harshel Desai, Charles Kuo, Xuan Vuong, Christine Muzzelo, Chinelo Ononye, Joe Roesner, Hweeyee Han, Mark Qi, Cecilia Pantoja, Barbara Zappala, Brandon Ling, Derrick Morton, Nhat Quach, Eled Gebrihot, Min Jeong Kim, Jason Iandoli, Vinh Trang, Tuyet Lam, Niti Khambhati, Jaeyoon Yi, Quang Minh Kieu, Krishan Patel, Chandler Brandenburg, Nithin Ravikumar, Blake Lash, Christian Burns, Robert Cowles, Dalton Snyder.

GT Postdocs and Visiting Scholars (4)

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Adrian Katona, Dustin Zuelke, Deepraj Ghosh, Shabnam Gupta.

GT High School Student Interns (4)

Brett Jones, Kathleen Allen, Ronald Shanderson, Saachi Datta.

OTHER TEACHING ACTIVITIES

PhD/ScM Thesis Committees, Brown University

1. Zahra Ahmed, PhD Candidate, Biomedical Engineering, Advisor – Vikas Srivastava
2. Anna Rusnak, ScM Candidate, Biomedical Engineering, Advisor -- Anubhav Tripathi
3. Adriana Col De Pena, PhD Candidate, Biomedical Engineering, Advisor -- Anubhav Tripathi
4. Ashley Uruchurtu, PhD Candidate, Pathology and Laboratory Medicine, Advisor – Wafik El-Deiry
5. Shuai Zhao, PhD Candidate, Pathology and Laboratory Medicine, Advisor – Wafik El-Deiry
6. Adrienne Parsons, PhD Candidate, Biomedical Engineering, Advisor – Eric Darling
7. Adrienne Parsons, ScM Candidate, Biomedical Engineering, Advisor – Eric Darling
8. Verida Leandre, PhD student, Biomedical Engineering, Advisor – Edith Mathiowitz
9. Sarah Gordon, PhD Candidate, Molecular Biology, Cell Biology, and Biochemistry, Advisor – Shipra Vaishnava
10. Chinedu Irofuala, ScM Candidate, Biomedical Engineering, Advisor – Kareen Coulombe
11. Elizabeth Bixler, ScM Candidate, Biomedical Engineering, Advisor – Eric Darling
12. Megan Dempsey, PhD Candidate, Biomedical Engineering, Advisor – Eric Darling
13. Jiwon, Seo, PhD Candidate, Molecular Biology, Cell Biology, and Biochemistry, Advisor – John Sedivy
14. Hafithe Al Ghosain, ScM Candidate, Biomedical Engineering, Adviosr – Jongwhan Lee
15. Adrienne Parsons, PhD Candidate, Biomedical Engineering, Advisor – Eric Darling
16. Shuai Zhao, PhD Candidate, Pathobiology, Advisor - Wafik El-Deiry
17. Aakash Jhaveri, ScM Candidate, Pathobiology, Advisor - Wafik El-Deiry
18. Botai Xuan, PhD Candidate, Molecular Pharmacology, Physiology, and Biotechnology, Advisor
19. Carolina Mejia Pena, PhD Candidate, Molecular Biology, Cell Biology, and Biochemistry, Advisor
20. Amy Lee, PhD Candidate, Biomedical Engineering, Advisor
21. Zhan Wu, ScM Candidate, Biomedical Engineering, Advisor

Science, Engineering and Education Workshops

1. Nabrit Conference for Early Career Scholars / SACNAS Regional Meeting, 2022
2. Harvard CNS Scholars Training Program, Boston, MA 2020.
3. NRMN SETH Grant Coaching Workshop, Bethesda, MD 2019.
4. Harvard Minority Faculty Development Workshop, Boston, MA 2019.
5. Harvard Med School: Career Advancement and Leadership Skills for Women in Healthcare, Boston, 2018.
6. NSF EFRI Workshop, Convergence and Interdisciplinarity in Advancing Larger Scale Research, DC, 2018.
7. Graduate Student Orientation, Focusing Professional Activities to Build a Strong CV, Brown, 2017.
8. NSF Includes Broadening Participation in STEM Conference, San Diego, CA, 2016.
9. NSF BRIGE Principal Investigator Conference, Washington, DC, 2011.
10. NSF Career Development Workshop, University of Florida, 2009.
11. College of Engineering, Pennsylvania State University, 2004.

PROFESSIONAL CONTRIBUTIONS / SERVICE

Advisory Roles

1. Faculty Advisory Board, Louisiana Tech University, Biomedical Engineering (2011-present).

Scientific Sessions and Conferences Organized and Chaired

1. Samuel Nabrit Conference for Early Career Scholars, 2022 Moderator and Planning Committee
2. Samuel Nabrit Conference for Early Career Scholars, 2020 Panelist
3. American Cancer Society CAN 6th Annual Breakfast Panel Member, 2019.
4. BMES Annual Meeting for Cancer Biomechanics, Session Chair, 2019.
5. Conference of the Ford Fellows, Invited Moderator/Panelist/Speaker, 2010-2020.
6. Senior Ford Conference, Planning committee, 2016, 2018.
7. Conference of the Ford Fellows, Co-chair, 2014.
8. GT Minority Faculty Development Workshop, Planning committee, 2013.
9. Conference of the Ford Fellows, Planning committee, 2011, 2013, 2014.
10. Georgia Tech Chemical & Biomolecular Engineering Future Faculty Program (2012)
11. Harvard Medical School Department of Continuing Education (2008)
12. Co-chair and organizer, Department of Chemical and Biomolecular Engineering Graduate Student Seminar Series, The Johns Hopkins University, 2004.

Editorial Board Member/Section Editor

1. Cancer Biology & Therapy (2019-2020), Editorial Board Member.
2. Scientific Reports (2017-present), Editorial Board Member.
3. PLoS One (2018-present), Section Editor.
4. AIMS Cell and Tissue Engineering (2016-2018), Editorial Board Member.
5. Frontiers in Developmental Biology (2022-present), Associate Editor.

Manuscript Review (recent only)

1. ACS Biomaterials
2. Advance Science
3. Biomaterials
4. Biophysical Journal
5. BMC Cancer
6. British Journal of Hematology
7. Cancer Research
8. Cancers/MDPI Journals
9. Cell
10. Cell Communication and Signaling
11. Cytoskeleton
12. Journal of Clinical and Experimental Metastasis
13. Journal of Neuro-Oncology
14. Journal of Royal Society Interface
15. Frontiers in Oncology, Frontiers in Cell and Developmental Biology
16. Nature Communications

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17. Nature Methods
18. Oncogene
19. Plos One
20. PNAS
21. Scientific Reports
22. Stem Cell

Grant Reviewing Activities

1. National Science Foundation BMMP and GRFP Panels
2. Department of Defense Cancer Research Programs (BCRO, OCRP)
3. Department of Defense Medical Research Programs (Wound Healing)
4. Ford Foundation Fellowship Panel (Biomedical Sciences, Biomedical Engineering)
5. National Institute of Health Cancer Cell Biology (CCB) Study Section (Standing Member)
6. National Institute of Health Basic Mechanisms in Cancer Health Disparities (BMCD) Study Section

Committee Assignments and Institute Contributions

1. IMSD Advisory Board member, 2019-present.
2. Trainer on T32 Applications for Biology of Aging, Therapeutics, Brown Respiratory Research Training Program, and MCB Training Grant
3. MPP Executive Board member, 2020-present.
4. MPP DIAP Committee member and chair, 2019-2020.
5. MCB Graduate Recruitment Committee, 2017, 2021, 2022.
6. MCB Seminar Committee, 2021-present.
7. MPP Seminar Committee, 2017-2021.
8. MCB DIAP Committee, 2017-2018, 2021-present.
9. Office of Women in Medicine and Science (OWIMS) Advisory Board Member, 2018-present.
10. Leadership Alliance Mentor (2017, 2018).
11. MCB Faculty Retreat Chair, 2018, 2023.
12. MCB Faculty Retreat Co-Chair, 2017, 2022.