

**Hugh David Charles Smyth, Ph.D.**  
**Professor with Tenure**  
**Alcon Centennial Professor**  
**The University of Texas at Austin**  
*Curriculum Vitae*

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Drug Delivery  
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## **EDUCATION AND TRAINING**

- 2001 – 2003      **University of North Carolina at Chapel Hill**  
School of Pharmacy, Division of Drug Delivery and Deposition  
Post-Doctoral Fellow
- 1998 – 2000      **University of Otago, Dunedin, New Zealand**  
School of Pharmacy, Department of Pharmaceutical Sciences  
Doctor of Philosophy  
Thesis: *Investigation of Electrically Assisted Drug Delivery in the Percutaneous Delivery of Peptides*
- 1997              **University of Otago, Dunedin, New Zealand**  
School of Pharmacy, Department of Pharmaceutical Sciences  
Post Graduate Diploma in Pharmaceutics (with Distinction)
- 1992 – 1995      **University of Otago, Dunedin, New Zealand**  
School of Pharmacy, Department of Pharmaceutical Sciences  
Bachelor of Pharmacy

## **PROFESSIONAL APPOINTMENTS**

### **PRIMARY APPOINTMENTS**

- 2020 – Present      **The University of Texas at Austin**, College of Pharmacy  
Alcon Centennial Professorship
- 2018 – Present      Full Professor  
**The University of Texas at Austin**, College of Pharmacy
- 2016 – 2020      **The University of Texas at Austin**, College of Pharmacy  
Alan W Hamm Centennial Fellow in Pharmacy
- 2014 – 2016      **The University of Texas at Austin**, College of Pharmacy  
Fellow to the Jaime N Delgado Endowed Professorship
- 2012 – 2014      **The University of Texas at Austin**, College of Pharmacy,  
Bergen Brunswig Corporation Centennial Fellow

2011 – Present Associate Professor with Tenure  
**The University of Texas at Austin**  
 College of Pharmacy, Division of Molecular Pharmaceutics  
 and Drug Delivery

2009 – 2011 **The University of Texas at Austin**  
 College of Pharmacy, Division of Pharmaceutics  
 Assistant Professor

2005 – 2009 **University of New Mexico**  
 Health Sciences Center, College of Pharmacy  
 Assistant Professor

2004 – 2005 **University of North Carolina at Chapel Hill**  
 School of Pharmacy, Division of Drug Delivery and Deposition  
 Research Assistant Professor

2000 **Knox Pharmacy**, Dunedin, New Zealand, Pharmacist

1998 – 1999 **GlaxoWellcome**, Research Triangle Park, Durham, NC.

1996 **Auckland Hospital**, Auckland Healthcare, New Zealand, Pharmacist

#### ADJUNCT AND OTHER APPOINTMENTS

2020 – Present Co-Founder and Chief Scientific Officer, Cloxero Therapeutics, Austin, TX.

2017 – Present Co-Founder, Via Therapeutics, Austin, TX (Start-up from technology developed in my lab)

2016 – Present Consulting Chief Technology Officer, Nob Hill Therapeutics, San Diego, CA (Start-up from technology developed in my lab)

2010 – 2021 Consulting Chief Scientist, Respira Therapeutics, (Start-up from technology developed in my lab, now in clinical development)

2014 – 2022 Editor-in-Chief, Drug Development and Industrial Pharmacy.

2006 – Present **Lovelace Respiratory Research Institute**, Albuquerque, NM  
 Adjunct Associate Scientist

2006 – 2009 **University of New Mexico Cancer Research and Treatment Center**  
 Member

#### PROFESSIONAL SOCIETIES

2004 – 2016 International Society for Aerosols in Medicines

2005 – 2008 American Chemical Society

2001 – 2005 North Carolina Pharmaceutical Discussion Group

2001 – Present	American Association of Pharmaceutical Scientists Inhalation and Nasal Community (Previously named: Inhalation and Nasal Technology Focus Group)
1998 – Present	American Association of Pharmaceutical Scientists
1997 – Present	Controlled Release Society
1996 – 2004	Member Pharmaceutical Society of New Zealand

## PUBLICATIONS

### PEER REVIEWED PAPERS (in reverse chronological order)

#### ***Professor, at The University of Texas at Austin (September 2018 – Present)***

1. Ren A, Koleng III JJ, Costello M, Spahn JE, Smyth HD, Zhang F. Twin-screw continuous mixing can produce dry powder inhalation mixtures for pulmonary delivery. *Journal of Pharmaceutical Sciences*. 2022 Oct 11.
2. Brunaugh AD, Walz A, Warnken Z, Pearce C, Munoz Gutierrez J, Koleng JJ, Smyth HD, 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. *Antimicrobial Agents and Chemotherapy*. 2022 Aug 9:e00186-22.
3. Hefnawy, A., Herpin, M.J., Easton, M., Joshi, S., Jordan, D., Smyth, H.D.C., Tarpy, J., Design Validation of a Smart Inhaler Device with an Integrated Spacer for Enhanced Aerosolization Performance. *J Pharm Innov* (2022). <https://doi.org/10.1007/s12247-022-09673-7>
4. Spahn JE, Hefnawy A, Smyth HD, Zhang F. Development of a novel method for the continuous blending of carrier-based dry powders for inhalation using a co-rotating twin-screw extruder. *International Journal of Pharmaceutics*. 2022 Jun 16:121914.
5. Spahn JE, Zhang F, Smyth HD. Mixing of dry powders for inhalation: A review. *International Journal of Pharmaceutics*. 2022 Apr 8:121736.
6. Trementozzi AN, Zhao C, Smyth H, Cui Z, Stachowiak JC. Gap Junction-Mediated Delivery of Polymeric Macromolecules. *ACS Biomaterials Science & Engineering*. 2022 Mar 10;8(4):1566-72.
7. Brunaugh AD, Ding L, Wu T, Schneider M, Khalaf R, Smyth HD. Identification of stability constraints in the particle engineering of an inhaled monoclonal antibody dried powder. *Journal of Pharmaceutical Sciences*. 2022 Feb 1;111(2):403-16.

8. Zhu Y, Gu Z, Liao Y, Li S, Xue Y, Firempong MA, Xu Y, Yu J, Smyth HD, Xu X. Improved intestinal absorption and oral bioavailability of astaxanthin using poly (ethylene glycol)-graft-chitosan nanoparticles: preparation, in vitro evaluation, and pharmacokinetics in rats. *Journal of the Science of Food and Agriculture*. 2022 Feb;102(3):1002-11.
9. Domínguez-Delgado CL, Akhtar Z, Awuah-Mensah G, Wu B, Smyth HD. Effects of Process and Formulation Parameters on Submicron Polymeric Particles Produced by a Rapid Emulsion-Diffusion Method. *Nanomaterials*. 2022 Jan 11;12(2):229.
10. Ding L, Brunaugh AD, Thakkar R, Lee C, Zhao QJ, Kalafat J, Maniruzzaman M, Smyth HD. Comparison of HPMC Inhalation-Grade Capsules and Their Effect on Aerosol Performance Using Budesonide and Rifampicin DPI Formulations. *AAPS PharmSciTech*. 2022 Jan;23(1):1-3.
11. Ceschan NE, Montoto SS, Sbaraglini ML, Ruiz ME, Smyth HD, Bucalá V, Ramírez-Rigo MV. Nebulization of a polyelectrolyte-drug system for systemic hypertension treatment. *European Journal of Pharmaceutical Sciences*. 2021 Dec 26:106108.
12. Ding L, Cai S, Wang J, Smyth H. 481: PEGylated tobramycin significantly improves anti-biofilm activity in vitro and in vivo. *Journal of Cystic Fibrosis*. 2021 Nov 1;20:S226-8.
13. Arafa KK, Smyth HD, El-Sherbiny IM. Mitotropic triphenylphosphonium doxorubicin-loaded core-shell nanoparticles for cellular and mitochondrial sequential targeting of breast cancer. *International Journal of Pharmaceutics*. 2021 Sep 5;606:120936.
14. Brunaugh AD, Ding L, Wu T, Schneider M, Khalaf R, Smyth HD. Identification of Stability Constraints in the Particle Engineering of an Inhaled Monoclonal Antibody Dried Powder. *Journal of Pharmaceutical Sciences*. 2021 Aug 26.
15. Zhu Y, Gu Z, Liao Y, Li S, Xue Y, Firempong MA, Xu Y, Yu J, Smyth HD, Xu X. Improved intestinal absorption and oral bioavailability of astaxanthin using poly (ethylene glycol)-graft-chitosan nanoparticles: preparation, in vitro evaluation, and pharmacokinetics in rats. *Journal of the Science of Food and Agriculture*. 2021 Aug 13.
16. Zhang H, Zhang Y, Williams III RO, Smyth HD. Development of PEGylated chitosan/CRISPR-Cas9 dry powders for pulmonary delivery via thin-film freeze-drying. *International Journal of Pharmaceutics*. 2021 Aug 10;605:120831.
17. 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 Aug;13(8):1213.

18. Hall MD, Anderson JM, Anderson A, Baker D, Bradner J, Brimacombe KR, Campbell EA, Corbett KS, Carter K, Cherry S, Chiang L, omas Cihlar, Emmie de Wit, Mark Denison, Matthew Disney, Courtney V Fletcher, Stephanie L Ford-Scheimer, Matthias Götte, Abigail C Grossman, Frederick G Hayden, Daria J Hazuda, Charlotte A Lanteri, Hilary Marston, Andrew D Mesecar, Stephanie Moore, Jennifer O Nwankwo, Jules O'Rear, George Painter, Kumar Singh Saikatendu, Celia A Schiffer, Timothy P Sheahan, Pei-Yong Shi, Hugh D Smyth, Michael J Sofia, Marla Weetall, Sandra K Weller, Richard Whitley, Anthony S Fauci, Christopher P Austin, Francis S Collins, Anthony J Conley, Mindy I Davis. Report of the National Institutes of Health SARS-CoV-2 Antiviral Therapeutics Summit. *The Journal of Infectious Diseases*. 2021 Jun 10.
19. Hewavitharana, Amitha K., Shaw, P. Nicholas, Smyth, H. D.C., Samaranayake, L. P., and Bandara, H. M.H.N. (2021). The importance of complete overlapping of analyte and internal standard peaks in eliminating matrix effects with liquid chromatography–mass spectrometry (Lc–ms). *LC-GC North America* 39 (7) 335-338..
20. Ding L, Wang J, Cai S, Smyth H, Cui Z. Pulmonary Biofilm-Based Chronic Infections and Inhaled Treatment Strategies. *International Journal of Pharmaceutics*. 2021 Jun 3;604:120768.
21. Wang JL, Hanafy MS, Xu H, Leal J, Zhai Y, Ghosh D, Williams Iii RO, Smyth HD, Cui Z. Aerosolizable siRNA-encapsulated solid lipid nanoparticles prepared by thin-film freeze-drying for potential pulmonary delivery. *International Journal of Pharmaceutics*. 2021 Mar 1;596:120215.
22. Brunaugh AD, Sharma S, Smyth H. Inhaled fixed-dose combination powders for the treatment of respiratory infections. *Expert Opinion on Drug Delivery*. 2021 Feb 27:1-5.
23. Brunaugh AD, Seo H, Warnken Z, Ding L, Seo SH, Smyth HD. Development and evaluation of inhalable composite niclosamide-lysozyme particles: A broad-spectrum, patient-adaptable treatment for coronavirus infections and sequalae. *PLoS one*. 2021 Feb 11;16(2):e0246803.
24. Shah SM, Shah SM, Khan S, Ullah F, Shah SW, Ghias M, Shahid M, Smyth HD, Hussain Z, Sohail M, Elhissi A. Efficient design to fabricate smart Lumefantrine nanocrystals using DENA® particle engineering technology: Characterisation, in vitro and in vivo antimalarial evaluation and assessment of acute and sub-acute toxicity. *Journal of Drug Delivery Science and Technology*. 2021 Feb 1;61:102228.
25. Armijo LM, Wawrzyniec SJ, Kopciuch M, Brandt YI, Rivera AC, Withers NJ, Cook NC, Huber DL, Monson TC, Smyth HD, Osiński M. Antibacterial activity of iron oxide, iron nitride, and tobramycin conjugated nanoparticles against *Pseudomonas aeruginosa* biofilms. *Journal of nanobiotechnology*. 2020 Dec;18(1):1-27.
26. Anzueto A, Smyth HD. Letter to the Editor in response to the article:“Nebulization: A potential source of SARS-CoV-2 transmission”. *Respiratory Medicine and Research*. 2020 Nov 17.

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