UNIVERSITY OF SOUTH FLORIDA

Division of Allergy and Immunology

Department of Internal Medicine

Joy McCann Culverhouse Airway Disease Research Center

and The James A. Haley V.A. Medical Center

Tampa, Florida

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2016
Annual Report

http://health.usf.edu/medicine/internalmedicine/allergy/index.htm

Dedicated to Noorbibi K. Day-Good, Ph.D.

Professor of Pediatrics
Retired Faculty

Dr. Day-Good, originally from Nairobi, Kenya has resided in the United States since late 1967. She began her career as an Assistant Professor at the University of Minnesota in 1971. Dr. Day has held positions as a Member of Memorial Sloan Kettering Center in New York with a joint appointment as Professor at Cornell Graduate School of Medical Science in Biology. In 1986 Dr. Day joined the University of South Florida, Department of Pediatrics, Division of Allergy and Immunology as a tenured Professor. She had joint appointments in the Departments of Internal Medicine and Molecular Medicine. Her awards in the past have included Fellowships from the NIH, Rheumatoid Arthritis Foundation and Investigator of the American Heart Association with continuous grants from ACS, NIH and the Eleanor Naylor Dana Foundation. She was awarded a sabbatical to study at Children's Hospital, Harvard Medical School, Boston 2007-2008. She was married to the late Robert A. Good, M.D., Ph.D., the "Founder of Modern Immunology".

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MORSANI COLLEGE OF MEDICINE

UNIVERSITY OF SOUTH FLORIDA

DIVISION OF ALLERGY AND CLINICAL IMMUNOLOGY (A/I)
DEPARTMENT OF INTERNAL MEDICINE
V.A. MEDICAL CENTER
13000 BRUCE B. DOWNS BOULEVARD (111D)
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January 9, 2017

I. GREETINGS!

The late Samuel C. Bukantz, M.D., founded the University of South Florida College of Medicine, Department of Internal Medicine, Division of Allergy and Immunology in 1972. Richard F. Lockey, M.D. succeeded Dr. Bukantz in 1983 and is the current Director of the Division. Mrs. Joy McCann Culverhouse endowed the Division in 1997 and The Joy McCann Culverhouse Airway Disease Research Center was dedicated in February 1998. In 1998, Mabel and Ellsworth Simmons endowed the Division with a grant for education and research.

The Division was selected as a World Allergy Organization (WAO) Center of Excellence for the 2016-2019 term, one of ten throughout the world. Please see the letter from Dr. Lanny Rosenwasser dated December 27, 2016 on page 2.

The goals of the Division are: first, to provide care to patients with allergic and immunologic diseases at the University of South Florida College of Medicine, Tampa General Hospital, James A. Haley V.A. Medical Center, All Children's Hospital, and H. Lee Moffitt Cancer Center; second, to train students, residents, and fellows in the subspecialty of allergy and immunology; and third, to conduct basic and clinical research in allergy, asthma, and immunology.

Individuals interested in collaborating with members of the Division may contact Richard F. Lockey, M.D. or any faculty member at (813) 972-7631 (email: rlockey@health.usf.edu).

Jolan Walter, M.D., Ph.D., Associate Professor of Pediatrics, assumed the position of Division Chief, Pediatric Allergy & Immunology, February 29, 2016, and she can be contacted at (813) 259-8705 (email: jolanwalter@health.usf.edu).

Richard F. Lockey, MD
Distinguished University Health Professor
Professor of Medicine, Pediatrics & Public Health
Joy McCann Culverhouse Chair of Allergy and Immunology
Director, Division of Allergy and Immunology
University of South Florida Morsani College of Medicine
Department of Internal Medicine

WORLD ALLERGY ORGANIZATION

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Center of Excellence

27 December 2016

Richard F. Lockey, MD
University of South Florida Morsani College of Medicine
Division of Allergy and Immunology
Department of Internal Medicine
12901 Bruce B Downs Blvd
MDC 19
Tampa, FL 33612
Email: rlockey@health.usf.edu

Dear Professor Richard F. Lockey,

On behalf of the World Allergy Organization (WAO) Centers of Excellence Selection Committee, it is my pleasure to inform you that University of South Florida Morsani College of Medicine, Division of Allergy and Immunology, Department of Internal Medicine has been chosen as a WAO Center of Excellence for the 2016-2019 term.

The purpose of WAO Centers of Excellence is to intensify and accelerate multi-disciplinary scientific and clinical innovation, education, and advocacy worldwide providing excellence in education, research, and training to various stakeholders in allergy, asthma and clinical immunology.

Congratulations on being selected to help fulfil the purpose of the WAO Centers of Excellence.

Please provide a brief description of your center so it can be displayed on the WAO website via email to Justin Dodge (jdodge@worldallergy.org) at the WAO Secretariat.

Sincerely,

Lanny Rosenwasser, MD
WAO Selection Committee, Chair

CC: Mario Sanchez Borges, WAO President

Front Row (L to R): Dennis K. Ledford, MD, Thomas B. Casale MD, Richard F. Lockey, MD, Peggy Hales, Roger W. Fox, MD

2nd Row (L to R): Mark C. Glaum, MD, PhD, Emma Westermann-Clark, MD, Amber Pepper, MD, Farnaz Tabatabaian, MD, Renee Smith, Rebecca Carter, Mason Breitzig, Blanca Camoretti-Mercado, Nicole McCray, PhD, Ramani Soundararajan, PhD, Seong H. Cho, MD, Narasaiah Kolliputi, PhD, Lee Tan, Michelle Twitmyer

Last Row (L to R): Chen Lin, MD, Peter Ricketti, DO, Michael Teng, PhD, Adeeb Bulkhi, MD, Sultan Alandijani, MD, Alex Czachor, Jutaro Fukumoto, MD, PhD

Missing in picture: Lakshmi Galam, PhD, Geeta Gehi

Picture: January, 2017

II. FACULTY AND STAFF

Core Faculty

Richard F. Lockey, M.D., University Distinguished Health Professor; Professor of Medicine, Pediatrics, and Public Health; Division Director; Joy McCann Culverhouse Chair of Allergy and Immunology

Thomas B. Casale, M.D., Professor of Medicine and Pediatrics

Roger W. Fox, M.D., Professor of Medicine, Pediatrics and Public Health

Dennis K. Ledford, M.D., Professor of Medicine and Pediatrics; Mabel & Ellsworth Simmons Professor

Seong H. Cho, M.D., Associate Professor of Medicine and Pediatrics

Mark C. Glaum, M.D., Ph.D., Associate Professor of Medicine and Pediatrics

Narasaiah Kolliputi, Ph.D., Associate Professor of Medicine and Pediatrics

Michael Teng, Ph.D., Associate Professor of Medicine and Pediatrics

Blanca Camoretti-Mercado, Ph.D., Assistant Professor of Medicine and Pediatrics

Lakshmi Galam, Ph.D., Assistant Professor of Medicine

Farnaz Tabatabaian, M.D., Assistant Professor of Medicine and Pediatrics

Jia-Wang Wang, Ph.D., Assistant Professor of Medicine

Clinical Faculty

Enrique Fernandez-Caldas, Ph.D., Clinical Professor of Medicine

Donald C. Lanza, M.D., Clinical Professor of Medicine

Hugh H. Windom, M.D., Clinical Professor of Medicine

Brett E. Stanaland, M.D., Clinical Associate Professor of Medicine

G. Edward Stewart II, M.D., Clinical Associate Professor of Medicine

Rosa Codina, Ph.D., Clinical Assistant Professor of Medicine

Jennifer E. Fergeson, D.O., Clinical Assistant Professor of Medicine

Thomas L. Johnson, II, M.D., Clinical Assistant Professor of Medicine

Alla Solyar, M.D., Clinical Assistant Professor of Medicine

Joint Faculty

Jolan Walter, M.D., Ph.D., Robert A. Good Endowed Chair in Immunology; Associate Professor of Pediatrics & Medicine; Chief, Pediatrics Division of Allergy & Immunology

Mark Ballow, M.D., Professor of Pediatrics and Medicine

Noorbibi K. Day-Good, Ph.D., Professor Emeritus; Pediatrics, Medicine & Public Health

Gary W. Litman, Ph.D., Professor of Pediatrics and Medicine; University Distinguished Health Professor; Andrew and Ann Hines Chair in Pediatrics

Mandel R. Sher, M.D., Professor of Pediatrics and Medicine

Stephen Kornfeld, M.D., Associate Professor of Pediatrics and Medicine

Panida Sriaroon, M.D., Associate Professor of Pediatrics and Medicine

Nathan Tang, M.D., Associate Professor of Pediatrics and Medicine

Jennifer Leiding, M.D., Assistant Professor of Pediatrics and Medicine

Richard F. Lockey, M.D., M.S.

Dr. Richard F. Lockey received his B.S. degree from Haverford College, Haverford, Pennsylvania; M.D. from Temple University, Philadelphia, Pennsylvania (Alpha Omega Alpha); M.S. from the University of Michigan in Ann Arbor, Michigan where he trained in Internal Medicine and Allergy/Immunology (A/I) and was a Major and Chief of A/I at Carswell Air Force Base, Fort Worth, Texas, from 1970-1972. He received a medal from the Florida Academy of Sciences, Tallahassee, Florida, in 2000, for his dedication and work to improve the health and well-being of the community and citizens of Florida. He was also the recipient of the Southern Medical Society, Dr. Robert D. and Alma W. Moreton Orginal Research Award in 2012. The American Academy of Allergy Asthma and Immunology presented him with a Special Recognition Award in 1993, Distinguished Service Award in 1999, and Distinguished Clinician Award in 2008. He has the honor of authoring, co-authoring or editing over 600 publications and 35 books or monographs with colleagues and has lectured on numerous occasions nationally and internationally. He is the co-editor of two books and an encyclopedia of allergy/immunology, with Dennis K. Ledford, MD, published in 2014: *Asthma, Comorbidities, Co-Existing Conditions, and Differential Diagnoses*, Oxford University Press; *Allergens and Allergen Immunotherapy: Subcutaneous, Sublingual and Oral*, 5th edition, CRC Press/Taylor & Francis Group; and *Encyclopedia of Infection and Immunity,* Springer, Inc. Professional honors include President of the American Academy of Allergy Asthma and Immunology (1992), past Director of the American Board of Allergy and Immunology (1993-1998) and President of the World Allergy Organization (2010-2012). He has served as co-editor or participant of two WHO reports and served on many journal editorial boards. He received the World Allergy Organization Gold Medal Award in 2015.

Over 90 physician specialists and 50 international post-graduate PhDs or MDs in basic and clinical research and medicine, many of whom have assumed leadership positions in medicine throughout the world, have been trained in the Division. The Division's staff consists of 7 clinicians, 4 basic scientists, and approximately 60 other healthcare professionals including physicians and support and laboratory personnel.

Areas of expertise and research: insect allergy; allergen immunotherapy; asthma; inflammatory lung diseases; pulmonary fibrosis; co-morbid conditions of asthma; and sleep apnea.

Thomas B. Casale, M.D.

Before joining USF in October 2013, as Professor of Medicine and Chief of Clinical and Translational Research, Dr. Thomas Casale was Professor of Medicine and Medical Microbiology and Immunology and Chief of Allergy/Immunology at Creighton University, Omaha, Nebraska. He did an allergy/immunology fellowship at the National Institutes of Health, Bethesda, MD, where he was chief medical staff fellow. From 1984 to 1996 he was at the University of Iowa where he attained the rank of Professor of Medicine and Director of Allergy/Immunology.

Dr. Casale is a member of the American Thoracic Society and served on their Board of Directors; American Society for Clinical Investigation; and a Fellow of the American College of Physicians and both the American College and American Academy of Allergy Asthma and Immunology. He is a Past President of the American Academy of Allergy Asthma and Immunology and the current Executive Vice President. He is a past member of the Board of Directors of the World Allergy Organization. He also served on the American Board of Allergy and Immunology and was Chair from 2005-2006.

Dr. Casale's clinical and basic research interests are directed toward the determination and treatment of the pathophysiologic mechanisms involved in respiratory and allergic diseases. He has published over 330 scientific papers, reviews and chapters on these topics. He is the principal investigator of USF's American Lung Association Airways Clinical Research Center. His research is funded by the National Institutes of Health, the American Lung Association, the Patient Centered Outcomes Research Institute, the American Academy of Allergy Asthma and Immunology, and various industry sources.

Roger W. Fox, M.D.

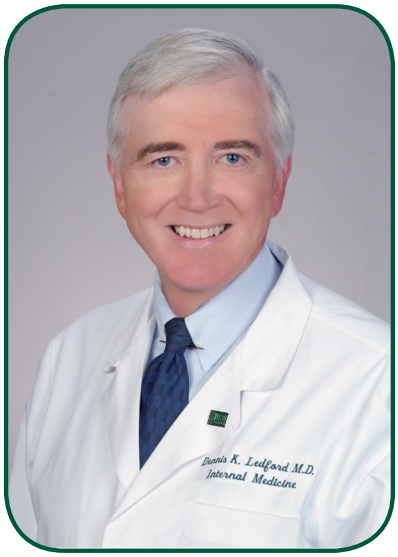
Dr. Roger W. Fox completed his 3 years of internal medicine and 2 years in allergy and immunology at the University of South Florida, Morsani College of Medicine, Tampa, FL after receiving his medical degree from St. Louis University School of Medicine. He joined the Division's faculty in July, 1980. He is a Fellow of the American College of Physicians and the American Academy of Allergy Asthma and Immunology.

He has been elected to "The Best Doctors in America" for the past decade and serves as the Director of Education of the allergy/immunology fellowship training program. He has helped train over 90 physicians in the specialty and has published extensively, and has presented at local, national and international medical meetings. He has served on various boards, including the Hillsborough County Medical Association, the Florida Allergy Asthma and Immunology Society, of which he is a past-president, and numerous committees in the American Academy of Allergy Asthma and Immunology.

Dr. Fox enjoys being a clinician and mentor and in that capacity, sees patients at the University of South Florida Morsani Medical Clinics, the Veterans' Administration Hospital Allergy Clinic, as well as the other clinics affiliated with the University of South Florida. Dr. Fox is a volunteer attending physician at the James A. Haley Tampa VA Hospital, having served as an attending physician for over 30 years, and has staff privileges at Tampa General, Moffitt Cancer, and Florida Hospitals.

His research interests include vocal cord dysfunction, acute and chronic urticaria and angioedema, comorbid conditions of asthma, allergic drug reactions and atopic eczema.

Dennis K. Ledford, M.D.



Dr. Dennis Ledford received his medical degree from the University of Tennessee Center for Health Sciences, Nashville, Tennessee. He completed his internal medicine residency there and served as chief medical resident for Dr. Gene Stollerman, M.D., Chairman of Internal Medicine at this same university. A fellowship in rheumatology and immunology followed at New York University and Bellevue Hospital in New York as well as a fellowship in allergy and immunology at the University of South Florida. He joined the faculty at USF Morsani College of Medicine and achieved the rank of professor of medicine in 2000.

Local and regional activities include past service as President of the USF Medical Faculty of the Morsani College of Medicine and President of the Florida Allergy Asthma and Immunology Society. He is current Head of the Allergy/Immunology Section, Florida Hospital and the James A. Haley VA Hospital,Tampa, FL. National contributions include prior service as President of the American Academy of Allergy Asthma and Immunology, an associate editor of the *Journal of Allergy and Clinical Immunology,* and chair of the Steering Committee for the American Academy of Allergy Asthma and Immunology Education and Research Trust Fund (AAAAI Foundation). He also served as Co-Chair of the American Council of Graduate Medical Education (ACGME), Allergy/Immunology Residency Review Committee and Director of the American Board of Allergy and Immunology.

Clinical responsibilities and student and resident teaching are combined with research interests in severe glucocorticoid-dependent asthma, allergen characterization, the association of gastroesophageal reflux and upper airway disease, and eosinophilic esophagitis.

Seong Cho, M.D.

Dr. Seong Cho received his M.D. from the Kyung-Hee University, Seoul, Korea in February, 1989. After completing his ear nose and throat (ENT) residency at Kyung Hee University Medical Center in Seoul, Korea, he pursued his postdoctoral research in 1997 in the Division of Pediatric Allergy and Immunology at University of California Los Angeles (UCLA), California. To achieve his goal of becoming a physician scientist in allergy and immunology in the U.S.A., he completed his residency training in internal medicine at the University of Tennessee and fellowship in the specialty of allergy and immunology, Department of Medicine, at Northwestern University, Chicago, IL. Dr. Cho then became an assistant professor at Northwestern University where he continued his academic career. He joined the Division of Allergy and Immunology, University of South Florida College of Medicine, February, 2015, as an assistant professor of medicine and was then promoted to Associate Professor, August, 2016.

Dr. Cho is board certified in internal medicine and allergy/immunology (USA) and otolaryngology (Korea). During his fellowship in allergy/immunology, he received the 2008 American College of Allergy Asthma and Immunology (ACAAI) First Place Clemens von Pirquet Award and the 2009 American Academy of Allergy Asthma and Immunology (AAAAI) GSK Fellows Career development Award. He has also received a variety of different research awards including awards from the American Heart Association (AHA) and National Institutes of Health (NIH).

Other than his research interest in asthma and chronic rhinosinusitis /nasal polyps, he is interested in mast cell biology and mast cell related disorders including the mast cell activation syndrome. He is widely published and he and his colleague discovered that human mast cells are a novel and major source of plasminogen activator inhibitor-1 (PAI-1), that mast cell-derived PAI-1 plays an important role in asthma, that it also plays a role in virus-induced asthma exacerbation and that PAI-1 inhibitor, a small molecule, reduces airway inflammation and remodeling in asthma. It is hoped that his research on PAI-1 could lead to a discovery of a novel biomarker of airway remodeling and cell- or gene-specific personalized therapeutic interventions for subjects with severe asthma. One other area of investigation is the age-related differences in the pathogenesis of chronic rhinosinusitis and nasal polyps for which he has a K23 grant support from the NIH.

Mark C. Glaum, M.D., Ph.D.

Dr. Mark Glaum received a B.A. in psychology from Fordham University in New York, NY. Following graduation, he returned to his home town of Philadelphia, PA, and earned a Master of Science in Physiology from the School of Graduate Studies at Hahnemann University. Dr. Glaum continued on at Hahnemann, where he was awarded an MD degree and a PhD in immunology. He completed internship and residency in internal medicine at Hahnemann Hospital and then pursued fellowship training in allergy and immunology at the University of Pennsylvania, where he received the Stanley E. Bradley Award for Bench Research in Internal Medicine. Dr. Glaum holds the rank of associate professor of medicine and pediatrics at the Morsani College of Medicine.

Dr. Glaum is board certified in internal medicine and allergy and immunology, and he is a fellow of the American Academy of Allergy Asthma and Immunology (AAAAI). He has been elected to “Top Doctors in America” for the last ten years and enjoys teaching medical students, internal medicine residents and allergy/immunology fellows. He became a staff member of the James A. Haley Veterans’ Hospital in 2016 where he sees patients. He also has staff privileges at Tampa General, Moffitt Cancer, and Florida Hospital Fletcher and Oak Hill Hospitals. He has served on the boards of the Allergy and Asthma Foundation of America and Hillsborough County Medical Society and is the current Chair of Rhinosinusitis and Ocular Allergy Interest Section of the American Academy of Allergy Asthma and Immunology.

Dr. Glaum’s research interests include food allergy, chronic rhinosinusitis, nasal polyps, mast cell biology, pollen identification, and devising new biological techniques using PCR to measure aeroallergens.

Narasaiah Kolliputi, Ph.D.

Dr. Narasaiah Kolliputi is an Associate Professor and Division Director of Research Education for the Division of Allergy and Immunology, Department of Internal Medicine, at the USF Morsani College of Medicine, Tampa, FL. He received his postdoctoral training at Massachusetts General Hospital, Harvard Medical School, Boston, MA. Prior to that time, he received his BS in biology and chemistry in 1997 followed by an MS in biochemistry in 1999 at Sri Venkateswara University, Tirupati, India. He then completed his PhD in 2004 in biochemistry at Osmania University, Hyderabad, India.

Dr. Kolliputi has published 52 papers, including a paper in *Circulation Research and Immunology*. He serves as a grant reviewer for the National Institutes of Health, VA Merit Grants, USA Department of Defense and the American Heart Association. He is an associate editor for *Frontiers in Pharmacology, Frontiers in Physiology* and *Frontiers in Genetics* and is a guest associate editor for *Frontiers in Mitochondrial Physiology*. He is an editorial board member for *Translational Medicine, Virology & Mycology* and *Journal of Biocatalysis & Biotransformation*. Dr. Kolliputi's research is funded by an NIH RO1 and an American Heart Association Scientist Developmental grant.

He is working on translational strategies to attenuate oxidative stress mediated acute lung injury (ALI), pulmonary fibrosis and pulmonary arterial hypertension.

Michael Teng, Ph.D.

Dr. Michael Teng received his Ph.D. in immunology from the University of Chicago in 1993. He trained as a postdoctoral fellow studying viral pathogenesis at The Scripps Research Institute in La Jolla, CA. Subsequently, he became a research fellow at the National Institute of Allergy and Infectious Diseases, investigating the molecular biology of respiratory syncytial virus (RSV) and RSV vaccine development. In 2002, he accepted a faculty appointment in the Department of Biochemistry and Molecular Biology at the Pennsylvania State University, University Park, PA, where his laboratory continued studies on RSV pathogenesis.

Dr. Teng joined the faculty of the Division of Allergy and Immunology at USF Morsani College of Medicine in 2010 and is director of basic research in the Division. He holds joint appointments in the Departments of Pediatrics, Molecular Medicine, and Pharmaceutical Sciences (College of Pharmacy). Dr. Teng is currently President of the USF Faculty Senate. He serves as a grant reviewer for the National Institutes of Health and the American Heart Association. His past and present research funding includes grants from the National Institutes of Health, the American Heart Association, and contracts with pharmaceutical companies.

Dr. Teng's research focuses on the host-virus interactions important for RSV pathogenesis. In particular, he is interested in the mechanisms by which RSV inhibits innate immune responses to enhance viral replication. Understanding the interplay between RSV proteins and innate immunity may lead to the development of more immunogenic RSV vaccine candidates. Additionally, Dr. Teng studies the interactions between cellular signal transduction machinery and viral proteins, with a view to discovering potential targets for antiviral therapy.

Blanca Camoretti-Mercado, Ph.D.

Blanca Camoretti-Mercado is Assistant Professor and Division Director of Translational Research. She received her Ph.D. degree from the University of Buenos Aires, Argentina, and conducted a post-doctoral fellowship at the University of Chicago. She joined the faculty of the Section of Cardiology and later the Section of Pulmonary and Critical Care in the Department of Medicine at the University of Chicago. In November, 2012 she was recruited to the University of South Florida. A recipient of Diversity, Mentor, and Teacher awards, she is an active member of the American Thoracic Society (ATS), and current chair of the Assembly on Respiratory Structure and Function. She is a member of the ATS Board of Directors and the Planning Committee. She served as chair of the ATS Programming and Nominating Committees, was a member of the International Lung Health and the Members in Training and Transition Committees, and is the founding member of the Science and Innovation Center. She organized and chaired numerous symposia and poster discussions, and presented her studies in academic and non-academic institutions worldwide. She chaired the Women Lung Conference of the American Lung Association (ALA, Chicago ATS Chapter), has been a reviewer in the National Institute of Health (NIH) and American Heart Association (AHA) study sections, and is on the editorial board of various journals.

Dr. Camoretti-Mercado has published over 50 original scientific, review and editorial articles, and book chapters. Her research has been funded by NIH, AHA, ALA, and the LAM and the Blowitz-Bridgeway Foundations; she also received the inaugural award from the ATS Research Foundation.

Her translational investigations focus on the molecular bases, cellular signaling, and genomic determinants of lung dysfunction. She cloned several genes of the contractile machinery, established the role and pathways of TGFβ action on gene expression and growth in airway smooth muscle, and created pre-clinical models of airway remodeling and hyperresponsiveness. She studies the smooth muscle as key effector of contraction and relaxation, source of inflammatory mediators, contributor to asthma, COPD and LAM diseases, and as a target for drug discovery.

Lakshmi Galam, Ph.D.

Dr. Lakshmi Galam is an Assistant Professor in the Division of Allergy and Immunology, Department of Internal Medicine, at the USF Morsani College of Medicine, Tampa, FL. She completed her postdoctoral training at Oklahoma State University, Stillwater, OK and then Massachusetts General Hospital, Harvard Medical School, Boston, MA. Prior to that time, she received her BS in biology and chemistry in 1996 followed by an MS in biotechnology in 1998 at Andhra University, Vishakapatnam, India. She then went on to complete her PhD in Genetics at Osmania University, Hyderabad, India, in 2004.

Dr. Galam has published 18 papers, including in *Free Radic Biol Med, Oncotarget. and Am J Physiol Lung Cell Mol Physiol.* She has experience in development and use of automated liquid handling systems integrated with high throughput analytical platforms and extensive experience in handling multiple types of primary cells for FACS-based analysis and HTS hit validation studies. She is working on understanding the mechanisms of oxidative stress with respect to SOCS-1 protection against hyperoxic acute lung injury. She is funded by the American Heart Association.

Farnaz Tabatabaian, M.D.

Dr. Farnaz Tabatabaian received a B.S. in chemistry from Wright State University in Dayton, Oh. Following graduation, she earned her Master of Science in Anatomy and Physiology at Wright State University where she had direct exposure to research in innate immunology and inflammation. She pursued an M.D. degree at Northeast Ohio University of Medicine, Akron, OH. She completed her internship and residency in internal medicine at the Wexner Medical Center, Ohio State University, and then did her fellowship training in allergy and immunology at the University of South Florida, Pediatric Division of Allergy and Immunology, Johns Hopkins All Children's Hospital, St. Petersburg, FL.

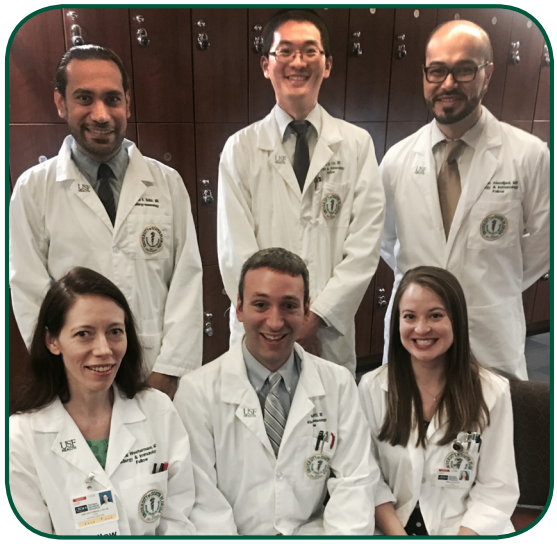
Dr. Tabatabaian is board certified in internal medicine. She enjoys teaching medical students, internal medicine residents and allergy/immunology fellows. She sees patients in internal medicine and allergy/immunology at the University of South Florida Morsani College of Medicine. Dr. Tabatabaian is involved in implementing and creating a curriculum in high value education for residents to help devise a way to decrease healthcare costs while providing excellence in care.

Dr. Tabatabaian's research interests include adult immunology with a focus on common variable immunodeficiency, inflammation and asthma, and the impact of nicotine on the bronchi and epithelial cells.

DIVISION OF ALLERGY AND IMMUNOLOGY

FELLOWS-IN-TRAINING

Adeeb Bulkhi, MD, completed his clinical fellowship training and graduated in June, 2016. He is currently doing a 3rd year of training as a Research Fellow and will graduate in June, 2017. Dr. Bulkhi received his medical degree from Umm Al Qura University, Medical Collage in Makkah, Kingdom of Saudi Arabia. He completed his residency in internal medicine at Wayne State University/Detroit Medical Center in Detroit, Michigan. Within the field of allergy and immunology, Dr. Bulkhi has a specific interest in asthma and its pathophysiology. His long term goal is to improve patient understanding of asthma and other comorbid conditions with emphasis on self-management.



1st row (L to R): Emma Westermann-Clark, MD, Peter Ricketti, DO, Amber Pepper, MD
2nd row (L to R): Adeeb Bulkhi, MD, Chen Hsing Lin, MD, Sultan Alandijani, MD

Sultan Alandijani, MD, 2nd year fellow, will graduate in September 2018. Dr. Alandijani received his medical degree from Umm-Alqura University Medical College in Makkah, Kingdom of Saudi Arabia. He completed his residency in internal medicine in New York Methodist Hospital, an affiliate of the Weill Cornell Medical College. Within the field of allergy and immunology, Dr. Alandijani has a specific interest in asthma and its pathophysiology, and allergic rhinitis with a long-term goal to improve the treatment of chronic allergic rhinitis and asthma.

Chen Lin, MD, 2nd year fellow, will graduate in June, 2017. Dr. Lin received his medical degree from Sichuan University, West China Center of Medical Sciences, China. He completed his residency in internal medicine at Nassau University Medical Center in East Meadow, New York. Dr. Lin's primary interests include asthma, food allergy and medical education.

Peter Ricketti, DO, 2nd year fellow, will graduate in June, 2017. Dr. Ricketti received his medical degree from the Philadelphia College of Osteopathic Medicine in Philadelphia, PA. He completed his residency in internal medicine at Rutgers - New Jersey Medical School in Newark, New Jersey. His primary interests include asthma, allergic rhinitis, contact dermatitis, sleep disorders, and autoimmune disorders. Beginning July 1, 2017, Dr. Ricketti will begin further subspecialty training in sleep medicine for one additional year at the University of South Florida before practicing in his father's allergy and pulmonary private practice in Trenton, New Jersey.

Amber N. Pepper, M.D., 1st year fellow, will graduate in June 2018. Dr. Pepper received her medical degree from the University of South Florida Morsani College of Medicine in Tampa, FL. She also completed her residency in Internal Medicine at the University of South Florida Morsani College of Medicine. Dr. Pepper has specific interests in asthma, allergic rhinitis, drug allergy, allergen immunotherapy, and medical education. Her long term goal is to promote patient and physician understanding of these conditions to improve medical outcomes.

Emma Westermann-Clark, M.D., 1st year fellow, will graduate in June 2018. Dr. Westermann received her medical degree from the University of Florida College of Medicine in Gainesville, Florida. She completed a Master's Degree in health policy at Harvard University. She did an Internal Medicine residency at the University of South Florida Morsani College of Medicine in Tampa, Florida. Her interests include food allergy, mucosal immunology, and immunodeficiency.

RESEARCH STAFF MEMBERS

Jutaro Fukumoto, M.D., Ph.D., Research Associate

A Ra Jo, Ph.D., Biological Scientist

Ramani Soundararajan, Ph.D., Scientific Researcher

Kim Teng, Senior Biological Scientist

STUDENTS AND VISITING RESEARCH SCHOLARS

Jianjun Chen, M.D., Visiting Research Scholar

M. Helena Hernandez Cuervo, MD, Graduate Student

Dae Woo Kim, M.D., Ph.D., Visiting Research Scholar

Wenjing Li, M.D., Visiting Research Scholar

Venkata R. Narala, PhD, Visiting Research Scholar

Pawel Bigos, Undergraduate Student

Michelle Kaminsky, Research Assistant/Student

Andrew McGill, Graduate Student

Bryann Tan, Undergraduate Student

ADMINISTRATIVE PERSONNEL

* **Peggy Hales,** Program Assistant

* **Rebecca Carter,** Administrative Secretary

* **Geeta Gehi,** Administrative Secretary

* Also James A. Haley Veterans' Hospital, Tampa, FL

DIVISION'S CLINICAL RESEARCH UNIT

Catherine Renee Smith, CMA, CCRC, Head Coordinator, Clinical Research Unit & American Lung Association Coordinator

Michelle Twitmyer, CCRC, Clinical Research Coordinator

Tiffani Kaage, Clinical Research Coordinator

ALL CHILDREN'S HOSPITAL

Amy Baldwin, Administrative Specialist

Clinical Research Unit

Left to Right: Tiffani Kaage, Michelle Twitmyer, Catherine Renee Smith

III. JOY MCCANN CULVERHOUSE AIRWAY DISEASE RESEARCH CENTER

A. Basic Research Projects

1. Bitter taste receptors (TAS2R) as novel therapeutic targets for airway relaxation. (PI: Camoretti-Mercado)

Asthma and chronic obstructive pulmonary disease (COPD) are characterized by airflow limitation and elevation of bronchoconstricting and pro-inflammatory agents in the lung. Airway smooth muscle (ASM) is a major driver of airway narrowing. G-protein coupled receptors regulate ASM contraction and relaxation by increasing intracellular calcium or cAMP, respectively. Activation of the recently described TAS2Rs present on the ASM augments calcium but paradoxically, causes relaxation. A second, selective and more efficient TAS2R-stimulated pathway was discovered. It relaxes ASM through inhibition of calcium flux and cell depolarization caused by ASM bronchoconstrictors.

2. Drug discovery for airway smooth muscle (ASM) bitter taste receptor (TAS2R) agonists (PI: Camoretti-Mercado)

Medicines used for obstructive respiratory diseases are ineffective for a subset of asthmatics and COPD patients. TAS2Rs have emerged as potential therapeutic targets because their activation elevates calcium but inhibits ASM contraction and bronchoconstriction. Structurally different agonists can stimulate TAS2Rs. A library of over 29 million compounds was screened and seven identified that elevate calcium specifically in ASM cells. Of these, none blocked calcium elicited by histamine or bradykinin, but three inhibited the elevation of calcium caused by acetyl choline and angiotensin II. Both are expected to oppose cell contraction. Further investigation on structure-function relationships will advance the development of improved ASM relaxants with high potency and efficacy.

3. Bitter taste receptors (TAS2R) function in human airway smooth muscle cells is partially gustducin-Independent (PI: Camoretti-Mercado)

TAS2R stimulation in the tongue with a variety of bitter compounds promotes activation of the trimeric G-protein gustucin, a member of the G_i family. Mice harboring the α-gustducin subunit knockout partially conserved bitter taste function, mediated by $G_{\alpha i\text{-}1}$. The requirement of α-gustducin in human ASM cells to stimulate and inhibit TAS2R action was investigated. $G\alpha_{i\text{-}1}$, $G\alpha_{i\text{-}2}$ and α-transducing-2 but not α-gustducin were detected in ASM cells. Pertussis toxin (PTX) was utilized to globally inactivate Gi proteins and it was discovered that TAS2R stimulation and inhibitory functions exhibit heterogeneous PTX sensitivity.

4. Airway responsiveness and remodeling in mice that overexpress S100A12 in smooth muscle (PI: Camoretti-Mercado)

S100A12 is a peptide found in increased quantities in the serum and sputum of patients with allergic asthma. It is proposed as a mediator of asthma pathology and may represent a biomarker for this disease. We generated transgenic mice expressing S100A12 in their smooth muscle and tested its role in mediating airway inflammation in an ovalbumin-allergic lung inflammation model. Compared to wild type sensitized and challenged animals, S100A12 mice showed reduced inflammation and eosinophilia, less mucus production, thinner ASM, and innate respiratory hyporresponsiveness. In vitro, S100A12 stimulation induced ASM cell apoptosis, which could at least partially explain the observed loss of the ASM layer and consequent broncho-protection in these mice.

5. Expression of active Akt1 promotes ASM cell hypertrophy (PI: Camoretti-Mercado)

Akt1 signaling is activated during ASM cell differentiation, concomitant with expression of the contractile phenotype and cell hypertrophy. We expressed a constitutionally active Akt1 mutant in ASM cells and observed induction of cell hypertrophy, augmented cell proliferation and expression of the marker, PCNA (proliferating cell nuclear antigen), with no selective up regulation of contractile proteins. We used human specimens from asthmatic and non-asthmatic donors and demonstrated activated Akt1 and its downstream target SP6 in smooth muscle bundles of asthmatics compared to non-asthmatics.

6. Role of plasminogen activator inhibitor-1 in the airway remodeling of asthma (PI: Cho).

The most highly induced gene in human mast cells (MC) cDNA microarray is plasminogen activator inhibitor-1 (PAI-1). PAI-1 promotes tissue remodeling in a mouse model of asthma and in patients with severe asthma. A low molecular weight PAI-1 inhibitor was found to reduce inflammation and fibrosis in a murine model of chronic asthma. A gain-of-function genetic polymorphism of PAI-1 is associated with the development of asthma and decreased lung function. Therefore, PAI-1 can be a potential target for asthma prevention and the treatment of severe asthma.

7. Effect of NALP-3 inflammasome on epithelial permeability (PI: Kolliputi)

Previous reports demonstrate the inflammasome, a poinflammatory cytokine processing complex, plays an important role in the production of early inflammatory cytokines associated with edema. Ceramide is a critical mediator of pulmonary edema, however the ability of ceramide to activate the inflammasome has not been elucidated. Utilizing macrophages in vitro, we discovered that ceramide induced inflammasome activation results in significant cytokine secretion. Genetic silencing of inflammasome components abolished the ability of ceramide to induce inflammasome activation, and a rescue of the barrier integrity of alveolar epithelial cell (AEC) in co-culture was observed. These novel results reveal that ceramide induced cytokine secretion and AEC permeability occurs through an inflammasome dependant mechanism

8. Effect of microRNA 16 on epithelial sodium channel in human alveolar epithelial cells (PI: Kolliputi)

Removal of edema from the air spaces of the lung is a critical function of the epithelial sodium channel (ENaC) and also involves the serotonin (5HT) transport system. Studies suggest that microRNA-16 (miR-16) targets the serotonin transporter (SERT). However, the role of miR-16 on its targets SERT and ENaC have not been studied. The expression patterns of miR-16, SERT, ENaC and serotonin are being investigated in mice exposed to room air and hyperoxia. The effects of miR-16 overexpression are being observed in vitro. MiR-16 and ENaC down regulation in mice exposed to hyperoxia correlates with an increase in SERT expression and pulmonary edema. Overexpression of miR-16 in alveolar epithelial cells suppresses SERT and increases ENaCβ levels. These data suggest that miR-16 upregulates ENaC, a major sodium channel involved in resolution of pulmonary edema in acute lung injury (ALI).

9. Role of enhancer of zeste homolog 2 on pulmonary artery smooth muscle cell proliferation (PI: Kolliputi)

Pulmonary arterial hypertension (PAH) is characterized by excessive proliferation of the pulmonary arterial smooth muscle cells (PASMCs). EZH2 regulates cancer cell proliferation; however, the role of EZH2 in the proliferation of PASMCs is not clear. Therefore, the expression of EZH2 is being investigated in normal and hypertensive mouse PASMCs. The effects of EZH2 overexpression on the proliferation of human PASMCs also are being tested. EZH2 protein expression in mouse PASMCs correlates with decreased right ventricular function. The overexpression of EZH2 in human PASMCs enhances proliferation and migration and decreases the rate of apoptosis. EZH2 transfected cells demonstrated an increase in proliferation and a significant decrease in apoptosis. These findings show that EZH2 plays a role in the migration and proliferation of PASMCs. More importantly, EZH2 may serve as a potential target for new therapies for PAH.

10. Effect of mir-206 on pulmonary artery smooth muscle cell proliferation and differentiation (PI: Kolliputi)

Pulmonary arterial hypertension (PAH) is a progressive devastating disease characterized by excessive proliferation of the pulmonary arterial smooth muscle cells (PASMCs). MicroRNA-206 (miR-206) is known to regulate proliferation however, the role of miR-206 in PAH has not been studied. Therefore, the expression patterns of miR-206 are being investigated in normal and hypertensive mouse PASMCs. The effects of miR-206 on cell proliferation, apoptosis and smooth muscle cell marker expression in human PASMCs also are being measured. MiR-206 expression in mouse PASMCs correlates with an increase in right ventricular systolic pressure. Reduction of miR-206 levels in hPASMCs causes increased proliferation and reduced apoptosis. These results suggest that miR-206 is a potential regulator of proliferation, apoptosis and differentiation of PASMCs, which could yield a novel treatment strategy in PAH.

11. Development and characterization of an animal model for idiopathic pulmonary fibrosis (PI: Kolliputi)

Idiopathic pulmonary fibrosis (IPF) is a chronic, progressive, fibrotic lung disease of unknown etiology. There is no animal model available that closely mimics the clinical and pathological features of IPF; this has hindered potential treatments for IPF. The goal of this project is to establish and characterize the clinical relevance of a new IPF animal model.

12. Exploring a novel epigenetic mechanism to understand the pathogenesis of pediatric eosinophilic esophagitis (PI: Kolliputi)

Eosinophilic esophagitis (EoE) is a significant public health problem that negatively impacts the quality of life for those affected. Current treatment includes symptomatic management with topical glucocorticoids, proton pump inhibitors, and elimination diets. Its pathogenesis is thought to have an environmental component, thus a better understanding of gene-environment interactions would significantly advance the field. We are exploring gene-environment interactions by analyzing the RNA epitome using RNA and DNA sequence information of EoE patients before and after treatment with individualized elimination diets. These analyses should provide information about the etiology of the disease and identify potential therapeutic targets.

13. Enhancing immunogenicity of RSV vaccines by altering NS1 function (PI: Teng)

This is part of a program project in collaboration with Dr. Mark Peeples (Nationwide Children's Hospital, Columbus, OH). The hypothesis that decreasing the ability of NS1 to inhibit interferon responses can enhance the immunogenicity of RSV vaccine candidates is being researched.

14. Structural determinants of NS2 for pathogenic functions (PI: Teng)

We have previously published that NS2 blocks interferon induction by binding to RIG-I. In addition NS2 appears to have additional functions associated with viral pathogenesis, including NFkB induction and STAT2 degradation. Trying to separate these activities by mutagenesis to understand how NS2 accomplishes each function is under investigation. The focus is on differentially altering the functions to develop an attenuated RSV vaccine candidate that maintains its immunogenicity.

15. Mechanism of RSV temperature sensitivity due to cis-acting sequences (PI: Teng)

Previous studies show that a single nucleotide change in the M2 transcription start sequence is sufficient to confer temperature sensitivity to recombinant RSV. The mechanism is being investigated by which this mutation affects RSV replication and transcription at non-permissive temperatures.

16. RSV matrix (M) protein trafficking and virus assembly (PI: Teng)

This is a long-term collaboration with Drs. David Jans and Reena Ghildyal (Monash University, Melbourne, AUS) to determine the role of M protein trafficking in RSV morphogenesis and the importance of nuclear translocation in M function.

17. MicroRNAs as biomarkers and therapeutics for asthma (PI: Wang)

MicroRNAs (miRs) are ~22 nucleotides long non-coding RNAs that inhibit mRNA translation by the base pairing rule at the accuracy of one base. It is believed that most human genes and the entire spectrum of biological pathways are tightly and delicately controlled by the miRNome. Deregulation of miRs may contribute to various diseases. The mechanism underlying miR regulations of immunity is under investigation. Developing miR biomarkers and therapeutics for inflammatory diseases, such as asthma, using cell culture and mouse models are goals of this research.

18. LRBA, a novel regulator of immune disorders (PI: Wang)

Lipopolysaccharide (LPS)-responsive beige-like anchor (LRBA) is a novel gene essential for the normal function of the immune system. It is the eighth common variable immunodeficiency (CVID) gene, mutation of which causes CVID and autoimmunity. LRBA is involved in some critical cellular processes such as cell proliferation, apoptosis and autophagy. It may interact with multiple important signal transduction pathways. The molecular mechanism by which LRBA regulates the immune system is being explored.

19. Genetic mutation correction by the CRISPR genome-editing technology (PI: Wang)

Clustered regularly-interspaced short palindromic repeats (CRISPR) technology can be used to edit human genome at low cost but high efficiency. It allows correction of genetic mutations that cause complex human diseases. Genetic mutations of LRBA gene cause severe immunodeficiency and autoimmune diseases, such as common variable immunodeficiency, inflammatory bowel diseases, type 1 diabetes and rheumatoid arthritis. We will collaborate with Dr. Michael Jordan (Cincinnati Children's Hospital Medical Center, University of Cincinnati) to correct the mutations of LRBA in stem cells in vitro, then transfer these cells to patients with LRBA deficiency to hopefully cure this complex human disease.

20. Development of animal model to study genetic interaction (PI: Wang)

Genetic interaction study in the intact animal provides the most compelling means to define genotype–phenotype relationship. However, it is extremely challenging in human and animal models, since the variations between individuals can interfere with a gene's contribution, which usually is small, to a phenotype. To overcome this barrier, we propose that the nine genotypes of two genes are produced and labeled with fluorescent proteins in a single mouse so that they can be analyzed in a single flow cytometer tube. Phenotyping sensitivity thus can be greatly increased with the increased sample size and eliminated variations. If successful, this project will lead to the development of a novel methodology to efficiently conduct a genetic interaction study in animal models to understand the etiology of complex human diseases.

21. Modeling complex human immunodeficiency disease in a single mouse (PI: Wang)

This project is designed to develop a novel conditional gene knockout technique to study genes in a single mouse at high resolution. Currently, clear and consistent phenotypes are the exception rather than the rule. This is due to the fact that variations between individuals can mask a gene's contribution to a phenotype. We propose to eliminate these variations by studying the three genotypes of a gene in a single mouse in one flow cytometry tube. Phenotyping sensitivity thus can be greatly increased, e.g. theoretically up to one million times, and the technique can detect the phenotypes currently undetectable. This novel technique can be used to obtain high resolution data while retaining the function of the current conditional knockout technique.

22. Development of CRISPR genome-editing technology (PI: Wang)

CRISPR can be programmed to edit the human genome and is widely used due to its high degree of fidelity and relatively simple construction. CRISPR, based on the non-homologous end-joining (NHEJ) repair pathway, is used, with high efficiency, to generate gene knock-outs with variable sizes of small insertion/deletions. More precise genome editing, either the insertion or deletion of a desired fragment, is more desirable and can be accomplished by combining the homology-directed-repair (HDR) pathway-based CRISPR technology. HDR-mediated gene knock-in experiments are typically inefficient and the off-target is also a concern when the CRISPR technique is used on humans. We are developing and improving the CRISPR technique to edit the genome at high efficiency and accuracy, required for clinical application.

B. Clinical Research Projects

1. Age-related pathogenesis of chronic rhinosinusitis and nasal polyps (PI: Cho)

Chronic rhinosinusitis (CRS) is one of the most common chronic diseases in the United States, with an estimated prevalence of 10% of the adult population. The prevalence of CRS sharply increases after age 50 such that those age 60 years and above are twice more likely to have CRS than adults age 19-39 years (1). A large cohort study in the US also shows that the incidence of CRS with nasal polyps (NP; CRSwNP) between ages 65-74 is almost two-fold higher compared with CRS without NP or control. We found that there is a significant decrease of eosinophilic inflammation, B lymphocyte activation and reduction of innate immune molecules with the aging process. We are investigating the age-related pathogenesis of CRS and nasal polyps using human endoscopic sinus surgery samples and a murine model of nasal polyps.

2. Effects of pine cone extract on IgE levels in patients with allergic rhinitis (PI: Ledford)

Pine cones and their aqueous extracts (PCE) were thought to have medicinal properties as far back as 2000 years ago in Japanese populations. Anecdotal reports suggest that the use of PCE improves allergic rhinitis symptoms; it

significantly reduces serum IgE levels in mouse models. The purpose of this study is to determine if oral PCE extract administered in a double-blind fashion significantly reduces IgE levels in patients with evidence of perennial allergic rhinitis.

3. A comparison of microRNA in patients with allergic rhinitis and other forms of rhinitis (PI: Ledford)

The evaluation of rhinitis is often hindered by limited measures to assess the pathogenesis of mucosal disease. This project builds upon a prior study and involves sampling the nasal mucosa of the inferior turbinates in subjects with various forms of rhinitis diagnosed with currently available clinical procedures. The expression of microRNA will be related to the diagnosis and current therapy. The intent is to explore possible biologic pathways that are modulated in different forms of rhinitis as well as to assess the feasibility of using microRNA as a diagnostic tool.

4. Pollen and fungal spores counts and molecular quantification of outdoor allergens (PI: Glaum)

The Division houses the Pollen and Mold Counting Station for Tampa that has two devices adapted to collect pollen and fungal spores. One collector utilizes traditional methods, the other is adapted to collect pollen samples suitable for molecular analysis. The collectors are located on the roof of the MDC 19 Building at the Morsani College of Medicine. Allergen Science & Consulting performs pollen and spore counts once a week, as a courtesy to the Division. The purpose of this study is to determine if it is feasible to utilize molecular methods to quantify aeroallergen content from volumetric air samples. Pollen-specific genes will be identified, quantitated and compared to pollen levels obtained by established standard counting methods.

5. Effect of oxymetazoline hydrochloride in combination with nasal glucocorticoid on the apnea hypopnea index (AHI) (PI: Lockey)

“Nocturnal Oxyhemoglobin Saturation, Snoring, and Sleep Quality in Subjects with Persistent Nasal Congestion. A Double Blinded, Placebo Control, Cross Over Prospective Trial” is designed to evaluate the effectiveness on the apnea/hypopnea index (AHI) of adding oxymetazoline to intranasal mometasone, and on other sleep parameters. The study will be carried out in subjects with persistent nasal congestion secondary to allergic or non-allergic rhinitis despite treatment with the highest recommended doses of intranasal mometasone.

6. Evaluation of calcium and vitamin D intake in children on inhaled or intranasal corticosteroids compared to normal children (PI: Lockey)

The specific aims of this project are to evaluate the dietary calcium intake of asthmatic children (4-17 years) who are receiving long-term treatment with inhaled or intranasal corticosteroids versus healthy controls using a validated food frequency questionnaire.

7. Differences in mold counts from January 1995 to December 2011 (PI: Lockey)

Allergic diseases are due to complex interactions between genetic and environmental factors. Airborne mold and pollens are known to trigger allergic respiratory disease in sensitive individuals. Yet little is known about possible changes as related to climate change in pollen and mold counts over the last 16 years. Daily pollen and fungal spores sample data between January 1995 to December 2010 are available for Sarasota, FL. These data will be compared to weather data for Sarasota available from the National Climatic Data Center. The objectives of this study are to determine if changes in pollen/mold counts can be correlated with climate changes.

C. Clinical Research Unit (CRU)

The University of South Florida, Asthma, Allergy and Immunology CRU was established in 1977 to improve the treatment of patients who suffer from asthma, allergic and immunologic diseases.

The CRU provides quality research in a variety of clinical areas which include the following: allergic conjunctivitis; allergen immunotherapy; allergen skin testing; allergic rhinitis; asthma; atopic eczema; bronchitis, acute and chronic; contact dermatitis; chronic obstructive pulmonary disease; exercise induced asthma; headache (migraine and tension); hereditary angioedema; immunodeficiency diseases; insect allergy; intravenous immunoglobulin; nasal polyps; sinusitis, acute and chronic; temporomandibular joint disease; urticaria and vasomotor rhinitis.

Studies funded by pharmaceutical companies are conducted at the Division's CRU. The CRU is also a member of the American Lung Association's Asthma Clinical Research Center network, one of 19 centers throughout the United States.

D. Clinical Research Unit (CRU) Studies

ML29510 XTEND-CI (Xolair treatment efficacy of longer duration in chronic idiopathic urticaria): a phase IV, multicenter, randomized, double-blind, placebo-controlled study to evaluate the efficacy and safety of omalizumab through 48 weeks in patients with chronic idiopathic urticaria

Double-blind, randomized, placebo-controlled, parallel-group, phase IV study to evaluate the effect of aclidinium bromide on long-term cardiovascular safety and copd exacerbations in patients with moderate to very severe COPD (ASCENT COPD) LAS-MD-45 (D6560C00002)

MB29599 A prospective, single arm, longitudinal cohort study to assess biomarkers in real world patients with severe asthma

ROF-MD-07 A 52-week, double-blind, randomized, placebo-controlled, parallel-group study to evaluate the effect of roflumilast 500 µg on exacerbation rate in patients with chronic obstructive pulmonary disease (COPD) treated with a fixed-dose combination of long-acting beta agonist and inhaled corticosteroid (LABA/ICS)

A9111007 A randomized, double-blind, placebo-controlled, parallel group study to assess the efficacy, safety, and tolerability of pf-03715455 administered twice daily by inhalation for 12 weeks in subjects with persistent moderate to severe asthma who remain uncontrolled despite treatment with inhaled corticosteroids (ICS) and long-acting beta2 agonists (LABA)

OPN-FLU-NP-3101 A 16-week randomized, double-blind, placebo-controlled, parallel-group, multicenter study evaluating the efficacy and safety of intranasal administration of 100, 200, and 400 µg of fluticasone propionate twice a day (BID) using a novel bi-directional device in subjects with bilateral nasal polyposis followed by an 8-week open-label extension phase to assess safety

AF219-012 A 12-week study to assess the efficacy and safety of af-219 in subjects with treatment refractory chronic cough

ARC003 PEANUT allergy oral immunotherapy study of AR101 for desensitization in children and adults (PALISADE)

EFC13579 A randomized, double blind, placebo-controlled, parallel group study to evaluate the efficacy and safety of dupilumab in patients with persistent asthma

U-SS-M-AS312 A randomized, double-blind, double-dummy, placebo-controlled, four way crossover multicenter study to compare the bronchoprotective effects of the test product albuterol sulfate HFA pMDI (Cipla, Ltd, India) with the reference product, albuterol sulfate HFA pMDI Proventil® HFA (Merck & Co., Inc., US)

SL75.14 A randomized, double-blind, placebo-controlled, multi-center study of the efficacy and safety of STG320 sublingual tablets of house dust mite (HDM) allergen extracts in adults and adolescents with HDM-associated allergic rhinitis

VX14-787-103 A phase 2b, randomized, double-blind, placebo-controlled, parallel-group, multicenter study of 2 dose levels of vx-787 administered as monotherapy and one dose level of VX-787 administered in combination with Oseltamivir for the treatment of acute uncomplicated seasonal influenza a in adult subjects

IV. BASIC AND CLINICAL RESEARCH SUPPORT

ENDOWMENTS

(Both these endowments are used to support research and teaching within the Division)

Joy McCann Culverhouse Endowment and Chair in Allergy and Immunology

Mabel and Ellsworth Simmons Endowment and Professorship of Allergy and Immunology

EXTRAMURAL FUNDING

Government Funding

National Institute of Allergy and Infectious Diseases

National Heart, Lung and Blood Institute

Non-Profit Funding

American Lung Association

American Heart Association

Patient Centered Outcomes Research Institute

Pharmaceutical Funding (past or present)

Ablynx, NV
Afferent
Aimmune Therapeutics
Almirall Pharmaceuticals
AstraZeneca COmpleware
CSL Behring
Cytos
Dyax Corporation
Forest Laboratories
Genentech Inc
GlaxoSmithKline
Jerini, US
Merck and Co., Inc.
MedImmune
Novartis Pharmaceuticals
Pfizer
Pharming Inc.
Roche
Sanofi-Aventis Pharmaceuticals
Schering-Plough Corporation
Shire
Stallergenes
Teva Pharmaceuticals
Vertex
Viropharma

V. FACULTY AND STAFF AWARDS

Thomas B. Casale, MD
Harold S Nelson Lectureship award
2016 American Academy of Allergy Asthma &Immunology Annual meeting, Los Angeles, CA

2016 Distinguished Service Award, American Academy of Allergy Asthma &Immunology

Peter Ricketti, DO
University of South Florida Morsani College of Medicine – $500.00 Travel grant award for most outstanding poster at the Eastern Allergy Conference, June 2016.

Dennis K. Ledford, MD
James A. Haley Veterans' Hospital, 30 Year Service Award, August 2, 2016.

Sultan Alandijani, MD, Adeeb Bulkhi, Chen H. Lin, MD, Peter Ricketti, DO
Travel grant, American Academy of Allergy Asthma and Immunology Annual Meeting, Los Angeles, CA, March 4 - 7, 2016.

Chen H. Lin, MD, Peter Ricketti, DO
Travel grant, Eastern Allergy Conference, Palm Beach, Florida, June 2 - 5, 2016.

Sultan Alandijani, MD, Adeeb Bulkhi, MD, Chen H. Lin, MD, Amber Pepper, MD, Peter Ricketti, DO
Travel grant, American College of Allergy, Asthma and Immunology 2016 Annual Scientific Meeting, San Francisco, CA, November 10 – 14, 2016.

Chen H. Lin, MD
Travel grant, Southeastern Allergy, Asthma and Immunology Society Annual Meeting, Miramar Beach, FL, September 15 – 18, 2016.

Adeeb Bulkhi, MD
Travel grant for accommodation, Florida Allergy, Asthma and Immunology Society 2016 Annual Meeting, Orlando, FL, July 22 – 24, 2016.

VI. Major Accomplishments:

Blanca Camoretti-Mercado, PhD
Member of the Board of Directors, American Thoracic Society.
Chair, Assembly on Respiratory Structure and Function, American Thoracic Society. (2016-2018)

Thomas B. Casale, MD
The University of South Florida was selected as an American Lung Association-Airways Clinical Research Centers (ACRC) site effective July 1, 2016. Dr. Thomas Casale, Division of Allergy and Immunology, Department of Internal Medicine, is the USF site principal investigator.
Global Allergy and Asthma European Network (GA(2)LEN), European Union Network of Excellence in Allergy and Asthma. Dr. Casale is the only principal investigator and representative outside of Europe.

Dennis K. Ledford, MD
Appointed Chief, Section of Allergy and Immunology, James A. Haley Veterans' Administration Hospital, January 15, 2016.

Rosa Codina, PhD
Presented a course on fungal aerobiology and pathology, sponsored by the Spanish Society of Allergology and Clinical Immunology in Toledo, Spain.

Celebrated three years of success of her company, Allergen Science & Consulting (www.allergenscienceandconsulting.com)

Richard F. Lockey, MD, Roger W. Fox, MD, Dennis K. Ledford, MD, Mark C. Glaum, MD, PhD
Selected as "Best Doctors in Tampa".

Richard F. Lockey, MD, Dennis K. Ledford, MD, Mark C. Glaum, MD, PhD
Selected as Castle Connolly's Top Doctors, 2015-2016.

Richard F. Lockey, MD
Editor-in-Chief, *IMpact Review*, Morsani College of Medicine, Tampa, FL.

Narasaiah Kolliputi, PhD

Received a new two-year $392,437 R21 award from the National Instijtute on Alcohol Abuse and Alcoholism (NIAAA) to explore the role of a messenger RNA-binding protein called tristetraprolin (TTP) in alcohol-induced liver fibrosis.

This is Dr. Kolliputi's second active NIH grant. In 2016, he was also awarded a $373,750 R56 from the National Heart, Lung and Blood Institute investigating the mechanisms that cause lung injury and acute respiratory distress syndrome (ARDS).

G. Edward Stewart, MD
President of the Marion County Medical Society from April 2015 through August 2016.

Division of Allergy and Immunology, Department of Internal Medicine
Selected as a World Allergy Organization (WAO) Center of Excellence for the term 2016 – 2019. The purpose of WAO Centers of Excellence is to intensify and accelerate multi-disciplinary scientific and clinical innovation, education, and advocacy worldwide providing excellence in education, research, and training to various stakeholders in allergy, asthma and clinical immunology.

VII. VISITING PROFESSOR EDUCATIONAL PROGRAM

Pyong Woo Park, PhD, Associate Professor of Pediatrics, Harvard Medical School, Boston, MA, "Proteoglycan Interactions in Microbial Pathogenesis and Host Defense", Thursday, March 31, 2016, 7:00 – 8:00 AM.

James Gern, MD, Professor, Allergy & Immunology, University of Wisconsin, School of Medicine & Public Health, Department of Medicine, Madison, Wisconsin, "Viral Infections and Atopic Disease", Wednesday, April 20, 2016, 7:00 – 8: 00AM.

Juan Carlos Cardet, MD, Associate Physician, Department of Medicine, Brigham and Women's Hospital; Assistant Director of the Asthma Research Center, Pulmonary Medicine, Brigham and Women's Hospital, Boston, MA, "Asthma Exacerbated Respiratory Disease (AERD)" , Grand Rounds, USF Internal Medicine, Thursday, August 11, 2016, 12 noon – 1 PM.
"Enterolactone and Asthma", Allergy and Immunology Research Conference, Thursday, August 11, 2016, 7:00 AM – 8:00 AM.

Michiko K. Oyoshi, PhD, Assistant Professor of Pediatrics,Harvard Medical School,Boston, MA, "Impacts of Skin Sensitization on Atopic March",Wednesday, November 30, 2016, 7:00 – 8:00 AM.

Michael J. Massaad, PhD, Instructor, Harvard Medical School, Boston, MA, "Genetic and Functional Analysis of Primary Immunodeficiency Disorders", Thursday, December 1, 2016, 7:00 – 8:00 AM.

VIII. PUBLICATIONS FROM THE DIVISION

BOOK CHAPTERS PUBLISHED

Teng MN, Tran KC. Use of minigenome systems to study RSV transcription. In: *Human Respiratory Syncytial Virus: Methods and Protocols.* Tripp RA, Jorquera P (eds). ISBN 978-1-4939-3687-8, 2016.

Pepper AN, Ledford DK: Allergic Rhinitis: Diagnosis and Treatment. In: *Allergy and Asthma: Practical Diagnosis and Management,* 2nd edition. Mahmoudi M (ed). Springer, Switzerland, pp 63-85.

Bender BG, Lockey RF: Solving the problem of nonadherence to immunotherapy. In: *Immunol Allergy Clin North Am*. Aeroallergen and Food Immunotherapy. Nowak-Wegrzyn AH, Cox LS (eds). W, B. Saunders Company, Philadelphia, PA. Vol 36(1): 205-13, 2016.

SCIENTIFIC ARTICLES PUBLISHED

Czachor A, Failla A, Kolliputi N, Lockey RF: The pivotal role of AKAP121 in mitochondrial physiology. *Am J Physiol Cell Physiol* 2016; 310(8):C625-8.

Ricketti PA, Unkle DW, Lockey RF, Cleri DJ, Ricketti AJ: Case study: idiopathic hemothorax in a patient with status asthmaticus. *J Asthma* 2016; 53(7):770-3.

Galam L, Rajan A, Failla A, Soundarajan R, Lockey RF, Kolliputi N: Deletion of P2X7 attenuates hyperoxia-induced acute lung injury via inflammasome suppression. *Am J Physiol Lung Cell Mol Physiol* 2016; 310(6): L572-81.

Patel SS, Fergeson JE, Glaum MC, Lockey RF: Symptomatic primary selective immunoglobulin M deficiency with non-protective pneumococcal titers responsive to subcutaneous immunoglobulin treatment. International archives of allergy and immunology 2016; 170(2):138-140.

Galam L, Soundararajan R, Breitzig M, Rajan A, Yeruva RR, Czachor A, Harris F, Lockey RF, Kolliputi N: SOCS-1 rescues IL-1β-mediated suppression of epithelial sodium channel in mouse lung epithelial cells via ASK-1. *Oncotarget,* 2016; 7(20):29081-91.

Creticos PS. Bernstein DI, Casale TB, Lockey RF, Maloney J, Nolte H: Coseasonal initiation of allergen immunotherapy: A systematic review. *JACI-Prac* 2016; 4(6): 1194-1204.

Soundararajan R, Stearns T, Czachor A, Fukumoto J, Turns C, Westermann-Clark E, Breitzig M, Tan L, Lockey RF, King B, Kolliputi N: Global gene profiling of aged lungs in Atp8b1mutant mice. *Aging* (Albany NY) 2016; 8(9): 2232-2252.

Saco T, Glaum MC, Ledford DK, Lockey RF: Onset of psoriatic arthritis associated with multiple wasp stings. *Ann Allergy Asthma Immunol* 2016 Nov 20. pii: S1081-1206(16)31226-1. doi: 10.1016/j.anai.2016.10.022. [Epub ahead of print]

Nolte H, Casale TB, Lockey RF, Fogh BS, Kaur A, Lu S, Nelson HS: Epinephrine use in clinical trials of sublingual immunotherapy tablets. *J Allergy Clin Immunol Pract* 2016 Nov 9. pii: S2213-2198(16)30402-0. doi: 10.1016/j.jaip.2016.08.017. [Epub ahead of print]. PMID: 27838323.

Fukumoto J, Soundararajan R, Leung J, Cox R, Lockey RF, Kolliputi N, Galam L,et al: The role of club cell phenoconversion and migration in idiopathic pulmonary fibrosis. *Aging* 2016; 8(11):3091-3109.

Fukumoto J, Cox R Jr, Fukumoto I, Cho Y, Parthasarathy PT, Galam L, Lockey RF, Kolliputi N: Deletion of ASK1 Protects against Hyperoxia-Induced Acute Lung Injury. *PLoS One*. 2016;11(1):e0147652.

Sriperumbudur A, Breitzig M, Lockey R, Kolliputi N: Hedgehog: the key to maintaining adult lung repair and regeneration. *J Cell Commun Signal* 2016 Dec 12. [Epub ahead of print] No abstract available. PMID:27943034.

Ledford DK: Hypogammaglobulinemia without Infection. *J Allergy Clin Immunol Pract* 2016; 4(4):790.

Ledford DK: Skin Tests and In Vitro Tests for Insect Allergy. *J Allergy Clin Immunol Pract* 2016; 4(3):562-3.

Ledford DK: Post Cystoscopy Anaphylaxis, *J Allergy Clin Immunol Pract* 2016; 4(1):189-90.

Luskin AT, Antonova EN, Broder MS, Chang EY, Omachi TA, Ledford DK: Health care resource use and costs associated with possible side effects of high oral corticosteroid use in asthma: a claims-based analysis. *Clinicoecon Outcomes Res* 2016; 8:641-648.

Ledford DK, Wenzel S: Severe Asthma with Joint Pain, Thrombophilia, and Irritable Bowel Syndrome. *J Allergy Clin Immunol Pract* 2016 Sep-Oct;4(5):1011-2.

Patel S, Fergeson J, Glaum MC: Symptomatic Primary Selective Immunoglobulin M Deficiency with Non-protective Pneumococcal Titers and T Cell Lymphopenia Responsive to Subcutaneous Immunoglobulin Treatment. *Int Arch of Allergy and Immunol* 2016;170:138–140.

Lee KS, Jeong JS, Kim SR, Cho SH, Ko YH, Lee KB, Lee YC: Phosphoinositide 3-kinase-δ regulates fungus-induced steroid-resistant allergic lung inflammation through endoplasmic reticulum stress. *Thorax* 2016;71(1):52-63.

Kim DW, Kim DK, Jin HR, Eun KM, Jo AR, Mo JH, Cho SH: Age-related decline of neutrophililc inflammation is associated with better postoperative prognosis in non-eosinophilic nasal polyps. *PLoS One* 2016;11(2):e0148442.

Kim DY, Lee SH, Carter RG, Kato A, Schleimer RP, Cho SH: A newly established murine model of sinus disease demonstrates activation of B cells, as occurs in human nasal polyps. *Am J Respir Cell Mol Biol* 2016; 55(2):170-5.

Kim DW, Eun KM, Jin HR, Cho SH, Kim DK: Prolonged allergen exposure is associated with increased thymic stromal lymphopoietin expression and Th2-skewing in mouse models of chronic rhinosinusitis. *Laryngoscope* 2016;126(8):E265-72.

Cho SH, Kim DW, Gevaert P. Chronic rhinosinusitis phenotypes; Chronic rhinosinusitis without nasal polyps. J Allergy Clin Immunol Pract 2016;4(4):575-82.

Cho SH, Bachert C, Lockey RF. Chronic rhinosinusitis phenotypes; An approach to better medical care for chronic rhinosinusitis. *J Allergy Clin Immunol Pract* 2016;4(4):639-42.

Cho SH, Min JY, Kang J, Kim DY, Oh SS, Torgerson DR, Del-Pino-Yanes MM, Hu D, Sen S, Huntsman S, Eng C, Farber HJ, Rodriguez-Cintron W, Rodriguez-Santana JR, Serebrisky D, Thyne SM, Borrell LN, Williams LK, Seibold MA, Burchard EG, Avila PC, Kumar R. Association of a PAI-1 gene polymorphism and early life infections with asthma risk, exacerbations, and reduced lung function. *PLoS One* 2016;11(8):e0157848.

Kim DW, Kulka M, Jo A, Eun KM, Arizmendi N, Tancowny BP, Hong SN, Lee JP, Jin HR, Lockey RF, Kim DK, Cho SH: Cross-talk between human mast cells and epithelial cells by IgE-mediated periostin production in eosinophilic nasal polyps. *J Allergy Clin Immunol* 2016. pii: S0091-6749(16)31189-7.

Cantillo JF, Puerta L, Lafosse-Marin S, Subiza JL, Caraballo L, Fernández-Caldas E: Identification and Characterization of IgE-Binding Tropomyosins in Aedes aegypti. *Int Arch Allergy Immunol* 2016;170(1):46-56.

Garcia ME, Sánchez-Borges M, Capriles-Hulett A, Fernandez-Caldas E: Oral mite anaphylaxis mimicking acute asthma. *Allergol Immunopathol (Madr)* 2016;44(5):484-5.

Sirvent S, Soria I, Cirauqui C, Cases B, Manzano AI, Diez-Rivero CM, Reche PA, López-Relaño J, Martínez-Naves E, Cañada FJ, Jiménez-Barbero J, Subiza J, Casanovas M, Fernández-Caldas E, Subiza JL, Palomares O: Novel vaccines targeting dendritic cells by coupling allergoids to nonoxidized mannan enhance allergen uptake and induce functional regulatory T cells through programmed death ligand 1. *J Allergy Clin Immunol* 2016;138(2):558-567.

Manzano AI, Javier Cañada F, Cases B, Sirvent S, Soria I, Palomares O, Fernández-Caldas E, Casanovas M, Jiménez-Barbero J, Subiza JL: Structural studies of novel glycoconjugates from polymerized allergens (allergoids) and mannans as allergy vaccines. *Glycoconj J* 2016;33(1):93-101.

Bousquet J, Schünemann HJ, Hellings PW, Arnavielhe S, Bachert C, Bedbrook A, Bergmann KC, Bosnic-Anticevich S, Brozek J, Calderon M, Canonica GW, Casale TB,et al: MASK study group. MACVIA clinical decision algorithm in adolescents and adults with allergic rhinitis. J Allergy Clin Immunol 2016; *J Allergy Clin Immunol* 2016;138(2):367-374.e2.

Dhami S, Nurmatov U, Agache I, Lau S, Muraro A, Jutel M, Roberts G,Akdis C, Bonini M, Calderon M, Casale T, Cavkaytar O, Cox L, Demoly P, Flood B, Hamelmann E, Izuhara K, Kalayci Ö, Kleine-Tebbe J, Nieto A, Papadopoulos N, Pfaar O, Rosenwasser L, Ryan D, Schmidt-Weber C, Szefler S, Wahn U, van Wijk RG, Wilkinson J, Sheikh A: Allergen immunotherapy for allergic asthma: protocol for a systematic review. *Clin Transl Allergy* 2016;6:5.

Casale TB, Lemanske RF Jr: In-Flight Medical Emergencies. *N Engl J Med* 2016;374(3):291-2.

Bousquet J, Hellings PW, Agache I, Bedbrook A, Bachert C, Bergmann KC, Bewick M, Bindslev-Jensen C, Bosnic-Anticevitch S, Bucca C, Caimmi DP, Camargos PA, Canonica GW, Casale T, et al. ARIA 2016: Care pathways implementing emerging technologies for predictive medicine in rhinitis and asthma across the life cycle. *Clin Transl Allergy* 2016; 6:47.

Demoly P, Makatsori M, Casale TB, Calderon MA. The Potential Role of Allergen Immunotherapy in Stepping Down Asthma Treatment. J Allergy Clin Immunol Pract 2016 Dec 29. pii: S2213-2198(16)30582-7. doi: 10.1016/j.jaip.2016.11.024. [Epub ahead of print] *PubMed* PMID: 28042004.

Tanno LK, Sublett JL, Meadows JA, Calderon M, Gross GN, Casale T, Demoly P; Joint Allergy Academies. Perspectives on the International Classification of Diseases, 11th Revision, developments in allergy clinical practice in the United States. *Ann Allergy Asthma Immunol* 2016 Dec 20. pii: S1081-1206(16)31273-X. doi: 10.1016/j.anai.2016.11.003. [Epub ahead of print] PubMed PMID: 28010916.

Zuberbier T, Abelson MB, Akdis CA, Bachert C, Berger U, Bindslev-Jensen C, Boelke G, Bousquet J, Canonica GW, Casale TB, Jutel M, Kowalski ML, Madonini E, Papadopoulos NG, Pfaar O, Sehlinger T, Bergmann KC; Global Allergy and Asthma European Network (GA(2) LEN) European Union Network of Excellence in Allergy and Asthma. Validation of the Global Allergy and Asthma European Network (GA(2)LEN) chamber for trials in allergy: Innovation of a mobile allergen exposure chamber. *J Allergy Clin Immunol* 2016. pii: S0091-6749(16)31049-1.

Xie Y, Jiang H, Zhang Q, Mehrotra S, Abel PW, Toews ML, Wolff DW, Rennard S, Panettieri RA Jr, Casale TB, Tu Y. Upregulation of RGS2: a new mechanism for pirfenidone amelioration of pulmonary fibrosis. *Respir Res* 2016;17(1):103.

Tanno LK, Calderon M, Sublett JL, Casale T, Demoly P; Joint Allergy Academies.. Smoothing the transition from International Classification of Diseases, Tenth Revision, Clinical Modification to International Classification of Diseases, Eleventh Revision. *J Allergy Clin Immunol Pract* 2016;4(6):1265-1267.

Creticos PS, Bernstein DI, Casale TB, Lockey RF, Maloney J, Nolte H. Coseasonal Initiation of Allergen Immunotherapy: A Systematic Review. *J Allergy Clin Immunol Pract* 2016;4(6):1194-1204.

Tanno LK, Calderon MA, Papadopoulos NG, Sanchez-Borges M, Moon HB, Sisul JC, Jares EJ, Sublett JL, Casale T, Demoly P; Joint Allergy Academies. Surveying the new Allergic and hypersensitivity conditions chapter of the International Classification of Diseases (ICD)-11. *Allergy* 2016;71(9):1235-40.

Tomei F, Ricci S, De Marco F, Sacco C, Ricci P, Pimpinella B, Scala B, Corsale S, Massimi R, Caciari T, Anzelmo V, Sancini A, Casale T, Tomei G, Rosati MV. Evaluation of liver function between indoor and outdoor workers: preliminary results. *Clin Ter* 2016;167(2):e25-31.

Casale TB (collaborator):
Bousquet J, Barbara C, Bateman E, et al; AIRWAYS-ICPs working group. AIRWAYS-ICPs (European Innovation Partnership on Active and Healthy Ageing) from concept to implementation. *Eur Respir J* 2016; 47(4):1028-33.

Sarfaty M, Kreslake JM, Casale TB, Maibach EW: Views of AAAAI members on climate change and health. *J Allergy Clin Immunol Pract* 2016;4(2):333-335.e26.

Li JT, Bernstein DI, Calderon MA, Casale TB, Cox L, Passalacqua G, Pfaar O, Papadopoulos NG: Sublingual grass and ragweed immunotherapy: Clinical considerations - a PRACTALL consensus report. *J Allergy Clin Immunol* 2016;137(2):369-76.

Pepper AN, Calderon MA, Casale TB: Sublingual immunotherapy for the polyallergic patient. *JAllergy Clin Immunol Pract* 2016; pii: S2213-2198(16)30262-8. doi: 10.1016/j.jaip.2016.06.019. [Epub ahead of print]

Bulkhi A, Tabatabaian F, Casale TB. Long- Acting Muscarinic Antagonists for Difficult to Treat Asthma: Emerging Evidence and Future Directions. *Drugs* 2016;76(10):999-1013.

Yi S, Niu D, Bai F, Li S, Huang L, He W, Prasad A, Czachor A, Tan LC, Kolliputi N, Wang F. Soluble Expression of a Human MnSOD and Hirudin Fusion Protein in Escherichia coli, and Its Effects on Metastasis and Invasion of 95-D Cells. *J Microbiol Biotechnol* 2016;26(11):1881-1890.

Lee KS, Jeong JS, Kim SR, Cho SH, Kolliputi N, Ko YH, Lee KB, Park SC, Park HJ, Lee YC. Phosphoinositide 3-kinase-δ regulates fungus-induced allergic lung inflammation through endoplasmic reticulum stress. *Thorax* 2016 ;71(1):52-63.

Breitzig M, Bhimineni C, Lockey R, Kolliputi N. 4-Hydroxy-2-nonenal: a critical target in oxidative stress? *Am J Physiol Cell Physiol* 2016;311(4):C537-C543.

Whelan JN, Reddy KD, Uversky VN, Teng MN: Functional correlations ofm respiratory syncytial virus proteins to intrinsic disorder. *Mol. Biosyst* 2016;12:1507-26.

Whelan JN, Tran KC, van Rossum DB, Teng MN: Identification of respiratory syncytial virus nonstructural protein 2 residues essential for exploitation of the host ubiquitin system and inhibition of innate immune responses. *J. Virol* 2016; 90:6453-63.

REVIEW ARTICLES/EDITORIALS

Fergeson J, Bulkhi A, Cooke A, Lin CH, Alandijani S, Ricketti P, Lockey RF: The contributions of allergic sensitization and respiratory pathogens to asthma inception (Continuing Medical Education Examination). *JAllergy Clin Immunol* March 2016; 137(3): 666.

Exam developed from Jackon DJ, Gern JE, Lemanske RF paper. *JAllergy Clin Immunol* 2016; 137(3): 659-65.

Lin CH, Alandijani S, Lockey RF: Subcutaneous versus sublingual immunotherapy. Expert Review *Clin Immunol* 2016 ;12(8):801-3

Pepper A, Lockey RF: Asthma and chronic obstructive pulmonary disease inhalers: techniques for proper use. *Allergy Asthma Proc* 2016; 37(4):279-90.

Cho SH, Bachert C, Lockey RF: Chronic rhinosinusitis phenotypes: An approach to better medical care for chronic rhinosinusitis. *JACI-Prac* 2016;;4(4):639-42.

Ledford DK, Lockey RF: Aspirin or nonsteroidal anti-inflammatory drug-exacerbated chronic rhinosinusitis. *JACI-In Prac*,2016;4(4):590-8.

Zhenhong L, Celestin J, Lockey RF: Pediatric sleep apnea syndrome: An update. *JACI-Prac* 2016; 4(5):852-61.

Fergeson JE, Patel S, Lockey RF: Acute asthma, prognosis and treatment. *JACI* 2016 Aug 20. pii: S0091-6749(16)30800-4. doi: 10.1016/j.jaci.2016.06.054. [Epub ahead of print]

Ledford DK: Omalizumab and allergic reactions. *J Allergy Clin Immunol Pract* 2016; 4(1):187-8.

Ledford DK: Henoch-Schönlein purpura and influenza vaccine. *J Allergy Clin Immunol Pract* Oct 2016. [Epub ahead of print]. doi: 10.1016/j.jaip.2016.05.022. No abstract available. PMID: 28065339.

Muraro A, Lemanske RF Jr, Hellings PW, Akdis CA, Bieber T, Casale TB, Jutel M, Ong PY, Poulsen LK, Schmid-Grendelmeier P, Simon HU, Seys SF, Agache I: Precision medicine in patients with allergic diseases: Airway diseases and atopic dermatitis-PRACTALL document of the European Academy of Allergy and Clinical Immunology and the American Academy of Allergy, Asthma & Immunology. *J Allergy Clin Immunol* 2016;137(5):1347-58.

Tanno LK, Calderon MA, Li J, Casale T, Demoly P; Joint Allergy Academies. Updating Allergy and/or Hypersensitivity Diagnostic Procedures in the WHO ICD-11 Revision. *J Allergy Clin Immunol Pract* 2016;4(4):650-7.

Patel SS, Ledford DK: Killer insects: Who is at risk for anaphylaxis from insect stings? *CurrTreat Options Allergy* 2016; 3: 235-242.

Stokes JR, Casale TB. Characterization of asthma endotypes: implications for therapy. *Ann Allergy Asthma Immunol* 2016;117(2):121-5.

Tanno LK, Calderon MA, Papadopoulos NG, Sanchez-Borges M, Rosenwasser LJ, Bousquet J, Pawankar R, Sisul JC, Cepeda AM, Li J, Muraro A, Fineman S, Sublett JL, Katelaris CH, Chang YS, Moon HB, Casale T, Demoly P; Joint Allergy Academies. Revisiting Desensitization and Allergen Immunotherapy Concepts for the International Classification of Diseases (ICD)-11. *J Allergy Clin Immunol Pract* 2016;4(4):643-9.

Bousquet J, Farrell J, Crooks G, Casale T, et al: Scaling up strategies of the chronic respiratory disease programme of the European Innovation Partnership on Active and Healthy Ageing (Action Plan B3: Area 5)..*Clin Transl Allergy* 2016;6:29.

INTERNET PUBLICATIONS

Pesek RD, Lockey RF: Diagnosis and Management of Allergy to Hymenoptera in Adolescents and Children. Clinical Decision Support: *Pediatrics*, 2013. Revised, 2016. (found online at: https://www.decisionsupportinmedicine.com/, subscription required).

Lin CH, Lockey RF: Syncope During Exercise. *WAO* Interactive case report available at: http://www.worldallergy.org/interactive_case_reviews//. Posted August, 2016.

Westermann-Clark E, Cooke A, Ridley MB, Lockey RF: "Recurrent Shortness of Breath in an Adult". Interactive case report available at: http://www.worldallergy.org/interactive_case_reviews. Posted September, 2016.

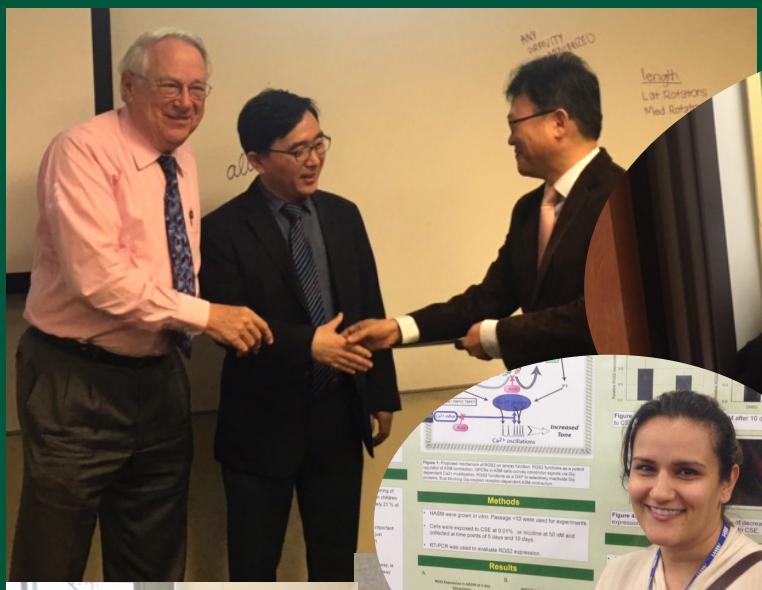
PATENTS

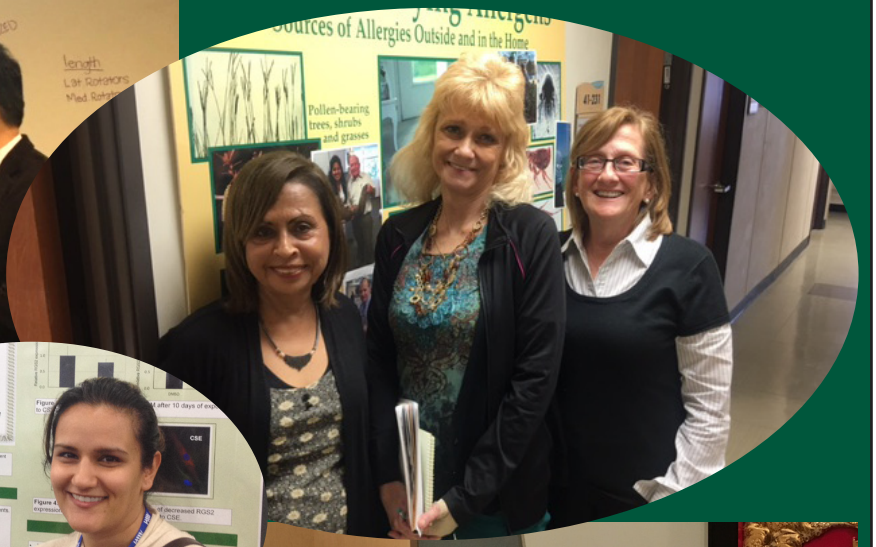
Wang JW & Lockey R. International Patent Application entitled "Modeling Complex Human Disease in a Single Animal". USF Ref. No. 14B132PRWO_Wang, 2016

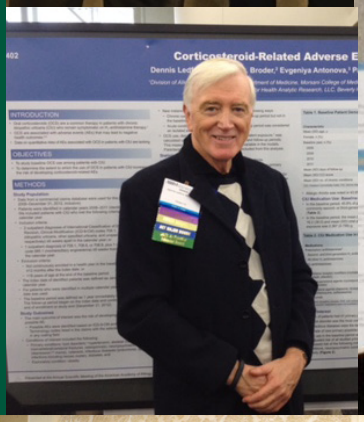
Wang JW & Lockey R. International Patent Application entitled "Methods and Compositions for Cloning into Large Vectors". USF Ref. No. 14B124PRWO, 2016

Wang JW & Lockey R. Utility Patent Application entitled "Animal Model and Method for Studying Gene-Gene Interactions". USF Ref. No. 14B153PRC, 2016

Wang JW & Lockey R. Provisional Patent Application entitled "Site-directed Mutagenesis without Polymerase Chain Reaction". USF Ref. No. 16A036PR, 2016. Accelerated patent prosecution.







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