ANITA SHUKLA

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RESEARCH INTERESTS

The Shukla Lab for Designer Biomaterials at Brown University develops nano- to macro-scale biomaterials for drug delivery. We focus on developing new treatments for bacterial and fungal infections, including targeted and responsive biomaterials (e.g., nanoparticles, surface coatings, hydrogels).

EDUCATION

- Ph.D. Chemical Engineering, Massachusetts Institute of Technology 2006 – June 3, 2011
- M.S. Chemical Engineering Practice, Massachusetts Institute of Technology 2006 – 2008
- B.S. Chemical Engineering and Biomedical Engineering (double major), Carnegie Mellon University 2002 – 2006

PROFESSIONAL APPOINTMENTS

- Elaine I. Savage Professor of Engineering, Brown University 2024 – current
- Elaine I. Savage Associate Professor of Engineering, Brown University 2023 – 2024
- Visiting Faculty, Center for Biosystems Science and Engineering, Indian Institute of Science, Bengaluru, India Fall 2022
- Associate Professor of Engineering (with tenure), Brown University 2021 – 2023
- Assistant Professor of Engineering, School of Engineering, Brown University 2013 – 2021
- Assistant Professor of Molecular Pharmacology, Physiology and Biotechnology, Division of Biology and Medicine, Brown University (courtesy appointment) 2014 – 2021
- NIH Ruth Kirschstein Postdoctoral Fellow, Bioengineering, Rice University 2011 – 2013

HONORS AND AWARDS

- American Institute for Medical and Biological Engineering (AIMBE) Fellow 2024
- National Academy of Medicine Emerging Leaders in Health and Medicine Scholar 2023
- Hazeltine Innovation Award, Brown University 2023
- Tau Beta Pi Excellence in Research Award, Rhode Island Alpha Chapter 2022
- National Academy of Engineering (NAE) Frontiers of Engineering Grainger Grant 2021
- National Science Foundation Faculty Early Career Development (CAREER) Award 2020
- NAE US Frontiers of Engineering Symposium Participant 2020
- Early Career Research Achievement Award, Brown University 2020
- Presidential Early Career Award for Scientists and Engineers (PECASE) 2019
- Tau Beta Pi Excellence in Research Award, Rhode Island Alpha Chapter 2019
- Henry Merritt Wriston Fellowship, Brown University 2018
- Dean's Award for Excellence in Teaching, Brown University 2017
- Director of Research Early Career Grant, Office of Naval Research 2017
- Dean's Emerging Areas of New Science (DEANS) Award, Brown University 2014
- Richard B. Salomon Faculty Research Award, Brown University 2014
- National Institutes of Health Ruth L. Kirschstein Postdoctoral Fellowship 2012
- Graduate Woman of Excellence, Massachusetts Institute of Technology 2010
- HHMI Graduate Education in Medical Sciences Certificate, Harvard-MIT 2008
- Chemical Engineering Special Service Award, MIT 2008
- National Science Foundation Graduate Research Fellowship 2006
- Judith A. Resnik Award for Excellence in Science & Engineering, Carnegie Mellon 2006

- Andrew Carnegie Society Scholar, Carnegie Mellon University 2006
- McCabe Society Award, Carnegie Mellon University 2006
- Tau Beta Pi – National Engineering Honor Society 2005
- Barry M. Goldwater Excellence in Education National Scholarship 2005

PEER-REVIEWED PUBLICATIONS

Journal Articles *Corresponding author; [+]Contributed equally

1. Vera-González, N., Deusenbery, C., LaMastro, V., and **Shukla, A.*** Fungal enzyme-responsive hydrogel drug delivery platform for triggered antifungal release, **Advanced Healthcare Materials**, 2024. *In press*
2. Krishna, K., Burrow, J.A., Jiang, Z., Liu, W., **Shukla, A.**, and Toussaint, K.C.* Femtosecond laser-assisted selective holding with ultra-low power for direct manipulation of biological speices, **Journal of Biomedical Optics**, 29, 8, 085601, 2024. https://doi.org/10.1117/1.JBO.29.8.086501
3. Gomez Casas, C. and **Shukla, A.*** Engineering immunomodulatory biomaterials to combat bacterial infections, **Frontiers in Biomaterials Science**, 2:1336842, 2024. https://doi.org/10.3389/fbiom.2023.1336842 *(Women in Biomaterials Science 2023, invited mini-review)*
4. Deusenbery, C., Gomez Casas, C., and **Shukla, A.*** pH-Responsive swelling micelles for the treatment of methicillin-resistant *Staphylococcus aureus* biofilms, **ACS Applied Polymer Materials**, 5, 9, 7400-7410, 2023. https://doi.org/10.1021/acsapm.3c01307
5. Deusenbery, C., Carneiro, O., Oberkfell, C., and **Shukla, A.*** Synergy of antibiotics and antibiofilm agents against methicillin-resistant *Staphylococcus aureus* biofilms, **ACS Infectious Diseases**, 9, 10, 1949-1963, 2023. https://doi.org/10.1021/acsinfecdis.3c00239
6. Felix, L.O., Whitely, C., Tharmalingam, N., Mishra, B., Vera-González, N., Mylonakis, E., **Shukla, A.**, and Fuchs, B.B.* Auranofin coated catheters inhibit bacterial and fungal biofilms in a murine subcutaneous model, **Frontiers in Cellular and Infection Microbiology**, 13, 2023. https://doi.org/10.3389/fcimb.2023.1135942
7. LaMastro, V., Campbell, K.M., Gonzalez, P., Meng-Saccoccio, T., and **Shukla, A.*** Antifungal liposomes: Lipid saturation and cholesterol concentration impact interaction with fungal and mammalian cells, **Journal of Biomedical Materials Research Part A**, 111, 5, 644-659, 2023. https://doi.org/10.1002/jbm.a.37501
8. Alkekhia, D., LaRose, C., and **Shukla, A.*** β-lactamase-responsive hydrogel drug delivery platform for bacteria-triggered cargo release, **ACS Applied Materials & Interfaces**, 14, 24, 27538-27550, 2022. https://pubs.acs.org/doi/10.1021/acsami.2c02614
9. Wang, Y. and **Shukla, A.*** Bacteria-responsive biopolymer-coated nanoparticles for biofilm penetration and eradication, **Biomaterials Science**, 10, 2831-2843, 2022. https://doi.org/10.1039/D2BM00361A (*Emerging Investigator Series, invited original research*)
10. Simpson, A., **Shukla, A.**, and Brown, A.C.* Biomaterials for hemostasis, **Annual Review of Biomedical Engineering**, 24, 111-135, 2022. https://doi.org/10.1146/annurev-bioeng-012521-101942 (*invited review)*
11. Abbasi, A., Imaichi, S., Ling, V., and **Shukla, A.*** Mesenchymal stem cell behavior on soft hydrogels with aligned surface topographies, **ACS Applied Bio Materials**, 5, 5, 1890-1900, 2022. https://doi.org/10.1021/acsabm.1c01260 (*Early Career Forum, invited original research)*
12. Battigelli, A., Almeida, B., and **Shukla, A.*** Recent advances in biorthogonal click chemistry

for biomedical applications, **Bioconjugate Chemistry**, 33, 2, 263-271, 2022. https://doi.org/10.1021/acs.bioconjchem.1c00564 (*invited review*)

13. Welch, E.C.[+], Powell, J.[+], Clevinger, T.[+], Fairman, A., and **Shukla, A.*** Advances in biosensors and diagnostic technologies using nanostructures and nanomaterials, **Advanced Functional Materials**, 31, 2104126, 2021. https://doi.org/10.1002/adfm.202104126 (*invited review*)
14. Deusenbery, C.[+], Wang, Y.[+], and **Shukla, A.*** Recent innovations in bacterial infection detection and treatment, **ACS Infectious Diseases**, 7, 4, 695-720, 2021. https://doi.org/10.1021/acsinfecdis.0c00890 *(invited review)*
15. Bailey-Hytholt, C.M.*, LaMastro, V., and **Shukla, A.*** Assembly of cell mimicking supported and suspended lipid bilayer models for the study of molecular interactions, **Journal of Visualized Experiments**, 174, e62599, 2021. https://doi.org/10.3791/62599
16. Bailey-Hytholt, C.M., Sayeed, S., **Shukla, A.,** and Tripathi, A.* Enrichment of placental trophoblast cells from clinical cervical samples using differences in surface adhesion on an inclined plane, **Annals of Biomedical Engineering**, 49, 2214-2227, 2021. https://doi.org/10.1007/s10439-021-02742-x
17. Alvarenga, J.A.D., Barros, P.P.D.,* Ribeiro, F.D.C., Rossoni, R.D., Garcia, M.T., Velloso, M.D.S., Shukla, S., Fuchs, B.B., **Shukla, A.**, Mylonakis, E., and Junqueira, J.C. Probiotic effects of *Lactobacillus paracasei* 28.4 to inhibit *Streptococcus mutans* in a gellan-based formulation, **Probiotics and Antimicrobial Proteins**, 13, 506-517, 2021. https://doi.org/10.1007/s12602-020-09712-0
18. Vera-González, N. and **Shukla, A.*** Advances in biomaterials for the prevention and disruption of *Candida* biofilms, **Frontiers in Microbiology**, 11, 2251, 2020. https://doi.org/10.3389/fmicb.2020.538602 *(invited review)*
19. Alkekhia, D.[+], Safford, H.[+], Shukla, S., Hopson, R., and **Shukla, A.*** β-lactamase triggered visual detection of bacteria using cephalosporin functionalized biomaterials, **Chemical Communications**, 56, 11098-11101, 2020. https://doi.org/10.1039/d0cc04088f
20. Bailey-Hytholt, C.M., Shen, T.-L., Nie, B., Tripathi, A., and **Shukla, A.*** Placental trophoblast-inspired lipid bilayers for cell-free investigation of molecular interactions, **ACS Applied Materials & Interfaces**, 12, 28, 31099-31111, 2020. https://doi.org/10.1021/acsami.0c06197
21. Battigelli, A., Almeida, B., Shukla, S., Rocha, A., and **Shukla, A.*** Inducing mesenchymal stem cell attachment on non-cell adhesive hydrogels through click chemistry, **Chemical Communications**, 56, 7661-7664, 2020. https://doi.org/10.1039/D0CC03403G
22. Wang. S.[+], Battigelli, A.[+], Alkekhia, D., Fairman, A., Yang, W., Moore, D., Antoci, V., and **Shukla, A.*** Controlled delivery of a protein tyrosine phosphatase inhibitor, SHP099, using cyclodextrin-mediated host–guest interactions in polyelectrolyte multilayer films for cancer therapy, **RSC Advances**, 10, 20073-20082, 2020. https://doi.org/10.1039/D0RA03864D
23. Shukla, S., Favata, J., Srivastava, V., Shahbazmohamadi, S., Tripathi, A. and **Shukla, A.*** Effect of polymer and ion concentration on mechanical and drug release behavior of gellan hydrogels using factorial design, **Journal of Polymer Science**, 58, 1365-1379, 2020. https://doi.org/10.1002/pol.20190205
24. Bailey-Hytholt, C., Puranik, T., Tripathi, A., and **Shukla, A.*** Investigating interactions of phthalate environmental toxicants with lipid structures, **Colloids and Surfaces B**, 190, 11093, 2020. https://doi.org/10.1016/j.colsurfb.2020.110923
25. Vera-González, N.[+], Hytholt, C. [+], Langlois, L., Ribeiro, F.D.C., Santos, E., Junqueira, J.C., and **Shukla, A.*** Anidulafungin liposome nanoparticles exhibit antifungal activity against planktonic and biofilm *Candida albicans*, **Journal of Biomedical Materials Research Part A**, 108, 11, 2263-2276, 2020. https://doi.org/10.1002/jbm.a.36984

26. Ribeiro, F., Junqueira, J.C.,* Dos Santos, J., Barros, P., Rossoni, R., Shukla, S., Fuchs, B., **Shukla, A.**, and Mylonakis, E. Development of probiotic formulations for oral candidiasis prevention: gellan gum as a carrier to deliver *Lactobacillus paracasei* 28.4, **Antimicrobial Agents and Chemotherapy**, 64, e02323-19, 2020. https://doi.org/10.1128/AAC.02323-19
27. Alkekhia, D., Hammond, P.T., and **Shukla, A.*** Layer-by-layer biomaterials for drug delivery, **Annual Review of Biomedical Engineering**, 22,1-24, 2020. https://doi.org/10.1146/annurev-bioeng-060418-052350 (*invited review*)
28. Almeida, B.$^{+}$, Wang, Y.$^{+}$, and **Shukla, A.*** Effects of nanoparticle properties on kartogenin delivery and interactions with mesenchymal stem cells, **Annals of Biomedical Engineering**, 48, 2090-2102, 2020. https://doi.org/10.1007/s10439-019-02430-x *(*Special Issue – Biomaterials - Engineering Cell Behavior, *invited original research)*
29. Yu, C., Alkekhia, D., and **Shukla, A.*** β-lactamase responsive supramolecular hydrogels with host-guest self-healing capability, **ACS Applied Polymer Materials**, 2,1, 55-65, 2020. https://doi.org/10.1021/acsapm.9b00879 (Young Investigator Forum, *invited original research*).
30. Bailey-Hytholt, C., Sayeed, S., Kraus, M., Joseph, R., **Shukla, A.,** and Tripathi, A.* A rapid method for label-free enrichment of rare trophoblast cells from cervical samples, **Scientific Reports**, 9, 12115, 2019. https://doi.org/10.1038/s41598-019-48346-3
31. Liu, H.$^{+}$, Shukla, S.$^{+}$, Vera-González, N.$^{+}$, Tharmalingam, N., Mylonakis, E., Fuchs, B.B, and **Shukla, A.*** Auranofin releasing antibacterial and antibiofilm polyurethane intravascular catheter coatings, **Frontiers in Cellular and Infection Microbiology***,* 9(37), 2019. https://doi.org/10.3389/fcimb.2019.00037
32. Alkekhia, D. and **Shukla, A.*** Influence of poly-L-lysine molecular weight on antibacterial efficacy in polyelectrolyte multilayer films, **Journal of Biomedical Materials Research Part A**. 107(6), 1324-1339, 2019. https://doi.org/10.1002/jbm.a.36645
33. Shukla, S., and **Shukla, A.*** Tunable antibiotic delivery from gellan hydrogels, **Journal of Materials Chemistry B**, 6, 6444-6458, 2018. https://doi.org/10.1039/C8TB00980E
34. Bailey, C.M., Tripathi, A., and **Shukla, A.*** Effects of flow and bulk vesicle concentration on supported lipid bilayer formation, **Langmuir**, 33, 43, 11986-11997, 2017. https://doi.org/10.1021/acs.langmuir.7b02764
35. Gwisai, T., Hollingsworth, N.R., Cowles, S., Tharmalingam, N., Mylonakis, E., Fuchs, B.B., and **Shukla, A.*** Repurposing niclosamide as a versatile antimicrobial surface coating against device-associated, hospital-acquired bacterial infections, **Biomedical Materials**, 12(4), 045010, 2017. https://doi.org/10.1088/1748-605X/aa7105
36. Almeida, B. and **Shukla, A.*** Degradation of alkanethiol self-assembled monolayers in mesenchymal stem cell culture, **Journal of Biomedical Materials Research Part A**, 105(2), 464-474, 2017. https://doi.org/10.1002/jbm.a.35922
37. Gates, S.J. and **Shukla, A.*** Layer-by-layer assembly of readily detachable chitosan and poly(acrylic acid) polyelectrolyte multilayer films, **Journal of Polymer Science Part B: Polymer Physics**, 55(2), 127-131, 2017. https://doi.org/10.1002/polb.24234
38. Sheybani, R. and **Shukla, A.*** Highly sensitive label-free dual sensor array for rapid detection of wound bacteria, **Biosensors and Bioelectronics**, 92, 425-433, 2017. https://doi.org/10.1016/j.bios.2016.10.084
39. **Shukla, A.***, Slater, J.H., Culver, J.C., Dickinson, M.E., and West, J.L. Biomimetic surface patterning promotes mesenchymal stem cell differentiation, **ACS Applied Materials & Interfaces**, 8(34), 21883–21892, 2016. https://doi.org/10.1021/acsami.5b08978

40. **Shukla, A.*** and Almeida, B. Advances in cellular and tissue engineering using layer-by-layer assembly, **Wiley Interdisciplinary Reviews: Nanomedicine & Nanobiotechnology**, 6(5), 411-421, 2014. (*invited review*) https://doi.org/10.1002/wnan.1269
41. Monteiro, I.P., **Shukla, A.***, Marques, A.P., Reis, R.L., and Hammond, P.T. Spray-assisted layer-by-layer assembly on hyaluronic acid scaffolds for skin tissue engineering**, Journal of Biomedical Materials Research Part A**, 103(1), 330-340, 2015. https://doi.org/10.1002/jbm.a.35178

Prior to appointment at Brown University:

42. **Shukla, A.**, Fang, J.C., Puranam, S., Jensen, F.R., and Hammond, P.T.* Hemostatic multilayer coatings, **Advanced Materials**, 24(4), 492-496, 2012. https://doi.org/10.1002/adma.201103794
43. **Shukla, A.**, Fang, J.C., Puranam, S., and Hammond, P.T.* Release of vancomycin from multilayer coated absorbent gelatin sponges, **Journal of Controlled Release**, 157(1), 64-71, 2012. https://doi.org/10.1016/j.jconrel.2011.09.062
44. **Shukla, A.**, Puranam, S., and Hammond, P.T.* Vancomycin storage stability in multilayer thin film coatings for on-demand care, **Journal of Biomaterials Science, Polymer Edition**, 23(15), 1895-1902, 2012. https://doi.org/10.1163/156856211X598256
45. **Shukla, A.**[+], Fuller, R.C.[+], and Hammond, P.T.* Design of multi-drug release coatings targeting infection and inflammation, **Journal of Controlled Release**, 155(2), 159-166, 2011. https://doi.org/10.1016/j.jconrel.2011.06.011
46. Samuel, R.E.[+], **Shukla, A.**[+], Paik, D.H., Wang, M.X., Fang, J.C., Schmidt, D.J., and Hammond, P.T.* Osteoconductive protamine-based polyelectrolyte multilayer functionalized surfaces, **Biomaterials**, 32(30), 7491-7502, 2011. https://doi.org/10.1016/j.biomaterials.2011.06.032
47. Engler, A.C.[+], **Shukla, A.**[+], Puranam, S., Buss, H.G., Jreige, N., and Hammond, P.T.* Effects of side group functionality and molecular weight on the activity of synthetic antimicrobial polypeptides, **Biomacromolecules**, 12(5), 1666-1674, 2011. https://doi.org/10.1021/bm2000583
48. **Shukla, A.**, Avadhany, S.N., Fang, J.C., and Hammond, P.T.* Tunable vancomycin releasing surfaces for biomedical applications, **Small**, 6(21), 2392-2404, 2010. https://doi.org/10.1002/smll.201001150
49. **Shukla, A.**, Fleming, K.E., Chuang, H.F., Chau, T.M., Loose, C.R., Stephanopoulos, G.N., and Hammond, P.T.* Controlling the release of peptide antimicrobial agents from surfaces, **Biomaterials**, 31(8), 2348-2357, 2010. https://doi.org/10.1016/j.biomaterials.2009.11.082
50. **Shukla, A.**, Dunn, A.R., Moses, M.A., and Van Vliet, K.J.* Endothelial cells as mechanical transducers: enzymatic activity and network formation under cyclic strain, **Mechanics and Chemistry of Biosystems**, 1(4), 279-290, 2004. https://doi.org/10.3970/mcb.2004.001.279

Book Chapters

- Antoci, V. Gracia, D.R., Glasser, J.L., and **Shukla, A.** *Chapter 8. Osteolysis and implant loosening*, **Orthopaedic Basic Science: Foundations of Clinical Practice,** Fifth Edition, editor: R.K. Aaron, Wolters Kluwer, American Academy of Orthopaedic Surgeons, pp.89-98, 2019.

Prior to appointment at Brown University:

- Yang, F., Neeley, W.L., Moore, M.J., Karp, J.M., **Shukla, A.,** and Langer, R.S. *Chapter 1. Tissue engineering: the therapeutic strategy of the twenty-first century*, **Nanotechnology and Tissue Engineering**, editors: C.T. Laurencin and L.S. Nair, CRC Press, pp. 3-32, 2008.

RESEARCH GRANTS

Current grants

- **Source of Support:** Brown University Hazeltine Innovation Awards

Title: "Towards Electrochemical Detection and Imaging of Bacterial Infections"
Dates: 06/01/2023 – 05/31/2025 **Role on Grant:** co-PI **Total:** $100,000

- **Source of Support:** Office of Naval Research

Title: "Antibiofilm Therapies for the Treatment of Combat-Associated Infections" (Grant No. N00014-22-1-2336)
Dates: 06/01/2022 – 05/31/2025 **Role on Grant:** PI **Total:** $550,000

- **Source of Support:** National Science Foundation

Title: "CAREER: Targeting therapeutic liposomes to fungal infections" (Grant No. 1942418)
Dates: 05/01/2020 – 04/30/2025 **Role on Grant:** PI **Total:** $565,826

Completed grants

- **Source of Support:** Rhode Island Commerce Innovation Voucher

Title: "Evaluation of a partially demineralized, structural bone allograft implant (OsteoPearl) as a drug delivery scaffold"
Dates: 06/22/2023 – 05/31/2024 **Role on Grant:** PI (Brown) **Total:** $49,996

- **Source of Support:** Office of Naval Research

Title: "Evaluating Efficacy and Stability of Responsive Antifungal Hydrogels for the Treatment of Infected Wounds" (Grant No. N00014-20-1-2455)
Dates: 05/01/2020 – 05/30/2024 **Role on Grant:** PI **Total:** $669,000

- **Source of Support:** Dr. Ralph and Marian Falk Medical Research Trust – Transformational Awards

Title: "Advancing Bacteria-Triggered Hydrogel Therapeutics to Combat Antibiotic Resistance"
Dates: 02/28/2021 – 02/27/2024 **Role on Grant:** PI **Total:** $1,000,000

- **Source of Support:** National Science Foundation

Title: "Planning Grant: Engineering Research Center for the Next-Generation Enterprise to Engineer Diagnostics at Low-Cost for the Home-Ecosystem (NEEDLE)" (Grant No. 2124312)
Dates: 09/01/2021 – 08/31/2023 **Role on Grant:** co-PI **Total:** $100,000

- **Source of Support:** Grainger Foundation Frontiers of Engineering Grants for Advancement of Interdisciplinary Research/National Academy of Engineering

Title: "A Combined Experimental and Computational Study of Microbe-Responsive Antimicrobial Hydrogels"
Dates: 07/01/2021 – 08/30/2023 **Role on Grant:** PI **Total:** $30,000

- **Source of Support:** Office of Naval Research

Title: "Advanced Microwave-Assisted Peptide Synthesis for Research on Smart Biomaterials" (Grant No. N00014-22-1-2362)
Dates: 04/01/2022 – 03/31/2023 **Role on Grant:** PI **Total:** $119,790

- **Source of Support:** Brown Biomedical Innovations to Impact (BBII) Fund

Title: "Evaluating the effectiveness of antifungal nanoparticles"

Dates: 09/15/2020 – 09/14/2022 **Role on Grant:** PI **Total:** $100,000

- **Source of Support:** Office of Naval Research, Director of Research Early Career Grant

Title: "Therapeutic Hydrogel Sensors for Monitoring and Treatment of Wounds" (Grant No. N00014-17-1-2120)
Dates: 01/01/2017 – 01/01/2022 **Role on Grant:** PI **Total:** $1,000,000

- **Source of Support:** Army Research Office (Innovation Corps @ Department of Defense)

Title: ""Exploring the Commercialization of a Smart Antifungal Wound Therapy" (Grant No. W911NF2010329)
Dates: 08/24/2020 – 08/23/2021 **Role on Grant:** PI **Total:** $70,000

- **Source of Support:** Takeda Pharmaceutical Company, Ltd.

Title: "Using Biomaterials to Maintain Mesenchymal Stem Cell Multipotency and Promote Homogeneous Secretome Production"
Dates: 07/01/2019 – 06/30/2021 **Role on Grant:** PI **Total:** $322,588

- **Source of Support:** Dr. Ralph and Marian Falk Medical Research Trust – Catalyst Awards

Title: "Combating the Global Threat of Antibiotic Resistance with Bacteria-Triggered Biomaterials"
Dates: 02/28/2019 – 11/27/2020 **Role on Grant:** PI **Total:** $300,000

- **Source of Support:** Office of Naval Research

Title: "Acquisition of State-of-the-Art Biological 3D Printer for Fabrication of Multifunctional Materials to Enhance Force Health Protection" (Grant No. N00014-19-1-2356)
Dates: 06/01/2019 – 05/31/2020 **Role on Grant:** PI **Total:** $249,868

- **Source of Support:** Seed Award, Office of the Vice President for Research, Brown University

Title: "Enhancing Wound Healing Using Hydrogels for Localized Chemokine Delivery"
Dates: 01/17/2019 – 06/30/2020 **Role on Grant:** co-PI **Total:** $75,000

- **Source of Support:** National Science Foundation

Title: "MRI: Acquisition of a Maskless Lithography Tool for the Brown Nanofabrication Central Facility" (Grant No. 1827453)
Dates: 09/01/2018 – 08/31/2020 **Role on Grant:** co-PI **Total:** $287,000

- **Source of Support:** Advance Clinical and Translational Research National Institute of General Medical Sciences, NIH

Title: "Modification of Orthopaedic Biomaterials with Osteolysis Inhibitors and Osteoconductive Peptides"
Dates: 05/01/2018 – 04/30/2019 **Role on Grant:** co-PI **Total:** $50,000

- **Source of Support:** Office of Naval Research

Title: "Triggered Anti-Fungal Hydrogels for the Treatment of *Candida* Infections" (Grant No. N00014-17-1-2651)
Dates: 09/01/2017 – 08/31/2019 **Role on Grant:** PI **Total:** $250,000

- **Source of Support:** Rhode Island Foundation

Title: "Temporal Geometric Control of Stem Cell Chondrogenesis for Osteoarthritis Therapy"
Dates: 03/01/2016 – 11/01/2017 **Role on Grant:** PI **Total:** $25,000

- **Source of Support:** Dean's Emerging Areas of New Science (DEANS) Awards, Division of Biology and Medicine and Alpert Medical School, Brown University

Title: "Anti-Microbial Activity of Auranofin and Assessment of a Coated Delivery Device"
Dates: 07/01/2014 – 07/01/2015 **Role on Grant:** co-PI **Total:** $80,000

- **Source of Support:** Richard B. Salomon Faculty Research Awards, Office of the Vice President for Research, Brown University

Title: "Bacterial Stimuli-Responsive Antibiotic Delivery Coatings"
Dates: 06/30/2014 – 06/30/2015 **Role on Grant:** PI **Total:** $15,000

- **Source of Support:** Office of Naval Research

Title: "Antimicrobial Internal Coating for the Acute Care Cover for Severely Injured Limbs (ACCSIL)" (Grant No. N00014-14-1-0798)
Dates: 06/15/2014 – 06/14/2017 **Role on Grant:** PI **Total:** $694,427

- **Source of Support:** National Institutes of Health/National Institute of General Medical Sciences

Title: "Directing Stem Cell Differentiation on Biologically Inspired Micropatterned Surfaces" (Grant No. 1F32GM103194-01)
Dates: 08/09/2012 – 08/09/2014 **Role on Grant:** PI **Total:** $101,404

PATENTS AND PATENT APPLICATIONS

- **Shukla, A.**, De Lima, P.M.N., Abbasi, A, Junqueira, J.C. Novel methylene blue-loaded liposome for enhanced photodynamic therapy: a breakthrough invention in combating *Candida albicans* biofilms, U.S. patent application no. 63/507,314 (filing date: June 9, 2023).
- LaMastro, V., and **Shukla, A.** Antifungal peptide decorated liposomes exhibit enhanced antifungal activity against *Candida albicans*, U.S. patent application no. 63/499,091 (filing date: April 28, 2023).
- **Shukla, A.**, Wang, Y., and **Jiang, Z.** Methods of making and using nanoparticles for treatment of bacterial biofilm, U.S. patent application no. 63/462,582 (filing date: April 28, 2023).
- **Shukla, A.**, Abbasi, A., and Alkekhia, D. Enzyme-responsive smart hydrogels for triggered delivery of antibiotics to infected wounds, U.S. patent application no. 63/384,159 (filing date: November 17, 2022).
- Wang, Y., **Shukla, A.** Methods of making and using nanoparticles for treatment of bacterial biofilm, U.S. patent application no. 63/317,201 (filling date: March 8, 2022).
- Alkekhia, D., Shukla, S., Safford, H., and **Shukla, A.** A chromogenic beta-lactamase substrate. U.S. patent no. 17/260,894 (filing date: January 15, 2021; notice of allowance: September 13, 2022).
- **Shukla, A.**, Liu, H., Fuchs, B., Mylonakis, E. Auranofin-releasing antibacterial and anti-biofilm polyurethane intravascular catheter coatings. U.S. patent no. 11,931,482 (issue date: March 19, 2024).
- Tripathi, A., Bailey-Hytholt, C., Sayeed, S., **Shukla, A.** Inclined plane cell enrichment device. U.S. provisional no. 62/943,548 (filing date: December 4, 2019).
- **Shukla, A.**, Alkekhia, D., and Yu, C. Bacterial beta-lactamase responsive hydrogels. International PCT application no. 62/926,957 (filing date: October 28, 2019).
- **Shukla, A.**, Bailey-Hytholt, C., Tripathi, A. Placental lipid bilayer for cell-free molecular interactions studies. U.S. utility no. 16/822,994 (filing date: March 18, 2020).
- **Shukla, A.**, Cowles, S., Vera-González, N., Bailey-Hytholt, C., Silvert, E. Targeted liposomal compositions for anti-fungal delivery against fungal pathogens. U.S. patent no. 11,273,124 (issue date: March 24, 2020).
- **Shukla, A**., Vera-González, N. Aspartic protease-triggered antifungal hydrogels. U.S. utility publication no. US 2019-0151455 A1 (publication date: May 23, 2019; filing date: October 15, 2018).

- **Shukla, A**., Shukla, S. Tunable anti-microbial loaded hydrogels, U.S. patent no. 10,058,506 (issue date: August 28, 2018).
- **Shukla, A.** and Hammond, P.T. Coating compositions, methods and coated devices, U.S. utility publication no. US 2012/0277719 A1 (filing date: April 27, 2012; publication date: November 1, 2012) *Licensed by LayerBio, Inc.*
- Mandell, K.J., Hammond, P.T., Fuller, R.C., **Shukla, A.**, Rizzo, J.F. Drug delivery coatings and devices, U.S. publication no. US 2013/0273137 A1 (publication date: April 17, 2013); PCT No. PCT/US11/35057 (PCT filed: May 3, 2011) *Licensed by LayerBio, Inc.*
- Chuang, H.F., **Shukla, A.**, Loose, C.R., Hammond, P.T., Stephanopoulos, G.N. Structures including antimicrobial peptides, PCT publication no. WO 2009/117473 A2 (publication date: September 24, 2009; filing date: March 18, 2009).

INVITED LECTURES

- Biomedical Engineering, Georgia Institute of Technology-Emory — Jan. 2025
- Gordon Research Conference on Drug Carriers in Medicine and Biology — Aug. 2024
- 3D Tissue Models for Infection and Immunological Assay, World Biomaterials Congress, Daegu, South Korea — May 2024
- Biomaterials for Regenerative Engineering, Materials Research Society (MRS) Fall Meeting, Boston, MA — Nov. 2023
- Approaching Zero Roadmap Initiative Seminar Series — Oct. 2023
- NSF-REU: Advanced Interdisciplinary Materials Research for Maritime Applications, University of Massachusetts Dartmouth — Aug. 2023
- Bioengineering, Imperial College, London, United Kingdom — Feb. 2023
- Chemical Engineering, Nanyang Technological University, Singapore — Nov. 2022
- Centre For BioSystems Science and Engineering, Indian Institute of Science, Bengaluru, India — Oct. 2022
- COBRE Center for Antimicrobial Resistance and Therapeutic Discovery, Miriam Hospital, Providence, RI — Sep. 2022
- Polymer Science and Engineering Department, University of Massachusetts, Amherst, MA — Sep. 2022
- Force Health Protection Program Review, Office of Naval Research (*hosted by Brown University*) — Jun. 2022
- Interdisciplinary Biomaterial Seminar Series, Syracuse University, Syracuse, NY — Apr. 2022
- Biofilm Seminar Series, Montana State University, Bozeman, MT (*virtual*) — Apr. 2022
- 3rd Society of Chemical Industry/Royal Society of Chemistry Symposium on Antimicrobial Drug Discovery (*virtual*) — Nov. 2021
- Drug Delivery for Infectious Diseases, American Institute of Chemical Engineers (AIChE) Annual Meeting, Boston, MA — Nov. 2021
- Biomedical Engineering, Rowan University, Glassboro, NJ (*virtual*) — Nov. 2021
- Infectious Diseases and Nanotechnology, 10th Sustainability in Nanotechnology Organization Conference (*virtual*) — Nov. 2021
- Force Health Protection Program Review, Office of Naval Research (*virtual*) — Jun. 2021
- Biomaterials and Tissue Engineering Course, Drexel University, Philadelphia, PA (*virtual)* — Apr. 2021
- Chemical and Biomolecular Engineering, University of Maryland, College Park, MD (*virtual*) — Dec. 2020
- Materials Science, University of Florida, Gainesville, FL (*virtual*) — Oct. 2020
- Pre-Tenure Bioengineering Faculty e-Seminar Series (*virtual*) — Sept. 2020

- Rising Stars in Drug Delivery and Novel Carriers Seminar Series (*virtual,* hosted by University of North Carolina, Chapel Hill, Eshelman School of Pharmacy, Division of Pharmacoengineering & Molecular Pharmaceutics) Aug. 2020
- Surface, Interface and Coating Materials, American Chemical Society (ACS) Fall Annual Meeting, San Francisco, CA (*virtual*) Aug. 2020
- Force Health Protection Program Review, Office of Naval Research (*virtual*) July 2020
- Nanoengineering, University of California San Diego, San Diego, CA (*virtual*) May 2020
- Chem. Eng. and Mater. Sci., Stevens Institute of Technology, Hoboken, NJ Feb. 2020
- Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA Feb. 2020
- Chemical Engineering, University of Pittsburgh, Pittsburgh, PA Jan. 2020
- Biomedical Engineering, Tufts University, Medford, MA Nov. 2019
- Microbes at Biomedical Interfaces Topical Plenary, AIChE, Orlando, FL Nov. 2019
- Chemical Engineering, Worcester Polytechnic Institute, Worcester, MA Oct. 2019
- Hydrogel Biomaterials, Biomedical Engineering Society Annual Meeting, Philadelphia, PA Oct. 2019
- Gordon Research Conference on Biomaterials and Tissue Engineering, Young Investigator Presentation Aug. 2019
- Chemical Biophysics Symposium, University of Toronto, Toronto, ON May 2019
- CardioPulmonary Vascular Biology COBRE, Brown, Veterans Affairs Feb. 2019
- Biomedical Engineering, University of Connecticut, Storrs, CT Nov. 2018
- Takeda – Pharmaceutical Sciences, Cambridge, MA Oct. 2018
- Biomedical Engineering, University of Massachusetts Dartmouth, Dartmouth, MA Oct. 2018
- Oral Biopathology, UNESP - Universidade Estadual Paulista, São Paulo, BR Aug. 2018
- Bioengineering, Rice University, Houston, TX Oct. 2017
- Chemical Engineering, Texas A&M University, College Station, TX Sep. 2017
- Force Health Protection Program Review, Office of Naval Research, Arlington, VA (delivered by graduate student, Dahlia Alkekhia) July 2017
- Computational and Cellular Biology of Blast and Combat Casualty Care Program Review, Office of Naval Research, University of Southern California, Los Angeles, CA Apr. 2017
- 3M Corporate Research Materials Laboratory, Minneapolis, MN Oct. 2016
- Walter Reed Army Institute of Research, Silver Spring, MD Sep. 2016
- Force Health Protection Program Review, Office of Naval Research, Arlington, VA July 2016
- Colloids and Surface Science Symposium, ACS, Cambridge, MA June 2016
- Polymeric Biomaterials Symposium, ACS Spring Annual Meeting, Denver, CO Mar. 2015
- U.S. Army Natick Soldier Research, Dev., and Eng. Center, Natick, MA Jan. 2015
- Bionanotechnology Plenary Lectures, AIChE Annual Meeting, Atlanta, GA Nov. 2014
- Biomedical Engineering, Worcester Polytechnic Institute, Worcester, MA Nov. 2014
- Force Health Protection Program Review, Office of Naval Research, Arlington, VA Sep. 2014
- Molecular Pharmacology, Physiology, and Biotechnology, Brown University, Providence, RI May 2014
- Force Health Protection, Office of Naval Research, Arlington, VA Apr. 2014
- Chemical Engineering, University of Rhode Island, Kingston, RI Mar. 2014
- We – Lab Engineering Seminar Series, Wellesley College, Wellesley, MA Nov. 2013
- IBM Research – Almaden, San Jose, CA Nov. 2013
- Orthopaedics Research Seminar, Rhode Island Hospital, Providence, RI Oct. 2013

- School of Engineering, Brown University, Providence, RI Mar. 2013
- Chemical Engineering, Lehigh University, Bethlehem, PA Feb. 2013
- Biomedical Engineering, University of Southern California, Los Angeles, CA Feb. 2013
- Chemical Engineering, Northeastern University, Boston, MA Feb. 2013
- Chemical Engineering, University of Rochester, Rochester, NY Jan. 2013
- Chemical Engineering, University of Virginia, Charlottesville, VA Jan. 2013
- Biomedical Engineering, Texas A&M University, College Station, TX Jan. 2013
- Chemical and Biomolecular Engineering, Univ. of Houston, Houston, TX Apr. 2012
- Neurosurgery, The University of Texas Health Science Center, Houston, TX Mar. 2012
- Chemical Engineering, University of Delaware, Newark, DE Feb. 2011

CONFERENCE ABSTRACTS (2013 – current; **conference honors received*)

- Jiang, Z., LaMastro, V., Kofron, C., and **Shukla, A.** Hands-on engineering exercises positively impact student learning in nanotechnology, **2024 Annual Biomedical Engineering Education Community (BEEC) Conference**, virtual, Feb. 2024.
- Walker, D.*, LaMastro, R., Liu, J., and **Shukla, A.** Targeting *Candida* infections with peptide-decorated liposomes, **Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS)**, Phoenix, AZ, Nov. 2023. **Travel Award Recipient*
- Shin, C., McCall, A., and **Shukla, A.** Optimization of a hydrogel-forming microneedle platform as a biofilm therapy, **Biomedical Engineering Society Annual Meeting**, Seattle, WA, Oct. 2023.
- Jiang, Z., Wang, Y., and **Shukla, A.** Dual stimuli-responsive silver loaded nanoparticles eliminate bacterial biofilms, **Biomedical Engineering Society Annual Meeting**, Seattle, WA, Oct. 2023.
- Izzo, M., Abbasi, A., and **Shukla, A.** Polymyxin B-modified liposomal ciprofloxacin for active targeting and treatment of *Pseudomonas aeruginosa* infections, **Biomedical Engineering Society Annual Meeting**, Seattle, WA, Oct. 2023.
- LaMastro, R., Liu, J., and **Shukla, A.** Antifungal peptide decorated liposomes exhibit enhanced antifungal activity against *Candida albicans*, **Biomedical Engineering Society Annual Meeting**, Seattle, WA, Oct. 2023.
- De Lima, P.M.N., Abbasi, A, Junqueira, J.C., and **Shukla, A.** Methylene blue-loaded liposomes photodynamic therapy effect against *Candida albicans* biofilms, **Biomedical Engineering Society Annual Meeting**, Seattle, WA, Oct. 2023.
- De Lima, P.M.N., Abbasi, A, Junqueira, J.C., and **Shukla, A.** Enhancing photodynamic therapy against *Candida albicans* biofilms using methylene blue-loaded liposomes, **5th Annual Nabrit Conference**, Providence, RI, June 2023.
- Jiang, Z.*, Carneiro, O., and **Shukla, A.** Impact of culture media on biofilm growth and virulence factor production by *Staphylococcus aureus* clinical isolates, **6th Stevens Conference on Bacteria-Material Interactions**, Hoboken, NJ, May 2023. **Travel Award Recipient*
- Abbasi, A., Jiang, Z., McCall, A., Leblanc, B., and **Shukla, A.** Enzyme-responsive "smart" hydrogels for triggered delivery of antibiotics to infected wounds, **Society for Biomaterials Annual Meeting**, San Diego, CA, Apr. 2023.
- LaMastro, R., Campbell, K., Gonzalez, P., Meng-Saccoccio, T., and **Shukla, A.** Antifungal liposomes: lipid saturation and cholesterol concentration impact interaction with fungal and mammalian cells, **Society for Biomaterials Annual Meeting**, San Diego, CA, Apr. 2023.
- LaMastro, R., Campbell, K., Gonzalez, P., and **Shukla, A.** Lipid saturation and cholesterol impact liposome interaction with fungal and mammalian cells, **Biomedical Engineering Society Annual Meeting**, San Antonio, TX, Oct. 2022.

- LaMastro, R., Campbell, K., Gonzalez, P., and **Shukla, A.** Effect of phospholipid and cholesterol concentration on liposome interaction with fungal and mammalian cells, **Materials Science and Technology 2022**, Pittsburgh, PA, Oct. 2022.
- Deusenbery, C., Carneiro, O., Obkerfell, C., and **Shukla, A.** Developing combination therapeutics to eradicate MRSA biofilms, **Gordon Research Conference: New Antibacterial Discovery and Development**, Lucca (Barga), Spain, July 2022.
- Mclaughlin, R., LaMastro, R., Frazer, C., Bennett, R., Harrington, E., **Shukla, A.**, and Hoffman-Kim, D. In vitro model of pulmonary candidiasis for testing novel therapeutics, **Experimental Biology**, Philadelphia, PA, Apr. 2022.
- **Shukla, A.** Microbe-responsive and microbe-targeted biomaterials for drug delivery, **American Institute of Chemical Engineers Annual Meeting**, Boston, MA, Nov. 2021.
- **Shukla, A.** Smart antibacterial and antifungal biomaterials, **American Institute of Chemical Engineers Annual Meeting**, Boston, MA, Nov. 2021.
- Wang, Y. and **Shukla, A.** Responsive polymer-coated gelatin nanoparticles to combat bacterial biofilms, **American Institute of Chemical Engineers Annual Meeting**, Boston, MA, Nov. 2021.
- Abbasi, A.*, Battigelli, A., Imaichi, S., Ling, V., and **Shukla, A.** Using biomaterials to maintain mesenchymal stem cell multipotency and promote homogenous secretome production. **American Institute of Chemical Engineers Annual Meeting**, Boston, MA, Nov. 2021. **Women in Chemical Engineering Travel Award Recipient*
- LaMastro, V., Vera-Gonzalez, N., Campbell, K., **Shukla, A.** Peptide-decorated antifungal liposomes exhibit enhanced *Candida albicans* interaction, **Biomedical Engineering Society Annual Meeting**, Orlando, FL, Oct. 2021.
- Wang, Y. and **Shukla, A.** Bacteria responsive biopolymer-coated gelatin nanoparticles to combat bacterial biofilms, **Society for Biomaterials Annual Meeting**, virtual, Apr. 2021.
- LaMastro, V., Vera-Gonzalez, N., Campbell, K., **Shukla, A.** Liposomes functionalized with fungi-targeting peptide demonstrate increased interaction with *Candida albicans*, **Candida and Candidiasis**, virtual, Mar. 2021.
- Alkekhia, D., Yu, C., LaRose, C., and **Shukla, A.** β-lactamase responsive hydrogels for bacteria-triggered antibacterial treatments, **American Institute of Chemical Engineers Annual Meeting**, virtual, Nov. 2020.
- Vera-González, N. and **Shukla, A.** Fungi-responsive hydrogel drug delivery systems, **American Institute of Chemical Engineers Annual Meeting**, virtual, Nov. 2020.
- Vera-González, N., Bailey-Hytholt, C.M., Langlois, L., de Camargo Ribeiro, F., de Souza Santos, E.L., Junqueira, J.C., and **Shukla, A.** Anidulafungin nanoparticles exhibit antifungal activity against planktonic and biofilm *Candida albicans*, **Biomedical Engineering Society Annual Meeting**, virtual, Oct. 2020.
- LaRose, C., Alkekhia, D., and **Shukla, A.** β-lactamase responsive hydrogels for bacteria-triggered antibacterial drug delivery, **Carnegie Mellon Forum on Biomedical Engineering**, virtual, Sep. 2020.
- **Shukla, A.** Advances in biomaterial surfaces: Antimicrobial coatings and cell-inspired lipid bilayers, **American Chemical Society Annual Fall Meeting**, virtual, Aug. 2020.
- Fairman, A., Wang, S., Alkekhia, D., Battigelli, A., Yang, W., Moore, D., Antoci, V., Garcia, D., Born, C., Aaron, R., Crisco, J., and **Shukla, A.** Modification of biomaterials with polyelectrolyte multilayer films for controlled delivery of osteolysis inhibitors, **Orthopedic Research Society Annual Meeting**, Phoenix, AZ, Feb. 2020.
- Gonzalez, N.V. and **Shukla, A.** Fungal-enzyme triggered delivery of liposomal antifungals from hydrogels, **Cellular and Molecular Bioengineering Conference**, Puerto Rice, Jan. 2020.

- Bailey-Hytholt, C.M., Puranik, T., Sayeed, S., Tripathi, A., and **Shukla, A.** Effect of di(2-ethylhexyl) phthalate and mono(2-ethylhexyl) phthalate interactions with a lipid membrane, **American Institute of Chemical Engineers Annual Meeting,** Orlando, FL, Nov. 2019.
- Bailey-Hytholt, C.M., Tripathi, A., and **Shukla, A.** Investigating molecular interactions of the placenta for prenatal treatment and testing, **American Institute of Chemical Engineers Annual Meeting,** Orlando, FL, Nov. 2019.
- Bailey-Hytholt, C.M., Sayeed, S., Kraus, M., Joseph, R., **Shukla, A.**, and Tripathi, A. A rapid method for label-free enrichment of rare trophoblast cells from cervical samples, **American Institute of Chemical Engineers Annual Meeting,** Orlando, FL, Nov. 2019.
- Bailey-Hytholt, C.M.*, Shen, T., Tripathi, A., and **Shukla, A.** Development of a model lipid bilayer, **American Institute of Chemical Engineers Annual Meeting,** Orlando, FL, Nov. 2019. **Women in Chemical Engineering Travel Award recipient*
- Langlois, L.*, Vera-González, N. Bailey-Hytholt, C.M., Ribeiro, F.D.C., Santos, E., Junqueira, J.C., and **Shukla, A.** Targeting antifungal liposomes for the treatment of systemic fungal infections, **19th Annual Sigma Xi Student Conference,** Madison, WI, Nov. 2019. **Best Poster Award, Engineering Division*
- Bailey-Hytholt, C.M., Sayeed, S., Kraus, M., Joseph, R., **Shukla, A.,** and Tripathi, A. A rapid method for label-free enrichment of rare trophoblast cells from cervical samples, **Biomedical Engineering Society Annual Meeting,** Philadelphia, PA, Oct. 2019.
- Bailey-Hytholt, C.M., Puranik, T., Tripathi, A., and **Shukla, A.** Impact of phthalate environmental toxicants with lipid structures, **Biomedical Engineering Society Annual Meeting,** Philadelphia, PA, Oct. 2019.
- Bailey-Hytholt, C.M.*, Shen, T.L., Tripathi, A., and **Shukla, A.** Development of a model placental lipid bilayer, **Biomedical Engineering Society Annual Meeting,** Philadelphia, PA, Oct. 2019. **Career Development Award*
- **Shukla, A.*** Advanced biomaterials for treatment and detection of microbial infections, **Gordon Research Conference: Biomaterials and Tissue Engineering**, Castelldefels, Spain, Aug. 2019. **Selected for Young Investigator Presentation*
- Deusenbery, C.*, Shukla, S. and **Shukla, A.** Utilizing IDR-1018 to develop antibiofilm gellan hydrogels, **5th Stevens Conference on Bacteria-Material Interactions**, Hoboken, NJ, June 2019. **2nd Place Best Poster Award*
- Shukla, S.* and **Shukla, A.** Investigating antibiofilm properties of IDR-1018 peptide loaded hydrogels, **Society for Biomaterials Annual Meeting,** Seattle, WA, Apr. 2019. **STAR Award Honorable Mention*
- Safford, H., Alkekhia, D., Shukla, S., and **Shukla, A.** A novel chromogenic and β-lactamase substrate for bacteria detection, **Society for Biomaterials Annual Meeting,** Seattle, WA, Apr. 2019.
- Almeida, B., Wang, Y., and **Shukla, A.** Targeted delivery of kartogenin-encapsulated nanoparticles for improved uptake by mesenchymal stem cells, **Society for Biomaterials Annual Meeting,** Seattle, WA, April 2019.
- Wang, S.*, Alkekhia, D., Battigelli, A., Yang, W., Moore, D., Antoci, V., and **Shukla, A.** Assembly of polyelectrolyte multilayer films for controlled delivery of a SHP2 inhibitor, **18th Annual Sigma Xi Student Conference**, San Francisco, CA, Oct. 2018. **Best Poster Award, Engineering Division*
- Wang, S., Alkekhia, D., Battigelli, A., Yang, W., Moore, D., Antoci, V., and **Shukla, A.** Polyelectrolyte multilayer films for controlled delivery of SHP2 inhibitor, SHP099, **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, Oct. 2018.
- Safford, H., Alkekhia, D., Shukla, S., and **Shukla, A.** A novel chromogenic β-lactamase substrate for bacteria detection, **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, Oct. 2018.

- **Shukla, A.** Microbe responsive biomaterials for antimicrobial drug delivery, **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, Oct. 2018.
- Battigelli, A., Almeida, B., and **Shukla, A.** Covalent interactions of mesenchymal stem cells with gellan hydrogels, **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, Oct. 2018.
- Alkekhia, D.* and **Shukla, A.,** Influence of poly-L-lysine molecular weight on antibacterial activity of polyelectrolyte films, **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, Oct. 2018. **BMES Student Travel Award*
- Alkekhia, D. and **Shukla, A.** Effect of poly-L-lysine molecular weight on antibacterial activity of polyelectrolyte multilayer coated surfaces, **American Institute of Chemical Engineers Annual Meeting**, Pittsburgh, PA, Oct. 2018.
- Battigelli, A.* and **Shukla, A.** Gellan hydrogels for the immobilization of mesenchymal stem cells, **American Chemical Society Fall National Meeting**, Boston, MA, Aug. 2018. **Selected for Future Faculty Symposium*
- Alkekhia D. and **Shukla A.** Effect of poly-L-lysine molecular weight on antibacterial activity in polyelectrolyte multilayer assemblies, **American Chemical Society Fall National Meeting**, Boston, MA, Aug. 2018.
- Vera-González, N. and **Shukla, A.** *Candida albicans* aspartic protease-triggered antifungal hydrogels, **American Society of Microbiology Conference on *Candida* and Candidiasis**, Providence, RI, Apr. 2018.
- Almeida, B.* and **Shukla, A.** Influencing the physical and chemical microenvironment to control mesenchymal stem cell differentiation, **Society of Women Engineers We Local Conference**, Providence, RI, Apr. 2018. **Finalist in Graduate Collegiate Competition*
- Vera-González, N. and **Shukla, A.** Combating fungal infections using responsive hydrogels for drug delivery, **Society for Biomaterials Annual Meeting**, Atlanta, GA, Apr. 2018.
- Shukla, S., Favata, J., Tripathi, A., Shahbazmohamadi, S., and **Shukla, A.** Evaluation of gellan hydrogel microstructure and drug release kinetics, **Society for Biomaterials Annual Meeting**, Atlanta, GA, Apr. 2018.
- Battigelli, A., Almeida, B., and **Shukla, A.** Clicking mesenchymal stem cells on hydrogel surfaces: Towards applications in wound healing, **Society for Biomaterials Annual Meeting**, Atlanta, GA, Apr. 2018.
- Puranik, T.,* Bailey, C.M., and **Shukla, A.** Investigating cholera toxin infection during pregnancy using an *in vitro* placental model, **Biomedical Engineering Society Annual Meeting**, Phoenix, AZ, Oct. 2017. **BMES Student Travel Award*
- Bailey, C.M.,* Tripathi, A., and **Shukla, A.** Flow induced liposome rupture into a lipid bilayer on solid surfaces using QCM-D, **Biomedical Engineering Society Annual Meeting**, Phoenix, AZ, Oct. 2017. **BMES Student Travel Award*
- Vera-González, N.A.* and **Shukla, A.** Combating *Candida albicans*: Aspartic protease-triggered hydrogels for drug delivery, **Biomedical Engineering Society Annual Meeting**, Phoenix, AZ, Oct. 2017. **BMES Student Travel Award*
- Almeida, B., Battigelli, A., and **Shukla, A.** Advanced approaches to employing chemical and physical cues for mesenchymal stem cell differentiation, **International Society for Stem Cell Research Annual Meeting**, Boston, MA, June 2017.
- **Shukla, A.** Antimicrobial smart materials: From responsive hydrogels to polymer-drug conjugates, **Society for Biomaterials Annual Meeting**, Minneapolis, MN, Apr. 2017.
- Almeida, B. and **Shukla, A.** Investigating the degradation of alkanethiol self-assembled monolayer surfaces in mesenchymal stem cell culture, **Society for Biomaterials Annual Meeting**, Minneapolis, MN, Apr. 2017.

- Adrianzén-Fonseca, M., Alkekhia, D., Shukla, S., Vera-González, N., Sheybani, R., and **Shukla, A.** Thermoresponsive hydrogels for triggered drug delivery, **New England Science Symposium**, Boston, MA, Mar. 2017.
- Levy, L., Almeida, B., Hollingsworth, N., and **Shukla, A.** Delivery of kartogenin-conjugated hyaluronic acid for enhancing *in vitro* chondrogenic differentiation, **Materials Research Society Annual Fall Meeting**, Boston, MA, Nov. 2016.
- Shukla, S., Tripathi, A., and **Shukla, A.** Effects of gellan hydrogel formulation on drug release and mechanical properties, **Materials Research Society Annual Fall Meeting**, Boston, MA, Nov. 2016.
- Hollingsworth, N., Cowles, S., Alkekhia, D., de Queiroz, Ribeiro N., Rossoni, R., Fuchs, B., and **Shukla, A.** Bacteria-responsive hyaluronic acid-penicillin conjugates as highly effective, versatile antibacterial polymers, **Materials Research Society Annual Fall Meeting**, Boston, MA, Nov. 2016.
- Vera-González, N.***** Cowles, S., and **Shukla, A.** Combating *Candida albicans*: Aspartic protease-triggered antifungal hydrogels, **Materials Research Society Annual Fall Meeting**, Boston, MA, Nov. 2016. ***Best Poster Award, Session I: Biomaterials for Regenerative Medicine***
- Cowles, S., Bailey, C., Vera-González, N., and **Shukla, A.** Functionalized liposome delivery targeting opportunistic fungi, **American Institute of Chemical Engineers Annual Meeting**, San Francisco, CA, Nov. 2016.
- Alkekhia, D. and **Shukla, A.** Multilayer polymeric films exhibiting controlled & β-lactamase-triggered antibiotic release, **Biomedical Engineering Society Annual Meeting**, Minneapolis, MN, Oct. 2016.
- Shukla, S., Tripathi, A., and **Shukla, A.** Analysis of gellan hydrogel drug release kinetics and rheological properties, **Biomedical Engineering Society Annual Meeting**, Minneapolis, MN, Oct. 2016.
- Cowles, S., Bailey, C., Vera-González, N., and **Shukla, A.** A novel liposomal formulation targeting *Candida albicans*, **Biomedical Engineering Society Annual Meeting**, Minneapolis, MN, Oct. 2016.
- Sheybani R. and **Shukla, A.** Biosensor array for highly sensitive and rapid detection of wound bacteria, **Biomedical Engineering Society Annual Meeting**, Minneapolis, MN, Oct. 2016.
- Sheybani R. and **Shukla, A.** Complementary sensors for rapid and sensitive detection of wound bacteria, **Engineering in Medicine and Biology Society***,* Orlando, FL, Aug. 2016. *(Peer-reviewed conference proceeding)*
- **Shukla, A.** Antimicrobial smart materials: Improving prehospital care for combat-related traumatic injuries, **Military Health System Research Symposium**, Kissimmee, FL, Aug. 2016.
- Bailey, C.M., Tripathi, A., and **Shukla, A.** The role of convective properties on model cell membrane assembly mechanisms using QCM-D, **Indian Institute of Technology Leadership Conference**, Providence, RI, Aug. 2016.
- Shukla, S.* and **Shukla, A.** Advanced nanoparticle-loaded antibacterial gellan hydrogels for treatment of burn infections, **Indian Institute of Technology Leadership Conference**, Providence, RI, Aug. 2016. ***Best Poster Award***
- Vera-González, N. Cowles, S., and **Shukla, A.** Combating *Candida albicans*: Aspartic protease-triggered antifungal hydrogels, **Indian Institute of Technology Leadership Conference**, Providence, RI, Aug. 2016.
- Almeida, B. and **Shukla, A.** Intrinsically degradable protein patterns for temporal stem cell engineering, **Indian Institute of Technology Leadership Conference**, Providence, RI, Aug. 2016.
- **Shukla, A.** Antimicrobial smart materials: From responsive hydrogels to polymer-drug conjugates, **ACS Colloid & Surface Science Symposium***,* Cambridge, MA, June 2016.

- Almeida, B. and **Shukla, A.** Intrinsic degradation of alkanethiol self-assembled monolayer surfaces for cell confinement studies, **ACS Colloid & Surface Science Symposium**, Cambridge, MA, June 2016.
- Hollingsworth, N. and **Shukla, A.** Antifouling coatings utilizing highly effective hyaluronic acid-penicillin conjugates, **World Biomaterials Congress**, Montréal, CA, May 2016.
- Almeida, B. and **Shukla, A.** Intrinsically degradable protein patterns for temporal stem cell engineering, **World Biomaterials Congress**, Montréal, CA, May 2016.
- Shukla, S. and **Shukla, A.** Advanced nanoparticle-loaded antibacterial gellan hydrogels for treatment of burn infections, **Biomedical Engineering Society Annual Meeting**, Tampa, FL, Oct. 2015.
- Hollingsworth, N. and **Shukla, A.** Facile, aqueous synthesis of hyaluronic acid-penicillin conjugates exhibiting superior antibacterial efficacy, **3rd Stevens Conference on Bacteria – Material Interactions**, Hoboken, NJ, June 2015.
- Shukla, S. and **Shukla, A.** Tunable antibacterial gellan hydrogels for burn infections, **3rd Stevens Conference on Bacteria – Material Interactions**, Hoboken, NJ, June 2015.
- Almeida, B. and **Shukla, A.** Towards degradable protein patterns for the characterization of temporal stem cell behavior, **Society for Biomaterials Annual Meeting**, Charlotte, NC, Apr. 2015.
- Gates, S. and **Shukla, A.** Detachable polymeric films for applications in drug delivery, **Society for Biomaterials Annual Meeting**, Charlotte, NC, Apr. 2015.
- Shukla, S. and **Shukla, A.** Tunable antibacterial gellan hydrogels for burn wounds, **Society for Biomaterials Annual Meeting**, Charlotte, NC, Apr. 2015.
- **Shukla, A.** Designer antimicrobial materials, **American Chemical Society Spring National Meeting**, Denver, CO, Mar. 2015.
- **Shukla, A.** Designer biomaterial surfaces for drug delivery and regenerative medicine, **American Institute of Chemical Engineers Annual Meeting**, Atlanta, GA, Nov. 2014.
- **Shukla, A.** and West, J.L. Stem cell differentiation on adipocyte-based protein micropatterns, **Society for Biomaterials Annual Meeting**, Denver, CO, Apr. 2014.
- **Shukla, A.** and West, J.L. Stem cell differentiation on cell-based biomimetic micropatterns, **American Institute of Chemical Engineers Annual Meeting**, San Francisco, CA, Nov. 2013.

TEACHING AND ADVISING

Courses Taught (*new course developed indicated for first semester taught)

Student evaluations: 5="strongly agree", 1="strongly disagree"

- *ENGN 1110: Transport and Biotransport Processes* Spring 2024
  (32 undergraduate, 0 graduate; instructor is effective: 4.82, course is effective: 4.59)
- *ENGN 1510: Nanoengineering and Nanomedicine* Fall 2023
  (8 undergraduate, 18 graduate; instructor is effective: 4.60, course is effective: 4.47)
- *ENGN 1510: Nanoengineering and Nanomedicine* Spring 2022
  (7 undergraduate, 7 graduate; instructor is effective: 5.00, course is effective: 5.00)
- *ENGN 1550: Recent Advances in Biomedical Engineering** Fall 2021
  (13 undergraduate, 6 graduate; instructor is effective: 4.83, course is effective: 4.83)
- *ENGN 1510: Nanoengineering and Nanomedicine* Spring 2021
  (3 undergraduate, 11 graduate; instructor is effective: 4.64, course is effective: 4.36)
- *ENGN 1490: Biomaterials* Fall 2020
  (31 undergraduate, 11 graduate; instructor is effective: 4.81, course is effective: 4.68)
- *ENGN 1510: Nanoengineering and Nanomedicine* Spring 2020

(3 graduate; instructor is effective: 4.67, course is effective: 4.67)

- *ENGN 1510: Nanoengineering and Nanomedicine* Fall 2019
  (1 undergraduate, 15 graduate; instructor is effective: 4.64, course is effective: 4.36)

Prior to Fall 2019 student evaluations: 1="very effective", 5="very ineffective"

- *ENGN 1110: Transport and Biotransport Processes* Spring 2018

(38 undergraduate, 0 graduate; effectiveness of instruction: 1.04, effectiveness of course: 1.24)

- *ENGN 1110: Transport and Biotransport Processes* Spring 2017

(42 undergraduate, 3 graduate; effectiveness of instruction: 1.19, effectiveness of course: 1.50)

- *ENGN 1510: Nanoengineering and Nanomedicine* Fall 2016

(19 undergraduate, 7 graduate; effectiveness of instruction: 1.00, effectiveness of course: 1.26)

- *ENGN 1110: Transport and Biotransport Processes* Spring 2016

(40 undergraduate students; effectiveness of instruction: 1.21, effectiveness of course: 1.41)

- *ENGN 1100: Transport and Biotransport Processes* Spring 2015

(28 undergraduate students; effectiveness of instruction: 1.21, effectiveness of course: 1.48)

- *ENGN 1510: Nanoengineering and Nanomedicine** Fall 2014

(7 undergraduate, 9 graduate; effectiveness of instruction: 1.64, effectiveness of course: 1.64)

- *ENGN 1100: Transport and Biotransport (co-taught)* Spring 2014

(39 undergraduate, 2 graduate; effectiveness of instruction: 3.11, effectiveness of course: 3.25)

- *ENGN 1490: Biomaterials (co-taught)* Fall 2013

(35 undergraduate, 6 graduate; effectiveness of instruction: 1.62, effectiveness of course: 2.31)

Doctoral Theses Directed (*_graduate fellowships and graduation honors_)

- Charlotte Chen* (Biomedical Engineering) 2024 – current
  **National Science Foundation Graduate Research Fellowship*
- Carolina Gomez Casas (Biomedical Engineering) 2022 – current
  Thesis title: *Modulating immune cell profiles to treat bacterial biofilm infections*
- Camila Carvalho (Biomedical Engineering) 2022 – current
  Thesis title: *Developing nanoparticles to mitigate Candida albicans pathogenicity in vulvovaginal candidiasis*
- Alec McCall* (Biomedical Engineering) 2021 – current
  Thesis title: *β-lactamase responsive microneedles for treatment of diabetic foot ulcer biofilm infections*
  **National Science Foundation Graduate Research Fellowship; Brown University Diversity Fellowship*
- Zhaowei Jiang (Biomedical Engineering) 2021 – current
  Thesis title: *Develop enzyme-responsive nanoparticles and investigating their efficacy in polymicrobial biofilm infection models*
- Veronica LaMastro (Biomedical Engineering) 2019 – 2024
  Thesis title: *Development of targeting liposomal nanoparticles for Candida albicans infections*
- Carly Deusenbery (Biomedical Engineering) 2018 – 2023
  Thesis title: *Developing treatments for methicillin-resistant Staphylococcus aureus biofilms: therapeutics and drug delivery* (current position: Senior Scientist, Insulet)
- Yingying Wang (Chemistry) 2018 – 2022
  Thesis title: *Synthesis and Fabrication of Polymeric Nanoparticles for Tunable and Targeted Drug Delivery* (current position: Senior Associate Scientist, Novo Nordisk)
- Noel Vera-González* (Biomedical Engineering) 2015 – 2020

Thesis title: *Combating Candida fungal infections: Nanoparticle and Responsive Drug Delivery Systems* (current position: Biomaterials Scientist, GelMEDIX)
**National Science Foundation Graduate Research Fellowship*

- Dahlia Alkekhia* (Biomedical Engineering) 2014 – 2020
  Thesis title: *Bacteria-Responsive Biomaterials for Prevention, Detection, and Treatment of Infections* (current position: Scientist II, Corner Therapeutics)
  **National Science Foundation Graduate Research Fellowship*
- Christina Bailey-Hytholt* (Biomedical Engineering) 2015 – 2019
  Thesis title: *Using trophoblast cells to develop biotechnological approaches that advance prenatal and women's health* (co-advisor: Anubhav Tripathi, Ph.D., School of Engineering, Brown) (current position: tenure-track Assistant Professor, Chemical Engineering, Worcester Polytechnic Institute)
  **National Science Foundation Graduate Research Fellowship; Brown University School of Engineering Outstanding Ph.D. Thesis Award; Brown University Presidential Award for Excellence in Teaching*
- Shashank Shukla*(Biomedical Engineering) 2015 – 2019
  Thesis title: *Investigating tunable and multifunctional antimicrobial gellan hydrogels for infection treatment and diagnosis* (current position: Principal Scientist, Drug Delivery, SalioGen Therapeutics)
  **Brown University School of Engineering Outstanding Teaching Assistant Award*
- Bethany Almeida (Biomedical Engineering) 2014 – 2019
  Thesis title: *Using biomaterials to control the physical and chemical properties of the mesenchymal stem cell microenvironment* (current position: tenure-track Assistant Professor, Chemical and Biomolecular Engineering, Clarkson University)

Master's Theses Directed

- Olivia Carneiro (Biotechnology) 2021 – 2023
  Thesis title: *Characterizing the hemolytic activity of Staphylococcus aureus clinical isolates* (accepted position: Ph.D. student, Pharmacology & Molecular Sciences, Johns Hopkins School of Medicine, Baltimore, Maryland)
- Yamini Singh (Biomedical Engineering; co-advisor: Kareen Coulombe, Ph.D., School of Engineering, Brown) 2021 – 2023
  Thesis title: *Optimization of hydrogels for core-shell 3D bioprinting of patterned vessels for vascularization of engineered cardiac tissues*
- Cassi LaRose (Biomedical Engineering) 2019 – 2023
  Thesis title: *β-Lactamase-degradable biomaterials for controlled release of therapeutics*
- Sai Kurapati (Biotechnology) 2021 – 2022
  Thesis title: *Analysis of antimicrobial bacteriophage-hydrogel therapies*
- Alison Veintimilla (Biotechnology) 2020 – 2022
  Thesis title: *β-Lactamase responsive delivery of bacteriophages for the treatment of multidrug resistant Pseudomonas aeruginosa* (current position: Ph.D. student, Materials Science & Engineering, University of Florida, Gainesville)
- Cutler Whitely (Biotechnology) 2020 – 2022
  Thesis title: *Active targeting antifungal drug delivery systems: a trends report, market analysis, and roadmap to commercialization* (current position: Scientist II, Cancer Drug Discovery, Novartis Institutes for BioMedical Research)

- Jessica Powell (Biomedical Engineering) 2019 – 2021
  Thesis title: *Vancomycin-loaded hemostatic hydrogels for the treatment of deep organ space surgical site infections* (current position: Marketing Manager, BD Surgery Strategic Development & Innovation)
- Quentin Altemose (Biomedical Engineering) 2018 – 2020
  Thesis title: *Simulation and synthesis of functional, self-assembling amyloid complexes for the development of antimicrobial coatings* (current position: Ph.D. student, Biomedical Engineering, Cornell University)
- Alexis Fairman (Biomedical Engineering; co-advisor: Valentin Antoci, M.D./Ph.D., Orthopaedics, Rhode Island Hospital) 2018 – 2020
  Thesis title: *Coating orthopedic implants with layer-by-layer polyelectrolyte films for the controlled delivery of SHP099 to inhibit osteolysis* (current position: Scientist, Lead Discovery and Optimization, Bristol Myers Squibb)
- Hanyang Liu (Biomedical Engineering; co-advisor: Beth Fuchs, Ph.D., Infectious Diseases, Rhode Island Hospital) 2016 – 2018
  Thesis title: *Auranofin releasing antibacterial and antibiofilm polyurethane intravascular catheter coatings* (current position: Associate Scientist, Takeda Oncology)
- Samantha Turnbull (previously Samantha Gates) (Biomedical Engineering) 2015 – 2016
  Thesis title: *Engineering self-assembled polymeric biomaterials for treating bacterial infection* (current position: Applications Team Lead - Southwest, Hamilton Company)
- Shashank Shukla (Biomedical Engineering) 2013 – 2015
  Thesis title: *Tunable nanoparticle-loaded antibacterial gellan hydrogels for burn wounds* (current position: Principal Scientist, Drug Delivery, SalioGen Therapeutics)

Senior Research Scientist Advised

- Akram Abbasi, Ph.D. (Chemical Engineering, University of Rhode Island) 2022 – current

Postdoctoral Researchers Advised

- Sk Rajab Ali, Ph.D. (Organic Chemistry, Indian Institute of Science) 2023 – current
- Kayla Campbell, Ph.D. (Pathobiology, Brown University) 2020 – 2022
  (current position: Scientist, Visterra)
- Noel Vera-González, Ph.D. (Biomedical Engineering, Brown University) 2020
  (current position: Biomaterials Scientist, GelMEDIX)
- Dahlia Alkekhia, Ph.D. (Biomedical Engineering, Brown University) 2020
  (current position: Scientist II, Corner Therapeutics)
- Akram Abbasi, Ph.D. (Chemical Engineering, University of Rhode Island) 2019 – 2022
- Chao Yu, Ph.D. (Chemistry and Chemical Engineering, Nanjing Tech) 2018 – 2020
  (current position: tenure-track Assistant Professor, Jiangsu University of Science and Technology)
- Alessia Battigelli, Ph.D. (Chemistry and Pharmaceutical Sciences, U. of Trieste) 2016 – 2020
  (current position: tenure-track Assistant Professor, Chemistry, University of Maine)
- Roya Sheybani, Ph.D., Hibbitt Engineering Postdoctoral Fellow (BME, USC) 2015 – 2016
  (current position: Director of Clinical Affairs and Clinical Science, CytoVale)

Visiting Doctoral Student Advised

- Meenakshi Verma 2024
  (Materials Science and Engineering, Indian Institute of Technology, Delhi; advisor: Sampa Saha, Ph.D., Materials Science and Engineering, IIT Delhi, India)
- Patrícia M. Nagai de Lima 2022 – 2023
  (Microbiology and Immunology,São Paulo State University - ICT/UNESP; advisor: Juliana Campos Junqueira, D.D.S., Ph.D., Department of Biosciences and Oral Diagnosis, São Paulo State University - ICT/UNESP)

Graduate Rotation Students Advised

- Jean Jerome (Ph.D. student, Therapeutic Sciences, Brown) 2023 – 2024
- Dominique Walker (Ph.D. student, Therapeutic Sciences, Brown) 2023
- Melanie Martinsen (M.D./Ph.D. student, Warren Alpert Medical School, Brown) 2022

Undergraduate Researchers Advised (Brown University, unless otherwise indicated)

- Jared Sonkin, Biomedical Engineering, Class of 2026 2024 – current
- Jamiley Avila, Biochemistry & Molecular Biology, Class of 2027 2024 – current
- Julia Patterson*, Biomedical Enineering, Class of 2026 2023 – current
- Kailee Tanaka*, Biomedical Engineering, Class of 2026 2023 – current
- Joanne Liu*, Biomedical Engineering, Class of 2024 2023 – 2024
- Anna Li, Chemical Engineering and Chinese, University of Rhode Island, Class of 2025 summer 2023
- Nina Hernandez, Biochemistry, Smith College, Class of 2024 (Leadership Alliance Student) summer 2023
- Niyanta Nepal*, Biomedical Engineering, Class of 2025 2023
- Mayayi Izzo*, Biomedical Engineering, Class of 2024 2022 – 2024
- Toby Meng-Saccoccio*, Biomedical Engineering, Class of 2024 2022 – 2024
- Aditi Patel[c], Biomedical Engineering, Class of 2023 2022 – 2023
- Kyle Lam, Class of 2025 2022
- Carleigh Oberkfell*, Biomedical Engineering, Class of 2024 2022
- Kevin Kwon, Computational Biology, Class of 2025 2022
- Injy El-Dib*, Biomedical Engineering, Class of 2024 2022
- Andrew Xu, Computational Biology, Class of 2024 2022
- Sameer Jain, Biomedical Engineering and Psychology, University of Rochester, Class of 2023 (NSF REU Student) summer 2022
- Isabella MacNaughton, Biomedical Engineering, University of Massachusetts, Amherst, Class of 2024 (NSF REU Student) summer 2022
- Joshua O. Acosta-Gonzalez, Chemical Engineering, University of Puerto Rico, Class of 2023 (Leadership Alliance Student) summer 2022
- Peter Gonzalez*, Chemical Biology, Class of 2024 2021 – 2024
- Christopher Shin*, Biomedical Engineering, Class of 2024 2021 – 2024
- Kitty Moy[cd], Chemical Engineering, Class of 2021 2020 – 2021
- Simran Singh, Biomedical Engineering, Class of 2023 2020
- Eliza Sternlicht, Biomedical Engineering, Class of 2022 2020
- Bonnee Nie*[c], Biochemistry, Class of 2020 2019 – 2020
- Luc Langlois*[b], Chemistry, Class of 2020 2019 – 2020
- Alicia Rocha, Biomedical Engineering, Class of 2020 2018 – 2019
- Sarah Branse, Biomedical Engineering, Class of 2021 2018 – 2019
- Lisa Okazaki, Biomedical Engineering, Class of 2021 2018 – 2019

- Selena Tully, Biomedical Engineering, Class of 2019 2018
- Isobel Rountree, Biomedical Engineering, Class of 2020 2018
- Sorathan Munckong, Biomedical Engineering, Class of 2019 2018
- Gur Agci, Chemical and Biochemical Engineering, Class of 2019 2018
- Paul Addonizio, Chemical and Biochemical Engineering, Class of 2018 2017 – 2018
- Soobin Wang*[bc], Biomedical Engineering, Class of 2019 2017 – 2019
- Eli Silvert, Materials Engineering, Class of 2020 2017 – 2019
- Hannah Safford*[ac], Biomedical Engineering, Class of 2019 2017 – 2019
- Sumaiya Sayeed*[cd], Biomedical Engineering, Class of 2020 2017 – 2019
- Claudia Rosenthal, Chemical and Biochemical Engineering, Class of 2018 2017
- Hannah Lam*, Chemical and Biochemical Engineering, Class of 2019 2016 – 2017
- Tanaya Puranik*, Biomedical Engineering, Class of 2019 2016 – 2019
- Marina Adrianzén Fonseca[c], Biomedical Engineering, Class of 2017 2016 – 2017
- Kiran Dhatt-Gauthier*, Chemical and Biochemical Engineering, Class of 2017 2016
- William O'Gara, Mechanical Engineering, Class of 2019 2016
- Zakir Tahiry, Biomedical Engineering, Class of 2019 2016
- Sarah Cowles*[ac], Chemical and Biochemical Engineering, Class of 2017 2015 – 2017
- Grant Menon, Biomedical Engineering, Class of 2017 2015
- Johnathan Davis, Biomedical Engineering, Class of 2016 2015
- Christian Dosdos, Biomedical Engineering, Class of 2018 2015
- Tinotenda Gwisai*[c], Biomedical Engineering, Class of 2016 2014 – 2016
- Lauren Levy*[#c], Biochemistry, Class of 2016 2014 – 2016
- Theresa Cloutier*, Chemical and Biochemical Engineering, Class of 2015 2014 – 2015
- Samantha Gates[c], Biomedical Engineering, Class of 2015 2013 – 2015
- Jenna Norton[c], Biomedical Engineering, Class of 2015 2013 – 2015

**Undergraduate Teaching and Research Award recipient, [#]Royce Fellowship recipient, [a]National Science Foundation Graduate Research Fellowship recipient, [b]SigmaXi National Annual Conference Engineering Division 1st place, [c]Honors thesis, [d]Outstanding senior award*

Ph.D. Thesis Committees Served On

- Helen Danielson (Biomedical Engineering) 2024 – current
  (Thesis Advisor: Nicolas Fawzi, Ph.D.)
- Stephanie Roser (Biomedical Engineering) 2024 – current
  (Thesis Advisor: Kareen Coulombe, Ph.D.)
- Alicia Minor (Biomedical Engineering) 2019 – 2023
  (Thesis Advisor: Kareen Coulombe, Ph.D.)
- Hyeseon Shin (Chemistry) 2022
  (Thesis Advisor: Edith Mathiowitz, Ph.D.)
- Rajeev Kant (Biomedical Engineering) 2018 – 2022
  (Thesis Advisor: Kareen Coulombe, Ph.D.)
- Jake Villanova (Chemistry) 2018 – 2022
  (Thesis Advisor: Vicki Colvin, Ph.D.)
- Amanda Khoo (Biomedical Engineering) 2018 – 2022
  (Thesis Advisor: Ian Wong, Ph.D.)
- Shuchi Liao (Chemical Engineering) 2019 – 2021
  (Thesis Advisor: Kurt Pennell, Ph.D.)
- Megan Dempsey (Biomedical Engineering) 2018 – 2021
  (Thesis Advisor: Eric Darling, Ph.D.)
- Elena Atherton (Biomedical Engineering) 2017 – 2021

(Thesis Advisor: David Borton, Ph.D.)
- Rachel Deraney (Biomedical Engineering) 2016 – 2019
  (Thesis Advisor: Anubhav Tripathi, Ph.D.)
- Thomas Valentin (Biomedical Engineering) 2016 – 2019
  (Thesis Advisor: Ian Wong, Ph.D.)
- Hetal Marble (Molecular Pharmacology and Physiology) 2016
  (Thesis Advisor: Eric Darling, Ph.D.)
- Bryan Sutermaster (Biomedical Engineering) 2014 – 2018
  (Thesis Advisor: Eric Darling, Ph.D.)
- Rafael Gonzalez Cruz (Biomedical Engineering) 2014 – 2018
  (Thesis Advisor: Eric Darling, Ph.D.)

OUTREACH AND SERVICE

To the Profession

- Associate Editor, *ACS Applied Polymer Materials* 2024 – current
- Co-Chair, Personalized Health and Medicine for Vaccine and Biologics Delivery Workshop, Catalyzing Across Sectors to Advance the Bioeconomy 2024
- Advisory Board, *RSC Applied Polymers* 2024 – current
- Member, Biomedical Engineering Society (BMES) Awards Committee 2023 – current
- Council Member, Society for Biomaterials (SFB) 2023 – current
- Chair, National Science Foundation Engineering Research Visioning Alliance (ERVA) Thematic Task Force on *Engineering Solutions to Combat Antimicrobial Resistance* 2023 – 2024
- Chair, SFB Fall 2024 Symposium (6 regional conferences across USA) 2022 – current
- Member, Education and Professional Development Committee, SFB 2022 – current
- Editorial Advisory Board, *ACS Infectious Diseases* 2022 – current
- Search Committee Member, ACS Publications Editor-in-Chief Search 2022
  Served on an ACS Publications Editor-in-Chief search committee (initiated 2022), providing nominations for candidates, feedback on candidates' records and vision statements, and advancing final candidates for Board of Directors approval. Invitation to the search committee was based upon accomplishments in the relevant field.
- Co-Chair, Home Health Technologies in 2032 Workshop, Providence, RI 2022
- Panelist, Materials Research Society webinar (*The Road to Mid-Career: Advancement for Early Career Professionals in Materials Science – Focus on US Academic Systems)* 2022
- Member, Finance Committee, SFB 2021 – current
- Vice-Chair, Surface Modification and Characterization Special Interest Group (SIG), SFB 2021 – 2023
- Organizing Committee Member, National Academy of Engineering US Frontiers of Engineering 2022 Symposium 2021 – 2022
- Panelist, Carnegie Mellon Biomedical Engineering Industry Insights 2021
- Alumni Advisory Board, Biomedical Engineering, Carnegie Mellon University 2020 – current
- Director, Materials Engineering and Sciences Division, AIChE 2020 – current
- Editorial Advisory Board, *ACS Applied Polymer Materials* 2020 – 2023
- Early Career Reviewer, Gene and Drug Delivery, National Institutes of Health 2020
- Fall Programming Chair, Women in Chemical Engineering (WIC), AIChE 2020
- Chair, Surface Modification and Characterization SIG, SFB 2019 – 2021
- Fall Programming Co-Chair, WIC, AIChE 2019
- Discussion Leader, Gordon Research Conference on *Biomaterials and Tissue Engineering* 2019

- Secretary/Treasurer, Surface Modification and Characterization SIG, SFB 2017 – 2019
- Panelist, Path of Professorship, Massachusetts Institute of Technology 2016 – 2023
- Reviewer, United States – Israel Binational Science Foundation 2015
- Annual Meeting Session and Workshop Chair/Co-Chair, Organizer 2014 – current

  World Biomaterials Congress
  - *2024* • *Advances in Antimicrobial and Antibiofilm Biomaterials*

  National Science Foundation Nanoscale Science and Engineering Grantees Conference
  - *2023* • *Future of nanomedicine: Realizing the potential of targeted drug delivery*

  Society for Biomaterials (SFB)
  - *2023* • *Future Biomaterials Faculty Workshop*
  - *2022* • *Future Biomaterials Faculty Workshop*
    - *Antimicrobial and Antibiofilm Biomaterials Strategies 1 & 2*
    - *Smart Biomaterials for Drug Delivery*
    - *Stimuli-Responsive Materials for Tissue Engineering and Regenerative Medicine*
  - *2021* • *Targeted and Stimuli-Responsive Biomaterials for Drug Delivery - 2*
  - *2019* • *Recent Advances in Antimicrobial and Antibiofilm Materials*
    - *Targeted and Stimuli-Responsive Biomaterials 1*
    - *From Bench-to-Bedside: Translating Biomaterials Research*
  - *2018* • *Therapeutic Strategies for the Treatment of Infectious Diseases*
  - *2017* • *Advances in Antimicrobial Biomaterials*
    - *Biomaterials for Therapeutic Drug Delivery*
  - *2015* • *Academic – Industry Collaborations in Biomaterials Research*
    - *Advanced Antimicrobial Materials*
    - *Advances in Programmable Biomaterials for Drug Delivery and Regenerative Medicine*
    - *Targeted and Target-Activated Drug Delivery*
  - *2014* • *Advances in Programmable Biomaterials*

  American Institute of Chemical Engineers (AIChE)
  - *2021* • *Fundamental Interactions of Microbes and Microbial Communities with Materials*
  - *2019* • *Hydrogel Biomaterials: Cell culture and Delivery*
    - *Hydrogel Biomaterials: Dynamic and Stimuli-Responsive Hydrogels*
    - *Topical Plenary: Fundamentals of Microbial Interactions with Interfaces*
    - *Overcoming Hurdles for Women in Innovation and Entrepreneurship*
    - *Panel Discussion: Advice and Mentorship from Female Leaders in Innovation and Entrepreneurship*
  - *2018* • *Graduate Student Competition in Microbiointerface Research*

  Biomedical Engineering Society (BMES)
  - *2018* • *Targeted or Responsive Delivery Systems*

- Reviewer, SFB, AIChE, BMES annual meeting abstracts 2014 – current
- Reviewer for peer-reviewed journals 2014 – current
  (*ACS Nano, ACS Applied Materials and Interfaces, ACS Applied Polymer Materials, ACS Biomaterials Science and Engineering, ACS Infectious Diseases, ACS Sensors, Acta*

Biomaterialia, Advanced Healthcare Materials, Annals of Biomedical Engineering, Biofabrication, Biomaterials, *Biomedical Materials, Biotechnology Journal, Cellular and Molecular Bioengineering, Chemical Communications, Colloids and Surfaces A, Fungal Genetics and Biology, Journal of Biomedical Materials Research Part A, Journal of Physical Chemistry, Langmuir, Macromolecular Bioscience, Materials Advances, Nature Communications, New Journal of Physics, Physical Biology, Science Advances, Scientific Reports, Small)*

- National Science Foundation grant reviewer (CBET, DMR) 2014 – current

To the University

- Biomedical Engineering Representative, Engineering Executive Committee 2023 – current
- Member, School of Engineering Faculty Hiring Committee 2023
- Member, School of Engineering Committee on the Core Curriculum 2022 – current
- Member, School of Engineering Dean Search Committee 2021
- Member, School of Engineering Tenure and Promotion Committee 2021
- Scientific member, Institutional Animal Care and Use Committee (IACUC) 2020 – 2023
- Biomedical Engineering ABET Lead 2020
- Director of Undergraduate Studies, Biomedical Engineering 2019 – current
- Concentration Advisor, Biomedical Engineering 2019 – 2022
- Musculoskeletal Faculty Position Search Committee, Orthopeadics, Brown 2019
- Seed Grant and Research Achievement Award Reviewer, Office of Vice President for Research 2017 – current
- Member, Brown University Community Council 2016 – 2018
- Faculty Advisor, Society of Women Engineers, Brown Chapter 2014 – current
- Undergraduate advising (freshmen, sophomores) 2014 – current
- Laboratory Strategy and Design Committee, School of Engineering 2014 – 2016
- Honors Thesis Committee, School of Engineering 2013 – 2017
- Lecture/Panelist (ENGN 0030, SPIRA, SWE, BMES, SigmaXi, WISE, CareerLAB, Scilogue, etc.) 2013 – current

To the Community

- Science activities (K), Frenchtown Elementary School, East Greenwich, RI 2021
- Lecture/science activities, Vartan Gregorian Elementary Science Conference, Providence, RI 2016, 2019
- Mentor, Project Lead the Way, Ponaganset High School, Scituate, RI 2016 – 2018
- Lecture, Summer@Brown “Introduction to Engineering and Design” 2016
- Lecture, “Introduction to Engineering,” Lincoln School course (all-girls school), Providence, RI 2015 – current

AFFILIATIONS

American Chemical Society (ACS)
American Institute of Chemical Engineers (AIChE)
Biomedical Engineering Society (BMES)
Society for Biomaterials (SFB)