

KRISTY MARIE AINSLIE

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DIVERSITY STATEMENT

Diversity in the workplace enhances us all in our ability to learn, teach, and communicate. For me, a diverse environment incorporates individuals regardless of race, color, religion, national origin, gender, gender identity, sexual orientation, disability, age, and/or economic background. As a cis female engineer in academia, I have experienced barriers first-hand, but I understand that many individuals have encountered considerably more challenges. As a professor I strive to be a more inclusive leader by mentoring diverse individuals, becoming a LGBTQ+ ally, and seeking out opportunities to overcome and learn about bias. I am aware that academia has an inherent bias that must be challenged and overcome to bring about a more inclusive environment.

EDUCATION

2002-2005	Pennsylvania State University	PhD	Chemical Engineering
	Application of Nanobiomaterials for Biofouling Attenuation		Advisor: Michael V. Pishko
2000-2002	Pennsylvania State University	MS	Chemical Engineering
	Effect of Shear Stress on the Contraction of Smooth Muscle Cells		Advisor: John M. Tarbell
1995-1999	Michigan State University	BS	Chemical Engineering

PROFESSIONAL EXPERIENCE

Jul 2021 -	Chair, Division of Pharmacoengineering and Molecular Pharmaceutics	
Jul 2021 -	Fred Eshelman Distinguished Professor, University of North Carolina	
Jul 2019 - Jul 2021	Vice Chair, Division of Pharmacoengineering and Molecular Pharmaceutics	
Apr 2019 - Jul 2021	Professor, University of North Carolina	
Jun 2018 -	Adjunct, School of Medicine, Department of Microbiology and Immunology	
Aug 2015 -	Affiliated Member, North Carolina State University Center for Comparative Medicine and Translational Research, Raleigh, NC	
Sept 2014-	Affiliate, School of Medicine, Department of Biomedical Engineering NC State/UNC	
Jun 2014-Apr 2019	Associate Professor, University of North Carolina School of Pharmacy, Division of Pharmacoengineering and Molecular Pharmaceutics	
Jul 2009-Jun 2014	Assistant Professor, The Ohio State University College of Pharmacy, Division of Pharmaceutics	
Aug 2006-Jul 2009	Post Doctoral Fellow, University of California, San Francisco	Advisor: Tejal A. Desai
	<ul style="list-style-type: none">• Application of polymeric microdevices for cancer therapy.• Characterization of immunological responses to nanomaterials.• Development of materials including polymeric microdevices, hydrogels, and nanowires.	
Mar-Aug 2006	Contractor, Naval Research Laboratory	Advisor: Lloyd J. Whitman
	<ul style="list-style-type: none">• Performed DNA based biotoxin assays.• Developed T-cell based biosensor for HIV/AIDS monitoring.• Aided in the optimization of surface chemistry on a silicon nitride surface.	
2005-2006	Post Doctoral Researcher, Protiveris	Advisor: Robert Cain
	<ul style="list-style-type: none">• Optimized surface chemistry on nanostructured material surface.• Performed biochemical assays on nanomechanical cantilever array system.• The investors reduced the funding for the start-up in January of 2006.	
2003-2005	Graduate Assistant PhD, Pennsylvania State University	Advisor: Michael M. Pishko
	<ul style="list-style-type: none">• Characterized cell and protein attachment to nanomaterials.• Applied basic surface chemistry knowledge.	

- Gained experience in biosensor technology.

- 2000-2002 Graduate Assistant MS, Pennsylvania State University Advisor: John M. Tarbell
- Examined calcium ion dependent cellular pathways in vascular smooth muscle cells.
 - Imaged calcium ions in real time and cell surface proteins through fluorescent and pharmacological methods.
 - Explored topics in fluid flow dynamics as they relate to shear stress.
- 1999– 2000 Staff Engineer, Malcolm Pirnie, East Lansing, MI
- Lansing office Information Technology leader.
 - Collected environmental soil and water samples.

HONORS

- 2021 Worthy of Recognition for SP PCHY 512 Pharmaceutics II and SU PHCY 850 Pharmacy Internship
- 2021 American Institute for Medical and Biological Engineering (AIMBE) Fellow Inauguration
- 2012 OSU Council of Graduate Students James M. Siddens Distinguished Faculty Advising Award
- 2012 Nominated for Ohio State University Distinguished Undergraduate Research Mentor Award
- 2009 Controlled Release Society Outstanding Oral Drug Delivery Award
- 2007 Controlled Release Society-Capsugel Post-Doc Award for Innovative Aspects of Oral Drug Delivery & Absorption
- 2005 Walter R. and Aura Lee Supina Graduate Fellowship in Chemical Engineering
- 2000 The Pennsylvania State University Life Science Consortium Graduate Fellowship
- 1999 Commencement Speaker for Michigan State University College of Engineering Graduation Ceremony

BIBLIOGRAPHY AND PRODUCTS OF SCHOLARSHIP

BOOKS & CHAPTERS

1. Graham-Gurysh EG, Carpenter BW, Beck WA, Varma DM, Vincent BG, Bachelder EM, Ainslie KM. Delivery Strategies for Cancer Vaccines and Immunoadjuvants. In: Mansoor Amiji M, editor. Delivery Strategies in Immunology: Elsevier; 2021
2. Gallovic MD, Bachelder EM, Ainslie KM. Immunostimulatory Inulin Adjuvants in Prophylactic Vaccines Against Pathogens. In: Davis CR, editor. Inulin: Chemical Properties, Uses and Health Benefits: Nova Science Publishers; 2017.
3. Peine, KJ; Chen, N; Bachelder EM; Ainslie KM. Handbook of Research on Novel Approaches for Drug Delivery (Chapter: Drug Delivery Strategies for Tolerogenic Therapy for Autoimmune Diseases in an Antigen-Specific Manner) IGI Global, New York (2017).
4. Ainslie, KM; Desai, TA. Long Acting Injections and Implants (Chapter: Micro-electric technologies) Springer, New York, New York (2012).
5. Ayala, P; Bernards, DA; Thakar, RT; Ainslie, KM; Desai, TA. *The Handbook of Enabling Technologies for Regenerative Medicine* (Chapter: Fabrication of cell microintegrated tissues) CRC/Taylor and Francis, New York (2010).
6. Ainslie, KM; Thakar, RT; Bernards, DA; Desai, TA. *Nanotechnology in Tissue Engineering and Regenerative Medicine* (Chapter: Inflammation Response to Implanted Nanostructured Materials) CRC/Taylor and Francis, New York (2010).
7. Ainslie, KM; Thakar, RT; Bernards, DA; Desai, TA. *Biological Interactions on Materials Surfaces: Understanding and Controlling Protein, Cell and Tissue Responses* (Chapter: Inflammation Response to Implanted Nanostructured Materials) Elsevier, New York (2009).

PEER REVIEWED ARTICLES (H-INDEX 33)

1. Batty CJ,* Lifshits LM,* Eckshtain-Levi M,* Mccammitt B, Moore KM, Amouzougan EA, Stiepel RT, Ross TM, Eric M. Bachelder EM, Ainslie KM. Metal-Organic Coordination Polymer for Delivery of a Subunit Broadly Acting Influenza Vaccine. *In Preparation*.
2. Batty CJ, Amouzougan EA, Ross TM, Bachelder EM, Ainslie KM. Optimization of CpG Delivery with Influenza H1N1 Computationally Optimized Broadly Reactive Antigen (COBRA) for Development of a Broadly Acting Influenza Vaccine. *In Preparation*.
3. Stiepel RT, Erik S. Pena ES, Ehrenzeller SA, Gallovic MD, Genito CJ, Bachelder EM, Ainslie KM. An Experimental and Mathematical Model of Drug Release from Acetalated Dextran Particles. *In Preparation*.
4. Varma DM, Batty CJ, Stiepel RT, Graham-Gurysh EG, Zahid MSH, Qiu K, Anselmo A, Hill DB, Ross TM, Bachelder

- EM, [Ainslie KM](#). Development of A Broadly Acting Subunit Influenza Vaccine via Delivery of Intranasal Gel. *Accepted ACS Biomaterials Science & Engineering*
5. Batty CJ, Gallovic MD, Williams J, Ross TM, Bachelder EM, [Ainslie KM](#). Multiplexed Electrospray Enables High Throughput Production of cGAMP Microparticles to Serve as a Vaccine Adjuvant for a Broadly Acting influenza Vaccine. *Submitted Biomaterials Science*
 6. Duggan E, Batty CJ, [Ainslie KM](#). Micro and nanotechnologies: The little formulations that could. *Under revision. Bioengineering & Translational Medicine*.
 7. Gallovic MD, Junkins RD, McGee CE, Sandor AM, Sample CJ, Mason AK, Arwood LC, Sahm RA, Bachelder EM, Sempowski GD, [Ainslie KM](#), Ting JPY. Delivery of STING agonist via polymeric microparticles improves seasonal influenza vaccine efficacy and durability in ferrets over standard adjuvants. *Under revision J Cont Release*.
 8. Watkins-Schulz R, Batty C, Schmidt ME, Chou WC, Bachelder EM, [Ainslie KM](#), Ting JPY. The direct and indirect effects of STING activation on natural killer cells. *Under revision J Cont Release*.
 9. Pena ES, Graham-Gurysh EG, Bachelder EM, [Ainslie KM](#). Design of Biopolymer-Based Interstitial Therapies for the Treatment of Glioblastoma. *International Journal of Molecular Sciences*. 2021; 22(23):13160. (*Invited*)
 10. Hendy D, Amouzougan EA, Young I, Eric M. Bachelder EM, [Ainslie KM](#). Nano/Microparticle Formulations for Universal Influenza Vaccines. *Accepted The AAPS Journal*.
 11. Genito CJ, Eckshtain-Levi M, Piedra-Quintero ZL, Krovi SA, Kroboth A, Stiepel RT, Guerau-de-Arellano M, Bachelder EM, [Ainslie KM](#). Dexamethasone and Fumaric Acid Ester Conjugate Synergistically Inhibits Inflammation and NF- κ B in Macrophages. *Bioconj Chem*. 2021 Jun 24.
 12. Zahid MSH, Varma DM, Johnson MM, Landavazo A, Bachelder EM, Blough BE, [Ainslie KM](#). In Vitro Re-sensitization of Resistant Intracellular Salmonella enterica Serovar Typhimurium to Traditional Antibiotics with AR-12. *FEMS Microbiol Lett*. 2021 Jun 16;368(11):fnab062.
 13. Batty CJ, Bachelder EM, [Ainslie KM](#). Historical Perspective of Clinical Nano and Microparticle Formulations for Delivery of Therapeutics. *Trends Mol Med*. 2021 Apr 23;S1471-4914(21)00097-6.
 14. Johnson BM, Uchimura T, Gallovic MD, Thamilarasan M, Chou WC, Gibson SA, Deng M, Tam JW, Batty CJ, Williams J, Matsushima GK, Bachelder EM, [Ainslie KM](#), Markovic-Plese S, Ting JP. STING Agonist Mitigates Experimental Autoimmune Encephalomyelitis by Stimulating Type I IFN-Dependent and -Independent Immune-Regulatory Pathways. *J Immunol*. 2021 May 1;206(9):2015-2028.
 15. Genito CJ, Batty CJ, Bachelder EM, [Ainslie KM](#). Considerations for size, surface charge, polymer degradation, co-delivery, and manufacturability in the development of polymeric particle vaccines for infectious diseases. *Advanced NanoBiomed Research*. 2021,1 p. 2000041 (*invited*).
 16. Batty CJ, Heise MT, Bachelder EM, [Ainslie KM](#). Vaccine Formulations in Clinical Development for the Prevention of Severe Acute Respiratory Syndrome Coronavirus 2 Infection. *Adv Drug Deliv Rev*. 2020 Dec 11:S0169-409X(20)30277-5. (*Invited*)
 17. Stiepel RT, Batty CJ, MacRaild CA, Norton RS, Bachelder E, [Ainslie KM](#). Merozoite surface protein 2 adsorbed onto acetalated dextran microparticles for malaria vaccination. *Int J Pharm*. 2020 Dec 10;593:120168.
 18. Moore KM, Batty CJ, Stiepel RT, Genito CJ, Bachelder EM, [Ainslie KM](#). Injectable, Ribbon-Like Microconfetti Biopolymer Platform for Vaccine Applications. *ACS Appl Mater Interfaces*. 2020 Sep 2;12(35):38950-38961
 19. Varma DM, Redding EA, EM Bachelder, [Ainslie KM](#). Nano-and Microformulations to Advance Therapies for Visceral Leishmaniasis *ACS Biomaterials Science & Engineering*. 2020 Online Oct 16. (*Invited*)
 20. Moore KM, Murthy AB, Graham-Gurysh EG, Hingtgen SD, Bachelder EM, [Ainslie KM](#). Polymeric Biomaterial Scaffolds for Tumoricidal Stem Cell Glioblastoma Therapy. *ACS Biomaterials Science & Engineering*. 2020;6(7):3762-77.
 21. Varma DM, Zahid MSH, Bachelder EM, [Ainslie KM](#). Formulation of host-targeted therapeutics against bacterial infections. *Transl Res*. 2020 Mar 16:S1931-5244(20)30046-3.
 22. Graham-Gurysh EG, Murthy AB, Moore KM, Hingtgen SD, Bachelder EM, [Ainslie KM](#). Synergistic drug combinations for a precision medicine approach to interstitial glioblastoma therapy. *J Control Release*. 2020 Jul 10;323:282-292.
 23. Graham-Gurysh EG, Moore K, Schorzman AN, Lee T, Zamboni WC, Hingtgen S, Bachelder EM, [Ainslie KM](#). Tumor Responsive and Tunable Polymeric Platform for Optimized Delivery of Paclitaxel to Treat Glioblastoma. *ACS Appl Mater Interfaces*. 2020 Apr 6.
 24. Iweala OI, Choudhary SK, Addison CT, Batty CJ, Kapita CM, Amelio C, Schuyler AJ, Deng S, Bachelder EM, [Ainslie KM](#), Savage PB, Brennan PJ, Commins SP. Glycolipid-mediated basophil activation in alpha-gal allergy. *J Allergy Clin Immunol*. 2020 Feb 20:S0091-6749(20)30258-X.
 25. Moore KM, Graham-Gurysh EG, Bomba HN, Murthy AB, Bachelder EM, Hingtgen SD, [Ainslie KM](#). Impact of composite scaffold degradation rate on neural stem cell persistence in the glioblastoma surgical resection cavity.

Submitted Materials Science & Engineering C. 2020 Jun;111:110846.

26. Pradhan S, Moore KM, [Ainslie KM](#), Yadavalli VK. Flexible, microstructured surfaces using chitin-derived biopolymers. *J Mater Chem B*. 2019;7(35):5328-35. Epub 2019/08/08. doi: 10.1039/c9tb00965e. PubMed PMID: 31389964.
27. Zahid MSH, Johnson MM, Tokarski RJ, 2nd, Satoskar AR, Fuchs JR, Bachelder EM, [Ainslie KM](#). Evaluation of synergy between host and pathogen-directed therapies against intracellular *Leishmania donovani*. *Int J Parasitol Drugs Drug Resist*. 2019;10:125-32. Epub 2019/09/08. doi: 10.1016/j.ijpddr.2019.08.004. PubMed PMID: 31493763; PMCID: PMC6731340.
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33. Chen N, Gallovic MD, Tiet P, McGee CE, Sempowski GD, Ting JPY, [Ainslie KM](#), Bachelder EM. Degradation of Acetalated Dextran Microparticles to Optimize M2e-Based Universal Influenza Vaccine Efficacy. *JCR ePub* 2018.
34. Batty CJ, Tiet P, Bachelder EM, [Ainslie KM](#). Drug Delivery for Cancer Immunotherapy and Vaccines. *Pharm Nanotechnol*. 2018 Sep 18.
35. Collier MA, Junkins R, Gallovic MD, Johnson B, Johnson MM, Macintyre A, Sempowski G, Bachelder EM, Ting JPY, [Ainslie KM](#). Acetalated Dextran microparticles for co-delivery of STING and TLR7/8 agonists. *Mol Pharm*. 2018 Nov 5;15(11):4933-4946.
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37. Chen N, Kroger CJ, Tisch RM, Bachelder EM, [Ainslie KM](#). Prevention of Type 1 Diabetes with Acetalated Dextran Microparticles Containing Rapamycin and Pancreatic Peptide P31. *Adv Healthc Mater*. 2018 Sep;7(18).
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43. Collier MA, Bachelder EM, [Ainslie KM](#). Electrosprayed Myocet-like Liposomes: An Alternative to Traditional Liposome Production. *Pharm Res*. 2017;34(2):419-26
44. Peine KJ, Chen N, Bachelder EM, [Ainslie KM](#). Drug Delivery Strategies for Tolerogenic Therapy For Autoimmune Diseases in an Antigen Specific Manner. In: Keservani R, editor. *Recent Advances in Drug Delivery Technology*. Hershey, PA: IGI Global; 2017.

45. Webb LM, Amici SA, Jablonski KA, Savardekar H, Panfil AR, Li L, Zhou W, Peine K, Karkhanis V, Bachelder EM, [Ainslie KM](#), Green PL, Li C, Baiocchi RA, Guerau-de-Arellano M. PRMT5-Selective Inhibitors Suppress Inflammatory T Cell Responses and Experimental Autoimmune Encephalomyelitis. *J Immunol.* 2017;198(4):1439-51.
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47. Duong AD, Collier MA, Bachelder EM, Wyslouzil BE, [Ainslie KM](#) One Step Encapsulation of Small Molecule Drugs in Liposomes via Electrospray-Remote Loading. *Mol Pharm.* 2016 Jan 4;13(1):92-9.
48. Gallovic MD, Montjoy DG, Collier MA, Do C, Wyslouzil BE, Bachelder EM, [Ainslie KM](#). Chemically modified inulin microparticles serving dual function as a protein antigen delivery vehicle and immunostimulatory adjuvant. *Biomater Sci.* 2016 Jan 11.
49. Collier MA, Peine KJ, Gautam S, Oghumu S, Varikuti S, Borteh H, Papenfuss TL, Sataoskar AR, Bachelder EM, [Ainslie KM](#). Host-mediated *Leishmania donovani* treatment using AR-12 encapsulated in acetalated dextran microparticles. *Int J Pharm.* 2016 Jan 5;499(1-2):186-194.
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51. Collier MA, Gallovic MD, Bachelder EM, Sykes CD, Kashuba A, [Ainslie KM](#). Saquinavir Loaded Acetalated Dextran Microconfetti - a Long Acting Protease Inhibitor Injectable. *Pharm Res.* 2016 Aug;33(8):1998-2009.
52. Chen N, Collier MA, Gallovic MD, Collins GC, Sanchez CC, Fernandes EQ, Bachelder EM, [Ainslie KM](#). Degradation of acetalated dextran can be broadly tuned based on cyclic acetal coverage and molecular weight. *Int J Pharm.* 2016 Oct 15;512(1):147-57.
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- Leishmaniasis. *Mol Pharm.* 2013;10(3):1045-55.
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NON-PEER REVIEWED ARTICLES

1. Pena ES, Bachelder EB, [Ainslie KM](#). Acetalated Dextran for Enhanced Delivery of Subunit Vaccines. In: Patravale VB, editor. Nineteenth International e-Symposium: Advances in Technology & Business Potential of New Drug Delivery Systems; February; Online: Controlled Release Society Indian Chapter 2021.

INVITED NON-CONFERENCE TALKS

1. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. Arizona State University, Tempe, AZ February 2022. *Virtual*
2. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. Virginia Commonwealth University, Richmond VA September 2021. *Virtual*
3. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. University of California, Davis Biomedical Engineering Department. Davis, CA April 2021. *Virtual*
4. [Ainslie KM](#). Women in Pharmaceutical Sciences. UNC GEO x CAPS Global Women in Pharmacy Event. Chapel Hill, NC Nov 2021.
5. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. University of Miami Biomedical Nanotechnology Institute. Miami, FL March 2021. *Virtual*
6. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. Utah School of Pharmacy. Salt Lake City, UT Jan 2021. *Virtual*
7. [Ainslie KM](#). Nanoparticle Formulations for Autoimmune Disease and Vaccinations. UNC Allergy and Immunology Grand Rounds. Oct 2020. *Virtual*
8. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. Rice Bioengineering. Houston, TX Sept 2020. *Virtual*
9. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccines) Go Down. University of Kentucky School of Pharmacy. Lexington, KY. Mar 2020.
10. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccines) Go Down. BME 590: Advanced Drug Delivery. Raleigh NC, NC State. Apr 2020.
11. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. University of Sydney. Sydney AUS 2019.
12. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. Duquesne University, School of Pharmacy. Pittsburgh, PA 2019.
13. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) Go Down. NCSU Department of Chemical Engineering. Raleigh, NC, 2015.
14. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) Go Down. UNC Molecular Pharmaceutics Division, Chapel Hill, NC, 2014.
15. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) Go Down. University of Buffalo, Pharmaceutical Science, Buffalo, NY, 2014.
16. [Ainslie KM](#). Novel Polymeric Carriers for Immune Modulation and Drug Delivery. Virginia Tech Biomedical Engineering Department, Blacksburg, VA, 2012.
17. [Ainslie KM](#). Acetalated Dextran: A spoonful of sugar helps the medicine (and vaccines) go down Center for Microbial Interface Biology, Columbus, OH, 2012
18. [Ainslie KM](#). Novel Polymeric Carriers for Immune Modulation and Drug Delivery. OSU Biomedical Engineering Seminar, Columbus, OH, 2012.
19. [Ainslie KM](#). Novel Polymeric Carriers for Immune Modulation and Drug Delivery. OSU Biophysics Seminar. Columbus, OH, 2011.

SELECTED REFEREED UNPUBLISHED ORAL PRESENTATIONS AND/OR ABSTRACTS

Oral presentations

1. [Ainslie KM](#). Acetalated Dextran Enhances Vaccine Delivery. AAPS. New Orleans, LA Nov 2020. *Virtual*
2. [Ainslie KM](#). Drexel Immune Modulation and Engineering Symposium. Philadelphia, PA Nov 2020. *Virtual*
3. [Ainslie KM](#). Acetalated Dextran: A Spoonful of Sugar Helps STING Agonists Go Down!. Innate Immune Stimulating

Therapies Summit. Boston, MS July 2020. Virtual

4. Ainslie KM. Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. SFB. Seattle, WA Apr 2019.
5. Ainslie KM. The Tunable Degradation of the Biodegradable Polymer Acetalated Dextran Results in Enhanced Efficacy of a Universal Flu Vaccine and Glioblastoma Chemotherapy. BMES. Philadelphia, PA 2019.
6. Ainslie KM. Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. UGA Center for Vaccines and Immunology. Athens, GA 2019.
7. Ainslie KM. Discovery and Formulation of Host-directed Therapies for Salmonella and Leishmania. Pharmalliance. Monash University, Melbourne AUS 2019.
8. Ainslie KM. Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. 5th Annual Biopharmaceutical Research and Development Symposium: Nanotechnology for Immunotherapy. Omaha, NE 2018.
9. Ainslie KM. Chemically modified inulin microparticles serving dual function as a protein antigen delivery vehicle and immunostimulatory adjuvant. AICHe, San Francisco 2016.
10. Ainslie KM. Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down. The 3rd NCSU:Seqirus Technical Symposium. Raleigh, NC 2015.
11. Ainslie KM. Acetalated Dextran: A Spoonful of Sugar Helps the Medicine (and Vaccine) go down Fusion Conference: Bridging the Gap Between Basic Science and Unmet Medical Needs. Tucson, AZ. 2015
12. Schully KL, Sharma S, Peine KJ, Pesce J, Elberson MA, Fonseca ME, Prouty AM, Bell MG, Bachelder EM, Keane-Myers A, Ainslie KM. Rapid Vaccination using an Acetalated Dextran Microparticulate Subunit Vaccine Confers Protection Against Triplicate Challenge by Bacillus anthracis. Vaccine OMICS Group, Chicago, IL, 2012.
13. Ainslie KM. Novel Biopolymer Acetalated Dextran for Therapeutics and Immune Applications. Batelle Women in Science and Engineering (WISE) Conference, Columbus, OH, 2011.
14. Ainslie KM. Acetalated dextran microparticles are a potent delivery platform for vaccine adjuvants in vitro. Controlled Release Society. Portland, OR, 2010. www.controlledrelease.org/
15. Ainslie KM. Translational Therapies for Drug Delivery and Immune Modulation. Davis Heart and Lung Research Institute: Work in Progress. Columbus, OH, 2010.
16. Ainslie KM. Translational Therapies for Drug Delivery and Immune Modulation. OSU Division of Medicinal Chemistry & Pharmacognosy, Columbus, OH, 2010.
17. Ainslie KM. Novel Polymeric Carriers for Immune Modulation and Drug Delivery. OSU Comprehensive Cancer Center - Innate Immunity. Columbus, OH, 2010.
18. Ainslie KM. Novel Polymeric Carriers for Immune Modulation and Drug Delivery. OSU Chemical Engineering Seminar, Columbus, OH, 2010.
19. Ainslie KM, Desai TA. Attachment of Hydrogel Filled Micro-engineered Particles for Oral Delivery of Chemotherapeutic Agents. Controlled Release Society, Copenhagen, Denmark, 2009.
20. Ainslie KM, Kraning CM, Desai TA. Microfabricated Oral Delivery Vehicle. American Institute of Chemical Engineers, Philadelphia, PA, 2008.
21. Ainslie KM, Desai TA. Microfabricated Oral Delivery Vehicle. Gordon Research Conference: Drug Carriers in Medicine, Big Sky, MT, 2008.
22. Ainslie KM, Tao SL, Kraning CM, Desai TA. Chemotherapeutic Release From Hydrogel Filled Micro-Engineered Particles For Oral Delivery. Biomedical Engineering Society, Los Angeles, CA, 2007 and Controlled Release Society, Long Beach, CA, 2007.
23. Ainslie KM, Sharma G, Grimes CA, Pishko MV. Attenuation of Protein Adsorption on Static and Vibrating Magnetic Nanowires. Materials Research Society, San Francisco, CA, 2004.

SELECTED POSTER PRESENTATIONS

1. Jarstfer M, Ainslie K, Cox WC, McLaughlin JE, Using the Multiple Mini Interview to Assess Candidates for a PhD Program in Pharmaceutical Sciences. AACP, virtual 2020.
2. Chen N, Johnson MM, Collier MA, Gallovic MD, Bachelder EM, Ainslie KM. Optimizing Adaptive Immune Responses to Universal Flu Vaccines via Acetalated Dextran Microparticles. GRC, Mt. Snow, VT 2018.
3. Gallovic MD, Schully KL, Bell MG, Elberson MA, Palmer JR, Darko CA, Bachelder EM, Wyslouzil BE, Keane-Myers AM, Ainslie KM. Acetalated Dextran Microparticulate Vaccine Formulated via Coaxial Electrospray Preserves Toxin Neutralization and Enhances Murine Survival Following Inhalational Bacillus Anthracis Exposure. GRC, Waterville Valley, NH 2016.
4. Hoang KV, Borteh HM, Rajaram MVS, Peine KJ, Curry H, Collier MA, Homsy ML, Bachelder EM, Gunn JS, Schlesinger LS, Ainslie KM. Acetalated dextran encapsulated AR-12 as a host-directed therapy to control Salmonella

- and Francisella infection GRC, Waterville Valley, NH 2014.
5. Sharma S, Schully K, Pesce JT, Bachelder EM, Keane-Myers A, Ainslie KM. Microparticulate Carrier for Rapid Vaccination Against Anthrax AAPS, Washington, DC 2011.
 6. Kanthamneni N, Guerau M, Huss D, Smith A, Lovett-Racke AE, Bachelder EM, Ainslie KM. Novel Microparticulate Treatment of Multiple Sclerosis with Dexamethasone and Myelin Oligodendrocyte Glycoprotein Loaded Acetalated Dextran AAPS, Washington, DC 2011.
 7. Ainslie KM. Vaccine applications of pH sensitive co-axial electrosprayed microparticles. Institute for Materials Research Facility Grant Presentation. Columbus, OH, 2011.
 8. Ainslie KM. Translational Drug Delivery Methods to Modulate PK/PD. OSU Center for Clinical and Translational Science Workshop. Columbus, OH, 2011.
 9. Ainslie KM Adjuvants Encapsulated in Ac-DEX Nanoparticles for Passive Targeting of Dendritic Cells and Enhanced Vaccination. Great Lakes Regional Center of Excellence, Chicago, IL, 2010. www.glrce.org/
 10. Ainslie KM, Novel Polymeric Carriers for Drug Delivery and Immune Modulation. College of Pharmacy Research Day, Columbus, OH, 2010.
 11. Bachelder EM, Albrecht MT, Mateczun AJ, Ainslie KM, Pesce JT, Keane-Myers AM. In Vitro Analysis of Acetalated Dextran Microparticles as a Potent Delivery Platform for Vaccine Adjuvants. Controlled Release Society, Portland, OR, 2009.
 12. Ainslie KM, Tao SL, Kraning CM, Desai TA. Chemotherapeutic Release From Hydrogel Filled Micro-Engineered Particles For Oral Delivery. Presented at Controlled Release Society, Santa Barbara, CA, 2007.
 13. Ainslie KM, Tao SL, Kraning CM, Desai TA. Chemotherapeutic Release From Hydrogel Filled Micro- Engineered Particles For Oral Delivery. Biomedical Engineering Society, Los Angeles, CA, 2007.
 14. Ainslie KM, Tao SL, Papat KC, Desai TA. Immunogenicity and Toxicity of Non-particulate Nanomaterials. Biomedical Engineering Society, Los Angeles, CA, 2007.
 15. Ainslie KM, Tao SL, Desai TA Chemotherapeutic Release From Hydrogel Filled Micro-Engineered Particles For Oral Delivery, University of California System Wide Bioengineering Conference, San Francisco, CA, 2007.
 16. Ainslie KM, Sharma G, Dyer MA, Grimes CA, Pishko MV. Attenuation of Protein Adsorption on Static and Vibrating Magnetic Nanowires. American Chemical Society, Philadelphia, PA, 2004.
 17. Ainslie KM, Sharma G, Grimes CA, Pishko, MV. Attenuation of Protein Adsorption on Static and Vibrating Magnetic Nanowires. American Institute of Chemical Engineers, Austin, TX, 2004.
 18. Ainslie KM, Civelek M, Garanich J, Tarbell JM. Smooth Muscle Cells Contract in Response to Fluid Flow via a Ca²⁺-Independent Signaling Mechanism. Biomedical Engineering Society (BMES), Houston, TX, 2002.

PATENTS

1. Ting JPY, Junkins R, Johnson B, Ainslie KM, Bachelder EM, Gallovic MD, Collier MA, Cheng N. Methods and Compositions for Inducing An Immune Response. Application Number: US11052149B2. 2021-07-06.
2. Ainslie KM, Bachelder EM, Gautam S, Peine K, Satoskar A. Compositions and Methods for Inhibiting Leishmania, #14/924,605, October 2015.
3. Ainslie KM, Bachelder EM, Gallovic MD, Keane-Myers A, Schully K, Wyslouzil BE. Immunogenic Compositions and Methods for Development of An Anthrax Vaccine. Provisional, September 2015.

MEDIA FEATURES

Nov 2021	CRS Young Scientists Committee: Interview with a Luminary
Feb 2021	Podcast: Side Effects May Vary – Two Coronavirus vaccine podcasts
Dec 2016	Carolina Scientific <i>The Macrophage's Bouncer</i>
May 2010	Medical News Today et al.: <i>Effects of Vaccines for HIV and Other Disease Could be Boosted by Prescription Drug</i>
May 2010	Pharmaceutical Formulation & Quality: <i>Delivery Platform Could Improve Vaccines</i>
June 2011	PodCast: Mammalian Cell Facts for Engineers. Fundamentals of Engineering
Jun 2008	Chemical Technology: <i>Hydrogel helps the medicine go down</i>
May 2008	Technology Research News: <i>This chip is a pill</i>

TEACHING ACTIVITIES

Year	Course name	Course Number	Lectures Taught	Enrollment	Course type	Overall Evaluation
2021 AU	Pharmaceutics Drug Delivery I	PHCY 512	3	147	Professional	5/5 ave. 4
	Advances in Drug Delivery	DPMP 864	2	8	Graduate	5/5 ave. 4.6
2021 SU	Pharmacy Internship	PHCY 850	1	13	Professional	4.8/5 ave. 4.3
2021 SP	Nanomedicine	DPMP 738	5	12	Graduate	4.9/5 ave. 4.4
	Pharmaceutics II	PHCY 514	4	124	Professional	4.5/5
2020 AU	Advances in Drug Delivery	DPMP 864	3	8	Graduate	-
2020 SP	Pharmaceutics II	PHCY 514	4	133/23	Professional	4.13 & 4.33/5
	Nanomedicine	MOPH 862	6	5	Graduate	4.33/5 ave: 3.7
2019 AU	NSF Fellowship	DPMP 869	12	6	Graduate	5.0/5
	Advances in Drug Delivery	DPMP 864	6	10	Graduate	4/5 ave: 3.8
2019 SP	Pharmaceutics II	PHCY 514	4	127/16	Professional	3.53 & 4.57/5 ave: 3.89/5
	Nanomedicine	MOPH 862	5	7	Graduate	5/5 ave. 3.33
2018 AU	Advanced Drug Delivery	MOPH 864	5	8	Graduate	4.5/5 (ave: 4/5)
2018 SP	Pharmaceutics II	PHCY 512	4	124/29	Professional	4.12 & 3.73/5 ave: 3.41/5
	Advanced Physical Pharmacy	MOPH 862	3	6	Graduate	NA
2017 AU	Advances in Drug Delivery and Nanomedicine	DPMP 868	5	6	Graduate	4.83/5.0
2017 SP	Pharmaceutics II	PHCY 512	4	125/25	Professional	4.25 & 4.27/5
2017 SP	Advanced Physical Pharmacy	MOPH 862	3	6	Graduate	NA
2016 AU	Advances in Drug Delivery	MOPH 868	6	6	Graduate	4.6/5
2016 AU	Nanomedicine	MOPH 738	4	7	Graduate	4.6/5
2016 SP	Pharmaceutics II	PHCY 512	4	125/25	Professional	4.25 & 4.27/5
	Advanced Physical Pharmacy	MOPH 862	3	6	Graduate	
2016 SP	Advanced Pharmaceutics	MOPH 862	3	8	Graduate	NA
2016 SP	Seminar	PHRS 899.004	14	30	Graduate	NA
2015 AU	Advances in Drug Delivery	MOPH 864	3	15	Graduate	3.8/5
2015 AU	Seminar	PHRS 899.004	14	30	Graduate	NA
2015 SP	Pharmaceutics II	PHCY 411	3	132	Professional	3.75/5
2014 AU	Nanomedicine	MOPH 738	1	18	Graduate	NA
2014 SP	Drug Delivery II	PHARM 6220	23	121	Professional	4.8/5
2014 SP	Pharmaceutics	PHARM 4250	5	~70	Undergraduate	NA
2013 SP	Drug Delivery II	PHARM 6220	23	126	Professional	4.4/5
2013 SP	Pharmaceutics	PHARM 4250	4	~70	Undergraduate	NA
2013 SP	Seminar	PHARM 8500	15	19	Graduate	NA
2012 AU	Drug Transport	PHARM 8040	12	9	/Undergraduate /Professional	NA

Year	Course name	Course Number	Lectures Taught	Enrollment	Course type	Overall Evaluation
2012 AU	Seminar	PHARM 8500	15	20	Graduate	NA
2012 SP	Drug Delivery II	PHARM 622	29	124	Professional	3.5/5
2012 SP	Pharmaceutics	PHARM 425	4	91	Undergraduate	4.1/5
2012 SP	Seminar	PHARM 850	15	17	Graduate	NA
2011 AU	Seminar	PHARM 850	15	22	Graduate	NA
2011 SP	Drug Delivery II	PHARM 622	29	142	Professional	2.9/5
2011 SP	Seminar	PHARM 850	15	23	Graduate	NA
2011 SP	Pharmaceutics	PHARM 425	4	71	Undergraduate	3.6/5
2010 AU	Drug Transport	PHARM 804	26	10	Graduate	4.2/5
2010 AU	Intro to Pharm Science	PHARM 852	1	23	Graduate	NA
2010 AU	Seminar	PHARM 850	15	22	Graduate	4.4/5
2010 SP	Drug Delivery II	PHARM 622	14	128	Professional	2.3/5
2009 AU	Intro to Pharm Science	PHARM 850	1	~20	Graduate	NA

- 2002 Teaching Assistant, Pennsylvania State University; Instructor: Michael V. Pishko
- Taught eight lectures focused on fundamental mass transfer topics.
 - Developed and taught curriculum for a lecture based on components of mass transfer constitutive equation.
 - Graded quizzes and examinations.
- 2001 Teaching Assistant, The Pennsylvania State University; Instructor: Alfred Carlson
- Created lectures based around professor supplied sample questions.
 - Taught fifteen recitations sections.
 - Developed and lectured from PowerPoint presentations on weekly topics and problem sets.

ADVISING

Current Lab Members

Name	Previous Degree	Position	Started	Topic	Awards
Staff					
Elizabeth Gurysh	PhD Biomedical Engineering, Wake	Research Associate	2021	Acetalated Dextran Scaffolds	PhRMA Post Doc Fellowship, NIH F32
Post Doc					
Sean Simpson	PhD Biochemistry, Wake	Post Doc	2020	Autoimmune therapies	
Liubov Lifshits	PhD Chemistry, Bowling Green	Post Doc	2020	Vaccines	
John Roque III	PhD Chemistry, UNC Greensboro	Post Doc	2021	Vaccines	
Denzel Middleton	PhD Animal and Food Science, WVU	Post Doc	2021	T1D Tolerance	
Luis Alberto Ontiveros Padilla	PhD Immunology: National Autonomous University of Mexico	Post Doc	2021	Vaccines	
Graduate					
Cole Batty	BS Chemistry, University of Minnesota	Graduate Student, Pharmaceutical Sciences	2017	Vaccine formulations	
Rebeca Stiepel	BS Chemical Engineering, U So Cal.	Graduate Student, Pharmaceutical Sciences	2019	Autoimmune vaccines	Ford Foundation Fellowship

Erik Pena	BS Chemical Engineering Canada	Graduate Student, Biomedical Engineering	2020	Influenza vaccines	
Dylan Heady	BS Pharmaceutical Sciences, Michigan	Graduate Student, Pharmaceutical Sciences	2021	Influenza Vaccines	Eshelman Fellowship
Ryan Woodring	BS Chemical Engineering, Penn State	Graduate Student, Pharmaceutical Sciences	2021	Influenza Vaccines	
Nicole Lukesh	BS Chemical Engineering, Notre Dame	Graduate Student, Pharmaceutical Sciences	2021	T1D Tolerance	Eshelman Fellowship
Ava Vargason	BS Chemical Engineering U Kentucky	Transfer from Anselmo Lab	2021	Functionalization of Bacteria	UNC 3MT winner

Undergraduate

Kapil Ramanarayanan	UNC, Biomedical Engineering	Undergraduate Researcher	2021	Scaffold development	
Stephen Ehrenzeller	UNC, Applied Biology	Undergraduate Researcher	2021	Tolerance	
Alex Haven	UNC, Biology	Undergraduate Researcher	2022	Protein structure assays	
Rachel Gentile	UNC, Biomedical Engineering	Undergraduate Researcher	2022	Tolerance	

High School Student

Eliza Dugan	Durham Math and Science High School	Intern	2021	Nanoparticles	
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Former Lab Members

Name	Previous Degree	Position	Years	Thesis Title/Topic	Awards	Next Position
Post Doc						
Adam Sandor	PhD Biochemistry, U of Colorado	Post Doc	2018-2020	Cancer therapies	T32 Cancer Nanotechnology Fellow Co-advised with Dr. Jenny Ting	Post Doc
Elizabeth Gurysh	PhD Biomedical Engineering, Wake	Post Doc	2015-2021	Acetalated Dextran Scaffolds	PhRMA Post Doc Fellowship, NIH NCI F32	Research Associate
Devika Sharma	PhD Biomedical Engineering, SUNY City College	Post Doc	2019-2021	Vaccines and Host Directed Therapies		Scientist, Baebies
Eva Amouzougan	PhD Pharmacology, Arizona	Post Doc	2020-2021	Influenza vaccines		Scientist, Charles Rivers
Md. Shamim Hasan Zahid	PhD Animal Science, Japan	Post Doc	2016-2020	Host directed therapies towards pathogens		Scientist, Triangle Biotech
Meital Levi	PhD, Chemistry, Bar	Post Doc	2018-2020	Vaccines		Scientist, Sigma Millipore

Ilan University						
Jon Williams	PharmD, Duquesne University	Post Doc	2018	Vaccines		Specialist, Nuventra Pharma Sciences
Monica Johnson	Pharm Sci, University of Colorado	Post Doc	2017	Host directed therapies		Co-Founder at STEM Boomerang
Archana Kovi	PhD Chemistry, Northwestern	Post Doc	2016	Chemical ligation of Ac-DEX		Scientist, RTI, International
Matthew Gallovic	PhD Chemical Engineering, Ohio State	Post Doc	2016-2018	Scalable production of vaccines		Lead Scientist, IMMvention Therapeutix
Pam Tiet	PhD Biomedical Engineering, City of Hope	Post Doc	2017-18	Cancer Immunotherapy	T32 Cancer Nanotechnology Fellow	Scientist, Process Development at Atara Biotherapeutics
Siabal Bandyopad- hyay	PhD Chemistry, University of Missouri	Post Doc	2013-2014	Ligation to Acetalated Dextran		Chief Scientific Officer, Neverwet
Anthony Duong	PhD Chemical Engineering, Ohio State	Post Doc	2013-2014	Electrospray of liposomes		Battelle, Research Scientist
Shalini Guatum	PhD Microbiology, India	Post Doc	2013-2014	Host-Directed Leishmania Therapies		Post Doc, Ohio State
Hassan Borteh	PhD Biomedical Engineering, Ohio State	Post Doc	2012-2013	Acetalated dextran scaffolds		Lecturer, Columbus State University
Samantha Meenach	PhD Chemical Engineering, Kentucky	Post Doc	2009-2010	Pulmonary Delivery		Assistant Professor, University of Rhode Island
Graduate						
Kevin Peine	BS Biology, DePaul	Graduate Student, OSU Molecular, Cell & Developmental Biology	2010-2014	Formulation of Particulate-based Immunomodulatory Therapeutics		AAAS Fellow, USAID Scientist
Matthew Gallovic		BS Chemical Engineering, Northwestern	Graduate Student, OSU Chemical Engineering	2010-2016	Scalable production of vaccines, OSU Chemical Engineering Outstanding Graduate Award for Academic Achievement	Lead Scientist, IMMvention Therapeutix
Michael Collier	BS Biomedical Engineering, Clemson	Graduate Student, Pharmaceutical Sciences	2011-2017	Immune modulating therapies	GSK Fellowship award, Fusion conference poster award, GPEN Conference	Formulation Scientist, Moderna Therapeutics

					travel award	
Naihan Chen	BS Biochemistry, Smith College	Graduate Student, Pharmaceutical Sciences	2014-2018	Antigen specific autoimmune therapies	Feng Liu Student Award	Pfizer, Clinical Pharmacology
Kathryn Moore	BS Biology, Georgia State	Graduate Student, Biomedical Engineering	2015-2020	Acetalated Dextran Scaffolds and microconfetti	GRC Poster Award 2108, BMES Poster Award 2017, NSFGFP	Post doc at Emory
Christopher Genito	BS Biochemistry, University of Maryland	Graduate Student, Microbiology & Immunology	2017-2021	Antigen specific autoimmune therapies	T32 Immunology Fellowship	Post Doc UNC
Kunyu Qiu	BS Pharm Sci Tsinghua University	Transfer from Anselmo Lab	2021	Oral Delivery of Bacteria		Consulting position
Undergraduate						
Elizabeth Redding	UNC, Biology	Undergraduate Researcher	2020	Leishmania		
Jalen Heyward	BS Psychology	Chancellor's Science Scholar	2017	Host-directed pathway discovery		
Deanna Brackman*	BS Pharmaceutical Science (BSPS), Ohio State	Undergraduate Researcher	2012-2014	Encapsulation of immune modulatory agents	OSU Summer Undergraduate Research Fellowship; OSU BSPS Undergraduate Research Fellowship	Graduate School, UCSF
Douglas Montjoy*	BS Chemical Engineering	Undergraduate Researcher	2012-2014	Acetalated Polymers	OSU Summer Undergraduate Research Fellowship	Graduate School, Michigan
Mike Homsy	BS Chemical Engineering, Ohio State	Undergraduate Researcher	2013-2014	Encapsulation of tolerogenic agents		Medical school
Erin Pesa	BS Finance, Ohio State	Undergraduate Researcher	2011	Immune activating acetalated polymers		Finance
Lauren Dellon	BS Chemical Engineering, Ohio State	Undergraduate Researcher	2011	Pulmonary Delivery		Graduate School, Northwestern
Katie Gregg	BS Chemical Engineering, Ohio State	Undergraduate Researcher	2010-2012	Immune activating acetalated polymers		Consultant at Newry Corp.
Claire Parker	BS Biomedical Engineering, Ohio State	Undergraduate Researcher	2009-2010	Pulmonary Delivery		R&D Senior Design Engineer at Ethicon

					Pelotonia Undergraduate Research Fellowship; Chemical Engineering Research Fellowship; Honorable Mention OSU Undergraduate Research Forum Best Poster; OSU Summer Undergraduate Research Fellowship	Graduate School, MIT
Kevin Kauffman*	BS Chemical Engineering, Ohio State	Undergraduate Researcher	2009-2012	New acetalated polymers		
Yu Jeong Kim	BS Pharmaceutical Science (BSPS), Ohio State	Undergraduate Researcher	2009-2012	Pulmonary Delivery	OSU Summer Undergraduate Research Fellowship	Graduate School, USC
Ben Pierson	BS Chemical Engineering, Ohio State	Undergraduate Researcher	2009-2010	Amphotericin B formulations		Doctor of Osteopathy School
Kaylyn Pogson*	Pending BS in Biology	Undergraduate Researcher	2014-2015	Formulations of Resiquimod	Best Poster at UNC Celebration of Undergraduate Research; UNC's Taylor Summer Undergraduate Research Fellowship;	UNC Undergrad
Quinta Fernandes	Pending BS in Biology		Undergraduate Researcher	2014-2015	Particle fabrication	UNC Undergrad
Graham Collins*	BS in BME, UNC	Undergraduate Researcher	2015-17	Acetalated Dextran Scaffolds	UNC's Taylor Summer Undergraduate Research Fellowship; BME Undergraduate Research Award;	GA Tech BME Grad Program
Rick Harrison	Pending BS in Biology	Undergraduate Researcher	2016-17	Acetalated Dextran Scaffolds		UNC Undergrad
Mabel D'Souza	Pending BS in Chemistry	Undergraduate Researcher	2016-17	Meta analysis of polymers for siRNA delivery		UNC Undergrad
Rebeca Thweat	BS in Chemical Engineering	SOLAR Scholar	2017	Modeling of drug diffusion from nanoparticles		UNC, PhD
Dylan Schuler	Pending BS in Chemistry	Undergraduate Researcher	2016-17	Meta analysis of polymers for siRNA		UNC Undergrad

delivery					
Ananya Murthy	University of Texas, Austin	Undergraduate Researcher in Biomedical Engineering	2017	Cancer drug synergy	Apply to PhD/MD programs
Other					
Brandon Mccammitt	UNC, Chemistry	Research Technician	2021	Vaccine carriers	RTI Scientist
Michael Hegarty	BS Biochemistry, Ohio State	Technician	2013		Medical school
Duane Probst		Research Technician	2012-2013		Student
Ashley Bowden	PharmD, Ohio State	Summer Intern	2012	Tolerogenic polymers	Pharmacist
Clement Do	PharmD, Ohio State; PhD Chemistry, USC	Summer Intern	2012, 2013	New acetalated polymers	Pharmacist
Sadhana Sharma	PhD Biomedical Engineering, University of Illinois	Research Scientist	2011-2010	Vaccines against bioterrorism agents	Administrator, Ohio State

*Undergraduate honors

Graduate Committees

Current: Patrick Hanafin (Chair)

Past: Anthony Duong (OSU; Chemical Engineering); Sneha Gupta (OSU; Pharm Sci); Tien-Lu Huang (OSU; Pharm Sci); Lei He, (OSU; Pharm Sci); Jay Kim (Chair; Pharm Sci); Okolie Onyinyechukwu (Pharm Sci); Carla Coste Sánchez (Chair; Pharm Sci); Shaye Hagler (Pharm Sci); Morgan McSweeney (Pharm Sci); Rebekah Watkins-Schultz (Genetics); Manisit Das (Phrm Sci); Eva Vargason (Chair)

GRANTS

CURRENT SUPPORT

5R01AI125147-02 (PI: Ainslie (lead)/Blough) 4/22/2016 – 3/31/2022 3.0 calendar
NIH/NIAID \$5,961,014

Host Targeted Therapy for Drug Resistant Salmonella and Francisella infection

We propose the optimization of a host targeted therapeutic for the treatment of infection due to drug resistant bacteria. We will alter the chemical structure and formulate the drug to increase the efficacy of the compound. We will perform experiments that will help enable IND FDA filing of the proposed therapy.

R01AI137525-01A1 (PI: Ainslie) 7/1/2018-6/30/2023 2.4 calendar
NIH \$1,891,998

Biomaterials to study tolerance immune induction kinetics

Antigen specific treatment of autoimmune diseases, like multiple sclerosis, relies on the communication between dendritic cells and T cells. To understand this and the role of nanoparticles in enhancing the immune synapse, we aim to apply acetalated dextran nanoparticles that have been previously shown to reduce clinical score in a mouse model of multiple sclerosis. We will use the unique degradation rates of acetalated dextran to understand the kinetics of dendritic and T cell interactions as it relates to tolerance.

Contract No. 75N93019C00052 (PI: Ainslie) 9/16/2019 - 8/31/2026 0.96 calendar
University of Georgia / NIH \$1,687,861

Center for Influenza Vaccine Research in High Risk Populations (CIVICs)

Our proposed research plan will converge human vaccine assessment with currently commercial vaccines in populations that are under-represented in many vaccine trials and compared results in match animal models to assess the effectiveness

of universal vaccine formulations developed in the CIVR-HRP. These data sets will be analyzed and statistical models will be produced to make intelligent predictions for success of our universal vaccine candidates in people.

1R01AI147497-01A1 (PI: Ainslie) 01/14/2020 - 1/13/2025 1.8 calendar
NIH \$2,919,766

Optimizing a Universal Influenza Subunit Nano/Microparticulate Vaccine

Here we propose an improved influenza vaccine that can act more broadly to prevent infection from viruses that have undergone natural genetic changes that prevent current flu vaccines from being efficacious. Our goal is to formulate computer generated influenza antigens (COBRA antigens) into degradable biopolymeric (Ac-DEX) nanoparticles to improve the vaccine's efficacy by co-delivering immune activating adjuvants.

5R01NS097507-02 (PI: Hingtgen) 6/1/2016 – 5/31/2022 1.06 calendar
NIH/NIND Role: Co-Investigator \$1,628,896

Nanofiber matrices to improve neural stem cell-mediated cancer therapy

This proposal seeks to define the design cues that are essential for polymeric scaffolds to improve tNSC therapy, and determine the efficacy of novel polymeric scaffolds capable of maximizing cytotoxic tNSC treatment of surgically resected GBM.

R01AI141333-01(PI: Ting/Bachelder) 12/14/2018 – 11/30/2023 1.2 calendar
NIH Role: Co-Investigator \$6,054,843

Micro-Particle Delivery of a Potent Intracellular Adjuvant for a Universal Flu Vaccine

This proposal plans to use a unique microparticle formulation to deliver adjuvants comprised of pathogen-associated molecules to activate the immune system. We propose that such an activated immune system will aid in vaccine responses to emerging viruses of urgent health impact.

1R01DK130225-01 PI: Ainslie 1.44 calendar
NIH 7/1/2021 – 6/30/2025 \$1,526,836

Formulation to Generate Tolerance Towards Type 1 Diabetes

Antigen specific tolerance towards type-1 (insulin dependent) diabetes can provide a long-term cure for the disease without the need for administration of exogenous insulin. We propose the use of microparticles to reprogram the immune system's response against the islet cells by creating antigen specific tolerance to mitigate the harmful autoimmune response.

1R01CA257009-01A1 PI: Ainslie 1.56 calendar
NIH 8/1/2021 – 7/31/2026 \$1,797,170

Tunable Temporal Drug Release for Optimized Synergistic Combination Therapy of Glioblastoma

Glioblastoma is a devastating brain cancer that needs new treatment options because even with chemotherapy, radiation, and surgical resection, tumor recurrence almost always leads to death. Here we propose synergistic combination therapy that relies on optimized elution of chemotherapeutics from a nanofibrous controlled-release scaffold placed in the brain at time of surgery to remove the tumor.

2021-FLG-3822 (NCBC) PI: Ainslie 0 calendar
NC Biotech Center 08/15/2021 – 08/14/2022 \$20,000

Patient-friendly oral dosage forms for living biological therapeutics

Due to the strict storage requirements of LBPs (e.g. -80°C, anaerobic environment), LBPs almost exclusively available as in-patient treatments during visits to healthcare providers, where suitable storage equipment is readily available; as such, there is an emergent need to develop patient-friendly oral dosage forms of LBPs that can be taken conveniently at home.

COMPLETED

Defense Threat Reduction Agency (DTRA) 9/09-9/10 0 mos \$96,959
Stimulation of broad spectrum protection via TLR 7, 8 & 9

OSU IMR PI: Ainslie 4/11-3/12 0.0 mos \$2,000

High throughput Production of Multi-component Multi-layered Acetalated Dextran-based Nanoparticle for Vaccination

DARPA PI: Ainslie 6/11-2/12 0 mos \$3,000

Optimization of Resiquimod in Vaccine Microparticulate Carrier to Modify Immune Cells for Vaccine Formulation

W911NF-10-1-0264 PI: Ainslie 9/10-6/13 2.4 mos \$1,176,660
7-day Biodefense: Universal vaccine microparticulate carrier that encapsulates immune modifiers and antigens in a novel polymeric matrix to passively target dendritic cells.

DTRA PI: Keane-Myers/Ainslie 6/13-5/14 0.6 mos \$779,517
Development of needle-free, multi-formulation nanoparticle vaccine

R21 NS072813-01 PI:Ainslie 8/11-7/13 0.6 mos. \$419,375
Encapsulated Active Vitamin D Vaccine for the Treatment of Multiple Sclerosis

R21 AI095773 consultant (PI: Pappenfus) 8/12-7/14 0 mos \$419,375
Regulatory myeloid cells in inflammatory disease: Therapy and targeted generation with micro particles

Arno Therapeutics co-I (PI: Schlesinger) 0 mos \$200,000
Use to fund additional studies in the Center for Microbial Interface Biology (CMIB) at OSU.

R21 AI102252 PI 7/12-6/17 0.6 mos \$415,113
Celecoxib Derivative: Host Cell-Directed Inhibitors of Intracellular Pathogens

EII PI 5/16-3/18 \$50,000
Long acting formulations for HIV therapy 0 mos

R33 AI102252 PI: Ainslie \$989,229
 NIH 7/12-6/18 0.6 mos
Celecoxib Derivative: Host Cell-Directed Inhibitors of Intracellular Pathogens

1R21AI123692-01 PI: Ainslie \$423,739
 NIH 4/16 – 3/19 1.2 mos
Microparticle resiquimod for the treatment of visceral leishmaniasis

1R41AI140795 PI: Ainslie (lead)/Goyal 06/1/2018 – 10/31/2019 1.35 calendar
 IMMvention Therapeutix/NIH \$104,140
STTR: Advancing Formulation of STING agonist for Universal Flu Vaccine

2018-BIG-6504 (PI: Ting) 1/01/2018 – 12/31/2019 0.24 calendar
 Role: Investigator \$200,000
 North Carolina Biotechnology Center (NCBC) NCE
Advancement of Immunotherapeutic Formulation for Breast Cancer

PA2018TierA_ID26 (PI: Ainslie) 01/01/2019 - 12/31/2019 0.12 calendar
 PharmAlliance \$49,840
Filling an unmet need with Malaria vaccines: an antibody inducing blood-stage microparticulate subunit vaccine

Grant # (PI: Ainslie) 01/01/2019 – 2/29/20 0.6 calendar
 Duke University / NIH \$125,187
Adjuvant Discovery Program

State Funded NC Policy Collaboratory 7/01/2020-12/30/2020
 Role: Co-Investigator \$342,411
A vaccine against COVID-19 that strongly induces three branches of immunity

No Number (PI: Ting/Ainslie) 7/01/2018 – 6/30/2020 0.12 calendar
 UNC Lineberger Comp. Cancer Ctr \$100,000

A Novel Microparticle Platform to Activate Innate Immunity as an Immunotherapeutic for Triple Negative Breast Cancer

1F32CA225199-01A1 (PI: Ainslie) 7/01/2018-4/30/2021

0 calendar

NIH

Combination Therapy of Stem Cells and Drug Eluting Scaffolds to Treat Glioblastoma

Glioblastoma is a devastating disease with limited therapeutic options due to tumor location, heterogeneity and drug resistance. This project proposes that combination therapy administered locally can overcome these challenges and lead to improved outcomes.

PROFESSIONAL SERVICE

GRANT REVIEW ACTIVITIES

2021 NIH NANO, ZRG1 F07A-H (20)
2020 NIH NANO Standing Member
NIH Emergency COVID ZAI1 JHM-X (J2)
2019 NIH NANO Standing Member
NIH CSR/SSI Anonymization Project
2018 CDMRP DIS-VDID
NIH CSR/SSI Anonymization Project
NIH NANO
NIH BMBI
NIH ZAI1 KP-M (M1) 1 Vaccines and Immunophrophylactics against Antibiotic-Resistant Bacteria
NIH EBIT
2017 NIH Non-HIV Microbial Vaccines ZRG1 IMM-R (12)
NIH R10 Innovative immunology SBIR (2x)
NIH ZRG1 CB -M (50) MIRA
2016 NIH NANO
NIH Non-HIV Microbial Vaccines ZRG1 IMM-R (12) B
NIH BAA Bacterial Vaccines ZAI1 TT-M(C1)
NIH VMD 2016/05 ZRG1 IMM-R (90) B
NIH Non-HIV Microbial Vaccines ZRG1 IMM-R (12)
2015 Swiss National Science Foundation Fellowship Application
NIH Nano Study Section Ad Hoc
NIH SBIR Clinical Trials 2015/01 ZAI1 TT-M (J3) 1
NIH SBIR ZRG1 IMM-R (12)
NIH R15 ZRG1 OTC-N (80) A
2014 NIH SBIR Review Topic 028
USAMRMC American Institute of Biological Sciences Grant Reviewer
2013 NIH NINDS/NIA EUREKA Review (ZNS1 SRB N (04))
NIH Drug Target Development and Validation for Antimicrobial-Resistant Pathogens ZAI-SM-M-J1
OSU PHPID
OSU CMIB/Arno Therapeutics Grant Committee
2012 Deutsche Forschungsgemeinschaft (German Research Foundation) vaccine grant
Technology Foundation STW, The Netherlands, tolerance grant
Ohio State University CCTS
2011 NIH Partnerships in Biodefense RO1 Immunotherapeutics (ZAI1 RGK-M (J1))
NIH Partnerships in Biodefense RO1 Bacterial Vaccines (ZAI1 RGK-M (J3))

PUBLIC SERVICE

2016 NC Museum of Natural Sciences Final Friday Nanotechnology Expert – answering questions of general public
2016 UNC Women in Science, Panelist
2015 UNC Women in Science, Speed Networking, Mentor
2015 - 2019 Mary Scroggs STEAM Workshop, Who Broke the Cookie Jar? and Hovercraft demonstration with help recruited for division graduate students.
2009-2013 Judge, Fundamentals of Engineering, OSU

- 2008 NSF Expanding your Horizons in Science and Mathematics, San Bruno, CA.
Nanotechnology Program for PBS *DragonflyTV investigation*, St. Paul, MN.
- 2007 Community Resource for Science, Berkeley, CA.
- 2001 – 2005 Science Lions; K-12 Interdisciplinary Science Outreach Organization, State College, PA.
- Founded and resided as president for three years.
 - Enlisted funding for initial start-up and continuation: > \$15,000.
 - Developed organization structure that is used to currently maintain group without self-involvement.
- 1996 – 1999 Science Theatre; K-12 Interdisciplinary Science Outreach Organization, East Lansing, MI.
- Developed three chemistry, engineering, and biology related presentations.
 - Created engineering department and recruited initial members and funding estimated at \$1,000.

SERVICE TO PUBLICATIONS

Journal Reviewer: Biomedical Microdevices, Langmuir, Acta Biomaterialia, ACS Nano, Advance Drug Delivery Reviews, The Journal of Biomaterials Science: Polymer Edition, Accounts of Chemical Research, Chemical Reviews, Biomaterials, Molecular Pharmaceutics, Journal of Controlled Release, Carbohydrate Chemistry, Acta Materialia, Biochimica et Biophysica Acta, Science, Adv Materials

Guest Editor (2021): Special issue The AAPS Journal for Rising Stars Issue

SERVICE TO PROFESSIONAL ORGANIZATIONS

- 2020 – 2021 Rising Stars in Drug Delivery and Novel Carriers Webinar co-organizer
- 2020 Nanoformulation Workshop and NanoDDS session and roundtable co-chair
- 2020 - Pres Abstract reviewer, BMES, AAPS, CRS
- 2017 - Pres AAPS UNC Student Chapter Faculty Advisor
- 2015 - 2016 Co-organizer for Fusion Conference, Host Directed Therapeutic Strategies to Combat Infection and Reduce Emergence of Drug Resistance Conference
- 2011 - 2014 ISPE OSU Student Chapter Faculty Advisor
- 2010 - 2014 AAPS OSU Student Chapter Faculty Advisor
- 2009 - 2011 Controlled Release Society Oral Drug Delivery Committee Leader

SERVICE TO COMPANIES

- 2012 - 2014 Scientific Advisory Board Member, Peptineo, Albuquerque, NM
- 2017 Co-Founder IMMvention Therapeutix, Durham, NC
- 2017 - 2020 Scientific Advisory Board Member, IMMvention Therapeutix, Durham, NC

SERVICE TO ADMINISTRATIVE COMMITTEE

University Activities

- 2020 – Pres UNC, LGBTQ+ Ally
- 2018 – Pres UNC, CHANL Advisory Committee
- 2016 - 2018 UNC, Eshelman School of Pharmacy, Dean Search Committee
- 2016 - 2018 UNC, Graduate School Administrative Board Member
- 2016 - 2018 UNC, Academic Policy Committee Member
- 2012 OSU, College of Pharmacy, Dean Search Committee
- 2011 OSU, Consultant for CCTS Webpage Development
- 2012 OSU, Summer Research Opportunities Program, Judge and Mentor
- 2010 - 2014 OSU, Ohio State Information Committee Chair; Immunology Round Table

School/College Activities

- 2021 – Pres UNC, BS Pharmaceutical Sciences Task Force Chair
- 2020 UNC, Organized School-wide LGBTQ+ training
- 2020 - 2020 UNC, Research Enterprise Subcommittee
- 2019 - 2021 UNC, Vice Chair, Division of Pharmacoengineering & Molecular Pharmaceutics
- 2019 - 2020 UNC, Faculty Advisory Team
- 2017 - 2018 UNC, PharmD Accreditation Self-Study Group Assignments - Standards (18-19): Faculty and Staff Quantitative and Qualitative Factors

2018 - 2019 UNC, Core Curriculum Committee, Chair
 2018 - 2018 UNC, COGSS: Committee for Optimization of Graduate Student Selection, Chair
 2017 - 2019 UNC, Graduate Visionary Committee
 2016 UNC, Advanced Inquiry into Pharmacy, Curriculum Transformation Committee
 2015 UNC, Graduate Program Governance Committee
 2015 UNC, Family Day Vaccine Session Co-Organizer
 2014, 2016 UNC, Candidates' Day Faculty Interviewer
 2014 UNC, Pharmaceutics Curriculum Transformation 2nd chair
 2014 - 2016 UNC, Scholastic Achievement and Progression Committee
 2011 - 2012 OSU, Web Information Committee
 2011 - 2014 OSU, Awards and Alumni Committee
 2011 - 2012 OSU, Committees on Committees, College Elected Position
 2011 OSU, Poster Judge, College of Pharmacy Research Day
 2010 - 2012 OSU, College Diversity Committee
 2009 - 2011 OSU, Technology and Education Resources Committee
 2009 - 2011 OSU, Web Page Development

Division Activities

2018 - 2020 UNC, Open Position Search Committee, Chair
 2016 - 2019 UNC, Graduate Curriculum Committee
 2016 UNC, Graduate Self-Study Committee
 2015 - 2016 UNC, Open Position Search Committee
 2015 - 2016 UNC, Division Chair Search Committee
 2011 - 2014 OSU, Division Webpage Developer
 2009 - 2010 OSU, Quarter to Semester: Graduate Studies
 2010 OSU, Quarter to Semester: PharmD Studies
 2010 - 2014 OSU, Graduate Recruitment Chair

AFFILIATIONS

2018 - Pres Adjunct Faculty, Department of Microbiology and Immunology, UNC-CH
 2014 - Pres Affiliated Faculty, Comparative Medicine Institute, North Carolina State University
 2014 - Pres Affiliated Faculty, Dept. Biomedical Engineering, University of North Carolina, CH
 2012 - 2014 Member, Center for Microbial Interface Biology, The Ohio State University
 2010 - 2014 Graduate Faculty, Dept. Biomedical Engineering, College of Eng, The Ohio State University
 2009 - 2014 Graduate Faculty, Biophysics Program, The Ohio State University
 2010 - 2014 Graduate Faculty, Molecular, Cellular and Developmental Biology, The Ohio State University
 2010 - 2014 Adjunct Member, Department of Chemical and Biomolecular Engineering, OSU
 2009 - 2010 Associate Member, Dorothy M. Davis Heart and Lung Research Institute, OSU Med Center
 2010 - 2011 Associate Member, OSU Comprehensive Cancer Center