

11/17/2025

## **Curriculum Vitae**

STEPHEN B. LIGGETT, M.D.  
Vice Dean for Research, Morsani College of Medicine  
Senior Associate Vice President for Research, USF Health  
Distinguished University Health Professor  
Professor of Medicine, Molecular Pharmacology and Physiology, and Medical Engineering  
University of South Florida

### **Personal Information**

USF Health, Morsani College of Medicine  
560 Channelside Dr, MDD 712  
Tampa, FL 33602  
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### **Education**

Georgia Institute of Technology, Atlanta GA	B.S. Physics	1973-1977
University of Miami School of Medicine, Miami, FL	M.D.	1978-1982

### **Training**

Intern and Resident in Internal Medicine Barnes Hospital and Washington University School of Medicine, St. Louis, MO	1982-1985
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Fellow, Pulmonary Diseases and Critical Care Medicine Washington University School of Medicine, St. Louis, MO Laboratory of Philip Cryer	1985-1988
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Research Fellow, laboratory of Robert J. Lefkowitz (2012 Nobel Prize in Chemistry) Howard Hughes Medical Institute and Duke University Medical Center, Durham, NC	1988-1991
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Sabbatical, molecular modeling laboratory of William Goddard, III California Institute of Technology Pasadena, CA	2019
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### **Certification**

American Board of Internal Medicine, #105999, 9/11/1985  
American Board of Internal Medicine, Pulmonary Diseases, #105999, 11/6/1990-11/5/2000

### **Medical License (active)**

Florida, #ME114562

## **Employment History**

### **Academic and Major Leadership Appointments**

#### **Duke University School of Medicine**

Assistant Professor of Medicine	1990-1992
Assistant Professor of Pharmacology	1990-1992

#### **University of Cincinnati College of Medicine**

Associate Professor of Medicine (with tenure)	1992-1995
Director, Pulmonary & Critical Care Medicine	1992-2003
Associate Professor of Pharmacology and Cell Biophysics	1992-1995
Associate Professor of Molecular Genetics & Biochemistry	1992-1995
Professor of Medicine	1995-2005
Professor of Pharmacology and Cell Biophysics	1995-2005
Professor of Molecular Genetics & Biochemistry	1995-2005
Distinguished University Research Professor	2001-2012
Gordon and Helen Hughes Taylor Professor of Medicine Endowed Chair	2003-2005
Director, Cardiopulmonary Research Center	2003-2005

#### **University of Maryland School of Medicine**

Professor of Medicine and Physiology	2005-2012
Director, Cardiopulmonary Genomics Program	2005-2012
Chief, Medical and Scientific Affairs, UM Institute for Clinical and Translational Sciences	2009-2012
Associate Dean for Interdisciplinary Research	2009-2012
Professor of Medicine (adjunct)	2012-

#### **University of South Florida Morsani College of Medicine**

Associate Vice President for Research, USF Health	2016-2024
Vice Dean for Research	2012-
Director, Office of Research (basic, translation, clinical)	2012-
Professor of Internal Medicine (Primary)	2012-
Professor of Molecular Pharmacology & Physiology	2012-
Professor of Medical Engineering	2017-
Co-Director, Center for Drug Discovery & Innovation	2018-
Institute Faculty, Institute for Advanced Discovery & Innovation	2018-
Founding Faculty of Medical Engineering	2018-
Director, USF Health Heart Institute	2021-
Senior Associate Vice President for Research, USF Health	2024-

### **Hospital Appointments**

Barnes Hospital, St. Louis, MO	1987-1988
Duke University Hospitals, Durham, NC	1988-1992
University Hospital, Cincinnati, OH	1992-2005
University of Maryland Medical System, Baltimore, MD	2005-2012
VA Maryland Health Care System, Baltimore, MD	2006-2012

### **Professional Memberships**

American Thoracic Society	1986
American College of Chest Physicians (Fellow)	1993
American Society for Biochemistry and Molecular Biology	1993
American Society for Pharmacology and Experimental Therapeutics	1993
American Society for Clinical Investigation	1994
American Heart Association	1996
American Association of Physicians	2000
Heart Failure Society of America	2005
American Association for the Advancement of Science (Member)	1991
National Academy of Inventors (elected Fellow)	2013
American Association for the Advancement of Science (elected Fellow)	2014

American Institute for Medical and Biological Engineering (elected Fellow)	2018
Academy of Science, Engineering, and Medicine of Florida (elected Fellow)	2025

### **Honors/Awards**

Magnum Cum Laude - Physics - Georgia Institute of Technology	1977
Alpha Omega Alpha, University of Miami School of Medicine	1982
American Society for Clinical Investigation	1994
University of Cincinnati Faculty Achievement Award	1995
American Academy of Asthma, Allergy and Immunology	
Philip S. Norman Lectureship Award	1997
Federation of American Society of Experimental Biology	1998
Welcome Professorship	
American Association of Physicians	2000
Ronald Ingram Award, Emory University	2001
Distinguished University Research Professor	2001
NIH Merit Award	2002
Frontiers in Pharmacology Award, Case Western Reserve	2004
Interurban Clinical Club	2007
Johnson McGuire Visiting Professor Lectureship, University of Cincinnati	2008
Excellence in Science Award, Thomas Jefferson University	2008
16 <sup>th</sup> Annual Roy H. Behnke Distinguished Lectureship, USF Health	2012
National Academy of Inventors (Fellow)	2013
American Association for the Advancement of Science (elected Fellow)	2014
University of South Florida Outstanding Faculty Award	2015
USF Institute for Advanced Study and Innovation	2015
Robert A. Good Honor Society	2017
Biomedical Research Exemplar Award, Washington University School of Medicine	2017
Faculty Outstanding Research Achievement Award	2017
American Institute for Medical and Biological Engineering (elected Fellow)	2018
University of Miami Miller School of Medicine Alumni Hall of Fame (Inductee)	2018
University of South Florida Outstanding Faculty Award	2019
Distinguished University Health Professor	2022

### **Additional Administrative Appointments**

#### ***University of Cincinnati***

Medical Science Scholars Program (MD/PhD)	1994-2005
Steering Committee	
Policy Committee	
Faculty Participation and Evaluation Committee	
Program Committee	
Research Committee, Department of Medicine	1992
Graduate Education Comm. - Dept. of Pharmacology	1992-1995
Student Research Committee	1992
Search Committee, Environmental Health Chairman	1993-1994
Space Utilization Committee - Department of Medicine	1994
Mission and Organization of Basic Science Departments	1994
Graduate Student Admissions & Program Committee	1995-1996
Department of Molecular Genetics, Biochemistry & Microbiology	
Pathobiology & Molecular Medicine Graduate Program Committee	1995-1996
DNA Sequencing Core Advisory Committee	1995-2005
Millennium Committee	2003-2005
Medical Student Grievance Committee (Chair)	2003-2004
Chair Search Committee, Department of Medicine	2003-2004
Standing Committee on Conflicts of Interest (Co-Chair)	2004-2005
Department of Medicine Space Committee (Chair)	2004-2005

Scientific Advisory Committee – Computational Medical Center	2004-2005
Financial Operational Committee – Computational Medical Center	2004-2005
Chair Search Committee, Cardiology	2004-2005

#### ***University of Maryland, Baltimore***

Executive Steering Committee – Program in Human Genetics	2005-2012
Multidisciplinary Advisory Council – Institutional NIH K-12 Grant	2005-2012
School of Medicine, Faculty Council Representative	2006-2008
Small Animal Physiology Core Advisory Committee	2006-2011
Medical Scientists Training Program (MD/PhD program)	2007-2011
Advisory Committee	
Medical Scientists Training Program (MD/PhD program)	2007-2011
Admissions Committee	
Associate Dean for Interdisciplinary Research -	2009-2012
Director of multiple committees and initiatives	
Medical Student Admissions Committee Interviewer	2011-2012
Director, Physician Scientist Program, Department of Medicine	2011-2012
Advisory Board, Center for Biomolecular Therapeutics	2011-2012

#### ***University of South Florida, Tampa***

Chair, Executive Management Committee-Research	2012-
Programming Development Committee	2012-
Financial Oversight Committee	2012-
Center for Drug Discovery and Innovation Oversight Committee	2012-
Research and Space Committee	2012-
USF Health Space Committee	2012-
Economic Development Corporation Life Sciences Task Force	2012-
Board of Directors, USF Health Heart Research Institute	2013-
Department of Medical Engineering Founder and Advisory Board member	2017-
Internal Advisory Board Member, Office of Corporate Partnerships	2018-
USF Health Care Executive Management Committee (voting member)	2018-
University Medical Services Association (MSSC) (voting member)	2018-
Medical Services Support Corporation (voting member)	2018-

#### **Start-up Companies and External Advisory Boards**

Genaissance Pharmaceuticals – Scientific Advisory Board	1999-2004
Genaissance Pharmaceuticals – Executive Medical Advisor	1999-2004
Marshfield Clinic Personalized Medicine – External Scientific Advisory Board	1999-2003
Orchid Biocomputer, Inc. – Medical Advisory Board (Founding Member)	1999-2002
Orchid Biocomputer – Clinical Genetics Network (founder)	1999-2002
Merck Research Laboratories – Pharmacogenomics Scientific Advisory Board	2002-2010
ARCA biopharma, Inc. – Scientific Founder	2005
ARCA biopharma, Inc. – Scientific Advisory Board	2005-
Molekule Medical Advisory Board	2017-
Aeon Respire, Inc. – Scientific Advisory Board	2019-
Amoro Therapeutics, Inc. – Scientific Advisory Board	2020-

#### **Editorial Boards/Study Sections/Committees**

##### ***Editorial Boards***

Journal of Biological Chemistry	1998-2003
Am J Respir Cell & Mol Biol	1994-
Am J Resp Cell & Mol Biol (Associate Editor)	1998-2003
Am J Physiol: Lung Cell and Molecular Physiology	1995-2003
Molecular Pharmacology	1997-
Pharmacogenetics and Genomics	2000-

Circulation	2003-2006
Molecular Diagnosis & Therapy	2006-
Clinical Medicine: Respiratory and Pulmonary Medicine	2007-
Clinical and Translational Science	2007-
Circulation: Cardiovascular Genetics	2008-
Journal of Personalized Medicine	2010-2021
Am J Physiol: Heart and Circulatory Physiology	2010-2012
Journal of Personalized Medicine (Editor-in-Chief)	2014-2021

### ***Study Sections/NIH Service***

Immunology and Lung Study Sections - NIH (Ad Hoc)	
Multiple NIH Program Project and SCOR Review Committees - NHLBI, NIAID	
VA Merit Review	
American Heart Association (National)	
American Lung Association (State, Chair)	1996-1997
NHLBI Working Group "Deterrents of Drug Therapies in Heart Failure"	2002
NHLBI Sarcoidosis Working Group	2002
NHLBI Working Group "Polymorphisms of the Beta-adrenergic Receptor Gene: Implications for Pharmacotherapy of Asthma"	2003
NHLBI Working Group "Strategic Directions in Congestive Heart Failure"	2003
NHLBI Lung Division Strategic Planning Workshop Group	2006
"Integrative Approaches to Pathogenetic Research"	
Co-Chair, NHLBI Lung Microbiome Workshop	2007
Chair, Molecular Mechanism Working Group,	2007
Pharmacogenetic Research Network, NIH	
NIH Working Group, Human Microbiome Project	2008

### ***Other National Committees***

Personalized Medicine Coalition (writing committee)	2008-
AAMC GRAND	2011-
(Group on Research Advancement and Development Representative)	
Institutional Representative, American Association for Clinical Research.	2019-

### ***American Lung Association***

Federal Lung Committee	1992-1993
Scientific Advisory Council	1993
Publications Committee	1994-1996
Cell & Molecular Biology Program Committee	1994
Allergy, Immunology & Inflammation Program Committee	1996
Research Committee (Chair, Ohio Affiliate)	1994
Search Committee for Editor, AJRCMB (Chair)	1996
Assembly on Allergy, Immunology & Inflammation	1997-1998
Long Range Planning Committee	

### ***Public Service***

Volunteer physician for mobile hospital for Mayan Indians in Guatemala	2009-
WEDU Community Advisory Board Member	2023-

## Basic Science Mentoring

TRAINEES				
Name	Mentoring Role	Dates	Terminal Degree(s)	Current Position
Huff, Robin	PhD thesis advisor	1991-1994	PhD Duke University	National Institutes of Health, Bethesda, MD
Mulheron, Janet	MS thesis advisor	1991-1992	MS/94 Duke University	Research Associate, Ciba-Geigy
Thomas, R.	Postdoctoral Fellow	1991-1993	PhD University of Miami	Assistant Professor, Dept. of Pediatric Pulmonary Med, Duke University
Green, Stuart	Postdoctoral Fellow	1991-2000	MD University of Tennessee	Vice President, Respiratory and Immunology, Merck Research Laboratories, Kenilworth, NJ
Eason, Margaret	PhD thesis advisor and Postdoctoral Fellow	1991-1996	PhD Duke University	Forensics Laboratory, Federal Bureau of Investigation, Washington, DC
Turki, Jamal	Postdoctoral Fellow	1993-1996	MBBS Jordan University	Faculty member, Jordan University, Amman, Jordan
Jewell-Motz, Elizabeth	Postdoctoral Fellow	1993-1999	PhD University of Cincinnati	Research Scientist Proctor & Gamble Pharmaceuticals
Sawaya, Patricia	Postdoctoral Fellow	1993-1996	PhD University of Cincinnati	Deceased August 1996
Moore, Don	Postdoctoral Fellow	1995-1997	MD University of Kentucky	Assistant Professor University of Kentucky
McGraw, Dennis	Postdoctoral Fellow	1995-1997	MD University of Mississippi	Associate Professor Pulmonary & Critical Care Medicine University of Cincinnati
Nath, Amaresh	Postdoctoral Fellow	1995-1998	MD LTM Medical College, Bombay, India	Assistant Professor Pulmonary & Critical Care Medicine University of Cincinnati
Liang, Mary	PhD thesis advisor	1995-2002	MD Beijing Medical University; PhD University of Cincinnati	Staff Pathologist, Orlando Regional Medical Center
Small, Kersten	Postdoctoral Fellow	1994-1997	PhD University of Cincinnati	Research Group Leader, Merck Research Laboratories, Rahway, NJ
Rathz, Deborah	PhD thesis advisor	1996-2002	PhD, MD University of Cincinnati	Staff Physician, Pulmonary & Critical Care Medicine, Cleveland Clinic
Tepe, Nicole	PhD thesis advisor	1996-2000	PhD University of Cincinnati	Patent Attorney, Frost Brown Todd LLC, Cincinnati, OH
Dash, Rajesh	PhD thesis committee	1997-2001	PhD, MD University of Cincinnati	Residency Program, University of Washington
Fortner, Christopher	PhD thesis committee	1997-2001	PhD, MD University of Cincinnati	Residency Program, Duke University
Gardner, Alicia	PhD thesis committee	1998-2003	PhD University of Cincinnati	Technical Service Scientist, Qiagen, Inc., Valencia, CA
Rubio, Marta	PhD thesis committee	2001-2005	PharmD Universidad del Pas Vasco, Vitoria, Spain	Technical Support Scientist, Invitrogen, Carlsbad, CA
Gregory, Kimberly	PhD thesis committee	2001-2005	BS/99 Vanderbilt University	Senior Medical Writer, Access Medical Group, Chicago, IL
Perez, Jeanne Miallet	Postdoctoral Fellow	2002-2004	PhD University of Science, Paris XI, France	INSERM U388, Institute Louis Bugnard, Toulouse, France
Almoosa, Khalid	Postdoctoral Fellow	2002-2004	MB Royal College of Surgeons, Ireland	Associate Professor, Pulmonary & Critical Care Medicine University of Texas, Houston, TX
Elwing, Jean	Postdoctoral Fellow	2003-2005	MD St. Louis University	Assistant Professor, Pulmonary & Critical Care Medicine University of Cincinnati
Fogel, Kevin	Postdoctoral Fellow	2004-2006	MD University of Cincinnati	Clinical Instructor, Pulmonary & Critical Care Medicine, University of Cincinnati
Stropes, Melissa	PhD thesis committee	2004-2009	PhD University of Cincinnati	Fellow, Clinical Molecular Genetics, Cincinnati Children's Hospital Medical Center

## Basic Science Mentoring (Cont.)

TRAINEES				
Name	Mentoring Role	Dates	Terminal Degree(s)	Current Position
Panebra, Alfredo	Postdoctoral Fellow	2005-2010	PhD University of Buenos Aires, Argentina	Fellow, Cardiopulmonary Genomics Program, University of Maryland
Swift, Steven	Postdoctoral Fellow	2005-2007	PhD University of Maryland Baltimore County	Institute of Bioscience and Biotechnology Research, Rockville, MD
Wang, Wayne	Postdoctoral Fellow	2005-2009	PhD Penn State University, State College, PA	Assistant Professor, Cardiopulmonary Genomics Program, University of Maryland
Tokarsky Fistler, Christa	Postdoctoral Fellow	2006-2007	MD Jefferson Medical College	Physician, Upper Chesapeake Health Center, Bel Air, MD
Rathe, Jennifer	PhD thesis Advisor	2006-2010	PhD University of Iowa	Medical Residency Program, Columbia University, New York
McIlmoyle, Elizabeth	Postdoctoral Fellow	2008-2010	MD Temple University	Sleep Specialist Physician, Baltimore Washington Medical Center, Glen Burnie, MD
Rogers, Hobart	PhD thesis committee	2008-2010	PharmD University of Maryland	Food and Drug Administration, Silver Spring, MD
Robinet, Kathryn	Postdoctoral Fellow	2009-2011	MD University of Maryland	Assistant Professor, Pulmonary and Critical Care Medicine, University of Maryland
Shoop, Laura	MS thesis advisor	2009-2013	MS University of Maryland	GeneDx, Inc., Gaithersburg, MD
Silhan, Leann	Postdoctoral Fellow	2011-2012	MD UT Southwestern	Instructor, Pulmonary and Critical Care Medicine, John Hopkins School of Medicine
Gray, Geoffrey	PhD thesis committee	2015-2018	PhD University of South Florida	University of South Florida
Kim, Donghwa	Research Associate	2014-2015	PhD Kangwon National University	Assistant Professor, University of South Florida, College of Medicine, Tampa, FL
Woo, Jung A.	Chair - Comprehensive Qualifying Examination	2014	PhD University of South Florida	Assistant Professor, Case Western Reserve University, School of Medicine, Cleveland, OH
Woo, Jung A.	Postdoctoral Fellow	2016-2018	PhD University of South Florida	Assistant Professor, Case Western Reserve University, School of Medicine, Cleveland, OH
Beidokhti, Maliheh	Postdoctoral Fellow	2020-2021	PhD University of Copenhagen	Postdoctoral Fellow, University of South Florida, College of Medicine, Tampa FL
Castaño, Maria	MS thesis committee chair	2023-2024	MS University of South Florida	Strategic Planning Analyst, Tampa General Hospital, Tampa, FL
Ramge, Melissa	PhD thesis committee	2023-2024	PhD University of South Florida	Clinical Research Associate, Health Informatics Institute, University of South Florida, Tampa, FL
Chambliss, Christopher	Mentor, NIH AAMC MOSAIC (Maximizing Opportunities for Scientific and Academic Independent Careers)	2024-2025	PhD Morehouse School of Medicine	Postdoctoral Researcher Emory University, School of Medicine, Atlanta, GA

## Grant Support

### Active:

Title: Characterization of biased airway smooth muscle TAS2R agonists for treating Asthma

Agency: NIH R01 HL155532-01

PI: S. Liggett (25% effort)

Award Period: 01/01/2021 – 12/31/2025

Total Award: \$2,122,650 (\$1,694,979 direct, \$427,671 indirect)

Title: Targeting T2 inflammation-evoked mechanical endotypes of SAM shortening in asthma  
 Agency: NIH R01 HL164404-01A1  
 PI: S. An (PI), S. Liggett (Co-I, 5% effort)  
 Award Period: 06/25/23 – 03/31/27  
 Total Award: \$29,996 (\$19,997 direct, \$9,999 indirect)

**Completed:**

Title: Airway Smooth Muscle Bitter Taste Receptors as Targets for Novel Bronchodilators  
 Agency: NIH P01 HL114471 (Novel Molecular Mechanisms Promote GPCR-Induced Bronchodilation in Asthma)  
 PI: R. Panettieri (PPG PI), S. Liggett (PI Project 2, 20% effort),  
 Award Period: Project 2: 07/01/2019 – 7/31/2025  
 Total Award: \$11,818,635 (\$10,164,255 direct, \$1,654,380 indirect)  
 Project 2: \$1,869,575 (\$1,250,825 direct, \$618,750 indirect)

Title: Molecular and Signaling Effects of Rare Variants  
 Agency: NIH R01 HL142992 (Effects of Rare Variants and Ancestry on Beta Agonist Response in Asthma and COPD)  
 PI: V. Ortega (PI), S. Liggett (PI Specific Aim 3, 20% effort),  
 Award Period: 02/01/2019 – 12/31/2024  
 Total Award: \$3,797,325 (\$3,043,885 direct, \$753,440 indirect)  
 Specific Aim 3: \$1,273,395 (\$851,770 direct, \$421,625 indirect)

Title: Novel role of  $\beta$ -arrestins in Tauopathy  
 Agency: NIH R01 AG059721  
 PI: J. Woo (PI), S. Liggett (Co-I, 5% effort)  
 Award Period: 05/15/19 – 01/31/24  
 Total Award: \$1,868,750 (\$1,250,000 direct, \$618,750 indirect)

Title: Molecular Properties of  $\beta$ -adrenergic Receptors in Asthma  
 Agency: NIH R01 HL045967  
 PI: S. Liggett  
 Award Period: 09/30/1990 – 06/30/2021  
 Total Award: \$6,477,021

Title: Molecular Properties of  $\beta$ -adrenergic Receptors in Asthma  
 Agency: NIH R56 HL045967  
 PI: S. Liggett  
 Award Period: 09/01/15 – 08/31/16 (rolled into renewal R01)  
 Total Award: \$373,750 (\$250,000 direct, \$123,750 indirect)

Title: Basis of Variability of Lung GPCR Signaling  
 Agency: NIH R01 HL071609  
 PI: S. Liggett  
 Award Period: 09/01/03 – 07/31/16  
 Total Award: \$1,918,750 (\$1,250,000 direct, \$668,750 indirect)

Title: FY2016 Regional Innovation Strategies Program - SEED TAMPA BAY  
 Agency: U.S. Economic Development Administration  
 PI: S. Liggett, S. Wickline, V. Landrio McDevitt.  
 Award Period: 01/01/2017-12/31/2019

Total Award:	\$559,057
Title:	Lung HRV: G-Protein Coupled Signaling Interactions in Asthma
Agency:	NIH R01 HL091490
PI:	S. Liggett
Award Period:	01/01/10 – 12/31/15
Total Award:	\$1,569,042 (\$1,156,542 direct, \$412,500 indirect)
Title:	Molecular Properties of $\beta$ -adrenergic Receptors in Asthma
Agency:	NIH R37 HL045967 (MERIT Award)
PI:	S. Liggett
Award Period:	03/15/02 – 02/28/14
Total Award:	\$2,677,300 (\$1,750,000 direct, \$668,750 indirect)
Title:	Project 1: $\beta_1$ - and $\alpha_{2C}$ -Adrenergic Receptor Polymorphisms in Human Heart Failure
Agency:	NIH – P50 HL77101 SCCOR in Heart Failure
PI:	S. Liggett (Project 1), L. Kranias (Program PI)
Award Period:	01/01/06 – 12/31/10
Total Award:	Project 1: \$1,948,835 (\$1,454,064 direct, \$494,771 indirect)
Title:	$\beta_2$ -adrenergic Pharmacogenetics Project
Agency:	NIH U01 HL65899 (Pharmacogenetics of Asthma Treatment)
PI:	S. Liggett ( $\beta_2$ project), S. Weiss (Program PI)
Award Period:	08/01/05 – 07/31/10
Total Award:	\$1,535,000 (Liggett Project) (\$1,000,000 direct, \$535,000 indirect)
Title:	Genetic-Adrenergic Interactions in Myocardial Failure
Agency:	NIH R01 HL48013-10
PI:	M. Bristow; S. Liggett (Collaborator)
Award Period:	12/01/03 – 11/30/07
Total Award:	Liggett component: \$292,117 (\$190,304 direct, \$101,814 indirect)
Title:	Computational Medicine Center
Agency:	State of Ohio
PI:	S. Liggett (Project 2), T. Boat (Program PI)
Award Period:	03/01/04 – 02/28/06
Total Award:	\$514,111 with \$8,731,000 for capital improvements (no indirect)
Title:	$\beta_2$ -adrenergic Pharmacogenetics Project
Agency:	NIH U01 HL65899 (Pharmacogenetics of Asthma Treatment)
PI:	S. Liggett ( $\beta_2$ project), S. Weiss & S. Liggett (Program Co-PI)
Award Period:	04/01/00 – 07/31/05
Total Award:	Liggett Project: \$1,628,970 (\$1,064,685 direct, \$564,285 indirect)
Title:	Project 2: Mechanisms of $\beta$ -receptor Dysfunction in Heart Failure
Agency:	NIH P01 HL22619 (Molecular Mechanism of Contraction)
PI:	S. Liggett (Project 2), A. Schwartz (Program PI)
Award Period:	07/01/99 – 06/30/05
Total Award:	Project 2: \$1,765,500 (\$1,153,922 direct, \$608,631 indirect)
Title:	Project 2: $\beta$ -adrenergic Receptor Genetics in Heart Failure
Agency:	NIH – P50 HL52318 (SCOR in Heart Failure)
PI:	S. Liggett (Project 2), G. Dorn (Program PI)
Award Period:	01/01/00 – 12/31/04

Total Award:	Project 2: \$1,512,815 (\$1,029,125 direct; \$483,689 indirect)
Title:	Project 2: $\beta$ -adrenergic Receptor Genetics in Heart Failure
Agency:	NIH – P50 HL52318 (SCOR in Heart Failure)
PI:	S. Liggett (Project 2), G. Dorn (Program PI)
Award Period:	02/01/95 – 12/31/99
Total Award:	Project 2: \$1,500,076 (\$1,000,000 direct, \$500,076 indirect)
Title:	Molecular Properties of $\beta$ -adrenergic Receptors in Asthma
Agency:	NIH R01 HL45967
PI:	S. Liggett
Award Period:	04/01/96 – 03/14/02
Total Award:	\$1,009,901 (\$657,789 direct, \$352,112 indirect)
Title:	Molecular Properties of $\beta$ -adrenergic Receptors in Asthma
Agency:	NIH R01 HL45967
PI:	S. Liggett
Award Period:	01/30/90 – 03/31/96
Total Award:	\$776,695
Title:	Cystic Fibrosis Award
Agency:	Caroline Halfter Spahn Trust Genetic Research Fund
PI:	S. Liggett
Award Period:	10/01/99-06/30/01
Total Award:	\$75,000
Title:	Adrenergic Receptor Pharmacogenetics
Agency:	Orchid BioSciences, Inc.
PI:	S. Liggett
Award Period:	02/01/00-01/31/01
Total Award:	\$187,055 (\$136,040 direct, \$51,015 indirect)
Title:	Component 6: Molecular Biology of Cardiopulmonary Adrenergic Receptors
Agency:	NIH P01 HL41496 (Program of Excellence in Mol Biol of Heart and Lung)
PI:	S. Liggett (Component 6), J. Lingrel (Program PI)
Award Period:	12/01/95 – 11/30/00
Total Award:	Component 6: \$930,187 (\$633,395 direct, \$296,792 indirect)
Title:	Mechanisms of $\alpha_2$ -adrenergic Receptor Function
Agency:	NIH – R01 HL53436
PI:	S. Liggett
Award Period:	08/01/95 – 07/31/00
Total Award:	\$992,311 (\$646,458 direct, \$345,853 indirect)
Title:	Molecular Properties of Salmeterol
Agency:	Glaxo
PI:	S. Liggett
Award Period:	04/01/94 – 12/31/95
Total Award:	\$250,000 (\$200,000 direct, \$50,000 indirect)
Title:	Pharmacologic Properties of Alpha Adrenergic Receptors
Agency:	Procter & Gamble
PI:	S. Liggett
Award Period:	07/01/92 – 06/30/94
Total Award:	\$544,161 (\$453,468 direct, \$90,693 indirect)

Title: Molecular Basis of Adrenergic Receptor Function  
Agency: K11 HL002386  
PI: S. Liggett  
Award Period: 07/01/89 – 06/30/91 (relinquished due to obtaining R01)

### **Clinical Trials**

Name:  $\beta_2$ -adrenergic receptors on resident lung cells pre/post  $\beta$ -agonist  
Sponsor: NIH, HL045967  
Role: PI

Name: Effects of  $\beta_2$ -adrenergic receptor polymorphisms exercise in human heart failure  
Sponsor: NIH, HL52318  
Role: Study PI

Name: Association studies of  $\alpha_2$ - and  $\beta_1$ -adrenergic receptors in human heart failure  
Sponsor: NIH, HL77101  
Role: Study PI

Name: Dobutamine responses in heart failure patients with  $\beta_1$ -adrenergic receptor polymorphisms  
Sponsor: NIH, HL77101  
Role: Co-PI

Name: Beta-blocker Evaluation of Survival Trial (BEST) Genetic Substudy  
Sponsor: Veterans Administration and NIH HL48013, HL77101  
Role: National Co-PI

Name: Adrenergic receptor genotypes and the response to carvedilol and metoprolol in heart failure  
Sponsor: CardioDx (Palo Alto, CA)  
Role: Design, analysis, and writing committee

Name: GWAS of asthma in the United Arab Emirates  
Sponsor: Motif BioSciences  
Role: Co-PI

Name: Complete Genome Sequencing of Human Rhinovirus from respiratory secretions  
Sponsor: NIH HL091490  
Role: PI

### **Patents, Inventions and Copyrights**

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|--|-----------------------|
| 1. Beta Adrenergic Receptor Polymorphisms  | issued (US 6,498,009) |
| 2. Association of Beta-2-adrenergic Receptor Haplotypes with Drug Response                                   | issued (US 6,586,183) |
| 3. Variation in Drug Response Related to Polymorphisms in Beta-2-adrenergic Receptor (Ile164)                | issued (US 6,797,472) |
| 4. Variation in Drug Response Related to Polymorphisms in the Beta-2-adrenergic receptor (5' leader cistron) | issued (US 6,861,217) |
| 5. Histamine-N-Methyltransferase Variants Associated with Histaminergic Disease                              | issued (US 6,316,188) |
| 6. Alpha-2 adrenergic Receptor Polymorphisms   | issued (US 7,041,810) |
| 7. Alpha-2A-adrenergic Receptor Polymorphisms  | issued (US 7,211,386) |
| 8. Alpha-2B-adrenergic Receptor Polymorphisms  | issued (US 7,229,756) |

9. Methods for Predicting Relative Efficacy of a Beta Blocker Therapy Based on $\beta_1$ -adrenergic Receptor Polymorphism	issued (US 7,449,292)
10. Alpha-2-adrenergic Receptor Polymorphisms	issued (US 7,572,603)
11. Heart Failure Assessment Based on Alpha-2C Adrenergic Receptor Polymorphisms	issued (US 7,642,052)
12. Methods for Treatment with Bucindolol Based on Genetic Targeting	issued (US 7,678,824)
13. Pharmaceutical and Therapeutic Applications Relating to a Type 9 Adenylyl Cyclase Polymorphism in Asthma and Reversible Bronchial Obstruction	issued (US 8,071,287)
14. Methods for Treatment with Bucindolol Based on Genetic Targeting	issued (US 8,080,578)
15. Methods for Treatment with Bucindolol Based on Genetic Targeting	issued (US 8,093,286)
16. A G-Protein Coupled Receptor Kinase-5 Polymorphism Alters Heart Failure Progression	issued (US 8,530,160)
17. A Functional Polymorphism of the $G\alpha_q$ (GNAQ) Gene is Associated with Accelerated Mortality in African-American Heart Failure	submitted, action pending
18. Methods for Treatment with Bucindolol Based on Genetic Targeting	issued (US 8,916,603)
19. Methods of Treating Obstructive Lung Diseases Using Bitter Tastants	issued (US 9,579,315)
20. Compositions and methods to reduce beta-agonist-mediated tachyphylaxis	issued (US 10,927,375)
21. Inhibition of beta-arrestin oligomerization in Tauopathy	issued (US 11,896,644)
22. Novel Bronchodilators for Treating Obstructive Lung Disease	issued, (US 12,257,248)
23. Biased adrenergic agonists	issued (US 12,024,502)

#### **Patents Pending**

1. A biased beta-2 agonist bronchodilator	submitted, action pending
2. Methods and compositions involving bucindolol for the treatment of heart	
3. disease	submitted, action pending
4. $\beta_1$ -adrenergic Receptor Polymorphisms Predict Response	
5. to Carvedilol in Heart Failure	submitted, action pending
6. Polymorphisms and Haplotypes of the $\alpha_{2C}$ -adrenergic Receptor Gene	submitted, action pending
7. Genetic Variation Within the $\beta_1$ -adrenergic receptor Gene Results in	
8. Haplotype-Specific Expression Phenotypes	submitted, action pending
9. Inhibition of beta-arrestin1 and beta-arrestin2 oligomerization in tauopathy	submitted, action pending

## **Publications: Impact**

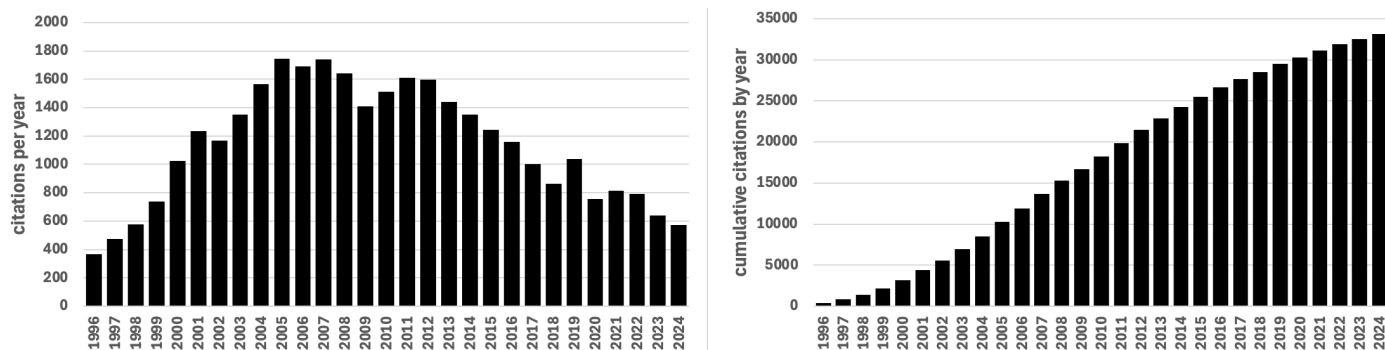
Date: November 17, 2025

### **Google Scholar:**

Total citations = 34,906

h-index = 97

i10-index = 248



Bibliography Profile: <https://www.ncbi.nlm.nih.gov/myncbi/1F1Y5rb4oohAh/bibliography/public/>

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### **Reviews, Books, Book Chapters, other Reviews**

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## **Book Chapters**

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263. Liggett SB, Schuster DP. Acute respiratory failure. In: Manual of Medical Therapeutics, 26th edition, Dunnagen WC, Ridner ML, eds. Boston, MA. Little Brown, 185-202, 1989.
264. Liggett SB, Lefkowitz RJ. Adrenergic receptor-coupled adenylyl cyclase systems. Regulation of receptor function by phosphorylation, sequestration and downregulation. In: Regulation of Cellular Signal Transduction Pathways by Desensitization and Amplification (Sibley D. and Houslay M, eds.) John Wiley & Sons, London, 3:71-97, 1993.
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### **Other Brief Communications**

283. Liggett SB. Polymorphisms of the  $\beta_2$ -adrenergic receptor. New England Journal of Medicine 346(7):536-538, 2002.
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### **Major Invited Presentations (National/International)**

1. Università degli Studi Conference: Cardiac  $\beta$ -adrenergic Receptors in the Normal and Failing Heart, Siena, Italy, 1990. "Molecular Domains involved with  $\beta_1$ - and  $\beta_2$ -adrenergic Receptor Desensitization."
2. American Society of Anesthesiology 1990 National Meeting, Las Vegas, Nevada. "Molecular Mechanisms of  $\beta$ -adrenergic Receptor Desensitization."
3. American Association of Pathologists National Meeting, Atlanta, Georgia, 1991. "Molecular Biology of  $\alpha$ - and  $\beta$ -adrenergic Receptors."
4. Biochemical Society National Meeting, Manchester, UK 1991. "Molecular Determinants for Adrenergic Receptor G-Protein Coupling."
5. American Society for Clinical Investigation 1992 Annual Meeting (Plenary session), Baltimore, Maryland. "Structural Basis for Receptor Subtype Specific Desensitization Revealed by a Chimeric  $\beta_3/\beta_2$ -adrenergic Receptor."
6. Medical Grand Rounds, University of Pittsburgh, Pittsburgh, PA, 1993. "Acquired and Genetics Defects of the  $\beta_2$ -Adrenergic Receptor in Asthma."
7. American Thoracic Society 1993 National Meeting (Plenary Session), San Francisco, CA. "Mutations of the Gene Encoding the  $\beta_2$ -adrenergic Receptor in Normal and Asthmatic Patients."
8. Medical Grand Rounds, University of Arkansas, 1993. "Mechanism of Acquired and Genetic Dysfunction of the  $\beta_2$ -adrenergic Receptor in Asthma."
9. Research Conference, Department of Medicine, University of Arkansas, 1993. "Molecular Basis of Adrenergic Receptor Desensitization."
10. Medical Grand Rounds, Temple University, 1993, Philadelphia, PA. "Polymorphisms of the  $\beta_2$ -Adrenergic Receptor in Asthma."
11. Research Conference, Department of Pharmacology, Vanderbilt University, Nashville, TN, 1993. "Regulation of  $\alpha_2$ -receptor Function."
12. American Thoracic Society, Workshop on Future Directions in Asthma Research, Washington, DC, 1993. "G-protein Coupled Receptors in Asthma."
13. American Thoracic Society 1994 National Meeting, Boston, MA. "Transmembrane Signaling and Intracellular Regulation Mechanisms in the Response to Occupational and Environmental Pollutants".

14. Central Society for Clinical Research 1994 National Meeting, Chicago, IL. "Allelic Variants of the  $\beta_2$  Adrenergic Receptor in Asthma."
15. American Thoracic Society 1994 National Meeting, Boston, MA. "Molecular Structure/Function Relationships of  $\beta$ -adrenergic Receptors."
16. International Workshop on Recent Advances in the Genetics of Asthma and Allergy, Cannes, France, September 1994. "The Genetics of Polymorphisms of the  $\beta_2$ -adrenergic Receptors in Asthma."
17. Federation of the American Societies for Experimental Biology. Atlanta, GA, 1995 National Meeting. Session Chair for: "Pharmacology, Molecular Biology and Therapeutic Potential of  $\beta_3$ -adrenergic Receptors."
18. Federation of the American Societies for Experimental Biology. Atlanta, GA, 1995 National Meeting. "Summary of Controversies Surrounding the  $\beta_3$ -adrenergic Receptor."
19. American Thoracic Society 1995 National Meeting, Seattle, WA. Session Chair for: "Molecular and Cellular Biology of G Protein Coupled Receptors."
20. American Thoracic Society 1995 National Meeting, Seattle, WA. "Molecular Domains Required for Desensitization of Adrenergic and Other G Protein Coupled Receptors."
21. American Thoracic Society 1995 National Meeting, Seattle WA. Session Chair for: " $\beta$ -adrenoceptor Dysfunction."
22. Asthma: Theory to Treatment, 1995, Chicago, IL. "Genetic Polymorphisms of the  $\beta_2$ -adrenergic Receptor: Effects on Receptor Function in Recombinant and Smooth Cells and in Clinical Asthma."
23. Federation of American Societies of Experimental Biology Colloquium, 1995, Nashville, TN. "Molecular Basis of  $\alpha_2$ -adrenergic Receptor Subtype Regulation by Agonist."
24. Beta<sub>2</sub> Agonist in Asthma Treatment, 1995, Seville, Spain. "Molecular Biology of the  $\beta_2$ -adrenergic Receptor: Focus on Interactions of Agonist with Receptor."
25. American Thoracic Society 1996 National Meeting, New Orleans, LA. Session Co-Chairman –" $\beta$ -agonists and asthma: from molecular biology to patient treatment."
26. American Thoracic Society 1996 National Meeting, New Orleans, LA. "Molecular basis of adrenergic receptor signaling and regulation."
27. American Thoracic Society 1996 National Meeting, New Orleans, LA. " $\beta$ -receptor dysfunction: cause or effect of asthma."
28. American Thoracic Society 1996 National Meeting, New Orleans, LA. "Molecular biology of the  $\beta$ -adrenergic receptor."
29. 24th Hakone Symposium on Respiration, June 1996, Hakone, Japan. " $\beta_2$ -adrenergic Receptor Polymorphisms in Asthma."
30. 5th Kinki Chest Club, June 1996, Osaka, Japan. " $\beta_2$ -adrenergic receptor polymorphisms in Asthma."
31. Hokkaido University Lecture Series, June 1996, Hokkaido University, Sapporo, Japan. "Molecular Biology of Adrenergic Receptors."

32. 5th Meeting of the Asthma Club, Sendai, Japan, September 20-21, 1996. "Genetics of Abnormalities in the  $\beta_2$ -adrenergic Receptor in Asthma."
33. Eighth International Catecholamine Symposium, October 13-16, 1996. "Structural Determinants of  $\alpha_2$ -adrenergic Receptor Regulation", Session Chair " $\alpha_2$ -adrenergic Receptors."
34. Astra-Draco Symposium - Asthma - Can We Improve Control?, Brussels, Belgium, October 18-19, 1996. "Structural Determinants of  $\beta_2$ -adrenergic Receptor Regulation."
35. Transatlantic Airway Conference, Key Biscayne, Florida, January 9-10, 1997. "Associations between polymorphisms in the  $\beta$ -adrenergic receptor and asthma."
36. Experimental Biology '97, San Diego, California, March 7-11, 1997. Session Chair - "Polymorphisms/Mutations in Drug Receptor-Effector Signaling."
37. Experimental Biology '97, San Diego, California, March 7-11, 1997. "Polymorphisms of the  $\beta_2$ -adrenergic receptor alter receptor function and regulation."
38. The Philip S. Norman Lecture, American Academy of Allergy, Asthma and Inflammation National Meeting, February 21-26, 1997. San Francisco, CA. " $\beta$ -adrenergic receptor genes: Do polymorphisms predict response to therapy?"
39. Molecular Pharmacology Gordon Conference, February 9-13, 1997. Ventura, CA. "Polymorphisms in human adrenergic receptors."
40. Workshop on  $\beta_2$ -agonists: Actual view on basal mechanisms and clinical applications, April 18-19, 1997. Marsstrand, Sweden. "Molecular biology of  $\beta_2$ -agonists."
41. University Hospital, April 21-22, 1997. Groningen, The Netherlands. "Regulatory knockouts and GRK localization reveal a molecular basis of lung cell-specific  $\beta_2$  adrenoceptor tachyphylaxis."
42. University Hospital, April 21-22, 1997. Groningen, The Netherlands. "Mutagenesis of the  $\beta_2$ -adrenoceptor localizes the salmeterol exosite to the fourth transmembrane domain."
43. Rhone-Poulenc Rorer Early Life Influences and Interventions in Asthma, July 9-13, 1997. Elbow Beach, Bermuda. "Pharmacogenetics of Asthma."
44. Institute of Allergy, The Genetics of Asthma Workshop, September 17-19, 1997. Brussels, Belgium. "Pharmacogenetics of Relevant Targets in Asthma."
45. Institute of Allergy, The Genetics of Asthma Workshop, September 17-19, 1997. Brussels, Belgium. Chairperson, Candidate Gene and Molecular Approaches session.
46. Ethno/Pharmacogenetics for Drug Development and Evaluation, September 25-16, 1997. Vancouver, BC, Canada. " $\beta_2$ -adrenergic Receptor Polymorphisms Alter the Asthmatic Phenotype and the Response to  $\beta$ -agonists."
47. American Heart Association Annual Meeting, November 9-12, 1997, Orlando, Florida. Council on Basic Science. Moderator, "Cardiac  $\beta_2$ -adrenergic Receptors in Transgenic Mice."
48. American Heart Association Annual Meeting, November 9-12, 1997, Orlando, Florida. "Rescue of Ventricular Failure in  $G_{\alpha q}$  Transgenic Mice by Overexpression of  $\beta$ -receptors."

49. The Cleveland Clinic Foundation, Department of Molecular Cardiology, February 23-24, 1998, Cleveland, Ohio. "Salvage of Ventricular Function by Overexpressing the  $\beta_2$ -adrenergic Receptor in the  $G_q$  Transgenic Mouse."
50. AAAAI Annual Meeting, NHLBI Symposium, Washington, DC. March 15-16, 1998, " $\beta$ -adrenergic Receptor Variants in Asthma."
51. Pharmacogenomics – Exploiting the Interface between Molecular Pharmacology and Medicinal Chemistry for Drug Development, April 20-22, 1998. Hamilton, Bermuda. " $\beta_2$ -adrenergic Receptors in Asthma and Heart Disease."
52. American Thoracic Society Annual Meeting, April 25-29, 1998. Chicago, Illinois. Facilitator, Asthma Therapy I.
53. American Thoracic Society Annual Meeting, April 25-29, 1998. Chicago, Illinois. Mini-Symposium – Chairman – Molecular Basis of  $\beta_2$ -Receptor Regulation.
54. American Thoracic Society Annual Meeting, April 25-29, 1998. Chicago, Illinois. Mini-Symposium. "Gene Therapy for Asthma via Expression of  $\beta_2$ -adrenergic-like Receptors."
55. Allen & Hanburys Symposium, April 27, 1998. Chicago, Illinois. "Recent Discovery of the Salmeterol Exosite: Implications for Therapeutic Strategies."
56. American Heart Association Annual Meeting, November 9-11, 1998. Dallas, Texas. Special Session – Genomic Dissection of Cardiovascular Physiology and Disease – "Genetic variation of  $\beta_1$  and  $\beta_2$  adrenergic receptors in Heart Failure."
57. Cardiovascular Genomics Conference, January 11-12, 1999. Orlando, Florida. "Polymorphisms in  $\beta$ -adrenergic receptors in congestive heart failure."
58. AAAAI Grand Seminar, February 28, 1999. Orlando, Florida. Seminar Moderator – Genetic Polymorphisms of Therapeutic Targets in Asthma – "Polymorphisms of the  $\beta_2$ -adrenergic receptor alter the asthmatic phenotype and response to therapy."
59. Glaxo-Wellcome Workshop on  $\beta_2$ -agonists. Lund, Sweden, April 17-18, 1999. "Regulatory knockouts and GRK localization reveal a molecular basis of lung cell-specific  $\beta_2$  adrenoceptor tachyphylaxis" and "Mutagenesis of the  $\beta_2$ -adrenoceptor localizes the salmeterol exosite to the fourth transmembrane domain."
60. Asthma '99 – Theory to Treatment. Honolulu, Hawaii. April 30-May 3, 1999. "Genetic Polymorphisms Influencing Treatment" and " $\beta$ -adrenergic Receptor Dysfunction in Asthma."
61. Asthma – The Important Questions. Port Douglas, Australia, June 3-6, 1999. "Do polymorphisms of  $\beta_2$ -adrenergic receptors matter?"
62. Heart Failure Society of America. San Francisco, CA, Sept 22-25, 1999. " $\beta$ -receptor Polymorphisms and the Effect on the Natural History of Heart Failure."
63. 41<sup>st</sup> Spring Meeting of the German Society of Experimental and Clinical Pharmacology and Toxicology. Mainz, Germany, March 21-23, 2000. " $\beta$ -adrenoceptor polymorphisms and their clinical implications."
64. The 3<sup>rd</sup> Annual Genaissance Pharmacogenetics Lecture. Pharmacogenetics: The Timing is Now. New Haven, CT, April 25, 2000. "The pharmacogenetics of G-protein coupled receptors."

65. Cardiovascular Research Conference, The Mayo Clinic, Rochester, MN, April 30-May 1, 2000. " $\beta$ -adrenergic receptor polymorphisms in heart failure."
66. Lilly Research Laboratories. Pharmacogenomics: Applications to Therapeutic Development. Indianapolis, IN, May 4, 2000. " $\beta$ -adrenergic receptor polymorphisms in heart and lung disease."
67. American Thoracic Society 2000. Toronto, Ontario, Canada, May 9-10, 2000. "D18-chromosome mutations and gene expression in asthma."
68. IBC Genetic Patenting/Pharmacogenomics & SNPs. Newark, NJ, May 31-June 1, 2000. " $\beta$ -adrenergic SNPs in cardiovascular disease."
69. ASPET/ASBMB Meeting. Boston, MA, June 4-7, 2000. Session Chair: Symposium - Biology of  $\alpha_2$ -adrenergic receptors: "Mechanisms of  $\alpha_2$ -adrenergic receptor regulation."
70. ASPET/ASBMB Meeting. Boston, MA, June 4-7, 2000. Symposium - Novel concepts in cardiac beta-adrenergic receptor function: "Polymorphism of  $\beta_1$  and  $\beta_2$ -adrenergic receptors."
71. Merck Research Laboratories. Human Genome Sequence Variation: Implications for Merck Drug Development and Utilization. Whitehouse Station, NJ, June 12-13, 2000. " $\beta$ -adrenergic receptor polymorphisms in asthma and CHF."
72. International Society of Hypertension. Role of  $\alpha_2$ -adrenergic receptors in hypertension. Chicago, IL, August 19-20, 2000. "Polymorphisms of the  $\alpha_2$ -adrenergic receptor subtypes."
73. Heart Failure Society of America. Boca Raton, FL, September 10-13, 2000. Symposium - Adrenergic receptors in heart failure: "Polymorphisms in adrenergic receptors: Their role in the development of the heart-failure phenotype."
74. XVIth International Symposium on Medicinal Chemistry. Bologna, Italy, September 18-22, 2000. "Functional consequences of genetic variation in  $\beta_1$  and  $\beta_2$  adrenoceptors in the human population."
75. Gordon Research Conference. Ventura, CA, February 11-16, 2001. "Molecular and physiologic consequences of Alpha- and Beta-adrenergic receptor polymorphisms."
76. AMA National Leadership Conference, Washington, DC, March 3-6, 2001. Genetic Medicine: The new frontier. " $\beta$ -adrenergic Receptor Haplotypes."
77. Merck Annual GPCR Retreat, Cape May, NJ, April 16-18, 2001. "Adrenergic receptor polymorphisms."
78. ASCI/AAP Joint Meeting, Chicago, IL, April 27-29, 2001. "Molecular and physiologic effects of  $\beta$ -adrenergic receptor polymorphisms in heart failure."
79. American Thoracic Society 2001. San Francisco, CA, May 21-24, 2001. "SNPs, CHIPS, and DIPS."
80. American Thoracic Society 2001. San Francisco, CA, May 21-24, 2001. Mini-Symposium "Genetics of Asthma."
81. World Asthma Meeting. Chicago, IL, July 13-15, 2001. "Clinical relevance of  $\beta_2$ -adrenergic receptor polymorphisms."
82. Heart Failure Society of America. Washington, DC, September 9-12, 2001. "Adrenergic receptor-effector complexes as novel gene therapy tools."

83. American Association for the Advancement of Science. Washington, DC, September 25, 2001. Seminar - The Impact of Genomics and Proteomics on Medicine. "Pharmacogenomics and the production of customized drugs."
84. American College of Chest Physicians. Philadelphia, PA, November 5-6, 2001. Chair seminar - Advances in  $\beta_2$ -agonist Therapy: Making a Difference in Acute and Chronic Asthma Treatment. "Future advances in  $\beta$ -agonist therapeutic strategies."
85. American Heart Association Annual Meeting. Anaheim, CA, November 11-14, 2001. "New concepts in genotype-phenotype correlations."
86. 2001 Roland H. Ingram Honorary Lecture at Emory University, Atlanta, GA, November 13, 2001. "Genetic variations of  $\beta_2$ -adrenergic receptor gene: Molecular characterization and clinical implications."
87. Vanderbilt University, Department of Pharmacology. Nashville, TN, February 19, 2002. "Molecular properties of  $\alpha_2$ -adrenergic receptor polymorphisms."
88. Congress on Beta-Agonists: New Understandings of Non-bronchodilator Actions. Miami, FL, April 19-21, 2002. Session Chair: Beta-adrenergic Signaling, "Mechanisms of functional diversity within members of the G protein-coupled receptor superfamily."
89. 2<sup>nd</sup> Annual ASPET G Protein Coupled Receptor Symposium. Rohnert Park, CA, July 12-14, 2002. "Genetic determinants of adrenergic receptor function."
90. NHLBI Sarcoidosis Working Group 2002. Bethesda, MD, August 22-23, 2002. "Gene-gene interaction in chronic heart disease."
91. NHLBI Workshop on Genetic Determinants of Response to Drug Therapies for Heart Failure. Bethesda, MD, September 9-10, 2002. "Adrenergic receptor polymorphisms."
92. Heart Failure Society of America. Boca Raton, FL, September 22-25, 2002. Symposium Moderator: Genomics and Genetics: Part I.
93. Heart Failure Society of America. Boca Raton, FL, September 22-25, 2002. "Synergistic interaction of functional polymorphisms of two adrenergic receptors increases heart failure risk."
94. NIH/NINDS Hereditary Dysautonomia Conference. Rockville, MD, October 3-4, 2002. "Adrenoceptor polymorphisms affecting autonomic regulation."
95. Medical University of South Carolina – Student Research Day. Charleston, SC, November 1, 2002. Keynote speaker: "Molecular and pathophysiologic consequences of genetic variation of cardiac adrenergic receptors."
96. Procter & Gamble Pharmaceuticals – Fourth Joint Scientific Colloquium. Cincinnati, OH, December 2, 2002. "Polymorphisms of signaling genes in heart failure."
97. NIH Pharmacogenetics Research Network and Knowledge Base Meeting. Memphis, TN, March 3-4, 2003. "Synergistic interaction of  $\beta_1$ - and  $\alpha_{2C}$ -adrenergic receptor polymorphisms in congestive heart failure."
98. AAAAI-2003 Annual Meeting. Denver, CO, March 7, 2003. Genetics Symposium - "Pharmacogenetics of Asthma."
99. AAAAI-2003 Annual Meeting. Denver, CO, March 8, 2003. "Pharmacogenomics: New Horizons in Therapy."

100. Receptors and their Signals: A Symposium honoring Dr. Robert Lefkowitz. Durham, NC, April 24-25, 2003. "Polymorphisms of Adrenergic Receptors: Variations on a Theme."
101. ASCI/AAP Joint Meeting, Chicago, IL, April 25-27, 2003. "Adrenergic Receptor Polymorphisms in Heart Failure."
102. 39<sup>th</sup> Karolinska Institutet Nobel Conference. Stockholm, Sweden, June 4-7, 2003. "Polymorphisms of Adrenergic Receptors."
103. EAACI 2003 Congress. Paris, France, June 7-11, 2003. Plenary Session Lecture, "How do Genes Affect the Response to Drugs?"
104. Heart Failure Society of America. Las Vegas, NV, September 19-23, 2003. Satellite Symposium: "Adrenergic Receptor Polymorphisms in Heart Failure."
105. Heart Failure Society of America. Las Vegas, NV, September 19-23, 2003. "Alpha and  $\beta$ AR Polymorphisms in Heart Failure Progression."
106. Cold Spring Harbor/Wellcome Trust Conference on Pharmacogenomics. Hinxton, Cambridge, England, September 24-28, 2003. "Complex Interactions of Adrenergic Receptor Polymorphisms Direct Heart Failure Phenotypes and Treatment Response."
107. Pittsburgh International Lung Conference. Pittsburgh, PA, October 12-15, 2003. "Biochemical Remodeling of Airway Relaxation-Contraction Signaling by Chronic  $\beta$ -agonists."
108. American Heart Association Annual Meeting. Orlando, FL, November 9-12, 2003. "Adrenergic Receptor Polymorphisms and Cardiac Disease."
109. Einstein College of Medicine. Bronx, NY, January 13, 2004. "Airway Contraction-Relaxation Remodeling During Chronic  $\beta$ -agonist Use."
110. Transatlantic Airway Conference. Lucerne, Switzerland, January 21-23, 2004. Symposium on Gene and Drug Therapy of Airway Disease.
111. UCSF Pharmaceutical Sciences and Pharmacogenomics Seminar Series. San Francisco, CA, February 11, 2004. "Pharmacogenetics of Polymorphisms of  $\beta_1$ -adrenergic Receptors in Heart Failure."
112. Keystone Symposia. Taos, NM, February 17-22, 2004. "Adrenergic Receptor Polymorphisms: Function and Disease Associations."
113. ASPET/FASEB Meeting. Washington, DC, April 17-21, 2004. "Polymorphisms in alpha and beta-adrenergic receptors: Relationship to outcomes in cardiovascular disease."
114. Case Western Reserve University - Frontiers in Pharmacology Annual Lecture. Cleveland, OH, May 6, 2004. "Molecular genetics and physiologic consequences of adrenergic receptor polymorphism."
115. American Thoracic Society 2004. Orlando, FL, May 21-24, 2004. Co-Chair symposium "Functional Consequences of Genetic Polymorphisms in Asthma."
116. American Thoracic Society 2004. Orlando, FL, May 21-24, 2004. "Regulation of Beta-adrenergic Receptors: Paradigm for G-Protein-Coupled Receptor Signaling."
117. Heart Failure Society of America. Toronto, Ontario, Canada, September 12-15, 2004. " $\beta_1$ -adrenergic Receptor Polymorphisms Predict the Clinical Response to Bucindolol in Heart Failure."

118. 4<sup>th</sup> Congress on Respiratory Science. Miami, FL, September 17-19, 2004. "Molecular Mechanisms of  $\beta_2$ -adrenergic Receptor Function and Regulation."
119. Lennox K. Black International Prize for Excellence in Medicine Symposium. Philadelphia, PA, October 14-15, 2004. "Molecular Genetics and Human Cardiac Phenotypes of Adrenergic Receptor Polymorphisms."
120. American Heart Association/Association of Black Cardiologists 2004 Congress on the Treatment of Cardiovascular Diseases. New Orleans, LA, November 6, 2004. "The Genomics of Heart Failure: Implications for Racial Differences."
121. University of Chicago/Center for Translational Medicine, Visiting Professor Seminar. Chicago, IL, November 9, 2004. "Biochemical Remodeling of the Airway Smooth Muscle Motor by  $\beta_2$ -adrenergic Receptors."
122. Cold Spring Harbor Pharmacogenomics Conference. Cold Spring Harbor, NY, November 18-21, 2004. "Multigene Pharmacogenetics of  $\beta$ -agonist Treatment in Asthma."
123. Johns Hopkins University, Asthma and Allergy Center. Baltimore, MD, December 1, 2004. "Biochemical Remodeling of the Airway Smooth Muscle Motor by  $\beta_2$ -adrenergic Receptors."
124. University of Maryland School of Medicine, Research Conference. Baltimore, MD, December 1, 2004. "Biochemical Remodeling of the Airway Smooth Muscle Motor by  $\beta_2$ -adrenergic Receptors."
125. Johns Hopkins University, Pulmonary Research Conference. Baltimore, MD, December 2, 2004. "Molecular and Physiologic Consequences of  $\beta_2$ -adrenergic Receptor Polymorphisms in Asthma."
126. National Institutes of Health. Bethesda, MD, December 2, 2004. "Mechanism of Chronic  $\beta$ -Agonist-Promoted Remodeling of the Smooth Muscle Motor."
127. University of Maryland, Baltimore, MD, January 27, 2005. "Genetic, Molecular, and Physiologic Properties of Adrenergic Receptor Polymorphisms in Heart Failure: coalescence of cell, transgenic mouse, and human studies."
128. AAAS Annual Meeting. Washington, DC, February 17-21, 2005. "Genomic Variation and Clinical Response to Adrenergic Blocking Agents."
129. American Thoracic Society 2005. San Diego, CA, May 20-25, 2005. "Beta Agonists: Rescue, Control, and Biochemical Remodeling."
130. American Thoracic Society 2005. San Diego, CA, May 20-25, 2005. "G-Protein Coupled Receptor Crosstalk in Airway Smooth Muscle."
131. 2005 4<sup>th</sup> Osong International Biosymposium, Seoul, Korea, September 25-30, 2005. "Pharmacogenomics of Beta-adrenergic Receptor Variation in the Failing Heart."
132. American Thoracic Society 2006. San Diego, CA, May 19-24, 2006. "The Functional Consequences of Beta-2 Receptor Polymorphisms."
133. II National Congress of Genomic Medicine, Mexico City, Mexico, October 25-27, 2006. "Genomic Basis of Cardiovascular Disease."
134. American Heart Association, Chicago, IL, November 12-15, 2006. Moderator at Abstract Oral Session "Heart Failure: The Beginning of the Pharmacogenomic Era?"

135. ASPET/FASEB Meeting. Washington, DC, April 28-May 2, 2007. "Genetically-Modified Animal Models for Pharmacogenomics Research."
136. American Thoracic Society 2007. San Francisco, CA, May 18-23, 2007. "Crosstalk Between the Steroid and the Beta Agonist Pathways: Implications for Pharmacogenetics."
137. NHLBI Lung Division Strategic Planning Workshop, Bethesda, MD, June 29-30, 2007. "Integrative Approaches to Pathogenetic Research."
138. NHLBI Lung Microbiome in Pulmonary Disease Workshop – Co-Chair. Bethesda, MD, July 19-20, 2007. "Complete Genomes of Human Rhinovirus and Relevance to Asthma Exacerbations."
139. Heart Failure Society of America. Washington, DC, September 16-19, 2007. "Does Genetic Variation Alter Cardiovascular Function, Heart Failure History, and Therapeutic Response?"
140. University of Pennsylvania Medical Center, Pulmonary Research Grand Rounds, Philadelphia, PA. November 14, 2007. "New Mechanisms of G-protein Coupled Receptor Regulation of Airway Contraction/Relaxation."
141. Merck Research Laboratories, CV Franchise Retreat, Red Bank, NJ, November 26, 2007. "Polymorphisms within GPCR Pathways in Heart Failure Pathology and Pharmacogenomics."
142. Johns Hopkins University Pediatric Pulmonary Research Conference, Baltimore, MD, March 11, 2008. "Unexpected Partners in GPCR Signaling in Airway Contraction/Relaxation Relevant to Asthma."
143. Johns Hopkins University Asthma and Allergy Center, Baltimore, MD, April 2, 2008. "Atypical Signal Switching Modulates Airway Contraction and Relaxation."
144. Children's National Medical Center, Washington, DC, April 11, 2008. "New Insights into Polymorphic Variation of the  $\beta_2$ -adrenergic Receptor and  $\beta$ -agonist Therapy."
145. Howard University School of Medicine, Washington, DC, April 16, 2008. "Pharmacogenomics of Asthma Treatment."
146. University of Cincinnati College of Medicine, Internal Medicine Grand Rounds, Cincinnati, OH, April 23, 2008. "Tailored Therapy for Heart Failure Using Pharmacogenetics."
147. University of Cincinnati College of Medicine, Molecule to the Bedside Seminar, Cincinnati, OH, April 24, 2008. "Mechanisms of  $\beta_2$ -adrenergic Receptor Signaling: Not a Simple Switch."
148. University of Cincinnati College of Medicine, Department of Pharmacology, Cincinnati, OH, April 25, 2008. "The Role of Pharmacogenetics in Personalized Medicine and Drug Development."
149. Center for Translational Medicine 4<sup>th</sup> Annual Scientific Symposium, Thomas Jefferson University, Philadelphia, PA, June 5, 2008. "Pathway-driven Pharmacogenomics in Heart Failure: mechanisms and application to treatment."
150. Personalized Medicine Lecture Series, George Washington University Medical Center, Washington, DC, June 12, 2008. Panel discussion on Genomics of Cardiovascular Disease: Current Clinical Applications.
151. Agilent Technologies e-Seminar, September 18, 2008. "Alternative Splicing of the G-Protein Coupled Receptor Superfamily in Human Airway Smooth Muscle Diversifies Range of Receptors." PMID: PMC2278184

152. 2<sup>nd</sup> Al-Ain International Genetics Conference, Al-Ain, United Arab Emirates, October 28-30, 2008. "Genetic Variation Within the GPCR Superfamily: From Pharmacogenomics to Drug Reprofilling."
153. Cold Spring Harbor Laboratory Pharmacogenomics Meeting – Co-Chair, Cold Spring Harbor, NY, November 19-22, 2008. "Genetic Variation within GPCR Signaling Networks – From Asthma to Heart Failure Pharmacogenomics."
154. Northwestern University Feinberg School of Medicine, Division of Allergy-Immunology, Research Conference, Chicago, IL, January 16, 2009. "New Insights on Viral Evolution, Recombination and Asthma Pathogenesis from Full Genome Sequences of All Known Human Rhinovirus Serotypes."
155. ACP Maryland Chapter Scientific Meeting, Ellicott City, MD, February 6, 2009. "Pharmacogenetics of Beta-Blocker Treatment in Heart Failure: We Are There!"
156. Johns Hopkins University, Cardiology Grand Rounds, Baltimore, MD, April 15, 2009. "Pharmacogenomics within the Adrenergic Network for Treatment of Heart Failure."
157. Johns Hopkins University, Pathology Grand Rounds, Baltimore, MD, May 4, 2009. "Sequencing and Analyses of All Known Human Rhinovirus Genomes Reveals Structure and Evolution."
158. American Thoracic Society 2009. San Diego, CA, May 15-20, 2009. "Full Genome Sequences and Phylogenetics of All Known Rhinovirus Serotypes Reveal New Insights into Airway Pathogenesis."
159. International Society for Heart Research (ISHR) North American Section Meeting, Baltimore, MD, May 26-29, 2009. "Genetic Variation within the Cardiac Adrenergic Network and Heart Failure Drug-Response."
160. AHA Basic Cardiovascular Sciences Conference, Las Vegas, NV, July 20-23, 2009. "Polymorphisms of Adrenergic Receptors and Associated Proteins in Heart Failure Pharmacogenomics."
161. Heart Failure Society of America. Boston, MA, September 13-16, 2009. "Adrenergic Polymorphisms and Beta-Blockade in Heart Failure."
162. Maryland Insurance Administration Meeting, Baltimore, MD, September 17, 2009. "Personalized Medicine."
163. 10<sup>th</sup> Annual 2009 Great Lakes G Protein-Coupled Retreat, Rochester, NY, October 16-18, 2009. "Pharmacogenomics of Cardiovascular Disease."
164. University of Chicago, Section of Cardiology, Grand Rounds, Chicago, IL, January 22, 2010. "Genetic Determinants of Beta-blocker Responsiveness in Heart Failure."
165. Scripps Green Hospital, Grand Rounds, La Jolla, CA, March 4, 2010. "Molecular and Genetic Basis of Responsiveness to  $\beta$ -blockers in Heart Failure."
166. The Future of Genomic Medicine III Conference, La Jolla, CA, March 6, 2010. "Pharmacogenomics of Heart Failure Therapy."
167. CIPP IX – 9<sup>th</sup> International Congress on Pediatric Pulmonology, Vienna, Austria, June 19, 2010. "Evolution and Structure of Human Rhinoviruses as Determined from Full Genome Sequences."
168. University of South Florida College of Medicine, Interdisciplinary Research Program in Cardiovascular Research Seminar Series, November 4, 2010. "Bitter Taste Receptors Expressed on Airway Smooth Muscle Transduce a Super-Localized Calcium Signal that Bronchodilates via BK<sub>Ca</sub>."

169. University of South Florida College of Medicine, Molecular Medicine Seminar, November 5, 2010. "Pharmacogenomics of Beta-blocker Therapy in Heart Failure."
170. Molecular Pharmacology Gordon Research Conference, Ventura, CA, January 12, 2011. "Bitter Taste Receptors on Airway Smooth Muscle Transduce a Superlocalized  $\text{Ca}^{++}$  Signal to  $\text{BK}_{\text{Ca}}$  that Bronchodilates: A Highly Effective Treatment Strategy for Asthma."
171. Pharmacogenomics Research Network (PGRN) Meeting, Baltimore, MD, April 27, 2011. Co-moderator of research seminar.
172. International Society for Heart Research, Philadelphia, PA, May 23, 2011. "Use of Founder Population GWAS of Cardiac Traits for Identifying Heart Failure Modifying SNPs."
173. Drug Discovery 2011 Meeting, Manchester, UK, September 6, 2011. "Bitter Taste Receptors on Airway Smooth Muscle Couple to a Restricted  $\text{Ca}^{2+}$  Pool and Agonists are Highly Efficacious Bronchodilators."
174. GlaxoSmithKline, Stevenage, UK, September 9, 2011. "Bitter Taste Receptors on Airway Smooth Muscle Couple to a Restricted  $\text{Ca}^{2+}$  Pool and Agonists are Highly Efficacious Bronchodilators for Asthma."
175. Loyola University Medical Center, Chicago, IL, "Pharmacology Graduate Students' Distinguished Speaker," October 19, 2011. "Molecular Basis of Bitter Taste Receptors on Airway Smooth Muscle Coupling to Relaxation: A Novel Target for Treating Asthma."
176. World Allergy Congress, Cancun, Mexico, December 5, 2011. "Personalized Medicine – Is There a Future?"
177. World Allergy Congress, Cancun Mexico, December 6, 2011. Chairperson of Symposium: "Neural Mechanisms in Airway Diseases."
178. University of South Florida College of Medicine, Tampa, FL, Health Research Day-Featured Speaker, February 24, 2012. "Personalized Medicine for Asthma: Role of Viral Genomic Variation."
179. AAAAI 2012 Annual Meeting, Orlando, FL, March 2, 2012. "Novel Therapy for Asthma."
180. Harvard School of Public Health, Program in Molecular and Integrative Physiological Sciences Seminar, Boston, MA, May 1, 2012. "Bitter Taste Receptors on Airway Smooth Muscle Relax via Specialized Calcium Signaling: A New Target for Bronchodilators."
181. American Heart Association Scientific Sessions Conference 2012, Los Angeles, CA, November 4, 2012. Moderator at Abstract Oral Session "Pharmacogenomics of Essential Hypertension."
182. Orlando Health Grand Rounds, Orlando, FL, April 4, 2013. "Airway Smooth Muscle Taste Receptors: Targets for Novel Bronchodilators in Asthma."
183. BioFlorida Conference 2013, Tampa, FL, September 16, 2013. "Resurrecting Failed Drugs Using Genomics: The Case of Bucindolol."
184. ACCA 126<sup>th</sup> Annual Meeting, Charleston, SC, October 18, 2013. "Bitter Taste Receptors in Wrong Place: Novel Airway Smooth Muscle Targets for Treating Asthma."
185. American Heart Association Scientific Sessions Conference 2013, Dallas, TX, November 17, 2013. Speaker Oral Session "Pharmacogenomics: Does the Science Lead to Clinical Practice?"

186. Annual Jacques de Champlain Scientific Symposium, Montreal, Canada, December 2, 2013. "Individualized Pharmacotherapy Aimed at G-protein Coupled Receptors".
187. Cardiology Grand Rounds Conference, University of Iowa, Iowa City, IA, March 5, 2014. "Pharmacogenomics of  $\beta$ -Blockers: From Molecular Biology to Clinical Trials".
188. AAAAI 2016 Annual Meeting, Los Angeles, CA, March 5, 2016. "Bitter Taste Receptors and Bronchodilation."
189. Safety Pharmacology Society Joint Meeting, Vancouver, BC, Canada, September 19, 2016. "Bitter Taste Receptors on Airway Smooth Muscle: New Therapeutic Targets and Evidence for a Previously Unrecognized Chemosensory System."
190. BioFlorida Tampa Bay Chapter 2018, Tampa, FL, August 16, 2018. "USF Health Research and Commercialization."
191. University of Miami School of Medicine, Department of Molecular and Cellular Pharmacology Seminar, Miami, FL, November 15, 2018. "Bitter Taste Receptors on Airway Smooth Muscle: A Novel Target for Obstructive Lung Disease."
192. Florida Gulf Coast University, Provost's Lecture Series, Fort Myers, FL, April 4, 2019. "Genomics and Personalized Medicine."
193. California Institute of Technology, Department of Biology and Biological Engineering, Pasadena, CA, August 19, 2019, "Novel Structure-Function Relationships of Sensory GPCRs."
194. California Institute of Technology, Department of Biology and Biological Engineering, Pasadena, CA, November 1, 2019, "Signal Transduction of Taste and Smell GPCRs Expressed in the 'Wrong Place' "
195. BioFlorida Tampa Bay Chapter 2021, Tampa, FL, April 22, 2021. Keynote Presentation "Translating basic science to applications: A collaborative interdisciplinary model."
196. University of Cincinnati, Division of Cardiovascular Health and Disease Grand Rounds Presentation, Cincinnati, OH, March 21, 2023. "A 1 in 40 hit for the  $\beta_2$ -adrenergic receptor: the new pharmacology and biology of biased GPCR ligands."

### **Presentations, Seminars, etc. (internal)**

1. Pulmonary Biology Research Seminar, September 9, 1992. " $\alpha_2$ -adrenergic Receptor Structure/Function."
2. Pulmonary Lecture Series, October 12, 1992. "Molecular Biology I."
3. Pulmonary Lecture Series, October 19, 1992. "Molecular Biology II."
4. Pulmonary Lecture Series, October 26, 1992. "Molecular Biology III."
5. Pharmacology Core Curriculum, January 4, 1993. "Adrenergic Receptors."
6. Pharmacology Core Curriculum, January 14, 1993. Adrenergic Receptors."
7. Department of Medicine Grand Rounds, January 30, 1993. "Molecular Mechanisms of Acquired and Genetic Defects in the  $\beta_2$ -adrenergic Receptor in Asthma."
8. Pharmacology Elective, April 9, 1993. "Desensitization of Adrenergic Receptors by Phosphorylation."
9. Family Medicine Review Course, May 5, 1993. "New Directions in Asthma."
10. Department of Medicine Grand Rounds, July 28, 1993. "The New Science for Treating Old Diseases: An Overview of Recent Advances in Molecular Biology."
11. Department of Medicine Fellows Lecture Series, September 9, 1993. "Molecular Genetics I."
12. Department of Medicine Fellows Lecture Series, September 16, 1993. "Molecular Genetics II."
13. Department of Otorhinolaryngology Grand Rounds, December 15, 1993. " $\beta$ -adrenergic Receptors in Asthma."
14. Department of Medicine Grand Rounds, July 27, 1994. "Autoantibodies to the  $\beta_2$ -adrenergic Receptor in Asthma."
15. Basic and Clinical Science Lecture, September 8, 1994. "Gene Structure – PCR, RT-PCR Mutation Analysis."
16. Anatomy and Cell Biology Lecture, November 10, 1994. "Molecular Domains Responsible for Desensitization of the Presynaptic  $\alpha_2$ -adrenergic Autoreceptor."
17. Pulmonary Lecture Series, February 20, 1995. "Asthma and Atopy."
18. Bedside to Bench Lecture, February 23, 1995. "Molecular Basis of Drug Tachyphylaxis."
19. Combined Infectious Diseases/Endocrine Research Conference, December 3, 1996. "Molecular Basis of  $\beta_2$ -adrenergic Receptor Function and Regulation."
20. Department of Medicine Research Conference, January 16, 1997. " $\beta$ -adrenergic Receptor Mutations in Heart Failure."
21. Cardiology Research Conference, March 3, 1997. "Alterations of  $\beta$ -adrenergic Receptor Signaling in Heart Failure."

22. Department of Medicine Grand Rounds, May 7, 1997. "Molecular Mechanism of Tachyphylaxis to  $\beta$ -agonists: how, when and where?"
23. Pulmonary Lecture Series, March 23, 1998. " $G_{\alpha q}$  Overexpression in Mice."
24. Department of Medicine Grand Rounds, July 22, 1998. "Creation of Anti-asthma Transgenic Mice and Strategy for Gene Therapy for Asthma."
25. Pulmonary Lecture Series, November 23, 1998. "Update on  $\beta$ -adrenergic Receptor Polymorphism."
26. Pulmonary Lecture Series, November 1, 1999. "Cardiopulmonary consequences of  $\beta$ -adrenergic Receptor Polymorphisms."
27. Molecule to the Bedside Seminar, January 27, 2000. "Polymorphisms in the Gene Pool."
28. Pulmonary Grand Rounds, October 16, 2000. "SNPs Update."
29. Department of Medicine Multidisciplinary CPC lecture, February 21, 2001. "Asthma Genetics."
30. Department of Medicine Grand Rounds, "Special Lecture," August 1, 2001. "Impact of Genomic Variation on the Future Practice of Medicine."
31. Department of Medicine Research Conference, August 16, 2001. "SNPs, DIPs and CHIPs."
32. HHMI Excel Program, June 21, 2002. "Receptor Polymorphisms and Response to Disease and Therapy."
33. Genomics Symposium, April 4, 2002. "Genomics as Applied to Asthma."
34. Pulmonary Grand Rounds, February 10, 2003. " $\beta_2$ -adrenergic receptors."
35. Internal Medicine Grand Rounds, July 23, 2003. "Mechanisms Underlying Adverse Effects of Chronic  $\beta$ -agonists in Asthma."
36. CMGCC Scientific Symposium, December 12, 2003. "Adrenergic Receptor Polymorphisms Predict Risk and Response to Therapy in Heart Failure."
37. Pulmonary Grand Rounds, February 2, 2004. "Polymorphic  $\beta_1$ -adrenergic Receptors in Heart Failure: From Transgenic Mice to the Bedside."
38. Cardiology Grand Rounds, October 27, 2005. "The Adrenergic Axis in Heart Failure: New Insights into Genetic Variability and Treatment Based on Genomics."
39. Department of Medicine, Medical Grand Rounds, October 4, 2006. "The Pharmacogenetics of Heart Failure Treatment."
40. School of Medicine, Third Annual Symposium on Translational Research in Molecular Pathology, October 29, 2007. "Pharmacogenomics of Heart Failure: Time for Personalized Medicine Based on Individual Genomes."
41. Interdepartmental Cardiovascular Research Forum, December 3, 2007. "Role of  $G_i$  in  $G_s/G_q$  Signaling in Airway Smooth Muscle Contraction and Relaxation."
42. Interdepartmental Cardiovascular Research Forum, June 8, 2009. "Diversity of Human Rhinoviruses from Full Genome Sequences: Implications for Smooth Muscle Pathology in Asthma."

43. School of Medicine, Department of Microbiology and Immunology Seminar Series, September 2, 2009. "Structure, Phylogeny, and Evolution of All Known Human Rhinovirus Subtypes."
44. School of Medicine, Medical Family Day, November 5, 2009. "The Genetic Codes for All Known Rhinoviruses: The Beginning, or the End, of the Common Cold?"
45. Department of Medicine, Medical Grand Rounds, January 6, 2010. "Genome Sequences of Rhinovirus Serotypes: A New Strategy for Asthma Treatment."
46. Second Translational Technologies and Resources Symposium, University of Maryland Institute for Clinical and Translational Science, September 21, 2010. "Bitter Taste Receptors Expressed on Airway Smooth Muscle Transduce a Localized Ca<sup>++</sup> Flux that Bronchodilates: A Highly Effective New Treatment Strategy for Asthma."
47. Membrane Biology Professor's Rounds, October 29, 2010. "Bitter Taste Receptors on Airway Smooth Muscle."
48. USF College of Public Health Global Health Seminar Series, January 29, 2013. "TAS2Rs as Targets for Novel Therapeutics for Asthma."
49. USF Health in The Villages, Tomorrow's Health Today Lecture Series, February 12, 2013. "Tailoring Drug Treatment Based on Your Genetic Makeup: The future is NOW."
50. USF Morsani College of Medicine Division of Pulmonary, Critical Care and Sleep Medicine Research Conference, March 26, 2013. "Development of novel treatments for severe asthma."
51. USF College of Pharmacy, Lecture Series, May 6, 2013. "Bitter Taste Receptor Agonists as Novel Treatment for Obstructive Lung Disease."
52. USF Morsani College of Medicine Department of Cardiology Genetics of Channelopathies and Cardiomyopathies Course, December 5, 2013. "Genetic Variants that Control and Predict the Response to Beta-Blockers in Heart Failure."
53. USF Health & ACLI Medical Section Annual Meeting, February 25, 2014. "Where is genetic testing going?"
54. USF Morsani College of Medicine Department of Molecular Medicine Work in Progress Seminar, April 30, 2014. "Taste Receptors on Airway Smooth Muscle."
55. USF Morsani College of Medicine Department of Molecular Pharmacology and Physiology Research Forum, June 2, 2014. "Airway smooth muscle taste receptors for treating obstructive lung disease."
56. USF Institute for Advanced Discovery & Innovation Institute Faculty Retreat, May 3, 2016. "Resurrecting Failed Drugs Using Genomics: The Case of Bucindolol."
57. USF Morsani College of Medicine Department of Cardiovascular Sciences Grand Rounds, May 10, 2016. "Genetic Targeting of  $\beta$ -blockers in Heart Failure."
58. USF Morsani College of Medicine Department of Cardiovascular Sciences, Cardiovascular regulation course (GMS6410), October 26, 2017, "Bases of GPCR function and regulation part 1."
59. USF Morsani College of Medicine Department of Cardiovascular Sciences, Cardiovascular regulation course (GMS6410), October 28, 2017, "Bases of GPCR function and regulation part 2."

60. USF Morsani College of Medicine Seminar: Innovation Entrepreneurship and Business in Medicine, Guest Speaker. March 13, 2018.
61. USF Morsani College of Medicine, Department of Internal Medicine, Internal Medicine Grand Rounds Invited Speaker, March 22, 2018. "Bitter Taste Receptor Agonists for the Treatment of Asthma: from bench to bedside."
62. USF College of Arts and Sciences, Department of Cell Biology, Microbiology and Molecular Biology Seminar, November 30, 2018, "New Signaling Paradigms for Peripheral Expression of GPCRs for Taste and Smell."
63. USF Morsani College of Medicine, December 1, 2022 "Academic Research-Intense Medical College as an Environment for Clinically Relevant Discovery: Alzheimer's Disease".
64. USF Morsani College of Medicine, December 2, 2024. ""Physician Scientists and the Pharma Valley of Death".