**EDUCATION**

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| --- | --- | --- | --- |
| University of Texas at Austin | Pharmaceutical Sciences | Ph.D. | Fall 2020 |
| University of Texas at Austin | Pharmaceutical Sciences | Pharm.D. | Spring 2016 |

**PROFESSIONAL EXPERIENCE**

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| --- | --- | --- |
| University of Michigan,  Department of Pharmaceutical Sciences | Assistant Professor | Nov 2021 - present |
| Via Therapeutics | Director, Strategy and Operations | Aug 2021 – Nov 2021 |
| CloXero Therapeutics | President/CEO | March 2020 – Oct 2024 |
| Via Therapeutics | Senior Research Scientist | Aug 2018 – July 2021 |
| Optimal Research | Pharmacist | Aug 2018 – present |
| Nau’s Enfield Drug | Pharmacist | Nov 2017 – Feb 2018 |
| Seton Medical Center Austin | Pharmacist | July 2016 – July 2017 |

**GRANTS AND CONTRACTS**

**Current**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PI** | **Title** | **Funding Agency** | **Award Period** | **Total Direct Costs (to Brunaugh)** |
| Brunaugh | Development of Repurposed Adjuvant Studded Particles to Enhance Inhaled Antibiotic Activity Against Extensively Drug Resistant Pathogens | PhRMA Foundation | 01/01/2023 –  06/30/2024 | $100,000 |
| Brunaugh | Identification of sugar mixtures with high glass transition temperature to enhance stability and aero-sol performance of spray dried proteins | Catalent Pharma, Inc | 03/01/2023 – 02/28/2024 | $22,435 |
| Brunaugh | Repurposing Niclosamide as an Inhaled Treatment for Burkholderia Cepacia Complex Infections in Cystic Fibrosis | Cystic Fibrosis Foundation | 05/01/2023 – 04/30/2025 | $100,000 |
| Markovitz | Molecularly Engineered Lectins for Intranasal Prophylaxis and Treatment of Coronaviruses | National Institutes of Health / NIAID | 03/01/23 – 02/29/28 | $150,000 |

**Previous**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PI** | **Title** | **Funding Agency** | **Award Period** | **Total Direct Costs** |
| Polli / Schwendeman | Center for Research on Complex Generics | FDA | 8/1/2022 - 7/31/2023 | $51,466 |
| Brunaugh  (PI status transferred after change in institute; continued serving as co-I) | R43AI162348: Development of synergistic clofazimine-amikacin inhalable powders for the treatment of pulmonary Mycobacterium abscessus infections | National Institutes of Health / NIAID | 03/01/2021 – 02/28/2022 | $212,774 |
| Brunaugh  (PI status transferred after change in institute; continued serving as co-I) | HHS75N93021C00042: Development of Low-Cost, Shelf-Stable, Patient- Adaptable Clofazimine Mini-Tablets for Treatment of Tuberculosis in Pediatrics (Phase I SBIR Contract) | National Institutes of Health / NIAID | 09/01/2021 –  10/31/2021 | $204,103 |
| Brunaugh as PI (Smyth as sponsor) | F31HL146178: Optimization of next generation pulmonary dry powder delivery systems | National Institutes of Health / NHLBI | 02/06/2019 – 09/29/2020 | -- |

**PUBLICATIONS**

1. Refereed Journal Publications
2. Romero-Gonzalez M, Crowther J, Ordoubadi M, Brunaugh AD. Strategies to Overcome Undesired Physicochemical Changes in Particle Engineering for Inhalation. KONA Powder and Particle Journal. 2024:2025008.
3. Warnken Z, Trementozzi A, Martins PP, Parkeh J, Koleng JJ, Smyth HD, Brunaugh A\*. Development of Low-Cost, Weight-Adjustable Clofazimine Mini-Tablets for Treatment of Tuberculosis in Pediatrics. European Journal of Pharmaceutical Sciences. 2023:106470.
4. Brunaugh AD, Walz A, Warnken Z, Pearce C, Munoz Gutierrez J, Koleng JJ, Smyth HDC, Gonzalez-Juarrero M. Respirable Clofazimine Particles Produced by Air Jet Milling Technique Are Efficacious in Treatment of BALB/c Mice with Chronic Mycobacterium tuberculosis Infection. Antimicrob. Agents Chemother. 2022;e00186-22
5. Brunaugh AD, Ding L, Wu T, Schneider M, Khalaf R, Smyth HDC. Identification of Stability Constraints in the Particle Engineering of an Inhaled Monoclonal Antibody Dried Powder. Journal of pharmaceutical sciences. 2022;111(2):403-416
6. Ding L, Brunaugh AD, Thakkar R, Lee C, Zhao Q, Kalafat J, Maniruzzaman M, Smyth HDC. Comparison of HPMC Inhalation-Grade Capsules and Their Effect on Aerosol Performance Using Budesonide and Rifampicin DPI Formulations. AAPS PharmSciTech. 2022; 23(1):1-13
7. Ding L, Brunaugh AD, Stegemann S, Jermain SV, Herpin MJ, Kalafat J, Smyth HD. A Quality by Design Framework for Capsule-Based Dry Powder Inhalers. Pharmaceutics. 2021;13(8):1213.
8. Brunaugh AD, Sharma S, Smyth HDC. Inhaled fixed-dose combination powders for the treatment of respiratory infections. Expert opinion on drug delivery. 2021:1-5.
9. Brunaugh AD, Seo H, Warnken Z, Ding L, Seo SH, Smyth HDC. Development and evaluation of inhalable composite niclosamide-lysozyme particles: A broad-spectrum, patient-adaptable treatment for coronavirus infections and sequalae. PLoS ONE 2021;16(2): e0246803.
10. Brunaugh AD, Wu T, Kanapuram SR, Smyth HD. Effect of particle formation process on characteristics and aerosol performance of respirable protein powders. Molecular pharmaceutics. 2019;16(10):4165-80.
11. Ferrati S, Wu T, Fuentes O, Brunaugh AD**,** Kanapuram SR, Smyth HD. Influence of formulation factors on the aerosol performance and stability of lysozyme powders: A systematic approach. AAPS PharmSciTech. 2018;19(7):2755-66.
12. Brunaugh AD, Smyth HD. Formulation techniques for high dose dry powders. International journal of pharmaceutics. 2018;547(1-2):489-98.
13. Brunaugh A, Smyth HD. Process optimization and particle engineering of micronized drug powders via milling. Drug delivery and translational research. 2018;8(6):1740-50.
14. Brunaugh AD, Jan SU, Ferrati S, Smyth HD. Excipient-free pulmonary delivery and macrophage targeting of clofazimine via air jet micronization. Molecular pharmaceutics. 2017;14(11):4019-31.
15. Morales JO, Fathe KR, Brunaugh A, Ferrati S, Li S, Montenegro-Nicolini M, Mousavikhamene Z, McConville JT, Prausnitz MR, Smyth HD. Challenges and future prospects for the delivery of biologics: oral mucosal, pulmonary, and transdermal routes. The AAPS journal. 2017;19(3):652-68.
16. Ferrati S, Gadok AK, Brunaugh AD, Zhao C, Heersema LA, Smyth HD, Stachowiak JC. Connexin membrane materials as potent inhibitors of breast cancer cell migration. Journal of The Royal Society Interface. 2017;14(133):20170313.

\* indicates corresponding author

1. Books and Book Chapters
2. Brunaugh AD, Smyth HD, Williams RO. Essential Pharmaceutics. Springer; 2019.
3. Moraga-Espinoza DF, Brunaugh AD, Ferrati S, Heersema LA, Herpin MJ, Martins PP, Zhang H, Smyth HD. Overview of the delivery technologies for inhalation aerosols. Inhalation Aerosols: Physical and Biological Basis for Therapy. 2019;1:123
4. Referred Conference Proceedings
5. Wang Z, Caverly L, Brunaugh AD. Characterization of the biofilm-forming ability of Mycobacterium abscessus isolates in synthetic cystic fibrosis sputum medium. Poster presented at Michigan Medicine Annual Pathology Research Symposium. 2022 Nov; Ann Arbor, MI
6. Dechayont B, Wang Z, Brunaugh AD. Repurposing curcumin as an adjunct therapeutic for extensively drug resistant gram negative pathogens. Poster presented at American Association of Pharmaceutical Scientists Annual Meeting. 2022 Oct; Boston, MA

1. Shah N, Brunaugh AD. Characterization and comparison of biorelevant simulated airway mucus to improve the development of *in vitro* dissolution and diffusion assays for aerosols. Poster presented at American Association of Pharmaceutical Scientists Annual Meeting. 2022 Oct; Boston, MA
2. Romero-Gonzalez M, Brunaugh AD. Composite niclosamide-human lysozyme inhalable therapeutic for the treatment of Burkholderia infection in cystic fibrosis patients. Poster presented at American Association of Pharmaceutical Scientists Annual Meeting. 2022 Oct; Boston, MA
3. Ding L, Brunaugh AD, Lee C, Zhao, Q, Kalafat J, Powale S, Bhat J, Almeida D, Solanki A, Smyth HDC. Comparison of commercially available HPMC inhalation-grade capsules and effect on aerosol performance within model DPI formulations. Poster presented at: Drug Delivery to the Lungs Annual Meeting; 2019 Dec; Edinburgh, UK.
4. Brunaugh AD, Wu T, Kanapurum S, Smyth HDC. Characterization and aerosol performance of respirable biologic protein powders produced by spray drying or spray freeze drying. Poster presented at: American Association of Pharmaceutical Scientists Annual Meeting; 2019 Oct; San Antonio, TX.
5. Ding L, Brunaugh AD, Lee C, Zhao Q, Kalafat J, Smyth HDC. 2019. A study using budesonide formulation for investigating the impact of HPMC inhalation-grade capsules suppliers on aerosol performance. Poster presented at: American Association of Pharmaceutical Scientists Annual Meeting; 2019 Oct; San Antonio, TX.
6. Ding L, Brunaugh AD, Lee C, Zhao Q, Kalafat J, Smyth HDC. 2019. Investigating HPMC inhalation-grade capsule type on aerosol performance of an excipient-free formulation of rifampicin. Poster presented at: American Association of Pharmaceutical Scientists Annual Meeting; 2019 Oct; San Antonio, TX.
7. Ferrati S, Wu T, Fuentes O, Brunaugh AD, Kanapuram S, Smyth HDC. 2018. A systematic analysis of the effect of formulation parameters on the aerosol performance and stability of spray freeze dried protein powders. Poster presented at: Respiratory Drug Delivery Annual Meeting; 2018 April; Tucson, AZ
8. Brunaugh A, Jan SU, Ferrati S, Smyth H. Inhaled Clofazimine Powder for Pulmonary Delivery and Macrophage Targeting. Poster presented at: Inhaled Therapies for Tuberculosis and Other Infectious Diseases; 2017 Oct; Durham, NM
9. Brunaugh A, Jan SU, Smyth H. Aerodynamic performance of milled clofazimine particles for pulmonary delivery. Poster presented at: International Society of Aerosols in Medicine 21st Congress; 2017 May; Santa Fe, NM
10. Brunaugh AD**,** Moraga-Espinoza D, Smyth HDC. 2016. Optimization of a novel active dry powder inhaler. Poster presented at: American Association of Pharmaceutical Scientists Annual Meeting; 2016 Nov; Denver, CO
11. Ferrati S, Gadok A, Heersema L, Brunaugh A, Smyth H. Stachowiak J. Delivery of Membrane Protein Connexin to Metastatic Cancer Cells Using Cell-Derived Vesicles. Poster presented at: American Association of Pharmaceutical Scientists Annual Meeting; 2016 Nov; Denver, CO
12. Ferrati S, Gadok A, Heersema L, Brunaugh A, Smyth H. Delivery of Transmembrane Proteins Using Cell-derived Biovesicles. Poster presented at: 43rd Annual Meeting & Exposition of the Controlled Release Society; 2016 July; Seattle, WA.
13. Brunaugh A, Lin Y, Lee S. Structures of DPO4-DNA Complexes. Poster presented at: Texas Enzymes Mechanisms Conference; 2014 Jan, Austin, TX.

**ORAL PRESENTATIONS**

1. Brunaugh AD. Development and Evaluation of Inhalable Composite Niclosamide-Lysozyme Particles for COVID-19 and Sequalae. Formulation & Delivery US. San Diego, CA. 2022 Oct
2. Brunaugh AD. Inhaled clofazimine particles: an important tool against mycobacterial lung infections. Annual Meeting of American Association of Pharmaceutical Sciences. Boston, MA. 2022 Oct
3. Brunaugh AD. Optimization of Next Generation Inhalable Powders for the Treatment of Respiratory Infections. China Pharmaceutical University. Virtual. 2022 May
4. Brunaugh AD. Development of Clofazimine Formulations for Treatment of Mycobacterial Lung Diseases. Colorado State University, Department of Microbiology, Immunology and Pathology. Fort Collins, CO. 2022 Jan
5. Smyth HDC, Brunaugh AD, Koleng J. Inhaled Delivery of Clofazimine – A high efficiency, flow independent, cellular-targeted system for mycobacterial infections. Respiratory Drug Delivery Annual Meeting. Virtual. 2020 April

**DISCLOSURES, PATENTS PENDING AND PATENTS AWARDED**

H.D.C. Smyth, A. Brunaugh, “Compositions of Clofazimine and Amikacin for Pulmonary Administration in the Treatment of Respiratory Diseases,” US Patent Application No. 63/195,388

H.D.C. Smyth, A. Brunaugh, L. Ding, “Methods and Systems for Selecting Conditions for Making Inhalation Formulations”, US Provisional Patent Pending, Application Number 63/130,063

R.O. Williams III, H.D.C. Smyth, Z. Warnken, M.O.J. Gonzalez, H. Seo, A. Brunaugh, M. Herpin, “Pharmaceutical Compositions of Niclosamide,” US Provisional Patent Pending, Application Number 63/003,793

H.D.C. Smyth, A. Brunaugh, Z. Warnken, H. Seo, “Pharmaceutical Compositions of Niclosamide and a Protein,” US Provisional Patent Pending, Application Number 63/079,674

H.D.C. Smyth, A. Brunaugh, “Inhalable Composition of Clofazimine and Methods of Use Thereof,” US Patent Application No. 16/652,904

**TEACHING EXPERIENCE**

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| --- | --- | --- | --- |
| University of Michigan | Course Coordinator | Biopharmaceutics (Pharmaceutical Sciences 838) | Fall 2022 - present |
| University of Michigan | Lecturer | Dosage Forms (Pharmaceutical Sciences 518) | Winter 2022 - present |
| University of Michigan | Lecturer | From Molecules to Drugs and Drug Products (Pharmaceutical Sciences 101) | Spring 2022 - present |
| University of Texas at Austin | Teaching Assistant | Basic Pharmaceutics (“Flipped” classroom model) | Spring 2018  Spring 2017  Spring 2016 |
| University of Texas at Austin | Teaching Assistant | Pharm.D. New Student Orientation Math Bootcamp | Summer 2017 |
| University of Texas at Austin | Teaching Assistant | Basic Intravenous Admixtures Laboratory | Summer 2017 |
| University of Texas at Austin | Teaching Assistant | Pharmacotherapeutics I Laboratory | Fall 2017 |
| University of Texas at Austin | Teaching Assistant | Drug Information and Evidence-Based Practice Laboratory | Fall 2016 |
| University of Texas at Austin | Advanced Academic Assistant | Basic Pharmaceutics (“Flipped” classroom model) | Spring 2015 |
| University of Texas at Austin | Pharm.D. Tutor | Pharmaceutical Biochemistry I  Physical and Chemical Principles of Drugs  Function and Anatomy of Human Systems I | Fall 2013  Spring 2014  Fall 2014 |
| University of Texas at Austin | Peer-Led Undergraduate Studies Student Preceptor | Intro to Medical Microbiology and Immunology | Spring 2012 |
| Learn To Be | Tutor | Primary and Secondary School Subjects | Dec 2010 – Dec 2012 |

**MENTORSHIP**

*University of Michigan – Ann Arbor*

A. PhD Research

1. Mariana Romero-Gonzalez, Summer 2022 – present
2. Bhanuz Dechayont, Summer 2022 – present
3. Nishant Shah, Fall 2022 – present
4. Grace Xia, Summer 2023 – present

B. PhD Rotations

1. John McClay, Spring 2022
2. Mariana Romero-Gonzalez, Spring 2022
3. Cecilia Spesia, Spring 2022
4. Sekou-Tidiane (Coumbe) Yoda, Spring 2022
5. Bhanuz Dechayont, Spring 2022
6. Julia Crowther, Fall 2022
7. Andrew Alvarez, Fall 2022
8. Grace Xia, Spring 2023

C. PharmD Research

1. Hayley Torres, Fall 2022 - present
2. Mary Vue, Fall 2022 - present
3. Jae Guen Jang, Fall 2022 - present

D. Master’s Research

1. Nishant Shah**,** Spring 2022 – Summer 2022
2. Ruisi Ling, Fall 2022 – Summer 2023
3. Maia Fleck, Spring 2024 – Summer 2024
4. Andrea Maser, Spring 2024 – Summer 2024

E. Undergraduate Research

1. Zitong Wang**,** Spring 2022 – Summer 2023
2. Lia Krawiec, Fall 2022 – Spring 2024

*University of Texas at Austin*

A. Pharm.D. Research **\*Indicates author of peer-reviewed publication resulting from mentored project**

1. Shivam Sharma\*, Fall 2019
2. Jenny Zhao\*, Spring 2019
3. Omar Fuentes\*, Summer 2017 – Fall 2019

B. Undergraduate Research **\*Indicates author of peer-reviewed publication resulting from mentored project**

1. Hyojong Seo\*, Fall 2019 – Fall 2020
2. Jerry Liu, Fall 2019
3. Christian Lee\*, Spring 2018 – Fall 2019
4. Samuel Fleming, Spring 2018 – Fall 2018
5. Lucy Cai, Summer 2017

**HONORS AND AWARDS**

* 2022 UC San Diego Raising Advancement and Parity for Infectious Disease Researchers (RAPID) Program Participant
* 2020 The Academy of Medicine, Engineering & Science of Texas Annual Poster Challenge Winner
* 2018 American Association of Pharmaceutical Scientists Foundation Graduate Student Fellowship
* 2018 Texas Ventures Labs Investment Competition E. Craig Nemec Elevator Challenge Winner
* 2018 Texas Ventures Labs Investment Competition Semi-Finalist
* 2018 University of Texas Dell Medical School Texas Health Catalyst Finalist and Awardee
* 2018 Dr. James W. McGinity Graduate Endowment in Pharmaceutics
* 2018 Silicon Valley Bank Trek Finalist
* 2016 University of Texas College of Pharmacy Outstanding Research Award
* 2016 Kappa Epsilon Nellie Wakeman Fellowship
* 2016 University of Texas College of Pharmacy Matthew’s Fellowship
* 2016 Doctor of Pharmacy with Honors
* 2015 Tom and Beverly Gerding Endowed Presidential Scholarship in Pharmacy
* 2014 University of Texas Endowed Presidential Scholarship Recipient
* 2014 Medisca Student Pharmacist Compounding Competition, Second Place National Winner
* 2014 Pat and Jack Maguire Scholarship Recipient
* 2013 J. Jeffrey Linhart Memorial Scholarship Recipient
* 2013 Pharmacy Student Research Training Program Scholarship Recipient

**CERTIFICATIONS**

* Leading for Equity, Diversity and Inclusion in Higher Education, University of Michigan, 2021
* Institute for Biomedical Entrepreneurship Biomedical Innovation and Entrepreneurship Certificate, 2019
* Texas Pharmacist License # 58517, 2016 (expires 2022)
* Accreditation Council for Pharmacy Education IV Admixtures Certification, 2014
* American Pharmacists Association Pharmacy-Based Immunization Delivery Certification, 2013
* American Pharmacists Association Delivery Medication Therapy Management Services Certification, 2014

**MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES**

* Sigma Xi, 2020-Present
* Texas Venture Mentoring Service, Austin Technology Incubator, 2018-present
* Lester Entrepreneurial Scholars Program, University of Texas at Austin, 2017-2020
* American Association of Pharmaceutical Scientists, 2016-Present
* Phi Lambda Sigma Pharmacy Leadership Society, 2014-Present
* Rho Chi Pharmacy Honor Society, 2013-Present

**SERVICE**

A. National Institute of Health Study Sections

* ZRG1 CVRS-J11, “Small Business: Respiratory Sciences”, ad-hoc reviewer
* DBTD, ad-hoc reviewer
* ZHL1 CSR-O (O1) 1, ad-hoc reviewer

B. University

*University of Michigan – Ann Arbor*

Departmental Committee Service

* Department Chair Search Committee, 2023
* Faculty Recruiting Committee, 2022 - present
* Department Seminar Committee, 2022 - present
* American Association of Pharmaceutical Sciences University of Michigan Student Chapter, Faculty Advisor, 2023 - present

College-wide Service

* Curriculum and Assessment (PharmD) Committee, 2022 - present
* Pharmacy Phamily Head, 2022 - present

*University of Texas at Austin*

Departmental Committee Service

* Faculty Recruiting Committee, 2018

College-wide Service

* American Association of Pharmaceutical Scientists Student Chapter Chair, 2017-2018
* Graduate Students Association College of Pharmacy Representative, 2014-2015
* College of Pharmacy Council Student Affairs Chair, 2013-2014

University-wide Service

* College of Pharmacy Dean Search Committee, 2019-2020
* Student Health Advisory Committee, 2011-2012