

Curriculum Vitae

As of 21 April 2023

Personal Details

Name: Qi (Tony) Zhou

Title: University Faculty Scholar Associate Professor (tenured)

Institute: Department of Industrial & Physical Pharmacy,
College of Pharmacy, Purdue University

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Career summary. After obtaining my bachelor degree in Pharmaceutics from Shenyang Pharmaceutical University (China), I had worked in a major pharmaceutical company for two years and developed formulations for **four new pharmaceutical products**. Upon obtained my PhD in pharmacy from Monash University in 2012, I have received postdoctoral training at the University of Sydney until I joined Purdue University as an Assistant Professor in 2015. In 2020, I was promoted to University Faculty Scholar Associate Professor with tenure at Purdue.

Research support. My research was supported by both Governments and major pharmaceutical companies. In 2013, I was awarded the Australian National Early Career Fellowship (Australian equivalent of NIH K01, \$300k) to support my work in aerosol formulation of antibiotics. In 2014 and 2015, I secured two NHMRC Project Grants (\$500k and \$700k, Australian equivalent of NIH R01; I am the second investigator) to develop novel inhalation formulations. In 2016 after I moved to Purdue University, I was awarded a Bill & Melinda Gates Foundation Pilot Project as the Co-Investigator (total \$660k, my share \$220k), Showalter Trust Grant (Sole PI \$75k), two Center for Pharmaceutical Processing Research Grants as the Principle Investigator (\$90k) and a few industrial projects. **In 2017, NIH/NIAID has awarded an R01 grant with total support of \$2.4 M (Principle Investigator). In 2019, my second NIH R01 grant (\$3.2M) was award (Principle Investigator) to support my research in inhalation formulations.** I have secured > \$10 million total funding to support my research.

Contribution to the field of research. I am a recognized expert in solid formulation and pharmaceutical manufacturing with a highly productive publication record as an early-career researcher. I have published >**110 journal articles** (60% first- or corresponding-authored), 2 book chapters, 20+ peer-reviewed full conference papers, and 11 international patent/patent applications. My significant contribution to the field has been recognized by the **prestigious 2014 Australian Endeavour Fellowship** from the Australian Government, **2015 Postdoctoral Fellowship** from American Association of Pharmaceutical Scientists (AAPS), **2016 Emerging Researcher Award** from International Pharmaceutical Excipients Council of the Americas Foundation (IPEC), **2017 New Investigator Award** from International Society of Aerosols in Medicines (ISAM), **2018 Chaney Family Early Faculty Scholar Award**, College of Pharmacy, Purdue University, **2018 Rising Star Scholarship Award**, National Institute for Pharmaceutical Technology & Education (NIPTE), USA, **2019 Outstanding Reviewer**, Journal of Pharmaceutical Sciences, **2019 Emerging Scientist Award** from The Aerosol Society, **2020 University Faculty Scholar Award** from Purdue University, **2021 AAPS Emerging Leader Award** and **2021 Young Investigator Award** from Pharmaceutics Journal.

I have conducted projects with multinational pharmaceutical companies including AstraZeneca, Genentech, Janssen, Merck, Pfizer, Boehringer Ingelheim, and Chiesi. I have a joint patent application with Chiesi, Italy.

International standing. My international standing was recognized by many invited oral presentations in national and international major conferences and invited seminars. **I am Vice Chair of Inhalation and Nasal Community of American Associate of Pharmaceutical Scientists (AAPS).** I have published 3 first-authored and 1 corresponding-authored expert reviews in inhalation formulation, pulmonary drug delivery and pharmaceutical manufacturing in a top pharmaceutical journal (*Adv Drug Del Rev*, **IF 15**), with one of them being selected as the **cover page of Volume 64, Issue 3**. Many of my articles were selected as the cover story of the journals (*Pharmacological Reviews* IF 17, Volume 73, Issue 2; *Molecular Pharmaceutics* IF 4.3, Volume 17, Issue 9, *Pharmaceutical Research* IF 3.2, Volume 37) One of my publications was selected by the editor of *Journal of Pharmaceutical Sciences* (105[2], 650–656) as “Most Original and Most Significant Scientific Findings”. **My articles are highlighted as the Top 1% highly cited paper in Pharmacology & Toxicology by the Web of Science as of Sept/Oct 2022 (*Pharmacological Reviews*, 73, Issue 2, 679-728), and as the Top 0.1% highly cited hot paper as of Sept/Oct 2022 (*Acta Pharmaceutica Sinica B*. 11:8, 2505-2536).**

Peer review involvement. I am an **Editor** of *AAPS PharmSciTech* and **Editorial Board Member** of *International Journal of Pharmaceutics*, *Pharmaceutical Research*, *Journal of Pharmacy and Pharmacology*, *European Journal of Pharmaceutical Sciences*, *Journal of Pharmaceutical Sciences*, *Current Pharmaceutical Design*, *AAPS Open* and *Drug Development and Industrial Pharmacy*. In addition, I was a **Guest-Editor** of *Advanced Drug Delivery Review*. I have reviewed >250 manuscripts for >15 multidisciplinary scientific journals.

I was an external reviewer of US Department of Defense Congressionally Directed Medical Research Programs, NSF Advanced Manufacturing Program, NIH Small Business Study Section, Australian NHMRC Project Grant (equivalent to NIH R01), the Strategic Project Grants of The Natural Sciences and Engineering Research Council of Canada, and the Regular Grant, The National Fund for Scientific and Technological Development, Chilean National Science and Technology Commission.

Four PhD students from my group graduated from Purdue University in the last four years. Both of them are working as a scientist at major pharmaceutical companies (one at Genentech and one at Pfizer). Students from my group has been awarded many prizes such as IPEC Excipient Graduate Student Scholarship, NIPTE Outstanding Student Research Award, Ronald W. Dollens Graduate Scholarship, McKeehan Graduate Fellowship, NSF Graduate Assistance in Areas of National Need (GAANN) Fellowship.

Working Experience

- 2020-Present University Faculty Scholar Associate Professor, Purdue University
- 2015-2020 Assistant Professor, Purdue University
- 2013-2015 Australian Biomedical Early Career Fellow, National Health and Medical Research Council (NHMRC, Australian equivalent of NIH) & University of Sydney
- 2012-2013 Postdoctoral Fellow, University of Sydney
- 2011-2012 Research Fellow, Monash University
- 2001-2003 Formulation Scientist, Shenzhen Neptune Pharmaceutical, China

Education

- 2007-2012 PhD in Pharmacy, Monash University, Australia

- 2004-2007 MSc in Pharmacy, National University of Singapore, Singapore
- 1997-2001 BEng in Pharmaceutics, Shenyang Pharmaceutical University, China

Award and Scholarship

- 2023 High Impact Paper Award, Acta Pharmaceutica Sinica B Journal.
- 2022 Young Investigator Award, Pharmaceutics Journal.
- 2021 Emerging Leader Award, American Association of Pharmaceutical Scientists (AAPS)
- 2021 Award for Exceptional Teaching and Instructional Support during the COVID-19 Pandemic, Purdue University
- 2020 University Faculty Scholar Award, Purdue University
- 2020 Teaching & Learning Innovation Award, College of Pharmacy, Purdue University
- 2019 Emerging Scientist Award, The Aerosol Society
- 2019 Outstanding Reviewer Award, Journal of Pharmaceutical Sciences
- 2018 Rising Star Scholarship Award, National Institute for Pharmaceutical Technology & Education (NIPTE)
- 2018 Chaney Family Early Faculty Scholar Award, College of Pharmacy, Purdue University
- 2017 Showalter Trust Research Award, Ralph W. and Grace M. Showalter Research Trust
- 2017 New Investigator Award, International Society of Aerosols in Medicines (ISAM)
- 2016 Emerging Researcher Award, International Pharmaceutical Excipients Council of the Americas Foundation (IPEC)
- 2015 Postdoctoral Fellow Award, American Association of Pharmaceutical Scientists (AAPS)
- 2014 Australian Endeavor Fellowship, Australian Government
- 2013 Australian Biomedical Early Career Fellowship (equivalent to NIH K01), NHMRC
- 2012 Outstanding Graduate Student Research Award in Pharmaceutical Technologies, AAPS
- 2011 Postgraduate Publications Award, Monash University
- 2010 Excipients Graduate Student Award, International Pharmaceutical Excipients Council of the Americas Foundation (IPEC)
- 2007-2011 International Postgraduate Research Scholarship, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University
- 2005-2007 University Research Scholarship, National University of Singapore

Grants

- 2023- 2024 *Understanding the effect of excipients and interaction on physical stability of spray dried protein formulations.* Merck Co. Role: Sole PI. \$50,000.
- 2023- 2024 *Freeze-Thaw and Aseptic Drying Technology Roadmap for Pharma/Biotech Manufacturing.* National Institute of Standards and Technology. Role: Co-I. Budget for Zhou \$12,391.
- 2022- 2023 *Tunable RF/Microwave Drying of Biologics.* National Institute for Innovation in Manufacturing Biopharmaceuticals Project fund. Role: Co-I. Budget for Zhou: \$ 104,694.
- 2022- 2023 *Advanced Characterization and Manufacturing Methods for mRNA Vaccine Development.* National Institute for Innovation in Manufacturing Biopharmaceuticals Project fund. Role: Co-I. Budget for Zhou: \$68,396.
- 2020-2021 *Impact of excipients on spray dried proteins for inhalation products.* NSF Center for Pharmaceutical Development project fund. Role: Sole PI. \$50,000.
- 2020-2021 *Effects of excipient on physical stability and aerosolization performance of spray dried proteins for dry powder inhaler formulations.* Center for Pharmaceutical Processing Research Grant. Role: PI. \$45,000.
- 2020-2021 *Effect of Excipients on Stability of Spray Dried Protein Formulations.* Merck Co. Role: Sole PI. \$50,000.
- 2019-2024 *Advancing innovative therapies against pandrug-resistant Gram-negative superbugs.* NIH/NIAID 1R01AI146160. Role: PI. Total budget: \$3,247,905.
- 2019-2020 *Electrospray drying for protein formulations.* Genentech. Role: PI. \$50,000.
- 2019-2020 *Understanding the effect of surface composition on stability of spray dried protein formulations.* Center for Pharmaceutical Processing Research Grant. Role: PI. \$45,000.
- 2018-2019 *An advanced surface characterization platform for fundamental understanding in aerosol performance of dry powder inhaler formulations.* Center for Pharmaceutical Processing Research Grant partnered with AstraZeneca and Genentech. Role: Sole PI. \$45,000.
- 2017 *Purdue College of Pharmacy Dean's Summer Undergraduate Research Fellowship (Patricia Ahn).* Role: Mentor. \$5,000.
- 2017-2022 *Combating Deadly Gram-negative Lung Infections: An Inhalation and Systems Approach.* NIH/NIAID 1R01AI132681. Role: PI. Total funding: \$2,403,074.
- 2017-2019 *Novel inhalation therapies for treatment of fatal Gram-negative lung infections.* Showalter Trust Research Award, Ralph W. and Grace M. Showalter Research Trust. Role: Sole PI. \$75,000.
- 2017 *Purdue College of Pharmacy Dean's Summer Undergraduate Research Fellowship (Jiayang Huang).* Role: Mentor. \$5,000.

- 2017 State Scholarship Fund (Shihui Yu), China Scholarship Council. Role: Mentor. \$25,000.
- 2017 State Scholarship Fund (Shaoning Wang), China Scholarship Council. Role: Mentor. \$25,000.
- 2017 State Scholarship Fund (Junhong Lin), China Scholarship Council. Role: Mentor. \$25,000.
- 2017 *On-line UPLC*. Purdue University Core Facility Research Equipment Grant. PI Taylor LS. Role: Co-I.
- 2016-2021 *Evaluate novel drug product manufacturing technologies*. Bill & Melinda Gates Foundation Pilot Project. PI Taylor LS. Role: Co-I. Budget for Zhou: \$200,000.
- 2016 Purdue College of Pharmacy Dean's Summer Undergraduate Research Fellowship (Kevin Bonar). Role: Mentor. \$5,000.
- 2016 *Advanced surface energy analyzer*. Purdue University Major Scientific Equipment Grant. PI Pinal R. Role: Co-I.
- 2016 *Developing powder aerosols of combinational antibiotics for combating life-threatening lung infections*; Summer Faculty Grant, Purdue Research Foundation. Role: Sole PI. \$10,000.
- 2015-2017 *Optimising inhaled polymyxins as a vital therapy for pulmonary infections: A novel biochemical, molecular imaging and systems pharmacology approach*. NHMRC Project Grants (Australian equivalent of NIH R01) APP 1104581. PI Li J. Role: Co-I.
- 2014-2016 *Novel inhalation formulation of colistin and combination therapy against Gram-negative 'superbugs'*. NHMRC Project Grants (Australian equivalent of NIH R01) APP1065046. PI Chan H. Role: Co-I.
- 2013-2016 *Inhaled antibiotic aerosols for respiratory infection treatment*; **Zhou Q**; NHMRC Early Career Fellowships (Australian equivalent of NIH K01) APP1053528. Role: Sole PI.

Editorial and Review Contribution

- 2022- present **Editorial Board Member**, *Journal of Pharmacy and Pharmacology*
- 2021-present **Editorial Board Member**, *European Journal of Pharmaceutical Sciences*
- 2021-present **Editorial Board Member**, *AAPS Open*
- 2020-present **Editorial Board Member**, *International Journal of Pharmaceutics*
- 2018-present **Editor**, *AAPS PharmSciTech*
- 2018-present **Editorial Board Member**, *Pharmaceutical Research*
- 2017-present **Editorial Advisory Board Member**, *Journal of Pharmaceutical Sciences*
- 2017-present **Editorial Board Member**, *Current Pharmaceutical Design*
- 2017-present **Editorial Board Member**, *Drug Development and Industrial Pharmacy*

2022 **Guest Editor**, thematic issue of ‘Advances in pulmonary drug delivery systems and inhalation formulations’, *Pharmaceutical Research*.

2020 **Guest Editor**, thematic issue of “Advances in solid formulations of pharmaceutical biologics - formulation, manufacturing, characterization and stability”, *Advanced Drug Delivery Reviews*

2017 **Guest Editor**, thematic issue of ‘Formulation and Manufacturing of Solid Dosage Forms’, *Pharmaceutical Research*.

2015 **Guest Editor**, thematic issue of ‘Advances in powder engineering and technology for pharmaceutical solid dosage forms’, *Current Pharmaceutical Design*.

2014 **Guest Editor**, thematic issue of ‘Emerging formulation design and drug delivery systems for inhaled therapy’, *Current Pharmaceutical Design*.

Journal Reviewer: Advanced Drug Delivery Reviews, Molecular Pharmaceutics, Expert Opinion Drug Delivery, Journal of Antimicrobial Chemotherapy, International Journal of Antimicrobial Agents, Drugs, AAPS Journal, European Journal of Pharmaceutics and Biopharmaceutics, International Journal of Pharmaceutics, Pharmaceutical Research, Current Pharmaceutical Design, Journal of Pharmaceutical Sciences, Annals of Biomedical Engineering, Journal of Medical Microbiology, Powder Technology, Drug Development and Industrial Pharmacy, AAPS PharmSciTech, Drying Technology, Particuology, Advances in Colloid and Interface Science, Asian Journal of Pharmaceutical Sciences

Grant Reviewer: 2019 US Department of Defense Congressionally Directed Medical Research Programs, 2019 NIH Small Business Study Section, 2014, 2017 Project Grant Scheme, The National Health and Medical Research Council of Australia (NHMRC, equivalent to NIH R01); 2015 Strategic Project Grants, The Natural Sciences and Engineering Research Council of Canada (NSERC); 2016 Regular Grant, The National Fund for Scientific and Technological Development, Chilean National Science and Technology Commission.

Professional and Social Membership

2021-Present	Vice Chair, Inhalation and Nasal Community of American Associate of Pharmaceutical Scientists (AAPS)
2013-Present	Executive Committee Member, Institute of Bioparticles, Chinese Society of Particuology
2007-2009	Treasurer & Founder Executive Member, AAPS-Monash Student Chapter
2006-2007	Treasurer, Executive Committee, AAPS-National University of Singapore Student Chapter
2006-2007	Treasurer, Pharmacy Graduate Committee, National University of Singapore
1998-2000	Vice-President, Student Association, Shenyang Pharmaceutical University
2006-Present	Member, AAPS

Conference Organizing

2021	Scientific Advisor, Drug Delivery to Lungs Conference
2019	Advisory Board, 3rd Annual Inhalation & Respiratory Drug Delivery Congress
2018	Organizing Committee Co-Chair, 15 th Garnet E. Peck Symposium
2014-2015	Executive Organizing Committee, Inhalation Asia 2015
2014	Session Chair, 8 th Victorian Chinese PhD students and Young Scholars Symposium

Publications

Journal Article (* Corresponding author; † Co-first author)

1. Loo C, Lee W, **Zhou QT***. 2023. Recent advances in inhaled nanoformulations of vaccines and

therapeutics targeting respiratory viral infections. *Pharmaceutical Research*. 40:1015–1036.

2. Mutukuri T, Ling J, Du Y, Su Y, **Zhou QT***. 2022. Effect of Buffer Salts on Physical Stability of Lyophilized and Spray-Dried Protein Formulations Containing Bovine Serum Albumin and Trehalose. *Pharmaceutical Research*. Published: 28 June 2022.
3. Mutukuri T, Darwish A, Strongrich AD, Peroulis D, Alexeenko A, **Zhou QT***. 2023. Radio frequency - assisted ultrasonic spray freeze drying for pharmaceutical protein solids. *Journal of Pharmaceutical Sciences*. 112(1):40-50.
4. Pathak V, Park H, Zemlyanov D, Bhujbal S, Ahmed M, Azad M, Li J, **Zhou QT***. 2022. Improved aerosolization stability of inhalable tobramycin powder formulation by co-spray drying with colistin. *Pharmaceutical Research*. 39(11):2781-2799.
5. Guan J, Yuan H, Yu S, Mao S, **Zhou QT***. 2022. Spray Dried Inhalable Ivacaftor Co-Amorphous Microparticle Formulations with Leucine Achieved Enhanced In Vitro Dissolution and Superior Aerosol Performance. *International Journal of Pharmaceutics*. 622: 121859.
6. Li M, Azad M, Ahmed M, Zhu Y, Song J, Zhou F, Chan H, Velkov T, **Zhou QT**, Li J. 2022. Polymyxin induces significant transcriptomic perturbations of cellular signalling networks in human lung epithelial cells. *Antibiotics*. 11(3):307.
7. Bian X, Qu X, Zhang X, Nang S, Bergen P, **Zhou QT**, Chan H, Feng M, Li J. 2022. Pharmacokinetics and pharmacodynamics of peptide antibiotics. *Advanced Drug Delivery Reviews*. 183:114171.
8. Kho Z, Azad M, Han M, Zhu, Y, Huang C, Schittenhelm R, Naderer T, Velkov T, Selkrig J, Zhou Q, Li J. 2022. Correlative proteomics identify the key roles of stress tolerance strategies in *Acinetobacter baumannii* in response to polymyxin and human macrophages. *PLOS Pathogens*. 18(3):e1010308.
9. Yu S, Pu X, Maizbha A, Yu H, Mutukuri T, Li J, **Zhou QT*** 2021. Spray-freeze-dried inhalable composite microparticles containing nanoparticles of combinational drugs for potential treatment of lung infections caused by *Pseudomonas aeruginosa*. *International Journal of Pharmaceutics*. 610:121160.
10. Mutukuri, T., Maa, Y., Gikanga, B., Sakhnovksy, R., **Zhou, Q.T.*** 2021. Electrostatic Spray Drying for Monoclonal Antibody Formulation. *International Journal of Pharmaceutics*. 607:120942.
11. Bhujbal, S., Su, Y., Pathak V., Zemlyanov, D., Cavallaro, A., Munson, E., Taylor, L., **Zhou, Q.T.*** 2021 Effect of storage humidity on physical stability of spray dried amorphous solid dispersions: two fluid nozzle vs. three fluid nozzle. *Pharmaceutics*. 13:7, 1074.
12. Ahmed, M., Azad, M., Li, M., Creek, D., Han, M., Zhou, F., Chan, H., **Zhou, Q.**, Velkov, T., and Li, J. 2021. Polymyxins induced metabolic perturbations in human lung epithelial cells. *Antimicrobial Agents and Chemotherapy*. 65:9, e00835-21.
13. Chen, Y., Ling, J., Li, M., Su, Y., Arte, K., Mutukuri, T., Taylor, L., Munson, E., Topp, E., **Zhou, Q.T.*** 2021. Understanding the Impact of Protein Excipient Interactions on Physical Stability of Spray-Dried Protein Solids. *Molecular Pharmaceutics*. 18:7, 2657–2668.

14. Bhujbal, S., Mitra, B., Jain, U., Gong, Y., Agrawal, A., Karki, S., Taylor, L., Kumar, S.,* **Zhou, Q. T.*** 2021. Pharmaceutical amorphous solid dispersion: A review of manufacturing strategies. *Acta Pharmaceutica Sinica B*. 11:8, 2505-2536.
15. Wickremasinghe, H., Yu, H., Azad, M., Zhao, J., Bergen, P., Velkov, T., **Zhou, Q.T.**, Zhu, Y., Li, J. 2021. Clinically relevant concentrations of polymyxin B and meropenem synergistically kill multidrug-resistant *Pseudomonas aeruginosa* and minimise biofilm formation. *Antibiotics*.10:4, 405.
16. Almangour, T.A., Garcia, E., **Zhou, Q.**, Forrest, A., Kaye, K., Li, J., Velkov, Y., Rao, G. 2021. Polymyxins for the treatment of lower respiratory tract infections: lessons learned from the integration of clinical pharmacokinetic studies and clinical outcomes. *International Journal of Antimicrobial Agents*. 57:6, 106328.
17. Yuan, H., Yu, S., Chai, G., Liu, J., **Zhou, Q.T.*** 2021. A LC-MS/MS method for simultaneous analysis of the cystic fibrosis therapeutic drugs colistin, ivacaftor and ciprofloxacin. *Journal of Pharmaceutical Analysis*. 11:6, 732-738.
18. Chen, Y., Mutukuri, T.T., Wilson, N.E., **Zhou, Q.T.*** 2021. Pharmaceutical protein solids: drying technology, solid-state characterization and stability. *Advanced Drug Delivery Reviews*.172: 211-233.
19. Azad, M.A.K., Zhang, S., Li, J., Kim, Y., Yu, H., Fulcher, A.J., Howard, D., de Jonge, M., James, S., Roberts, K., Velkov, T., Fu, J., **Zhou, Q.T.*** Li, J. 2021. Synchrotron-based X-ray fluorescence microscopy reveals accumulation of polymyxins in single human alveolar epithelial cells. *Antimicrobial Agents and Chemotherapy*. 65(5):e02314-20.
20. Zhao, J., Han, M., Zhu, Y., Lin, Y., Wang, Y., Lu, J., Hu, Y., **Zhou, Q. T.**, Velkov, V., Li, J. 2021. Comparative metabolomics reveals key pathways associated with the synergistic activity of polymyxin B and rifampicin combination against multidrug-resistant *Acinetobacter baumannii*. *Biochemical Pharmacology*. 184: 114400.
21. Chen, J., Maizbha, A., Zhu, C., Yu, S., Pan., W., Velkov, T., Li, J., **Zhou, Q.T.*** 2021. In vitro evaluation of drug delivery behavior for inhalable amorphous nanoparticle formulations in a human lung epithelial cell model. *International Journal of Pharmaceutics*. 596: 120211.
22. Mutukuri, T., Wilson, N., Taylor, L., Topp, E., **Zhou, Q.T.*** 2021. Effects of Drying Method and Excipient on the Structure and Physical Stability of Protein Solids: Freeze Drying vs. Spray Freeze Drying. *International Journal of Pharmaceutics*. 594: 120169.
23. Nang, S., Azad, M.A.K., Velkov, T., **Zhou, Q.T.*** Li, J.* 2021. Rescuing the last-line polymyxins: Achievements and challenges. *Pharmacological Reviews*. 73:2, 679-728.
24. Bhujbal, S., Pathak., V., Zemlyanov, D.Y., Taylor, L.S. **Zhou, Q.T.*** 2020. Physical stability and dissolution of lumefantrine amorphous solid dispersions produced by spray anti-solvent precipitation. *Journal of Pharmaceutical Sciences*. 110:6, 2423-2431.
25. Lin, Y., Aye, S.M., Rao, G., **Zhou, Q.T.**, Chan, H.K., Li, J. 2020. Treatment of Infections Caused by Gram-negative Pathogens: Current Status on the PK/PD of Parenteral and Inhaled Polymyxins in Patients.

26. Shetty, N., Zhang, Y., Park, H., Zemlyanov, D.Y., Shah, D., He, A., Ahn, P., Mutukuri, T., Chan, H., **Zhou, Q.*** 2020. Surface composition and aerosolization stability of an inhalable combinational powder formulation spray dried using a three-fluid nozzle. *Pharmaceutical Research*. 37: 219. #
27. Hussein, M., Hu, X., Paulin, O.K.A., Crawford, S., **Zhou, Q.T.**, Baker, M., Schneider-Futschik, E., Zhu, Y., Li, J., Velkov, T. 2020. Polymyxin B combinations with FDA-approved non-antibiotic phenothiazine drugs targeting multi-drug resistance of Gram-negative pathogens. *Computational and Structural Biotechnology Journal*. 18, 2247-2258. #
28. Trasi, N., Bhujbal, S., Zemlyanov, D.Y., **Zhou, Q.**, Taylor, L.S. 2020. Physical stability and release properties of lumefantrine amorphous solid dispersion granules prepared by a simple solvent evaporation approach. *International Journal of Pharmaceutics:X*. 2: 100052. #
29. Zhu, C., Chen, J., Yu, S., Que, C., Taylor, L., Tan, W., Wu, C., **Zhou, Q.*** 2020. Inhalable nano-composite microparticles with enhanced dissolution and superior aerosol performance. *Molecular Pharmaceutics*. 17:9, 3270–3280. #
30. Park, H., Nie, H., Dhiman, A., Tomar, V., **Zhou, Q.*** 2020. Understanding dynamics of polymorphic conversion during tableting process using an in situ mechanical Raman spectroscopy. *Molecular Pharmaceutics*. 17: 8, 3043–3052. #
31. Chai, G., Hassan, A., Meng, T., Lou, L., Ma, J., Simmers, R., Zhou, L., Rubin, B., **Zhou, Q.T.**, Longest, W., Hindle, M., Xu Q. 2020. Dry powder aerosol containing muco-inert particles for excipient enhanced growth pulmonary drug delivery. *Nanomedicine: Nanotechnology, Biology, and Medicine*. 29, 102262. #
32. Fathalla, A., Chow, S., Naderer, T., **Zhou, Q.**, Velkov, T., Azad, M., Li, J. 2020. Polymyxin-induced cell death of human macrophage-like THP-1 and neutrophil-like HL-60 cells associated with the activation of apoptotic pathways. *Antimicrobial Agents and Chemotherapy*. 64(9):e00013-20. #
33. Yu, S., Yuan, H., Chai, G., Peng, K., Zou, P., Li, X., Li, J., Zhou, F., Chan, H., **Zhou, Q.T.*** 2020. Optimization of inhalable liposomal powder formulations and evaluation of their in vitro drug delivery behavior in Calu-3 human lung epithelial cells. *International Journal of Pharmaceutics*. 586:119570. #
34. Hussein, M., Schneider-Futschik, E, Paulin, O., Allobawi, R., Crawford, S., **Zhou, Q.T.**, Hanif, A., Baker, M., Zhu, Y., Li, J., Velkov, T. 2020. Effective Strategy Targeting Polymyxin-Resistant Gram-Negative Pathogens: Polymyxin B in Combination with the Selective Serotonin Reuptake Inhibitor Sertraline. *ACS Infectious Diseases*. 6, 6, 1436–1450. #
35. Hussein, M., Han, M., Zhu, Y., **Zhou, Q.**, Lin, Y., Hancock, R., Hoyer, D., Creek, D., Li, J., Velkov, T. 2020. Metabolomics study of the synergistic killing of polymyxin B in combination with amikacin against polymyxin-susceptible and resistant *Pseudomonas aeruginosa*. *Antimicrobial Agents and Chemotherapy*. 20;64(1). pii: e01587-19. #
36. Lu, P., Xing, Y., Peng, H., Liu, Z.,* **Zhou, Q.T.*** Xue, Z., Ma, Z., Kebebe, D., Zhang, B., Liu, H. 2020. Physicochemical and pharmacokinetic evaluation of spray-dried co-formulation of Salvia miltiorrhiza polyphenolic acid and L-leucine with improved bioavailability. *Journal of Aerosol Medicine and Pulmonary Drug Delivery*. 33, 2. #

37. Shetty, N., Cipolla, D., Park, H., **Zhou, Q.T.*** 2020. Physical Stability of Dry Powder Inhaler Formulations. *Expert Opinion on Drug Delivery*. 17:1, 77-96. #
38. Yu, S., Wang, S., Lin, Y., Zou, P., Chai, G., Lin, Y., Velkov, T. Li, J., **Zhou, Q.T.*** 2020. Inhalable Liposomal Powder formulations for Co-delivery of Synergistic Ciprofloxacin and Colistin against Multi-drug Resistant Gram-negative Lung Infections. *International Journal of Pharmaceutics*. 575:15, 118915. #
39. Wilson, N., Mutukuri, T., Zemlyanov D., Taylor, L., Topp, E.,* **Zhou, Q.T.*** 2019. Surface Composition and Formulation Heterogeneity of Protein Solids Produced by Spray Drying. *Pharmaceutical Research*. 37:1, 14. #
40. Trasi, N., Bhujbal, S., **Zhou, Q.T.**, Taylor, L.S. 2019. Amorphous Solid Dispersion Formation via Solvent Granulation - A Case Study with Ritonavir and Lopinavir. *International Journal of Pharmaceutics*:X. 1: 100035. #
41. Lin, Y., Han, M., Zhao, J., Zhu, Y., Rao, G., Forrest, A., Song, J., Kaye, K., Hertzong, P., Purcell, A., Creek, D., **Zhou, Q.T.**, Velkov, T., Li, J. 2019. Synergistic Combination of Polymyxin B and Enrofloxacin Induced Metabolic Perturbations in Extensive Drug-resistant *Pseudomonas aeruginosa*. *Frontiers in Pharmacology*. 10:1146. #
42. Chai, G., Park, H., Yu, S., Zhou, F., Li, J., Xu, Q., **Zhou, Q.T.*** Evaluation of Co-delivery of Colistin and Ciprofloxacin in Liposomes Using an In Vitro Human Lung Epithelial Cell Model. 2019. *International Journal of Pharmaceutics*. 569, 118616. #
43. Mangal, S., Park, H., Nour, R., Shetty, N., Cavallaro, A., Zemlyanov, Thalberg, K., Puri, V., Nicholas, M., Narang, A., **Zhou, Q.T.*** 2019. Correlations between surface composition and aerosolization of jet-milled dry powder inhaler formulations with pharmaceutical lubricants. *International Journal of Pharmaceutics*. 567, 118470. #
44. Wilson, N., Topp, E., **Zhou, Q.T.*** 2019. Effects of Drying Method and Excipient on Structure and Stability of Protein Solids Using Solid-State Hydrogen/Deuterium Exchange Mass Spectrometry (ssHDX-MS). *International Journal of Pharmaceutics*. 567, 118470. #
45. Ling, J., Mangal, S., Wang, S., Cavallaro, A., **Zhou, Q.T.*** 2019. Simultaneous particle size reduction and homogeneous mixing to produce combinational powder formulations for inhalation by the single-step co-jet-milling. *Journal of Pharmaceutical Sciences*. 108 (9), 3146-3151. #
46. Lu, P., Xing, Y., Xue, Z., Ma, Z., Zhang, B., Peng, H., **Zhou, Q.**, Liu, H., Liu, Z., Li, J. Pharmacokinetics of Salvianolic acid B, Rosmarinic acid and Danshensu in rat after pulmonary administration of Salvia miltiorrhiza polyphenolic acid solution. 2019. *Biomedical Chromatography*. 33(8), e4561. #
47. Mangal, S., Huang, J., Shetty, N., Park, H., Lin, Y., Yu, Y., Zemlyanov, D., Velkov, T., Li, J., **Zhou, Q.T.*** 2019. Effects of antibiotic component on in-vitro bacterial killing, physico-chemical properties, aerosolization and dissolution of a ternary-combinational inhalation powder formulation of antibiotics for pan-drug resistant Gram-negative lung infections. *International Journal of Pharmaceutics*. 561, 102-113. #
48. Lin, Y., Rahim, N., Zhao, J., Han, M., Yu, H., Wickremasinghe, H., Chen K., Wang, J., Paterson, D., Zhu,

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138. Morton D.A.V., Stewart, P.J., **Zhou, Q.**, Investigating the Flow Modification of Fine Lactose Carrier Particles. 2008. *Proceeding of Respiratory Drug Delivery 2008*, pp. 655-659, Scottsdale, USA.
139. **Zhou, Q.**, Armstrong, B., Morton, D.A.V., Stewart, PJ., Investigation of Fundamental Powder Flow Properties of Fine Lactose Particles Following Mechanical Surface Modification. 2008. *Drug Delivery to Lungs 19* (DDL), Edinburg, UK.

Conference Abstract

1. Bhujbal, S., Zemlyanov, D.Y., Cavallaro, A.A., Taylor, L.S., **Zhou, Q.T.** Determining heterogenous surface composition of spray dried amorphous solid dispersions by an advanced analytical platform (poster). 2018 Centre for pharmaceutical processing research meeting (CPPR), 15th – 16th October, 2018, West Lafayette, USA.
2. Bhujbal, S., Zemlyanov, D.Y., Cavallaro, A.A., Taylor, L.S., **Zhou, Q.T.** An Advanced Analytical Platform to Determine Heterogeneous Composition Distributions on Particle Surface of Spray Dried Amorphous Solid Dispersion (poster). 2018 Pharmaceutics Graduate Student Research Meeting (PGSRM), 7th – 9th June 2018, Minneapolis, USA.
3. Bhujbal, S., Zemlyanov, D.Y., Cavallaro, A.A., Taylor, L.S., **Zhou, Q.T.** Developing an advanced analytical platform to determine heterogeneous drug and polymer distributions on particle surface of spray dried amorphous solid dispersion (poster). 2018 Peck Symposium, 7th March 2018, West Lafayette, USA.
4. Wilson, N.E., Topp, E.M., **Zhou, Q.T.** Process and Formulation Effects on Protein Structure and Stability Using Solid State Hydrogen/Deuterium Exchange Mass Spectrometry (ssHDX-MS). American Association of Pharmaceutical Scientists PharmSci 360. 4th - 7th November, 2018, Washington, DC.
5. Wilson, N.E., Topp, E.M., **Zhou, Q.T.** Effects of Processing and Formulation on Protein Heterogeneity and Stability. LyoHUB/American Society for Testing and Materials E55 Workshop. 23rd October, 2018, West Lafayette, IN.
6. Wilson, N.E., Topp, E.M., **Zhou, QT.** Impact of Spray-drying and Formulation Design on Protein Stability and Heterogeneity. Center for Pharmaceutical Processing Research Meeting. 16th – 18th May, 2018, Storrs, CT.
7. Wilson, N.E., **Zhou, Q.T.**, Topp, E.M. Effects of Lyophilization and Spray-drying on Protein Structure. Garnet E. Peck Symposium. 7th March, 2018., West Lafayette, IN.
8. Shetty, N., Ahn, P., Mangal, S., Zemlyanov,D., Cavallaro, A., **Zhou, Q.** Stable aerosol formulation of spray dried ciprofloxacin with colistin for treating resistant respiratory infections. The Fifteenth Annual Garnet E. Peck Symposium. March 2018. West Lafayette, USA.

9. Shetty, N., Zemlyanov,D., Nie, H., **Zhou, Q.** DPI Formulations of Ciprofloxacin: Role of Excipients in Enhancing Stability and Aerosol Performance. The Fifteenth Annual Garnet E. Peck Symposium. March 2018. West Lafayette, USA.
10. Shetty, N., Zemlyanov,D., Nie, H., **Zhou, Q.** Novel Application of an Old Excipient L-Leucine-Improving Physical and Aerosolization Stability of Spray Dried Amorphous DPI Formulations. National Institute for Pharmaceutical Technology and Education, 23rd August 2018. New York, USA.
11. Shetty, N., Ahn, P., Park, H., Zemlyanov,D., Cavallaro, A., **Zhou, Q.** Incorporation of colistin in the spray dried ciprofloxacin improves physical and aerosolization stability of dry powder inhaler formulations AAPS PharmSci 360, . 4th November 2018. Washington DC, USA.
12. Shetty, N., Zemlyanov,D., **Zhou, Q.** Effect of Excipients on Physical Stability and Aerosol Performance of Spray Dried Amorphous DPI Formulations. AAPS PharmSci 360, 4th November 2018. Washington DC, USA.
13. Shetty, N., Zeng, L., Mangal, S., Nie, H., Rowles, M., Guo, R., Han, Y., Park, J. Y., **Zhou, Q.** Effect of moisture-induced recrystallization on the aerosol performance of inhalable spray dried amorphous ciprofloxacin particles. The Fourteenth Annual Garnet E. Peck Symposium. 7th March, 2017. West Lafayette, USA.
14. Shetty, N., Zeng, L., Mangal, S., Nie, H., Rowles, M., Guo, R., Han, Y., Park, J. Y., **Zhou, Q.** Challenges Of maintaining stability of spray dried ciprofloxacin for use in dry powder inhalation (DPI) and its impact on aerosol performance. 49th Annual Pharmaceutics Graduate Student Research Meeting. 15th June, 2017. Michigan, USA (Oral Presentation).
15. Shetty, N., Zeng, L., Mangal, S., Nie, H., Rowles, M., Guo, R., Han, Y., Park, J. Y., **Zhou, Q.** Impact of Recrystallization of Ciprofloxacin Amorphous Particles on Aerosol Performance. AAPS Annual Meeting and Exposition. 12th November, 2017. San Diego. USA
16. Shetty, N., Zeng, L., Mangal, S., Nie, H., Rowles, M., Guo, R., Han, Y., Park, J. Y., **Zhou, Q.** Critical Impact of Crystallization on Aerosol Performance of Amorphous Spray Dried Ciprofloxacin. Center for Pharmaceutical Processing Research. October, 2017. West Lafayette, USA
17. Mangal, S., Wei, G., Qu, L., Borna, K., Khan, R., **Zhou, Q.T.** Dry coating a cohesive pharmaceutical powder via high-shear processing to improve powder flowability. 2016 GPEN conference, 9th – 12th November, 2016, Lawrence, USA.
18. **Zhou, Q.T.**, Qu, L. , Stewart, P.J., Hapgood, K., Morton, D.A.V. Developing free-flowing powder mixtures for direct compaction via a novel single-step mechanical processing. 2016 AAPS Annual Meeting and Exposition, 13th – 17th November, 2016, Denver, USA.
19. **Zhou, Q.T.** , Loh, Z.H., Gengenbach, T., Denman, J., Chan, H.K. Surface coating amorphous hygroscopic colistin powder with synergistic hydrophobic azithromycin prevents moisture-induced reduction in aerosolization. 2016 AAPS Annual Meeting and Exposition, 13th – 17th November, 2016, Denver, USA.
20. **Zhou, Q.T.** , Loh, Z.H., Chan, H.K. Coating surface of hygroscopic inhalable particles with another hydrophobic drug to prevent moisture-induced reduction in aerosol performance. David Grant Symposium, 2016, Minneapolis, USA.

21. Qu, L., **Zhou, Q.T.**, Stewart, P.J., Hapgood, K., Morton, D.A.V. Surface coating cohesive ibuprofen powders by a high-shear mechanical approach: Effect of coating material on coating quality, flowability and dissolution. David Grant Symposium, 2016, Minneapolis, USA.
22. Zhou, Q.T. , Loh, Z.H., Chan, H.K. Spray drying to produce an inhalable combination powder formulation consisting of amorphous colistin and crystalline rifampentine antibiotics with enhanced antimicrobial activities. Garnet Peck Symposium, 2016, West Lafayette, USA.
23. Qu, L., **Zhou, Q.T.**, Stewart, P.J., Hapgood, K., Morton, D.A.V. Improving flowability and dissolution of cohesive ibuprofen powders by mechanical dry coating. Garnet Peck Symposium, 2016, West Lafayette, USA.
24. Qu, L., **Zhou, Q.T.**, Stewart, P.J., Hapgood, K., Morton, D.A.V. Effect of coating materials on the surface coating quality, flowability and dissolution of dry-coated cohesive ibuprofen powders. 2015 AAPS Annual Meeting and Exposition, 25th October – 29th October, 2015, Orlando, USA.
25. **Zhou, Q. T.**, Sun, S., Chan, J., Li, J., Chan, H. K. Particle engineering to develop a novel dry powder inhaler formulation of combination antibiotics with superior aerosol performance and enhanced anti-biofilm activity. 2015 AAPS Annual Meeting and Exposition, 25th October – 29th October, 2015, Orlando, USA.
26. **Zhou, Q.T.**, Morton, D. A.V., Li, J., Chan, H.K. How to engineer inhaled powder formulations of combination antibiotics. Inhalation Asia 2015, 9th – 11th September, 2015, Shenyang, China.
27. **Zhou, Q.T.**, Morton, D. A.V., Yu, H. H., Jacob, J., Wang, J., Li, J., Chan, H.K. Engineering of inhaled antibiotic powder formulation of colistin for the treatment of respiratory infections. Inhalation Asia 2013, 26th – 28th June, 2013, Hong Kong, China.
28. **Zhou, Q.**, Tong, Z., Tang, P., Yang, R., Chan, H., Use of computational modeling to understand the effect of device design on the aerosolisation of a carrier-based dry powder inhaler. Inhalation Asia 2013, 26th – 28th June, 2013, Hong Kong, China.
29. **Zhou, Q.T.**, Gengenbach, T., Denman, J. A., Yu, H. H., Li, J., Chan, H.K. Novel inhaled combination powders consisting of colistin and rifampicin for respiratory infections. Asian Federation for Pharmaceutical Sciences 2013, 20th – 22nd November, 2013, Jeju, Republic of Korea.
30. **Zhou, Q.**, Li, Q, Larson, I., Gengenbach, T., Stewart, P.J., Morton, D.A.V., Effect of surface coating with magnesium stearate via mechanical dry powder coating approach on the aerosol performance of micronized drug powders from dry powder inhalers. 2012 AAPS Annual Meeting and Exposition, 14th – 17th October, 2012, Chicago, USA.
31. Morton, D.A.V., **Zhou, Q.T.**, Qu, L., Larson, I., Stewart, P.J., Characterisation of nano-structured surface coatings and influence on the flow behaviour of fine cohesive pharmaceutical powders. Powder Flow 2011, 6th December, 2011, London, UK.
32. Morton, D.A.V., **Zhou, Q.T.**, Qu, L., Larson, I., Stewart, P.J., Improving fine excipient powder flow via a mechanical dry surface modification process. Powder Flow 2011, 6th December, 2011, London, UK.
33. **Zhou, Q.T.**, Qu, L., Larson, I., Armstrong, B., Stewart, P.J., Morton, D.A.V., Effect of surface

modification via mechanical dry coating on the aerosolisation of a range of milled drug powders, The 4th Annual Meeting of the Australian Chapter of Controlled Release Society, 25th – 26th November, 2010, Melbourne, Australia.

34. **Zhou, Q.T.**, Qu, L., Larson, I., Armstrong, B., Stewart, P.J., Morton, D.A.V., Novel applications of traditional lubricants using a dry particle coating technique to improve the functionality of cohesive drug or excipient powders, 2010 AAPS Annual Meeting and Exposition, 14th – 18th November, 2010, New Orleans, USA.
35. **Zhou, Q.**, Chan, L.W., Heng, P.W.S., Effect of surface roughness of lactose carriers on in vitro performance of salbutamol sulphate, Asian pharmaceuticals graduate congress, 25th – 27th September 2006, Singapore.
36. **Zhou, Q.**, Chan, L.W., Heng, P.W.S., Effect of carrier roughness on dry powder inhalant deposition. 2006 AAPS Annual Meeting and Exposition, 29th October – 2nd November, 2006, San Antonio, USA.
37. **Zhou, Q.**, Chan, L.W., Heng, P.W.S., Comparison of the surface roughness parameters obtained by scanning probe microscope for DPIs carrier particles. 2005 AAPS Annual Meeting and Exposition, 6th – 10th November, 2005, Nashville, USA.

Invited Oral Presentation in National and International Conferences

1. Particle Engineering and Surface Characterization for Carrier Free Dry Powders for Inhalation. Workshop for Formulation Technologies for the Development of Dry Powder for Inhalation. Pharmaceutical Technology. Nov 16, 2022. Virtual.
2. Particle engineering and advanced characterization for dry powder inhaler formulations. Early Career International Particle Technology Forum 2022. May 27, 2022. Virtual.
3. Particle engineering and advanced characterization for dry powder inhaler formulations. The 50th Anniversary Annual Meeting and International Conference of the Korean Society of Pharmaceutical Sciences and Technology. Dec 1, 2021. Virtual.
4. Why engineered particles. Development of Inhalation Therapeutics Symposium jointly by AAPS-BADG & PBSS. Jul 29, 2021. Virtual.
5. Understanding the impact of surface properties on quality and performance of high-dose dry powder inhaler formulations. January 8, 2021. The International Society for Aerosols in Medicine Webinar. Virtual.
6. Dry Powder Inhaler Formulation of High-dose Antibiotics for Treatment of Lung Infections. 14 December, 2020. International symposium on antibiotic resistance and drug development. Virtual.
7. Emerging manufacturing and advanced characterization for pharmaceutical solid products. Sino-American Pharmaceutical Professionals Association Annual Conference. 2 October, 2020. Virtual.
8. Advanced Surface Chemistry Characterization to Understand Physical Stability and Performance of Dry Powder Inhalers. 26 April, 2020. Respiratory Drug Delivery Conference. Virtual.
9. Formulation, Characterization and Drug Delivery of Dry Powder Inhalers. 12 December, 2019. Drug Delivery to the Lungs conference. Edinburgh, UK.

10. Advanced Particle Surface Characterization for Formulation and Manufacturing of Pharmaceutical Solids. 4 November, 2019. AAPS PharmSci360 conference. San Antonio, USA.
11. Teaching old drugs new tricks: combating deadly lung infections by re-formulating old antibiotics. 14 October, 2019. Purdue Institute for Drug Discovery 6th Annual Symposium. West Lafayette, USA.
12. Particle engineering and surface characterization for dry powder inhaler formulations. 22 – 23 August, 2018. The National Institute for Pharmaceutical Technology & Education Annual Conference. New York, USA.
13. Understanding the effect of surface composition on stability of spray dried protein formulations. 16 – 18 May, 2018. **Dane O. Kildsig Center for Pharmaceutical Processing Research Meeting**. Hartford, USA.
14. Designing New Generation Dry Powder Inhalers – Formulation, Characterization And Mechanism-Based In Vivo Modelling. 12 – 13 March, 2018. **Inhalation & Respiratory Drug Delivery USA Congress**.
15. Innovative technologies for spray drying and characterization of pharmaceutical solids. 7 March, 2018. **15th Garnet E. Peck Symposium**. West Lafayette, USA.
16. Emerging Drying Techniques for Manufacturing of Pharmaceutical Biologics. 11–12 January, 2018. **11th Annual Lyophilization and Emerging Drying Technologies conference**. San Diego, USA.
17. An advanced surface characterization platform for fundamental understanding in aerosol performance of dry powder inhaler formulations. 10 – 12 October, 2017. **Dane O. Kildsig Center for Pharmaceutical Processing Research Meeting**. West Lafayette, USA.
18. Understanding the effects of particle surface coating with lubricants on dissolution and compaction behavior of pharmaceutical solids. 16 – 18 May, 2017. **Dane O. Kildsig Center for Pharmaceutical Processing Research Meeting**. Minneapolis, USA.
19. Developing dry powder inhaler formulations of combinational antibiotics via particle engineering for the treatment of respiratory infections. 3 – 7 June, 2017. **21st Congress of the International Society of Aerosols in Medicine**. Santa Fe, USA.
20. Particle engineering for dry powder inhaler formulation design. 15 – 17 March, 2016. **4th Dry Powder Inhalation China Technology Conference**. Shanghai, China
21. How to engineer inhaled powder formulations of combination antibiotics. 9 - 11 September, 2015. **Inhalation Asia 2015**. Shenyang, China.
22. Novel inhaled combination powders for respiratory infections. 13- 16 April, 2014. **2014 World Congress of Pharmaceutical Sciences**. Melbourne, Australia.
23. Inhalable powder formulation of combination antibiotics with high aerosol efficiency and moisture protection. 8 - 11 Dec, 2013. **2013 Australasian Pharmaceutical Science Association Conference**. Dunedin, New Zealand.
24. Understanding the role of device design on the aerosolisation of a carrier-based dry powder inhaler. 2 – 5 Dec, 2012. **2012 Australasian Pharmaceutical Science Association Conference**. Sydney, Australia.

25. Nano-scale surface engineering via mechanical dry coating for improving flow, fluidization and aerosolization of fine cohesive powders. 24 - 29 April, 2011. *Particulate Processes in the Pharmaceutical Industry III*, Goldcoast, Australia.
26. Green and innovative nano-scale particle engineering to improve formulation performance of cohesive pharmaceutical powders. 3 - 5 Nov, 2011. *BIT's 1st Annual Symposium of Drug Delivery Systems*, Shenzhen, China.
27. Improving the flow and dispersion properties of several micronized drug powders using an innovative dry coating approach. 26 - 29 April, 2010. *World Congress of Particle Technology 6*, Nuremberg, Germany.
28. Improving aerosol performance of model drugs via mechanical surface modification. 9 - 11 December, 2009. *Drug Delivery to Lungs 20* (DDL), Edinburg, UK.

Invited Talk or Seminar

1. Particle engineering and characterization for pharmaceutical solid dosage forms. 13 November, 2019. University of Mississippi. Oxford, USA.
2. Particle engineering and advanced characterization for high-dose dry powder inhaler formulations. 25 October, 2019. Virginia Commonwealth University. Richmond, USA.
3. Spray Drying for pharmaceutical products. 5 April, 2018. Chicagoland Pharmaceutical Discussion Group. Chicago, USA
4. Particle engineering and characterization for pharmaceutical solid dosage forms. 3 April, 2018. University of Texas Austin. Austin, USA.
5. Emerging drying techniques for manufacturing of pharmaceutical biologics. CHI's 11th Annual Lyophilization and Emerging Drying Technologies. Jan 11-12, 2018. Hilton San Diego Bayfront, San Diego, CA.
6. Designing New Generation Dry Powder Inhalers – Formulation, Characterization And Mechanism-Based In Vivo Modelling. Annual Formulation & Drug Delivery USA Congress. 18 - 19 March 2019, San Diego, USA.
7. New Generation Inhalation Formulations for Combating Deadly Respiratory Diseases. 27th October, 2017. College of Pharmacy Dean's Advisory Meeting. West Lafayette, USA.
8. Particle Engineering for Pharmaceutical Solid Dosage Forms, 20th September, 2017. University of Maryland. Baltimore, USA.
9. Collective surface-sensitive spectroscopies for measuring phase separation of spray-dried amorphous solids. 8th September, 2017. Merck-Purdue Center. West Lafayette, USA.
10. A global career path for a pharmaceutical scientist. 7th September, 2017. Purdue University Asian American & Asian Resource and Cultural Center. West Lafayette, USA.
11. Particle Engineering and surface characterization for Design and Manufacturing of Pharmaceutical Solid Dosage Forms. 20th July, 2017. Abbot visit. West Lafayette, USA.

12. Particle engineering for pharmaceutical solids. 14th February, 2017. Fluid Air Inc., Aurora, USA.
13. Particle engineering for pharmaceutical solids and dosage forms. 26th October, 2016. International Society of Pharmaceutical Engineering, Purdue Student Chapter.
14. How to find an academic job. 1st April, 2016. AAPS Purdue Student Chapter Career Day, West Lafayette, USA.
15. Particle engineering for pharmaceutical manufacturing. 15th March, 2016. Shanghai Institute of Materia Medica, Chinese Academy of Sciences, Shanghai, China.
16. Pulmonary drug delivery systems. 14th September, 2015. Harbin Medical University, Harbin, China.
17. Dry powder inhalers – formulation and device. 8th September, 2015. Shenyang Pharmaceutical University, Shenyang, China.
18. Inhalation therapy and inhaled formulation. 6th September, 2015. Tianjin University of Traditional Chinese Medicine, Tianjin, China.
19. Particle engineering for dry powder inhaler formulations of antibiotics against lung infections. 23rd March, 2015. The University of Hong Kong, Hong Kong, China.
20. Inhaled powder formulation of antibiotics for respiratory infection. 9th August, 2013. The University of Sydney, Sydney, Australia.
21. Improving formulation and manufacturing performance of pharmaceutical solids by novel mechanical dry powder coating. 3rd November, 2011. Sun Yat-Sen University, Guangzhou, China.
22. Novel nano-scale mechanical dry powder coating – mechanisms of action and its applications in pharmaceutical formulation. 28th October, 2011. Shenyang Pharmaceutical University, Shenyang, China.

Student Supervision

a. Graduate Student Scholarship, Fellowship, and other Awards

<u>Period</u>	<u>Fellowship/Scholarship</u>	<u>Project</u>	<u>Grad Student</u>
2021	PGSG Professional Development Grant	Emerging manufacturing of pharmaceutical protein solid formulations	Tarun Tejasvi Mutukuri
2020	Mckeehan Graduate Fellowship	Advanced manufacturing of amorphous solid dispersion formulations	Sonal Bhujbal
2020	Chaney Graduate Research Award	Advanced manufacturing of amorphous solid dispersion formulations	Sonal Bhujbal
2020	Rodger D. Logan Travel Award	Advanced manufacturing of amorphous solid dispersion formulations	Sonal Bhujbal
2020	Dollens Graduate Scholarship	Advanced manufacturing of amorphous solid dispersion	Sonal Bhujbal

		formulations	
2020	Three-minute thesis competition, Runner Up, Annual Agricultural and Biological Engineering symposium	Advanced manufacturing of amorphous solid dispersion formulations	Sonal Bhujbal
2017	Rho Chi, Academic Honor Society of Pharmacy	Advanced manufacturing of amorphous solid dispersion formulations	Sonal Bhujbal
2015	Travel grant from Purdue Graduate Student Government	Advanced manufacturing of amorphous solid dispersion formulations	Sonal Bhujbal
2018	Excipient Graduate Student Scholarship, IPEC	Physical stability of dry powder inhalers	Nivedita Shetty
2018	NIPTE Outstanding Student Research Award	Physical stability of dry powder inhalers	Nivedita Shetty
2018	Ronald W. Dollens Graduate Scholarship	Physical stability of dry powder inhalers	Nivedita Shetty
2018	McKeehan Graduate Fellowship	Physical stability of dry powder inhalers	Nivedita Shetty
2018	Chaney Graduate Student Travel Award	Physical stability of dry powder inhalers	Nivedita Shetty
2016	Graduate School Summer Research Grant	Physical stability of dry powder inhalers	Nivedita Shetty
2018	Second Place Winner for 3 Minute Thesis competition at Peck Symposium	Inhaled therapy for deadly lung infections	Nivedita Shetty
2016	Top finalist in Purdue University Student Soybean Product Innovation Competition	Inhaled therapy for deadly lung infections	Nivedita Shetty
2017	Top finalist in the 3 Minute Thesis Competition of Purdue University	Inhaled therapy for deadly lung infections	Nivedita Shetty
2016 - 2019	NSF Graduate Assistance in Areas of National Need (GAANN) Fellowship	Spray drying of protein formulations	Nathan Wilson

b. Undergraduate Student Research Activities

<u>Semester</u>	<u>Project</u>	<u>Undergraduate</u>
Summer, Fall 2018 and Spring 2019	Spray drying for inhalation therapy	Athena He (PharmD)

Fall 2018 and Spring 2019	Dry powder inhaler formulations	Yiwen Zhang (Bio Sci)
Spring 2019	Liposomal formulations	Kuan Peng (Shenyang Pharmaceutical University)
Spring, Summer, Fall 2018	Dry powder inhaler formulations	Patricia Ahn (PharmD)
Spring 2018	Liposomal formulations	Peizi Zhou (Shenyang Pharmaceutical University)
Spring, Summer, Fall 2017	Inhalation therapy	Jiayang Huang (BSPS)
Summer, Fall 2016, Spring 2017	Particle engineering for inhaled formulations	Rui Guo (BSPS)
Summer, Fall 2016, Spring 2017	Inhaled formulations	Youngwoo Han (BSPS)
Spring 2017	Inhaled formulations	Rongkun Xu (Shenyang Pharmaceutical University)
Spring, Summer, Fall 2016	Inhaled formulations	Kevin Bonar (pre-Pharmacy)
Spring 2016	Dry coating for pharmaceutical solids	Guoguang Wei (Shenyang Pharmaceutical University)

c. Undergraduate student scholarship, fellowship, and other awards

<u>Semester</u>	<u>Fellowship/Scholarship</u>	<u>Undergraduate</u>
Summer, Fall 2018 and Spring 2019	Purdue-Louis Stokes Alliance for Minority Participation (LSAMP) Program Research Fellowship	Athena He (PharmD)
July 2018	First Place Louis Stokes Alliance Minority Participation research presentation	Athena He (PharmD)

Summer 2018	Dean's Undergraduate Research Fellowship	Patricia Ahn (PharmD)
Summer 2017	Dean's Undergraduate Research Fellowship	Jiayang Huang (BSPS)
Summer 2016	Dean's Undergraduate Research Fellowship	Kevin Bonar (pre-Pharm)