

## Curriculum Vitae

**NAME/TITLE**            **Hugh David Charles Smyth, Ph.D.,  
Associate Professor with Tenure, UT-Austin  
Hamm Endowed Faculty Fellow**

**ADDRESS**            The University of Texas at Austin  
College of Pharmacy  
Division of Pharmaceutics  
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**DEGREES**            B.Pharm., University of Otago, NZ  
Ph.D., University of Otago, NZ

### PRIMARY APPOINTMENTS

2011 – Present	<b>The University of Texas at Austin</b> College of Pharmacy, Division of Pharmaceutics Associate Professor with Tenure
2009 – 2011	<b>The University of Texas at Austin</b> College of Pharmacy, Division of Pharmaceutics Assistant Professor
2005 – 2009	<b>University of New Mexico</b> Health Sciences Center, College of Pharmacy Assistant Professor
2004 – 2005	<b>University of North Carolina at Chapel Hill</b> School of Pharmacy, Division of Drug Delivery and Deposition Research Assistant Professor
2000	<b>Knox Pharmacy</b> , Dunedin, New Zealand, Pharmacist
1998 – 1999	<b>GlaxoWellcome</b> , Research Triangle Park, NC.
1996	<b>Auckland Hospital</b> , Auckland Healthcare, New Zealand, Pharmacist

### ADJUNCT APPOINTMENTS

2006 – Present	<b>Lovelace Respiratory Research Institute</b> , Albuquerque, NM Adjunct Associate Scientist
2006 – 2009	<b>University of New Mexico Cancer Research and Treatment Center</b> Member

## EDUCATION

- 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

## AWARDS AND HONORS

- 2016              Vice Chair, Executive Committee, Inhalation and Nasal Technology Focus Group of the American Association of Pharmaceutical Scientists.
- 2015              Executive Committee Member, Inhalation and Nasal Technology Focus Group of the American Association of Pharmaceutical Scientists.
- Invited Plenary Speaker, International Symposium for Graduate Students in Pharmaceutical Sciences, Guangzhou, China
- 2014              Editor-in-Chief, Drug Development and Industrial Pharmacy, Taylor and Francis Press (September, 2014 - current).
- American Association of Colleges of Pharmacy, Academic Research Fellow
- Nominee for 2014 Edith and Peter O'Donnell Engineering Award, The Academy of Medicine, Engineering & Science of Texas
- 2013              Nominee for 2014 Edith and Peter O'Donnell Technology Innovation Award, The Academy of Medicine, Engineering & Science of Texas
- 2012              Bergen-Brunswig Fellow, University of Texas at Austin.
- 2008              Best Poster, Respiratory Drug Delivery 2008, Scottsdale, AZ
- 2007              New Investigator Award in Pharmaceutics,  
Drug Delivery, and Pharmaceutical Technologies  
**American Association of Pharmaceutical Scientists**
- 2007              New Investigator in Pharmaceutics Award,

**Pharmaceutical Research and Manufacturers of America (PhRMA)  
Foundation**

- 2007                      Winning Team, Second Annual Technology Business Plan Competition  
University of New Mexico
- 1997 – 1999              Vernon Tews - GlaxoWellcome Inc. Education Scholarship

**PROFESSIONAL SOCIETIES**

- 2004 – Present              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 Technology Focus Group
- 1998 – Present              American Association of Pharmaceutical Scientists
- 1997 – Present              Controlled Release Society
- 1996 – 2004              Member Pharmaceutical Society of New Zealand

**SCHOLARLY REVIEW**

**Ad Hoc Review**

- 2000 – Present              European Journal of Pharmaceutics and Biopharmaceutics  
Molecular Pharmaceutics  
Journal of Microencapsulation  
Nature Reviews Drug Discovery  
International Journal of Pharmaceutics  
Journal of Pharmaceutical Sciences  
Journal of Aerosol Medicine  
Journal of Controlled Release  
AAPS PharmSciTech  
Journal of Pharmacy and Pharmacology  
Pharmaceutical Research  
Drug Development and Industrial Pharmacy  
Langmuir  
Powder Technology  
Journal of Environmental Management

**Editorial Review**

- 2016                      Guest Editor, Current Pharmaceutical Design, Special Issue “Pulmonary  
delivery of systemic drugs - from Aerosol Generation to Efficacious Delivery”
- 2014 – Present              Editor-in-Chief, Drug Development and Industrial Pharmacy.
- 2012 – Present              Editorial Board Member, Journal of Bioequivalence & Bioavailability

2010 – Present	Editorial Advisory Board, Drug Delivery Letters
2010	Guest Editor, Journal of Nanomaterials, Special Issue Nanostructured Aerosol Particles: Fabrication, Pulmonary Drug Delivery, and Controlled Release
2008 – 2012	Editorial Advisory Board for Books Controlled Release Society
2007 – 2010	Editorial Advisory Committee for Books American Association of Pharmaceutical Scientists
2007 – Present	Reviewer, Annual Meeting American Association of Pharmaceutical Scientists
2006 – 2014	Editorial Board Member Drug Development and Industrial Pharmacy

### **National / International Grant Review**

2016	Study Section member, National Institutes of Health:
	NIDA, ZDA1-SXM-M-71 SRO: Susan McGuire
	CSR, ZRG1-ETTN-J-50 SRO: Kristin Kramer
	NIDA, ZDA1-SXM-M-13 SRO: Susan McGuire
	CSR, ZRG1-ETTN-G-50 SRO: Paek-Gyu Lee
	CSR, ZRG1-ETTN-G-50 SRO: Paek-Gyu Lee
	CSR, Gene and Drug Delivery (GDD) SRO: Amy Rubinstein
2015-Present	Grant Reviewer, Cystic Fibrosis Foundation.
2013-Present	Ad-Hoc Study Section Member Center for Scientific Review National Institutes of Health
2012	Ad-Hoc Study Section Member (2 Study Sections) Center for Scientific Review National Institutes of Health
2010	Panelist SBIR/STTR Program National Science Foundation
2010	Reviewer Ohio Cancer Research Associates Foundation
2009	Panelist SBIR/STTR Program National Science Foundation
2009	Reviewer

North Carolina Biotechnology Center

- 2007 Panelist “Drug Discovery and Development”  
National Science Foundation
- 2006 Panelist “Drug Delivery in Biotechnology”  
National Science Foundation
- 2005 Special Emphasis Panel: “Delivery Systems and Nanotechnology”  
Center for Scientific Review  
National Institutes of Health
- 2004 Reviewer  
Alberta Heritage Foundation for Medical Research, Canada
- 2001 Panelist “Drug Delivery in Biotechnology”  
National Science Foundation

**External Tenure and Promotion Reviewer**

- 2016 Texas Tech University Health Sciences Center – School of Pharmacy  
University of New Mexico, College of Pharmacy
- 2013 Mylan School of Pharmacy and Graduate School of Pharmaceutical Sciences  
Duquesne University, Pittsburgh, PA  
College of Pharmacy, University of Iowa, Iowa City, Iowa
- 2012 Massachusetts College of Pharmacy and Health Sciences, Boston, MA

**SERVICE**

**The University of Texas at Austin**

- 2016 Chair, Task Force on Pharmacokinetics, College of Pharmacy.
- 2014 Co-Chair, Faculty Retreat Committee, College of Pharmacy.  
Member, Center for Infectious Diseases, UT-Austin
- 2012 - Present Chair, Faculty Search Committee, Pharmaceutics (2013).  
Steering Committee, Improving Course Outcome and Student Achievement,  
(ICOSA)  
Continuing Education Committee  
Graduate Studies Administrative Sub-Committee\*  
Teaching Credentials & Assignments Committee\*  
Division of Pharmaceutics Graduate Advisor.

2010 – 2013	Steering Committee, TherapUTex, Drug Dynamics Institute College of Pharmacy
2010 – present	Curriculum Committee College of Pharmacy
2010 – present	Program Assessment Team College of Pharmacy
2010 – present	Accreditation Self-Study Committee 5 College of Pharmacy
2010	Seminar Coordinator Division of Pharmaceutics College of Pharmacy

### **University of New Mexico**

2009	Faculty Advisor for Pharm.D. Class of 2012
2007 – 2008	University of New Mexico Intellectual Property Policy Committee
2007 – 2009	Organizational Planning & Evaluation Committee College of Pharmacy
2007	Faculty Search Committee, Pharmacokinetics College of Pharmacy
2006 – 2009	Steering Committee Member, Biomedical Sciences Graduate Program The Biomedical Sciences Graduate Program is the graduate program for the entire Health Sciences Center. The steering committee has members from each participating unit and oversees the graduate program from admissions, qualifying exams, assessment, etc.
2006 – 2009	Lung Cancer Working Group Cancer Research and Treatment Center
2006 – 2009	Phase 1 Working Group Cancer Research and Treatment Center
2006 – 2007	Assessment Task Force College of Pharmacy
2005	Scholarships, Student Loans and Awards Committee College of Pharmacy

### **Professional Leadership**

2016	Member of Organizing Committee, American Association of Pharmaceutical Scientists, Arden House Conference on Drug/Device Combination Products.
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2015	Executive Committee Member, Inhalation and Nasal Technology Focus Group of the American Association of Pharmaceutical Scientists.
2014	Founder, Via Therapeutics, Austin, TX Founder, SpinDrift Therapeutics, Austin, TX  Member of Organizing Committee, International Society of Microencapsulation International Meeting 2015.
2011	Co-Chair, Workshop on: Developing Pharmaceutical Products for Controlled Pulmonary Delivery, October 23, 2011, Walter E. Washington Convention Center, Washington, D.C., U.S.A. Controlled Release Society & American Association of Pharmaceutical Scientists
2010-Present	Chief Scientist, Consultant Respira Therapeutics Start-up company based on intellectual property and patents licensed from my laboratory
2010	Programming Committee “Lactose as a Carrier for Inhalation Products” Conference Parma, Italy
2008	Pulmonary Advisory Board Mannkind Corporation, Danbury, Connecticut
2007	Member Business Advisory Board Zia Scientific, Albuquerque, New Mexico
2005 – Present	Scientific Consultant to various Law Firms
2003	Scientific Analyst, Evaluation of Existing Inhaler Products in Developing Nations United Nations Development Program

### **Professional Development**

2013	Member of University of Texas at Austin learning community program on “Flipping the Classroom”
2011	College Wide Workshop on Objective Writing, Speaker: Dr. John Littlefield Director of the Academic Center for Excellence in Teaching (ACET) at the UT Health Science Center, San Antonio
2009 – Present	Teaching Conversations, The University of Texas at Austin, College of Pharmacy Coordinator: Patrick Davis, Senior Associate Dean
2006 – 2009	Faculty Development Series, College of Pharmacy, University of New Mexico Coordinators: Craig Marcus, Division Chair, Laurie Hudson, Regents Professor
2004 – 2005	Teaching Methods and Teaching Enhancement

Center for Teaching and Learning / Center for Faculty Excellence  
University of North Carolina at Chapel Hill

### Outreach and Community Service

2017	Eanes Elementary Science Day, Facilitator Presented crystal formation, fossilization, and earth science 5 Kindergarten Classes
2015	Eanes Elementary Science Day, Facilitator Chemistry of Pharmaceuticals 5 Second Grade Classes
2009 – 2015	Explore UT “Hogwarts Jungle Potion Class” Compounding of reversible gels

### TEACHING

#### Professional Curriculum, Pharm.D.

*The University of Texas at Austin*

2017 – Present	PHM 388M Pharmaceuticals. Flipped, team based class ~ 125 students.
2016 – Present	PHM 281C, Foundations For Interprofessional Collaborative Practice
2014-2016	PHR356C Pharmaceuticals (Spring). Transformed didactic course into a team-based flipped class room model with Dr Williams. Approximately 14 modules x 3 hours per week. Co-developed all new syllabus, course materials, quizzes, exams, assignments.
2010-2013	PHR 156P (Spring) Pharmaceutics Laboratory and Lectures <b>Course Coordinator: Hugh Smyth</b> Lecture course on pharmaceutical calculations to 1 <sup>st</sup> year Pharm.D. students. Developed new syllabus, generated new course handouts, study guides, and participated in electronic “lecture capture” to enable students to remotely access the lecture audio and visual materials to supplement lectures. Approximately 130 students, 12 lectures  Laboratory compounding course for 1 <sup>st</sup> year Pharm.D. students. Includes introductory presentations in lab and directing practical demonstrations of compounding techniques. Approximately 25 students per lab, 5 labs per week, 10 weeks.
2010-Present	PHR 356. Lecture course on pharmaceutics. Approximately 130 students, 2-3 lectures (Team Taught Course). Course Coordinator: R O Williams



*University of New Mexico*

- 2006 - 2009      PHARM 701: Pharmaceutics I, Fall Semester  
Course Coordinator: Linda Felton  
Study of pharmaceutical dosage forms and relevant physico-chemical and biopharmaceutical principles. Introduction to the metrology and calculations involved in the compounding and dispensing of pharmaceutical preparations. Dosage forms discussed include ophthalmics, otics, nasal products, aerosols, and transdermal products.  
Approximately 85-90 students, 12 lectures
- 2006 - 2009      PHARM 702: Pharmaceutics II, Spring Semester  
**Course Coordinator: Hugh Smyth**  
Study of pharmaceutical dosage forms and relevant physico-chemical and biopharmaceutical principles. Introduction to the metrology and calculations involved in the compounding and dispensing of pharmaceutical preparations. Dosage forms discussed include ophthalmics, otics, nasal products, aerosols, and transdermal products.  
Approximately 85-90 students, 14 lectures

*The University of North Carolina at Chapel Hill*

- 2003              Pharm 411, Basic Pharmaceutics 2  
Course Coordinator: Anthony Hickey  
2 Lectures, Inhalation Aerosols

*University of Otago, New Zealand*

- 2000              Pharmaceutics I,  
Course Coordinator: Nigel Davies  
2 Lectures, Transdermal Drug Delivery

**Graduate Curriculum**

*The University of Texas at Austin*

- 2011 - Present      PHR 380Q, Fall  
Advanced Manufacturing Pharmacy  
Approximately 12 Students, Co-Coordinator.
- 2010 - Present      PHR 382, Summer  
Recent Advances in Pharmaceutics  
**Course Coordinator: Hugh Smyth**  
Approximately 10 Students, 6 x 4 hr Lectures

*The University of New Mexico*

- 2007 – 2008      PHARM/BIOMED 576: Molecular and Cellular Pharmacology, Fall Semester,  
Course Coordinator: Joe Masserano

The course reviews general principles of pharmacology, including receptor interaction and signaling, ADME, drug design, pharmacogenomics, and toxicology. One lecture was provided on the Respiratory Pharmacology  
Approximately 5 students

- 2006 – 2009      PHARM/BIOMED 581: General Toxicology  
Course Coordinators: Mary Walker/Craig Marcus  
An in-depth introduction to the basic principles and concepts of toxicology. Categories of chemicals causing toxic effects, the manner of exposure to toxic substances, the environmental and biological effects, and the laws and regulations will be considered. Two lectures on Respiratory Toxicology  
Approximately 5 students
- 2007              ECE 590 Graduate Seminar (Electrical and Computer Engineering):  
Course Coordinator: Marek Osinski  
One lecture, Nanocrystals and Nanoparticles for Drug Delivery  
Approximately 10 students.

### **Other Courses Taught**

- 2015              5 Day Workshop on “Pharmaceutical Engineering of Particulate Systems for Inhalation of Bioactive Molecules”, Universidad Nacional del Sur and The National Scientific and Technical Research Council (CONICET) of Argentina. Bahia Blanca, Argentina February 2015
- 2005              Workshop “Sustained Pulmonary Drug Delivery”  
The Institute of Validation Technology  
Drug Delivery Systems conference, September 20-23  
San Francisco
- 2004              Department of Biomedical Engineering, University of North Carolina at Chapel Hill; Undergraduate lectures on “Drug Delivery”
- 2003              Faculty Speaker  
Pharmaceutical Inhalation Aerosol Technology Course and Colloquia  
September 29-30  
Research Triangle Park, North Carolina
- 2000              Teaching Assistant  
Biopharmacy, Physical Pharmacy, & Aseptic Dispensing  
School of Pharmacy, University of Otago, NZ
- 1997              Teaching Assistant  
Biopharmacy, Physical Pharmacy, & Aseptic Dispensing  
School of Pharmacy, University of Otago, NZ

### **Students Supervised**

#### *Post-Doctoral Fellows / Visiting Scientists*

- 2016 – Present      Prof. Veronica Ramirez-Rigo

2016 – Present	Dr Matthew Herpin
2016 – 2017	Dr Ashkan Yazdi
2016 – Present	Dr Yuan Zhu
2016	Dr Syed Umer Jan
2016	Dr Frederic Tewes
2014 – Present	Dr. Silvia Ferrati, <i>“Biomimetic Vesicles for Drug Delivery”</i>
2014 – 2016	Dr Kristin Fathe, Editorial Assistant and Pharmaceutical Analysis.
2014 – 2015	Dr Xianfei Xie, “Controlled pulmonary drug delivery to alter and optimize the pharmacokinetics of therapeutic molecules”
2013 – 2014	Dr Xin Li “Microfluidic Synthesis of Shape Controlled Particles”
2012 – 2014	Dr Nihal Bandara, Ph.D. (University of Hong Kong, Microbiology and Oral Biosciences). “Drug Delivery in Biofilms”
2011 – 2014	Roger Andrew Maloney, Ph.D. (University of New Mexico, Physics) “Particle Adhesion and Detachment”
2011-2012	Aileen Gibbons, Ph.D. (Royal College of Surgeons, Dublin, Ireland) “Dry Powder Inhaler Formulations” Current Position, Senior Scientist, Respira Therapeutics.
2009 – 2011	Stephen Marek, Ph.D. (The University of Texas) “Interparticulate Forces” Current Position, Lecturer, Biomedical Engineering, Univ. of Texas at Austin
2008 – 2010	Ibrahim El-Sherbiny, Ph.D. (Massey University, New Zealand) “Hydrogels for Drug Delivery” Current Position: Associate Professor, Mansoura University Egypt.
2008 – 2010	Parthiban Selvam, Ph.D. (Wayne State University) “Dry Powder Inhaler Development” Current Position: Scientist, Savara Pharmaceuticals
2008 – 2009	Satya Singh, Ph.D., (Indian Institute of Technology, Kanpur, India) “Computational Fluid Dynamics for Inhalers” Current Position: Scientist, Indian Institute of Technology
2006 – 2008	Imran Saleem, Ph.D. (Aston University, United Kingdom) “Inhalation Aerosols for Lung Cancer Treatment” Current Position: Faculty at John Moores University, Liverpool, United Kingdom

*Graduate Students (\* in candidacy, + graduate)*

2016 – Present	Ashlee Branuagh, Pharm.D., Graduate Student, Pharmaceutics Ph.D. Graduate Program, The University of Texas at Austin
2016 – Present	Lara Heerasema Graduate Student Biomedical Engineering Ph.D. Graduate Program, The University of Texas at Austin
2015 – Present	Jasmim Leal Graduate Student Pharmaceutics Ph.D. Graduate Program, The University of Texas at Austin
2015 – Present	Patricia Martins, M.Pharm. Graduate Student Pharmaceutics Ph.D. Graduate Program, The University of Texas at Austin
2015	Nazareth Ceschan, Ph.D. Graduate Student on Fellowship from CONICET & Universidad Nacional del Sur, Bahia Blanca Argentina.
2014 – Present	Zachary Warnken, Pharm.D., Ph.D. Graduate Student Pharmaceutics Ph.D. Graduate Program, The University of Texas at Austin Co-Supervised with Dr Williams.
2013 – Present	Tania Bahamóndez, Graduate Student Pharmaceutics Ph.D. Graduate Program, The University of Texas at Austin
2013 – Present	Daniel F Moraga-Espinoza, Graduate Student Pharmaceutics Ph.D. Graduate Program, The University of Texas at Austin
2012 – 2016	+Ashkan Yazdi, PharmD, Graduate Student Pharmaceutics Ph.D. Graduate Program, The University of Texas at Austin
2011 – 2015	+Ping Du, Ph.D. Pharmaceutics Graduate Program, The University of Texas at Austin Graduated 2015
2010 – 2015	+Matt Herpin, Graduate Student Pharmaceutics Graduate Program, The University of Texas at Austin
2010 – 2015	+Ju Du, Graduate Student Pharmaceutics Graduate Program, The University of Texas at Austin “Novel Therapeutics Delivered as Inhalation Aerosols” Graduated 2015
2011 – 2014	+Srimahitha Kaliki, Graduate Student Biomedical Engineering Graduate Program, The University of Texas at Austin Graduated 2014
2010 – 2013	+Diana Guzman, Graduate Student at Facultad de Farmacia Universidad Autonoma Del Estado De Morelos Co-Advisor: Dr Dea Herrera Ruiz Graduated 2013
2006 – 2011	+Martin Donovan, Graduate Student Awarded NSF IGERT scholarship for Nanoscience and Microsystems Biomedical Sciences Graduate Program, UNM, transferred to:

Pharmaceutics Graduate Program, The University of Texas at Austin  
Graduated August 2011  
Current Position, Senior Scientist, Xeris Therapeutics, Austin Texas

- 2007 – 2011      +Shayna McGill, Graduate Student  
Biomedical Sciences Graduate Program, UNM, transferred to:  
Pharmaceutics Graduate Program, The University of Texas at Austin  
Awarded NSF IGERT fellowship for “Integrating Nanotechnology with Cell  
Biology and Neuroscience”  
Winner of International Society for Aerosols in Medicine, Biennial Student  
Research Award  
Graduated, August 2011  
Current Position, Postdoctoral Fellow, University of North Carolina, Chapel Hill
- 2007 – 2009      +Leah Mitchell, Ph.D. Biomedical Sciences, University of New Mexico  
“Mechanisms of Inhaled Multiwalled Carbon Nanotube-Induced  
Immunosuppression in Mice”  
Major Advisor: Scott Burchiel  
Graduated May 2009
- 2007                Sonya Flores, Graduate Student, Biomedical Sciences Graduate Program  
On Rotation
- 2005 – 2008      +Michelle B. Gallegos, Masters Student,  
Mechanical Engineering Program, University of New Mexico  
Major Advisor: C Randall Truman  
Graduated 2008

*Pharm. D. Students (Research)*

- 2016                Jaynish Amin, Pharm.D. Student, Honors Program  
  
Ashlee Brunaugh, Pharm.D., Ph.D. Student, Research Rotations
- 2015                Autumn Lee, Pharm.D. Student, Research Rotations. Honors Program  
  
Allison Dietert, Pharm.D. Student, Research Rotations, Honors Program  
  
Andee Shaunessy, Pharm.D. Student, Research Rotations, Honors Program  
  
Jaynish Amin, Pharm.D. Student, Research Rotations, Honors Program
- 2014                Ashlee Brunaugh, Pharm.D., Ph.D. Student, Research Rotations.  
  
Maliha Ahmed, Pharm.D. Student, Research Rotations, Honors Program  
The University of Texas at Austin  
  
Sarah Hallowell, Pharm.D. Student, Research Rotations, Honors Program  
The University of Texas at Austin
- 2013                Stephanie Hufnagel, Pharm.D. Student, Research Rotations, Honors Program  
The University of Texas at Austin

2010 – 2013	Lucy Gong, Pharm.D. Student, Research Rotations, Honors Program The University of Texas at Austin
2010 – 2012	Scott Mosley, Pharm.D. Student, Research Rotations, Honors Program The University of Texas at Austin
2010 – 2012	Tommy Cai, Student, Research Rotation, The University of Texas at Austin
2009 – 2012	Nicola Maynard, Pharm.D. Student, College of Pharmacy University of New Mexico
2009	Samantha Torres, Pharm.D. Student, College of Pharmacy University of New Mexico Summer Fellow
2008	Vincent Agustin, Pharm.D. Student, College of Pharmacy University of New Mexico Summer Fellow
2007 – 2008	HongChao Liu, Pharm.D. Student, College of Pharmacy University of New Mexico Pfizer Fellow, UNM 2007-2008

*Undergraduate Students (Research)*

2015	Heather Klein (BME) Jessica Musler (BME) Sarah Maguire (BME) Bianca Wu (Pre-Pharmacy)
2014	Alejandro Harb David Kolacny Heather Klein (BME) Jessica Musler (BME) Kevin Gandingco (BME) Jeanette Lee (Intellectual Entrepreneurship Program)
2012 – 2013	Danielle Stolley, Tyler Fields Damian Jimenez Sarah D Labianca Giovanni A Campagna Khurram Qazi Jihyun Yoo Howard Lin Joiesah Sunga Samantha Salcedo Alejandro Harb David Kolacny Johnny Thai
2011 – 2012	Johnny Thai - Biochemistry Major Stivaly Gomez - Biomedical Engineering

Michael Huang - Pre-Med  
 Kunnel Zachariah - Chemical Engineering  
 Mashal Awais - Chemistry  
 David Yang - Biomedical Engineering  
 Charlie Nguyen - Biology  
 Kevin Zhao - Intellectual Entrepreneurship Program, Pre-Pharm

2010 – 2012 Y Vo, Chemical Engineering, University of Texas at Austin  
 2009 Kristi Mascarenas, McNair Scholar, University of New Mexico  
 2008 – 2009 Abdullah Feroz, Regents Scholar, Undergraduate, University of New Mexico  
 Carla Cuylear, Minority Access to Research Careers (MARC) Scholar  
 Undergraduate, University of New Mexico  
 2007 – 2008 Poonam Patil, Pre-Pharmacy Student, University of New Mexico  
 2006 – 2007 Laura Rogers, Pre-Pharmacy Student, University of New Mexico

### Student Committees

#### *Doctoral Thesis Committees (\* denotes chair of committee)*

Year Complete	Student	Program
2009	MITCHELL, LEAH	Biomedical Sciences (UNM)
2011	*DONOVAN, MARTIN JOSEPH	Pharmaceutical Sciences (UT)
2011	CARVALHO, THIAGO CARDOSO	Pharmaceutical Sciences (UT)
2011	*MCGILL, SHAYNA LORRAINE	Pharmaceutical Sciences (UT)
2011	O'DONNELL, KEVIN PATRICK	Pharmaceutical Sciences (UT)
2012	HUGHEY, JUSTIN ROY	Pharmaceutical Sciences (UT)
2012	BOSSELMANN, STEPHANIE	Pharmaceutical Sciences (UT)
2012	MORALES, JAVIER OCTAVIO	Pharmaceutical Sciences (UT)
2013	KUMAR, AMIT	Pharmaceutical Sciences (UT)
2013	CARVALHO, SIMONE RAFFA	Pharmaceutical Sciences (UT)
2013	KEEN, JUSTIN MARTIN	Pharmaceutical Sciences (UT)
2013	LI, XINRAN	Pharmaceutical Sciences (UT)
2013	WANG, YI-BO	Pharmaceutical Sciences (UT)
2014	BENNETT, RYAN COLE	Pharmaceutical Sciences (UT)
2014	*KALIKI, SRIMAHITHA	Biomedical Engineering (UT)
2015	*DU, JU	Pharmaceutical Sciences (UT)
2015	*DU, PING	Pharmaceutical Sciences (UT)
2015	IBRAHIM, YOUSSEF W.	Pharmaceutical Sciences (UT)
2015	*HERPIN, MATTHEW JOSEPH	Pharmaceutical Sciences (UT)
2016	LAFOUNTAIN, JUSTIN SCOTT	Pharmaceutical Sciences (UT)
2016	PRASAD, LEENA KUMARI	Pharmaceutical Sciences (UT)
2016	*YAZDI, ASHKAN KHAKPARVAR	Pharmaceutical Sciences (UT)
Pending	ALDAYEL, ABDULAZIZ M.	Pharmaceutical Sciences (UT)
Pending	*BAHAMONDEZ-CANAS, T. F.	Pharmaceutical Sciences (UT)
2017	GADOK, AVINASH KAUR	Biomedical Engineering (UT)
Pending	HASER, ABBE JEANNE	Pharmaceutical Sciences (UT)
Pending	*HEERSEMA, LARA ASHLEY	Biomedical Engineering (UT)
Pending	HUANG, SIYUAN	Pharmaceutical Sciences (UT)
Pending	IMAM, ZACHARY IBRAHIM	Biomedical Engineering (UT)
Pending	KIM, JAE YOU	Biomedical Engineering (UT)
Pending	*LEAL, JASMIM	Pharmaceutical Sciences (UT)

Pending	LIU, XINQUAN	Pharmaceutical Sciences (UT)
Pending	MAINCENT, JULIEN	Pharmaceutical Sciences (UT)
Pending	*MORAGA-ESPINOZA, D. F.	Pharmaceutical Sciences (UT)
Pending	THAKKAR, SACHIN	Pharmaceutical Sciences (UT)
Pending	*WARNKEN, ZACHARY NIELSON	Pharmaceutical Sciences (UT)
Pending	LIU, XU	Pharmaceutical Sciences (UT)
Pending	KOVACH, KRISTIN N.	College of Natural Sciences (UT)

*Masters Thesis Committees*

2008	Michelle Gallegos	Mechanical Engineering, UNM
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**External Examiner for Doctoral Students**

2016	Sumit Arora, “Dry Powder Inhalable formulations of voriconazole for effective pulmonary delivery”, <u>National Institute of Pharmaceutical Education and Research (NIPER),Nagar, Punjab, India.</u>  Jesslyn Ooi, “The Determination Of Physical And Chemical Stability Of Pressurised Metered Dose Inhaler Formulations”, <u>University of Sydney, Australia.</u>
2013	Diana Guzman Villanueva, Facultad de Farmacia, UAEM Cuernavaca, Morelos, Mexico

**Student Awards** (under my direct supervision)

2011	Matthew Herpin, Graduate Student Pharmaceutical Researchers and Manufacturers Association (PhRMA) Foundation, Graduate Student Fellowship in Pharmaceutics (Full Stipend Support, 2 years)
2010	Shayna McGill, Graduate Student Dr. Bill and Jill Williams and Dr. Jim and Kitty McGinity Graduate Fellowship
2009	Shayna McGill, Graduate Student Nominee, Teaching Excellence Award College of Pharmacy, The University of Texas at Austin
2009	Martin Donovan, Graduate Student Nominee, Teaching Excellence Award College of Pharmacy, The University of Texas at Austin
2009	Shayna McGill, Graduate Student Winner of the International Society for Aerosols in Medicine, Biennial Student Research Award
2008	Hongchao Liu, Pharmaceutical Sciences Pharm.D. Research Award University of New Mexico, College of Pharmacy
2007 – 2009	Shayna McGill, Graduate Student



Awarded NSF IGERT fellowship for “Integrating Nanotechnology with Cell Biology and Neuroscience”

2006 – 2009                      Martin Donovan, Graduate Student  
Awarded NSF IGERT scholarship for Nanoscience and Microsystems

## **OUTREACH AND COMMUNITY INVOLVEMENT**

2017                              Eanes Elementary Science Day, Organizer and present of an all day workshop on “Physical Sciences”

2015                              Eanes Elementary Science Day, Organizer and present of an all day workshop on “Chemistry and Physics of Medicines”

2013                              UT SAGE™ (Seminars for Adult Growth and Enrichment) seminar, “Inhaled Pharmaceuticals” at the Thompson Conference Center

## **INVITED PRESENTATIONS**

1. Smyth, HDC “Amorphous or Crystalline? Evaluating Particle Engineering Approaches for Inhalation Products” Respiratory Drug Delivery, Asia. Goa, India, November 8-11, 2016. Invited.
2. Smyth, HDC “Biophysical Barriers in Respiratory Drug Delivery” at Mechanisms and Barriers in Nanomedicine Workshop, Breckenridge, Colorado. July 16, 2016, Invited.
3. Smyth, HDC “Chitosan-Derived Nanoparticle-Mediated CRISPR/Cas9 Delivery” at Cystic Fibrosis Foundation conference: New Technologies Advancing Toward a One-Time Cure. Savannah, GA from June 26 - 30, 2016. Invited.
4. James Hannon, Martin Donovan, Aileen Gibbons, Zhen Xu, Robert Curtis, Hugh Smyth, and Andy Clark, “Novel High Efficiency Inhaler for PDE5i Lung Delivery” Respiratory Drug Delivery 2016, Scottsdale, Arizona. Invited.
5. Smyth, HDC “Engineering Drug Delivery Systems” Department of Cell Biology and Immunology, UNT Health Science Center, University of North Texas, Fort Worth, Texas, December 10 2015. Invited.
6. Smyth, HDC “Engineering Devices and Molecules for Pulmonary Drug Delivery” Texas Tech University, November 2015. Invited
7. Smyth, HDC, “Challenges and Future Prospects for pulmonary delivery of Biologics” Annual Meeting of American Association of Pharmaceutical Sciences, Orlando, FL, 2015
8. Invited Plenary Speaker, International Symposium for Graduate Students in Pharmaceutical Sciences, Guangzhou, China August 2015
9. Smyth HDC, Invited 5 Day Workshop on “Pharmaceutical Engineering of Particulate Systems for Inhalation of Bioactive Molecules”, Universidad Nacional del Sur and The National

Scientific and Technical Research Council (CONICET) of Argentina. Bahia Blanca, Argentina February 2015, included the following individual presentations:

- a. Macro- and Microstructure of the Airways for Drug Delivery
  - b. Pulmonary Drug Metabolism, Clearance, and Absorption
  - c. Engineering and Physics of Aerosol Drug Delivery to the Lung
  - d. Engineering inhaled Drug Delivery Systems to Overcome Lung Clearance Mechanisms
  - e. Science and Technology of Pressurized Metered Dose Inhalers
  - f. Science and Technology of Dry Powder Inhalers
  - g. Science and Technology of Aqueous Based Aerosols for Lung Delivery
  - h. Particle Engineering Technologies for Pulmonary Drug Delivery
  - i. In vitro performance testing for Pulmonary Drug Delivery
  - j. Future Perspectives
10. Smyth, HDC, "Novel Dry Powder Inhaler Devices", CFTR gene repair and oligonucleotide delivery workshop Dec. 2 - 3, 2014 Cystic Fibrosis Foundation, Bethesda, MD.
  11. Smyth, HDC, "Drug Device Combination Products for Pulmonary Drug Delivery", Part of Mini-Symposium on Combination Products, Annual Meeting of American Association of Pharmaceutical Sciences, San Diego, TX, 2014
  12. Smyth, HDC, "Spindrift Therapeutics", Venture Expo, Texas Venture Labs, 2014.
  13. Smyth, HDC, Hugh Smyth, Achieving controlled pulmonary drug delivery, 19<sup>th</sup> International Symposium on Microencapsulation, Pamplona, Spain, Sept 9 -11, 2013.
  14. Smyth HDC, Covert Operations: Designing Controlled Drug Delivery Systems for Inhalation, Annual Meeting of American Association of Pharmaceutical Sciences, Chicago, IL, Oct 2012
  15. Smyth HDC, Excipient Challenges in the Development of Dry Powder Inhalers, AAPS Inhalation and Nasal Technology Focus Group Fall Symposium, Pittsburgh, September 2012.
  16. Smyth HDC, Controlling Respiratory Drug Delivery: dispersion, release, and transport, AAPS Inhalation and Nasal Technology Focus Group, Respiratory Drug Delivery 2012, Scottsdale, AZ
  17. Smyth HDC, Improvements with Inhalation Devices, 3rd Asthma and COPD Conference, IQPC, October 2011, Philadelphia, PA.
  18. Smyth HDC, Drug Delivery to the Lung: Navigating the Obstacle Course, University of Illinois, Chicago, College of Pharmacy, 2011.
  19. Smyth HDC, Overcoming Lung Clearance Mechanisms For Controlled Release Pulmonary Drug Delivery, CRS/AAPS Joint Workshop, AAPS Annual Meeting, 2011
  20. **Smyth HDC**, Widening the lens: Re-evaluating the Influence of Size and Shape of lactose carriers on Aerosol Performance of DPIs, Drug Delivery to the Lung 21, 8th - 10th December 2010, Edinburgh International Conference Centre, Edinburgh, Scotland, UK, Invited
  21. **Smyth HDC**, Designing Aerosol Formulations for Asthma and COPD, 2<sup>nd</sup> Annual Asthma and COPD Conference, June 28-30, 2010, Philadelphia, PA, Invited
  22. **Smyth H**, New Ways of Delivering Drugs to the Lungs University of Texas at Austin, May 2009 Invited

23. **Smyth HDC**, Donovan M, Selvam P, Singh S, McNair D, Truman R, Tunable Dry Powder Inhalers: Future or Folly, Respiratory Drug Delivery, May 2009, Lisbon, Portugal, Invited
24. **Smyth HDC**, Formulation Considerations for Sterile Controlled Release Aerosol Products 44th Annual Pharmaceutical Technologies Arden Conference, American Association of Pharmaceutical Scientists, West Point, NY. February 2009 Invited
25. **Smyth, H**, Gallegos, M, Truman C R, *A Novel Mechanism of Dry Powder Inhaler Dispersion: Optimizing Flow-Induced Flutter*, Respiratory Drug Delivery, Scottsdale, AZ, May 2008 Invited
26. **Smyth HDC**, Nano/Microsystems for Lung Drug Delivery INCBN IGERT Seminar 24<sup>th</sup> September, Center for High Technology Materials, Albuquerque, NM, September 2007 Invited
27. **Smyth HDC**, Sustained Release Pulmonary Drug Delivery Lovelace Respiratory Research Institute, Albuquerque, NM, July 2007 Invited
28. **Smyth HDC**, Pulmonary Drug Delivery Systems Center for High Technology Materials, Science and Technology Park, Albuquerque, NM, Oct 2006 Invited
29. **Smyth HDC**, Inhaled Chemotherapy Cancer Research and Treatment Center, UNM, August 2006 Invited
30. **Smyth HDC**, Sustained Pulmonary Drug Delivery, Drug Delivery Systems, IVT Workshop, San Francisco, September 20-23, 2005 Invited
31. **Smyth HDC**, Pulmonary Drug Delivery: Alternatives to CFC Metered Dose Inhalers University of New Mexico, Albuquerque, NM, Nov 2004 Invited
32. **Smyth HDC**, Particle size analysis and the impact this variable has on formulation development and product performance AAPS North Carolina Pharmaceutical Discussion Group (NCPDG), Durham, Nov 2004 Invited
33. **Smyth HDC**, Lectures on Pharmaceutical Inhalation Aerosol Technology at the PhIAT 2003 course and colloquia, Research Triangle Park, NC September 29-30, 2003 (Metered Dose Inhalers, Physicochemical characterization of aerosols)
34. **Smyth HDC**, Analytical Techniques for Determining Particle Size for Micronization, Barnett Micronizing and Particle Size Reduction Conference, Philadelphia, June 2003 Invited
35. **Smyth HDC**, Mehta, SC, Becket, G, Electrically Assisted Delivery of Proteins and Peptides Across The Skin. Formulation And Drug Delivery Conference, 3rd Annual Conference, Dunedin, New Zealand, February 2000 Invited
36. **Smyth HDC**, Mehta SC, Becket G, The Relationship Between Electroosmotic Flow And Electrical Potential Difference In The Human Epidermal Membrane, Perspectives In Percutaneous Penetration, 7th International Conference, La Grande Motte, France, April 2000, Invited
37. **Smyth HDC**, Mehta, SC, Becket G, Can We Deliver Proteins and Peptides Across The Skin? GlaxoWellcome Inc, Research Triangle Park, NC, October 1999 Invited

#### **PUBLISHED / ISSUED PATENTS**

#### Issued Patents

1. **Apparatuses and methods for microparticle dry coating of surfaces**, Inventors: Parthiban Selvam, Hugh D.C. Smyth, Martin Donovan, United States Patent 8715770
2. **Aerosol-mediated particle synthesis**, Inventors: Hugh D.C. Smyth, Ibrahim M. El-Sherbiny, United States Patent 8652366
3. **Bead-containing dry powder inhaler**, Inventors: Martin J. Donovan, Jacques Pappo, Hugh Smyth, United States Patent 8651104
4. **Swellable particles for drug delivery**, Inventors: Hugh D. Smyth, Martin J. Donovan, United States Patent 8440231
5. **Dry powder inhaler**, Inventors: Martin J. Donovan, Jacques Pappo, Hugh Smyth, United States Patent 8561609
6. **Swellable particles for drug delivery**, Inventors: Hugh D. Smyth, Martin J. Donovan, United States Patent 8257685
7. **Dry powder aerosol generator**, Inventors: Hickey, Anthony J., Smyth, Hugh D. C., Telko, Martin J. United States Patent 8205612
8. **Coated filament for evaporation/condensation aerosol generation of therapeutic agents and methods for using**, Inventors: Hickey, Anthony J., Smyth, Hugh D. C., United States Patent 8165460
9. **Methods of acoustic measurement and control of pharmaceutical sprays**, Inventors: Hickey, Anthony J., Smyth, Hugh D. C., Mitran, Sorin, United States Patent 8156829
10. **Dry powder inhaler with aeroelastic dispersion mechanism**, Inventors: Hugh Smyth, Randall Truman, United States Patent 8127763

#### Patent Applications

1. **SOLID COMPOSITIONS FOR PHARMACEUTICAL USE**, Inventors: Hugh D.C. Smyth, Ibrahim M. El-Sherbiny, United States Patent Application 20140141094
2. **TOROIDAL PHARMACEUTICAL FORMULATIONS**, Inventors: **Hugh D C Smyth, Matthew Herpin, United States Patent Application 20130012893**
3. Dry powder nebulizer, US20130000640, Inventors: Nicola Jeanne Maynard, Hugh D. Smyth.
1. Dry powder inhaler with flutter dispersion member, US 20120234322 A1, Inventors: Parthiban Selvam, Hugh D.C. Smyth, Charles Randall Truman
2. Dry powder inhaler with aeroelastic dispersion mechanism, US 2012/0125331 A1, Inventors: Hugh Smyth, Charles Randall Truman
3. Methods And Systems For Dosing And Coating Inhalation Powders Onto Carrier Systems, US 2012/0207913 A1, Inventors: Hugh D. Smyth, Martin J. Donovan
4. DPI Formulation Containing Sulfoalkyl Ether Cyclodextrin, US 2007/0175472 A1, Inventors: James D. Pipkin, Rupert O. Zimmerer, Anthony J. Hickey, Diane O. Thompson, Hugh D.C. Smyth
5. Formulations Containing Large-Size Carrier Particles For Dry Powder, US 2011/0253140 A1, Inventors: Hugh D.C. Smyth, Martin Donovan
6. Active nanoparticles and method of using, US 2009/0226521 A1, Inventors: Hugh D. Smyth, Marek Osinski, Shayna L. McGill

#### **PUBLICATIONS (\* denotes corresponding author)**

##### A. Original Research Papers

1. Javier O. Morales,, Kristin R. Fathe, Ashlee Brunaugh, Silvia Ferrati, Song Li, Miguel Montenegro-Nicolini, Jason T. McConville, Mark R. Prausnitz, Hugh D.C. Smyth. Challenges and Future Prospects for the Delivery of Biologics: Oral Mucosal, Pulmonary, and Transdermal Routes, AAPS Journal, Accepted.
2. Xin Hua, Wanjiang Zhang, Zhimin Dong, Jiashuo Zhang, Shengnan Tan & Hugh Smyth Magnetically Triggered Drug Release from Nanoparticles and Its Applications in Anti-Tumor Treatment, Drug Delivery, Accepted, DOI:10.1080/10717544.2016.1256001
3. Ashkan K. Yazdi, Hugh D.C. Smyth, Implementation of design of experiments approach for the micronization of a drug with a high brittle–ductile transition particle diameter, Drug Development and Industrial Pharmacy, Accepted, Published online: 14 Nov 2016
4. Smyth HD, Heersema LA, Moon C, Watts AB, Williams III RO, Amorphous or Crystalline? Evaluating Particle Engineering Approaches for Inhalation Products, RDD Asia 2016. Volume 1, 2016: 163-176.
5. Nazareth Eliana Ceschan, Verónica Bucalá, María Verónica Ramírez-Rigo, Hugh David Charles Smyth, Impact of feed counterion addition and cyclone type on aerodynamic behavior of alginic-atenolol microparticles produced by spray drying, European Journal of Pharmaceutics and Biopharmaceutics, Volume 109, December 2016, Pages 72-80, ISSN 0939-6411, <http://dx.doi.org/10.1016/j.ejpb.2016.09.020>.
6. Avinash K Gadok, David J Busch, Silvia Ferrati, Brian Li, H.D.C. Smyth, and Jeanne C Stachowiak, □Connectosomes for Direct Molecular Delivery to the Cellular Cytoplasm□ *Journal of the American Chemical Society*, Accepted, September 2016 □DOI: 10.1021/jacs.6b05191
7. Ping Du<sup>1,2</sup>, Ju Du<sup>1,2</sup>, Hugh D. C. Smyth<sup>1\*</sup> Evaluation of Granulated Lactose as a Carrier for Dry Powder Inhaler (DPI) Formulations 2: Effect of Drugs and Drug Loading, Journal of Pharmaceutical Sciences, Accepted. August 31, 2016
8. Francesca Buttini<sup>1,2</sup>, James Hannon<sup>3</sup>, Kristi Saavedra<sup>3</sup>, Irene Rossi<sup>1</sup>, Anna Giulia Balducci<sup>1,a</sup>, Hugh Smyth<sup>3,4</sup>, Andy Clark<sup>3,5</sup>, Paolo Colombo<sup>1\*</sup> "Accessorized DPI: a shortcut towards flexibility and patient adaptability in dry powder inhalation," Pharmaceutical Research. Accepted, August 16, 2016
9. Zachary N. Warnken, Hugh D.C. Smyth, Alan B. Watts, Steve Weitman, John G. Kuhn, Robert O. Williams III, Formulation and device design to increase nose to brain drug delivery, Journal of Drug Delivery Science and Technology, Volume 35, October 2016, Pages 213-222, ISSN 1773-2247, <http://dx.doi.org/10.1016/j.jddst.2016.05.003>.
10. H. M. H. N. Bandara, M. J. Herpin, D. Kolacny, Jr., A. Harb, D. Romanovicz, and **H. D. C. Smyth**, Incorporation of Farnesol Significantly Increases the Efficacy of Liposomal Ciprofloxacin against *Pseudomonas aeruginosa* Biofilms in Vitro *Molecular Pharmaceutics* Article ASAP, DOI: 10.1021/acs.molpharmaceut.6b00360
11. J Kaushik KS, Stolhandske J, Shindell O, **Smyth HDC**, Gordon VD (2016) Tobramycin and bicarbonate synergise to kill planktonic *Pseudomonas aeruginosa*, but antagonize to promote biofilm survival. *Biofilms and Microbiomes*. 2: 16006.

12. Justin S. LaFountaine, Kristin Fathe, **Hugh D.C. Smyth**, Delivery and therapeutic applications of gene editing technologies ZFNs, TALENs, and CRISPR/Cas9, *International Journal of Pharmaceutics* 494(1): 180-194.
13. Ashkan K. Yazdi, Hugh D.C. Smyth, Carrier-free high-dose dry powder inhaler formulation of ibuprofen: Physicochemical characterization and in vitro aerodynamic performance, *International Journal of Pharmaceutics*, Available online 24 June 2016, ISSN 0378-5173, <http://dx.doi.org/10.1016/j.ijpharm.2016.06.061>.
14. Fathe, Kristin; Ferrati, Silvia; Moraga-Espinoza, Daniel; Yazdi, Ashkan; D.C. Smyth, Hugh, Inhaled Biologics: From Preclinical to Product Approval, *Current Pharmaceutical Design*, Volume 22, Number 17, May 2016, pp. 2501-2521(21)
15. Leena Kumari Prasad , Hugh Smyth, 3D Printing technologies for drug delivery: a review, *Drug Development and Industrial Pharmacy*, Vol. 42, Iss. 7, 2016
16. Ashkan K. Yazdi, Hugh D.C. Smyth, Hollow crystalline straws of diclofenac for high-dose and carrier-free dry powder inhaler formulations, *International Journal of Pharmaceutics*, Volume 502, Issues 1–2, 11 April 2016, Pages 170-180, ISSN 0378-5173, <http://dx.doi.org/10.1016/j.ijpharm.2016.02.030>.
17. Thakkar SG, Fathe K, **Smyth HD**. Amorphous or crystalline? A comparison of particle engineering methods and selection. *Curr Pharm Des*. 2015 Oct . PMID: 26446464.
18. H.M.H.N. Bandara , D. Nguyen , S. Mogarala , M. Osifski , **H.D.C. Smyth**, Magnetic fields suppress *Pseudomonas aeruginosa* biofilms and enhance ciprofloxacin activity, *Biofouling* Vol. 31, Iss. 5, 2015
19. Ju Du, H. M. H. N. Bandara, Ping Du, Hui Huang, Khang Hoang, Dang Nguyen, Sri Vasudha Mogarala, and **Hugh D. C. Smyth**, Improved Biofilm Antimicrobial Activity of Polyethylene Glycol Conjugated Tobramycin Compared to Tobramycin in *Pseudomonas aeruginosa* Biofilms, *Molecular Pharmaceutics* 2015 12 (5), 1544-1553, DOI: 10.1021/mp500846u
20. Leisha M. Armijo ; Priyanka Jain ; Angelina Malagodi ; F. Zuly Fornelli ; Allison Hayat ; Antonio C. Rivera ; Michael French ; **Hugh D. C. Smyth** ; Marek Osifski; Inhibition of bacterial growth by iron oxide nanoparticles with and without attached drug: Have we conquered the antibiotic resistance problem? *Proc. SPIE 9338, Colloidal Nanoparticles for Biomedical Applications X*, 93381Q (March 12, 2015); doi:10.1117/12.2085048.
21. Xin Hua, Shengnan Tan, H. M. H. N. Bandara, Yujie Fu, Siguo Liu mail, **HDC Smyth**, 2014, Externally Controlled Triggered-Release of Drug from PLGA Micro and Nanoparticles, *PLoS ONE* 9(12): e114271. doi:10.1371/journal.pone.0114271
22. Xin Hua, Xiao Peng, Shengnan Tan, Chunying Li, Wei Wang, Meng Luo, Yujie Fu, Yuangang Zu, Hugh Smyth, In Vitro Oxidative Metabolism Of Cajaninstilbene Acid By Human Liver Microsomes and Hepatocytes: Involvement Of Cytochrome P450 Reaction Phenotyping, Inhibition And Induction Studies. *Journal of Agricultural and Food Chemistry* 10/2014; 62(43). DOI:10.1021/jf501635a
23. H. M. H. N. Bandara, A. Harb, D. Kolacny Jr., P. Martins, H. D. C. Smyth, Sound Waves Effectively Assist Tobramycin in Elimination of *Pseudomonas aeruginosa* Biofilms In vitro, *AAPS PharmSciTech*, 2014, 15(6), 1644-1654 DOI: 10.1208/s12249-014-0200-1



24. Diana Guzman-Villanueva, Ibrahim M El-Sherbiny, Alexander V Vlassov, Dea Herrera-Ruiz, Hugh DC Smyth, Enhanced cellular uptake and gene silencing activity of siRNA molecules mediated by chitosan-derivative nanocomplexes, *International Journal of Pharmaceutics*, Vol 473, 1 October 2014, Pages 579–590
25. Du J, El-Sherbiny IM, Smyth HD. Swellable Ciprofloxacin-Loaded Nano-in-Micro Hydrogel Particles for Local Lung Drug Delivery. *AAPS PharmSciTech*. 2014;15(6):1535-1544. doi:10.1208/s12249-014-0176-x.
26. Du, Ping, Du, Ju, Smyth, Evaluation of Granulated Lactose as a Carrier for DPI Formulations 1: Effect of Granule Size, *AAPS PharmSciTech*, Published online: 25 June 2014
27. Leisha M. Armijo ; Michael Kopciuch ; Zuzia Olszówka ; Stephen J. Wawrzyniec ; Antonio C. Rivera ; John B. Plumley ; Nathaniel C. Cook ; Yekaterina I. Brandt ; Dale L. Huber ; Gennady A. Smolyakov ; Natalie L. Adolphi ; Hugh D. C. Smyth ; Marek Osiński, Delivery of tobramycin coupled to iron oxide nanoparticles across the biofilm of mucoidal *Pseudomonas aeruginosa* and investigation of its efficacy, *Proc. SPIE, Colloidal Nanoparticles for Biomedical Applications IX, 2014*, doi:10.1117/12.2043340
28. IY Saleem, HDC Smyth, Tuning Aerosol Particle Size Distribution of Metered Dose Inhalers Using Cosolvents and Surfactants, *BioMed Research International*, Volume 2013 (2013), Article ID 574310, 7 pages, <http://dx.doi.org/10.1155/2013/574310>
29. Ju Du, Ping Du & Hugh DC Smyth, Hydrogels for controlled pulmonary delivery, *Therapeutic Delivery* October 2013 ,Vol. 4, No. 10, Pages 1293-1305 , DOI 10.4155/tde.13.90
30. D Guzman-Villanueva, IM El-Sherbiny, D Herrera-Ruiz, HDC Smyth, Design and In Vitro Evaluation of a New Nano-Microparticulate System for Enhanced Aqueous-Phase Solubility of Curcumin, *BioMed Research International*, Volume 2013 (2013), Article ID 724763, 9 pages <http://dx.doi.org/10.1155/2013/724763>
31. Patrick J. Wayne, Peter Vorobieff, Hugh Smyth, Tennille Bernard, Clint Corbin, Andy Maloney, Joseph Conroy, Ross White, Michael Anderson, Sanjay Kumar, C. Randall Truman, Deepti Srivastava, Shock-Driven Particle Transport Off Smooth and Rough Surfaces, *Journal of Fluids Engineering*, (2013) Vol 135, number 6, Article 061302.
32. Leisha M. Armijo ; Brian A. Akins ; John B. Plumley ; Antonio C. Rivera ; Nathan J. Withers ; Nathaniel C. Cook ; Gennady A. Smolyakov ; Dale L. Huber ; Hugh D. C. Smyth and Marek Osiński (2013) Highly efficient multifunctional MnSe/ZnSeS quantum dots for biomedical applications ", *Proc. SPIE, 8595, Colloidal Nanocrystals for Biomedical Applications VIII*, 859517; doi:10.1117/12.2009563
33. Yekaterina I. Brandt ; Leisha M. Armijo ; Antonio C. Rivera ; John B. Plumley ; Nathaniel C. Cook ; Gennady A. Smolyakov ; Hugh D. C. Smyth and Marek Osiński, (2013) Effectiveness of tobramycin conjugated to iron oxide nanoparticles in treating infection in cystic fibrosis ", *Proc. SPIE, 8595, Colloidal Nanocrystals for Biomedical Applications VIII*, 85951C (February 22, 2013); doi:10.1117/12.2009549
34. Guzman-Villanueva D., El-Sherbiny IM, Herrera-Ruiz D, Vlassov AV, Smyth HDC,\* (2012) Formulation approaches to short interfering RNA and MicroRNA: Challenges and implications, *Journal of Pharmaceutical Sciences*, 101(11), pages 4046–4066, DOI: 10.1002/jps.23300

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36. Armijo, L.M.; Brandt, Y.I.; Mathew, D.; Yadav, S.; Maestas, S.; Rivera, A.C.; Cook, N.C.; Withers, N.J.; Smolyakov, G.A.; Adolphi, N.; Monson, T.C.; Huber, D.L.; Smyth, H.D.C.; Osiński, M. (2012) Iron Oxide Nanocrystals for Magnetic Hyperthermia Applications. *Nanomaterials* 2, 134-146.
37. Donovan MJ\*, Kim S, Raman V, and Smyth, HD (2012), Dry Powder Inhaler Device Influence on Carrier Particle Performance, *Journal of Pharmaceutical Sciences*, Vol. 101 (3) pp. 1097 – 1107
38. El-Sherbiny, IM, Smyth HDC, Controlled Release Pulmonary Administration of Curcumin Using Swellable Biocompatible Microparticles, *Molecular Pharmaceutics* **2012** 9 (2), 269-280, DOI: 10.1021/mp200351y
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60. Hunter Z, **Smyth, HDC**, Durfee P, Chackerian B\* (2009) Induction Of Mucosal And Systemic Antibody Responses Against The HIV Coreceptor CCR5 Upon Intramuscular Immunization And Aerosol Delivery Of A Virus-Like Particle Based Vaccine, *Vaccine*, 28(2), 403-414

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A. Conference Abstracts

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