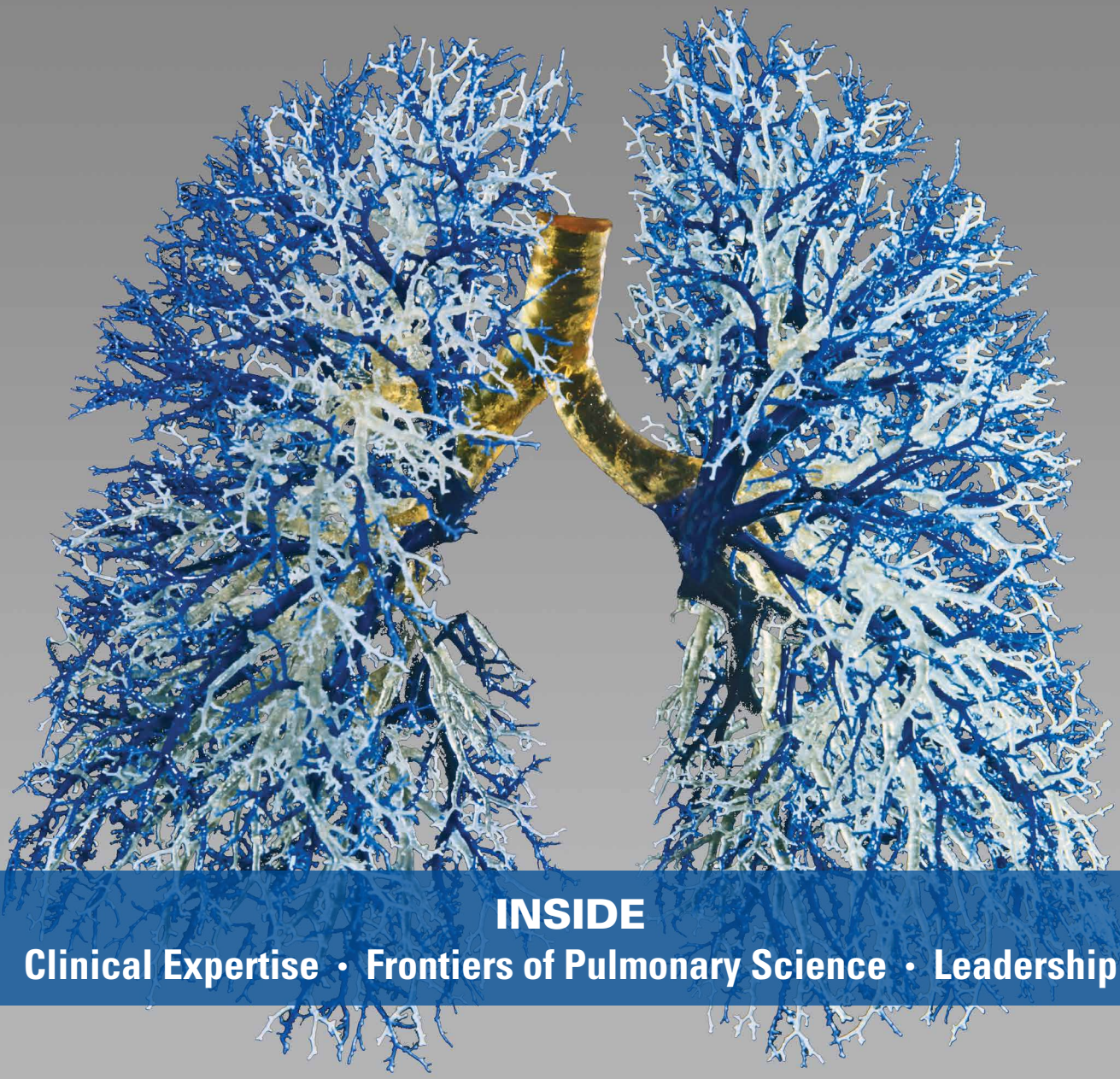
National Jewish Health®

Breathing Science is Life.™

BEST HOSPITALS
U.S.News & WORLD REPORT
NATIONAL
PULMONOLOGY
2016-17

PULMONARY HIGHLIGHTS 2016



INSIDE

Clinical Expertise • Frontiers of Pulmonary Science • Leadership

Inside

2-3 Clinical Expertise

4-5 Clinical Research

6-7 Frontiers of Pulmonary Science

8-9 Education

10-11 Faculty Leadership

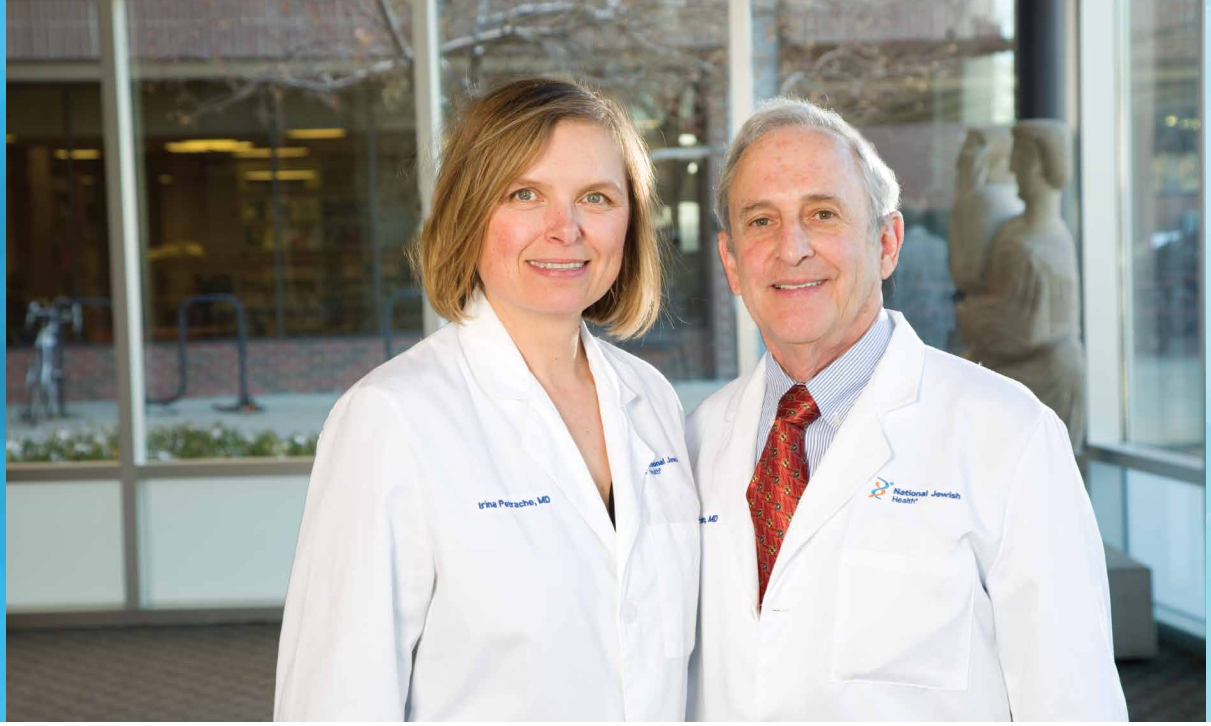
12-13 Faculty News and Honors

14-19 Selected 2016 Publications

20 Recognition and Breakthroughs in Research

For referrals and consults, call our Physician Line at 800.652.9555

Or learn more at njhealth.org/for-professionals.



Dear Colleague,

With pleasure and pride, we present "National Jewish Health Pulmonary Highlights 2016," our compilation of clinical, research and educational activities and capabilities in pulmonary medicine at National Jewish Health. As an academic medical institution focused for more than 118 years on respiratory and related diseases, and with one of the largest pulmonary division in the nation, we believe that our work helps advance pulmonary medicine and the options available to help your patients today and tomorrow.

Patients come to National Jewish Health from around the nation and the world seeking answers for their respiratory problems. Our team of expert pulmonologists conducts intensive evaluations in collaboration with cardiologists, gastroenterologists, allergists, oncologists, rheumatologists and others on the National Jewish Health staff. Once we develop a diagnosis and treatment plan, we then work with patients' hometown physicians to implement the plan and adjust care as necessary.

We have a robust research program seeking answers to the many questions and challenges that remain in pulmonary medicine. Ranging from basic discovery to translational research and hundreds of clinical trials, we are finding new pathways, new biomarkers and new therapies. Our faculty, recognized national leaders in their fields, train medical students, residents and postgraduate fellows in affiliation with the University of Colorado School of Medicine. They also share their expertise with established physicians at conferences and continuing medical education programs across the country.

We hope you will take a few minutes to look through this publication and learn more about what is happening at the forefront of pulmonary medicine and how it can benefit your patients.

Irina Petrache, MD
Chief, Division of Pulmonary,
Critical Care and Sleep Medicine
National Jewish Health

Richard J. Martin, MD
Chair, Department of Medicine
National Jewish Health

CLINICAL EXPERTISE

National Jewish Health provides unparalleled care for complex, symptomatic pulmonary patients. People come from around the nation and the world for comprehensive evaluations, diagnoses and treatment plans from our expert pulmonary subspecialists and their colleagues in cardiology, gastroenterology, oncology, immunology, rheumatology and radiology. When needed, patients can transfer seamlessly to nearby Saint Joseph Hospital, our excellent local partner, where care can continue to be managed by National Jewish Health physicians. Our physicians and staff work with each patient's hometown physicians to implement, monitor and adjust care as needed.

Asthma

Thorough upper and lower airway evaluations in our multi-day adult and pediatric asthma programs help us phenotype patients and tease out complicating factors from aspiration to allergies, vocal cord dysfunction and inhaler technique. Our faculty members lead numerous National Institutes of Health (NIH) studies and industry-sponsored clinical trials.

Cardiology

Our cardiologists are experts in the heart-lung interface. They work closely with pulmonologists to diagnose and treat the cardiac causes and consequences of lung disease, including pulmonary hypertension, cardiac sarcoidosis and other rare diseases.

COPD

A complete medical and nonmedical evaluation allows our team of physicians and therapists to address not only COPD medications, but also education, compliance, nutrition and rehabilitation. Personalized management plans and education optimize care and quality of life. Our faculty is advancing pulmonary medicine with COPDGene and other studies to diagnose and phenotype COPD.

NTM

Mycobacterial disease is part of our DNA, with our origins as a hospital for destitute tuberculosis patients. The longevity of our program and our experience with thousands of complex mycobacterial infections have given us a deep knowledge of antibiotic regimens and surgical options. In addition to our intensive outpatient program, we provide inpatient care and surgical support through our collaborative relationship locally with Saint Joseph Hospital.

Chronic Beryllium Disease

National Jewish Health has more experience with the diagnosis and treatment of chronic beryllium disease than any other group in the world. We emphasize early disease detection and intervention to halt or slow disease progression. We have published extensively on exposures, genetic factors and immune responses associated with chronic beryllium disease.

Cystic Fibrosis

We have the largest and most experienced adult cystic fibrosis program in the nation. Our team of pulmonary specialists, nurse coordinators, respiratory therapists, registered dietitians, psychologists and social workers provides treatment for more than 400 adults from around the nation. We have more than two dozen ongoing clinical trials to evaluate new cystic fibrosis therapies.

Environmental Health

In step with increasing recognition that environmental pollutants cause disease, our multidisciplinary team has helped define, diagnose and treat patients with a broad range of occupational, environmental and granulomatous lung diseases. Our thorough evaluations have uncovered previously unknown causes of pulmonary disease.

Interstitial Lung Disease

We have vast experience with interstitial lung disease (ILD). Our detailed evaluation, diagnosis and plan of care are based on the most current information about ILD, much of which has been discovered at National Jewish Health. We have ongoing trials of approved and experimental medications. We seek to broaden

CLINICAL EXPERTISE

knowledge of ILD causes and develop new treatments.

Oncology

Expert pulmonologists, thoracic radiologists, gastroenterologists and surgeons help us diagnose and treat cancers of the lungs, head and neck, and digestive system. Lung cancer screening and our tumor registry help us screen and monitor patients at high risk for lung cancer.

Pediatrics

For decades, we have helped shape the evolving knowledge about diagnosis and treatment of asthma, vocal cord dysfunction and other pediatric pulmonary diseases. Our Severe Asthma Clinic and Pediatric Day Program offer multi-day medical and psychological evaluations, education and management plans for children with pulmonary and atopic diseases.

Pulmonary Hypertension

Cardiologists and pulmonologists work as a team to provide comprehensive and sophisticated diagnostic, outpatient and inpatient services for pulmonary hypertension.

Sarcoidosis

Support from our expert cardiologists, neurologists and network of providers positions National Jewish Health to address the multi-organ nature of sarcoidosis. Our experience with thousands of sarcoidosis patients has helped us better define the disease and gain insight into its causes.

Sleep

The oldest and most comprehensive sleep center in the region relies on a full complement of pulmonologists, sleep medicine specialists, psychologists, respiratory therapists and polysomnographic technologists to address the full spectrum of sleep disorders.

Diagnostic Laboratories

Our Advanced Diagnostic Laboratories have CAP15189 accreditation and decades of experience developing immunology, complement, infectious disease and molecular diagnostic tests. We help clients from around the world select, customize and interpret laboratory tests.

Pulmonary Physiology Services

Our state-of-the-art laboratory offers many unique tests, including exercise-induced bronchoconstriction; cardiopulmonary exercise test with full metabolic testing, arterial line, lactate levels and cardiac data; and continuous laryngoscopy with exercise tolerance.

Interventional Pulmonology

Our minimally invasive diagnostic, therapeutic and palliative procedures include identification, diagnosis and treatment of pulmonary nodules; early detection of lung cancer; diagnosis and treatment of airway obstructions; pleural procedures; implantation and removal of airway stents; and bronchial thermoplasty.

MOUNT SINAI – NATIONAL JEWISH HEALTH RESPIRATORY INSTITUTE

The Icahn School of Medicine at Mount Sinai, a leading academic medical center in New York City, and National Jewish Health have partnered to create the **Mount Sinai – National Jewish Health Respiratory Institute** in New York City. The Respiratory Institute brings together leading experts in diagnosing and treating respiratory disease and offers a model for multidisciplinary, personalized care for patients with respiratory disease.

MOUNT SINAI - NATIONAL JEWISH HEALTH

Respiratory Institute

Icahn School of Medicine at Mount Sinai

National Jewish Health®

CLINICAL RESEARCH

National Jewish Health is constantly searching for new, more effective treatments and medications for our patients and for patients around the world. Today, we have more than 300 active clinical trials that offer cutting-edge, experimental treatments for a wide range of respiratory and related diseases. We collaborate with the National Institutes of Health, industry and leading research institutions across the nation as members of numerous research networks and consortiums.

SELECTED 2016 CLINICAL RESEARCH RESULTS

Acetaminophen for Children with Asthma

Previous research has raised concerns about the link between asthma and acetaminophen. **Ronina Covar, MD; Michael Wechsler, MD; Tod Olin, MD**; and their colleagues in the AsthmaNet national research network reported that children with asthma who take acetaminophen for fever and pain relief suffer no more exacerbations than those taking ibuprofen. *N Engl J Med.* 2016 Aug 18;375(7):619-30.

Black Lung on the Rise

After declining for several decades, black lung disease is on the rise again. **Cecile Rose, MD, MPH**, and her colleagues recently reported that rapidly progressive lung disease in U.S coal miners is linked to silica and silicates in coal mine dust. This could be the result of mining thinner seams of coal, which requires cutting through surrounding rock containing silica and silicates. *Am J Respir Crit Care Med.* 2016 Mar 15;193(6): 673-80.

Reducing Radiation

Shawn Teague, MD, and his colleagues report a successful quality improvement project aimed at reducing radiation doses in thoracic imaging. Using an iterative reconstruction technique and reduced voltage, they were able to reduce the effective radiation dose by 44 percent with no perceived difference in diagnostic quality. *J Digit Imaging.* 2016 Oct;29(5):622-6.

Pirfenidone for Idiopathic Pulmonary Fibrosis

Evaluating treatment response for idiopathic pulmonary fibrosis can be difficult due to variable clinical course with periods of decline interspersed by stretches of stability. **Jeffrey Swigris, DO**, and his colleagues found that patients whose disease progressed during treatment with perfenidone benefited from continued treatment with lower risk of subsequent FVC decline compared to patients taking placebo. *Thorax.* 2016 May;71(5):429-35.

β-blockers and COPD exacerbations

James Crapo, MD, and his colleagues in the COPDGene network reported that moderate to severe COPD patients taking ββ-blocker medications experienced one-quarter fewer exacerbations and one-third fewer severe exacerbations than comparable patients not taking the medications. *Thorax.* 2016 Jan;71(1):8-14.

CLINICAL RESEARCH

SELECTED OPEN CLINICAL TRIALS

Asthma

Airway and Gut Microbiome in Allergy and Asthma: Relationships to Immune and Clinical Phenotype
Richard Martin, MD

Best African American Response to Asthma Drugs (BARD)
Michael Wechsler, MD

COPD

COPDGene — Genetic Epidemiology of COPD
James Crapo, MD

Beta Blockers for the Prevention of Acute Exacerbations of COPD
Barry J. Make, MD

Critical Care

Inflammatory and Antiviral Markers in Adults with Respiratory Distress Syndrome
Kenneth C. Malcolm, PhD

National Trends in Critical Care
Anuj Mehta, MD

Interstitial Lung Disease

Functional Status in Connective Tissue Disease-Associated Interstitial Lung Disease
Amy L. Olson, MD

Optimizing Management of IPF through Effective Health Care Provider-Patient Communication
Jeffrey Swigris, DO

Cystic Fibrosis

Continuous Glucose Monitoring as a Predictor of Lung Function and BMI Decline in Adults with CF
Jennifer L. Taylor-Cousar, MD

TEACH Trial: Testing the Effect of Adding Chronic Azithromycin to Inhaled Tobramycin
Jerry A. Nick, MD

Ivacaftor Therapy Expanded Access Program for Patients 2 Years of Age and Older with Selected Residual Function Mutations on a CFTR Allele
Jerry A. Nick, MD

ASTHMA INSTITUTE ADVANCES TOWARD A CURE

Asthma care has improved tremendously in recent years. However, we still do not know what causes asthma. We can neither prevent asthma nor cure it. For patients with severe disease, asthma remains a deadly disease, causing an average of 10 deaths in the United States every day.

Thanks to a $5 million gift from Martin and Michele Cohen, National Jewish Health has launched the Cohen Family Asthma Institute to focus on the causes, treatments and prevention of asthma. The institute builds on historic strengths at National Jewish Health in asthma, allergy and immunology, bringing together a broad coalition of researchers, physicians, patients and health care organizations to seek a cure for asthma. The Cohen Family Asthma Institute is led by Co-Directors **Michael Wechsler, MD**; and **Rohit Katial, MD**; and Associate Director **Ronina Covar, MD.**

Sleep

The Evaluation of the Astral IVAPS Auto-EPAP Treatment Algorithm
Sheila Tsai, MD

Therapist-Directed vs. Online Therapy for Insomnia Co-Occurring with Sleep Apnea.
Jack D. Edinger, PhD

FRONTIERS OF PULMONARY SCIENCE

Laboratory scientists at National Jewish Health are advancing the frontiers of pulmonary science. Working closely with physicians, who bring crucial insights and questions from the clinic, our scientists are delving deeply into the genetics and epigenetics of lung disease, the fundamental mechanisms of lung injury and repair and the immunological function of the lungs. The answers they find will inspire the therapies of tomorrow.

SELECTED 2016 RESEARCH REPORTS

Antioxidant Protects Against Mustard Gas

Brian Day, PhD, and his colleagues reported that the catalytic antioxidant AEOL 10150 reduced biomarkers of lung damage and improved survival by more than 50 percent in rats exposed to sulfur mustard, a powerful chemical warfare agent. *Toxicol Sci.* 2016 Sep 7. [Epub ahead of print]

Enhanced Defense Against TB

Xiyuan Bai, PhD, and **Ed Chan, MD**, showed that curcumin, an organic chemical that gives the spice turmeric its yellow color, protects against tuberculosis infections in cell culture. Curcumin enhanced immune defense, increasing death of infected cells and destruction of the bacteria inside infected cells. Since *M. tuberculosis* inevitably develops resistance to antibiotics that attack the organism directly, enhancing the body's own defenses against tuberculosis may be a strategy less prone to the development of resistance. *Respirology.* 2016 Jul;21(5):951-7.

What Do Endothelial Microparticles Do?

Vesicles released from the plasma membrane of endothelial cells, known as endothelial microparticles, are emerging as biomarkers of COPD. **Irina Petrache, MD**; **Karina Serban, MD**, and their colleagues found that cigarette smoke exposure releases endothelial microparticles with distinct microRNA cargo within. Therefore, the endothelial microparticles in smokers and COPD patients may not only be biomarkers, but also can have biological activities important in development of disease. The engulfment of the particles by circulating macrophages reduced their ability to clear dying cells, which may contribute to increased inflammation. *Sci Rep.* 2016 Aug 17;6:31596.

Alternative Splicing in Chronic Asthma

Max Seibold, PhD, and his colleagues discovered that an unconventional form of the cytokine IL-33 appears important in chronic asthma. Alternative splicing of IL-33, lacking exons 3 and 4, causes it to be secreted from epithelial cells. Once in circulation, IL-33 binds to receptors on mast cells and basophils, which then release cytokines that drive Type 2 inflammation in chronic asthma. *Proc Natl Acad Sci U S A.* 2016 Aug 2;113(31):8765-70.

Cell-Based Therapy for Lung Injury

Moumita Ghosh, PhD, and her colleagues reported that transplantation of both tissue stem cells and stem-cell-derived progenitors, rather than stem cells alone, could be an effective therapy for repair of damaged airways. That mixture actively contributed to epithelial repair. Two weeks after transplantation, the mixture of cells differentiated into basal, secretory and ciliated epithelial cells that persisted for at least 43 days. *Am J Respir Cell Mol Biol.* 2016 Sep 15. [Epub ahead of print]

FRONTIERS OF PULMONARY SCIENCE

NOTEWORTHY ONGOING RESEARCH

Mechanisms of Lung Macrophage Programming by MUC5B During Health and Disease
William Janssen, MD

Macrophage Endocytosis in Resolving Lung Inflammation
Peter M. Henson, PhD

Epigenetic Regulation of Altered T Cell Immunity in Sarcoidosis
Nabeel Y. Hamzeh, MD

Lung Stem Cells and Their Niches
Stijn De Langhe, PhD

Mechanisms of Repair of the Alveolar Epithelium after Lung Injury
Rachel L. Zemans, MD

Asthma Susceptibility Due to Environmental Programming of Innate Immunity in Utero
Magdalena M. Gorska, MD, PhD

DUSP1 as a Therapeutic Target in Fibroproliferative Acute Lung Injury
David W. Riches, PhD

Novel Function of MUC18: Amplification of Inflammation in Allergic Lungs
Hong W. Chu, MD

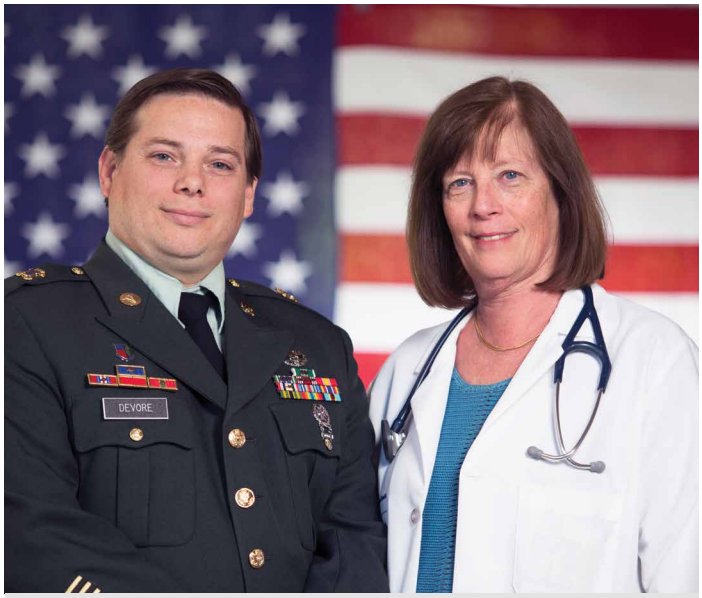
RECENT PATENTS

Methods and Composition for the Disruption of Biofilms (Pat. # 9314479)
Inventors: Jerry Nick, MD, and Quinn Parks, PhD

Methods of inhibiting biofilm formation or reducing biofilms in a subject or on a device or surface by administering a charged compound such as a polyamino acid to a subject, device or surface.

Methods to Determine Susceptibility to Treatment with Leukotriene Modifiers (Pat. # 9383374)
Inventors: Nathan Rabinovitch, MD, and Erwin Gelfand, MD

A method of determining the susceptibility of a subject to treatment with a leukotriene modifier by identifying a subject with a high ratio of CysLT levels to eosinophilic airway inflammation as susceptible to treatment with the leukotriene modifier.



RESEARCH SEEKS ANSWERS TO WARFIGHTERS' PULMONARY DISEASE

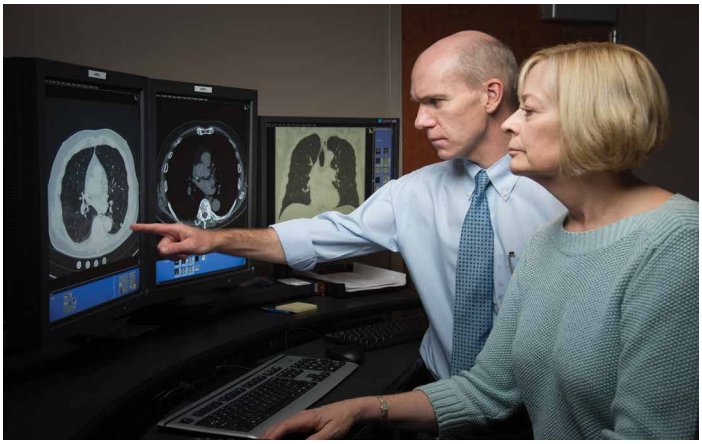
National Jewish Health researchers are studying why warfighters deployed to Southwest Asia suffer increased rates of respiratory disease, and will test potential treatments thanks to $11.5 million in grants from the U.S. Department of Defense. The grants take advantage of a unique cohort of previously deployed veterans with lung disease and leverage National Jewish Health expertise in lung injury and repair.

For more than five years, warfighters with respiratory symptoms have come to the Center of Excellence on Deployment-Related Lung Disease led by **Cecile Rose, MD**, an expert in occupational lung disease. Dr. Rose has collected extensive clinical and epidemiological information as well as biological samples from the ill warfighters. **Gregory Downey, MD**, an expert on the molecular mechanisms of lung injury and repair, will combine forces with Dr. Rose and her group for this groundbreaking study. In addition to laboratory studies, the researchers will evaluate experimental medications that target the WNT/β-catenin and matrix metalloproteinase pathways.

EDUCATION

ACADEMIC TRAINING

National Jewish Health physicians and scientists are thought leaders in their fields who elevate the standard of patient care and teach the next generation of health professionals with fellowships, training and continuing medical education. National Jewish Health is an accredited teaching affiliate of the University of Colorado School of Medicine, where our physicians and scientists have faculty appointments.



Based at National Jewish Health:

- Adult Sleep Medicine
- Pediatric Allergy and Immunology
- Adult Allergy and Immunology
- Mycobacterial Disease

Based at University of Colorado School of Medicine with rotations at National Jewish Health:

- Adult Pulmonary and Critical Care Medicine
- Infectious Disease
- Pediatric Pulmonary Medicine
- Rheumatology
- Cardiothoracic Radiology

In collaboration with the Colorado School of Public Health, National Jewish Health also offers fellowships in:

- Occupational and Environmental Medicine
- Pediatric Sleep Medicine

Postdoctoral Fellowships

National Jewish Health has a robust discovery and translation research enterprise, placing National Jewish Health in the top 6 percent of institutions funded by the National Institutes of Health. Numerous opportunities exist for postdoctoral training in laboratories in the Department of Biomedical Research, the Division of Cell Biology and the Basic Science Section of the Department of Medicine.

Graduate Education

Students enrolled in one of the PhD programs offered by the Graduate School of the University of Colorado Denver have the opportunity to perform their thesis research in the laboratories of the faculty at National Jewish Health.

Residents and Medical Students

Residents and medical students at the University of Colorado School of Medicine have rotations at National Jewish Health in a variety of specialties including pulmonary medicine, cardiology, allergy and gastroenterology. In addition, our faculty train residents in family medicine at National Jewish Health — Saint Joseph Hospital.

School of Medicine
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

EDUCATION

CONTINUING MEDICAL EDUCATION

The Office of Professional Education at National Jewish Health is an award-winning provider of accredited education. Professional Education produces innovative educational activities that assist physicians, pharmacists, nurses and other health care providers in developing and enhancing their clinical knowledge, competency and performance to improve the quality of patient care. Educational programs that are offered focus on the disease states that National Jewish Health researches and treats.

In support of improving patient care, National Jewish Health is accredited with commendation by:

- The Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians
- The Accreditation Council for Pharmacy Education (ACPE), and the California Board of Registered Nursing (CBRN) to provide continuing education for the health care team.

Upcoming programs include:

39th Annual National Jewish Health Pulmonary and Allergy Update

February 1-4, 2017, Keystone Conference Center, Keystone, CO

The Pulmonary and Allergy Update highlights insights and recent advances in pulmonary medicine, asthma, allergy and immunology, and is presented by expert faculty from National Jewish Health. The conference features lectures, case workshops and hands-on sessions. Certified for CME and nursing contact hours.

54th Annual Denver TB Course

April 5-8, 2017, National Jewish Health, Denver, CO

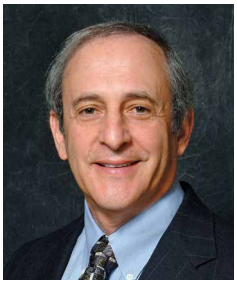
The Denver TB Course is the most cutting-edge, comprehensive and longest running tuberculosis course in the United States. Topics include epidemiology of tuberculosis, transmission and pathogenesis and diagnosis and treatment of tuberculosis, emphasizing vulnerable populations such as pediatric and HIV co-infection. Certified for CME and nursing contact hours.

Online Course — Learn about emerging therapies for severe asthma

Changing Paradigms in the Treatment of Severe Asthma: The Role of Biologic Therapies (CME)

For more information about our courses, visit njhealth.org/CME or call 800.844.2305.

FACULTY LEADERSHIP


Richard J. Martin, MD


Gregory Downey, MD


Debra S. Dyer, MD


Pamela Zeitlin, MD, PhD


Philippa Marrack, PhD


Stephen K. Frankel, MD

DEPARTMENT OF MEDICINE

Richard J. Martin, MD, Chair
Kevin K. Brown, MD,
Vice Chair of Clinical Affairs
Brian J. Day, PhD,
Vice Chair of Research
Jeffrey A. Kern, MD,
Vice Chair of Finance

Division of Pulmonary, Critical Care and Sleep Medicine
Irina Petrache, MD, Chief

Division of Allergy and Clinical Immunology
Rafeul Alam, MD, PhD, Chief

Division of Cardiology
J. Kern Buckner, MD, Chief

Community Research Section
Lisa C. Cicutto, RN, PhD, Head

Division of Environmental and Occupational Health Sciences
Lisa A. Maier, MD, MSPH, Chief

Division of Gastroenterology
Kenneth Vega, MD, Chief

Hospital and Internal Medicine Section
Carrie A. Horn, MD, Head

Division of Mycobacterial and Respiratory Infections
Charles L. Daley, MD, Chief

Nephrology/Diabetology Section
Elizabeth F. Owen Kern, MD, MS, Head

Neuropsychology Section
Sarah B. Viamonte, PhD, Head

Division of Oncology, Cancer Center
Jeffrey A. Kern, MD, Chief

Division of Pathology
Steve D. Groshong, MD, PhD, Chief

Critical Care Section
Kenneth Lyn-Kew, MD, Head

Division of Rheumatology
Kevin K. Brown, MD, Acting Chief

DEPARTMENT OF RADIOLOGY
Debra S. Dyer, MD, Chair

DEPARTMENT OF ACADEMIC AFFAIRS
Gregory Downey, MD,
Executive Vice President

Division of Biostatistics and Bioinformatics
Douglas C. Everett, PhD, Head

Center for Genes, Environment and Health
Tasha E. Fingerlin, PhD, Director

DEPARTMENT OF BIOMEDICAL RESEARCH
Philippa Marrack, PhD, Chair

DEPARTMENT OF PEDIATRICS
Pamela Zeitlin, MD, PhD, Head,

Pediatric Pulmonary Division
Pamela Zeitlin, MD, PhD, Interim Head

Allergy & Clinical Immunology Division
Donald Y. M. Leung, MD, PhD, Head

Ambulatory Pediatrics
Pia J. Hauk, MD, Head

Behavioral Health
Bruce G. Bender, PhD, Head

Cell Biology
David W. H. Riches PhD, Head

CHIEF MEDICAL OFFICER
Stephen K. Frankel, MD


Donald Y. M. Leung, MD, PhD


Brian J. Day, PhD


Tasha E. Fingerlin, PhD


Rafeul Alam, MD, PhD


Sheila Tsai, MD


Lisa A. Maier, MD, MSPH

FACULTY LEADERSHIP

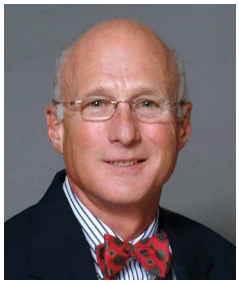

Irina Petrache, MD


Kenneth Lyn-Kew, MD


Kevin K. Brown, MD


Charles L. Daley, MD


Jeffrey A. Kern, MD


J. Kern Buckner, MD

DIVISION OF PULMONARY, CRITICAL CARE AND SLEEP MEDICINE

Irina Petrache, MD, Chief
- Akrum Al-Zubaidi, DO, FCCP
- Evgeny Berdyshev, PhD
- David A. Beuther, MD
- Michelle Beutz, MD
- Russell P. Bowler, MD, PhD
- Kevin K. Brown, MD
- Hong Wei Chu, MD
- Gregory P. Cosgrove, MD
- Gary R. Cott, MD
- Vanessa Craig, MD
- James D. Crapo, MD
- Azzeddine Dakhama, PhD
- Gregory P. Downey, MD
- James J. Fenton, MD
- James H. Finigan, MD
- Stephen K. Frankel, MD
- M. Patricia George, MD
- Anthony N. Gerber, MD, PhD
- Moumita Ghosh, PhD
- James T. Good, MD
- Ann Granchelli, MD
- Kendra Hammond, MD
- Yoko Ito, MD, PhD
- William J. Janssen, MD
- Rebecca Keith, MD
- Susan Kotake, MD
- Steven E. Lommatzsch, MD
- Barry J. Make, MD
- Kenneth Malcolm, PhD
- Vipin Malik, MD
- Laurie Manka, MD
- Richard J. Martin, MD
- Robert J. Mason, MD
- Robert Maulitz, MD
- Richard D. Mountain, MD
- Jerry A. Nick, MD
- Mari Numata-Nakamura, MD, PhD
- Amy L. Olson, MD, MSPH
- William T. Pluss, MD
- Donald R. Rollins, MD
- Milene T. Saavedra, MD
- Robert A. Sandhaus, MD, PhD
- Sarah Sasse, PhD
- Kelly Schweitzer, PhD
- Karina Serban, MD
- Evan Stepp, MD
- Jeffery J. Swigris, DO, MS
- David A. Taryle, MD, FCCP
- Jennifer Taylor-Cousar, MD
- Dennis R. Voelker, PhD
- Michael E. Wechsler, MD, MMSc
- Catherine Wittman, MD
- James P. Woodrow, MD
- Qun Wu, MD, PhD
- Zulma X. Yunt, MD
- Rachel L. Zemans, MD

Critical Care Section

Kenneth Lyn-Kew, MD, Head
- Charlene E. Brady, MD
- Matthew Cohn, MD
- Evans Fernandez-Perez, MD
- Tristan Huie, MD
- Luciano B. Lemos-Filho, MD
- Sherstin T. Lommatzsch, MD
- Anuj Mehta, MD
- Jason McCarl, MD
- Michael Mohning, MD
- Dionne M. Morgan, MD
- James K. O'Brien, MD
- Terasa Prock, MD, PhD
- Ahmad M. Rashid, MD
- Howard Saft, MD
- Elaine M.K. Schwartz, MD
- Michael D. Schwartz, MD
- Amen Sergew, MD
- Joshua J. Solomon, MD, MSPH
- Peter Stubenrauch, MD
- Mary L. Warner, MD
- Jennifer S. Wink, MD

Sleep Medicine Section

Sheila Tsai, MD, Head
- Mark Aloia, PhD
- Jack D. Edinger, PhD
- Robert Glidewell, PsyD
- Robert J. Lapidus, MD
- Teofilo L. Lee-Chiong, MD
- Vipin Malik, MD

Environmental and Occupational Health Sciences Division

Lisa A. Maier, MD, MSPH, FCCP, Chief
- E. Brigitte Gottschall, MD
- Nabeel Hamzeh, MD, FCCP
- Silpa Krefft, MD
- Annyce S. Mayer, MD, MSPH
- Karin A. Pacheco, MD, MSPH
- Clara Restrepo, MD, MPH
- Cecile S. Rose, MD, MPH

Mycobacterial and Respiratory Infections Division

Charles L. Daley, MD, Chief
- Wendi Drummond, DO, MPH
- Gwen A. Huitt, MD, MS
- Shannon H. Kasperbauer, MD

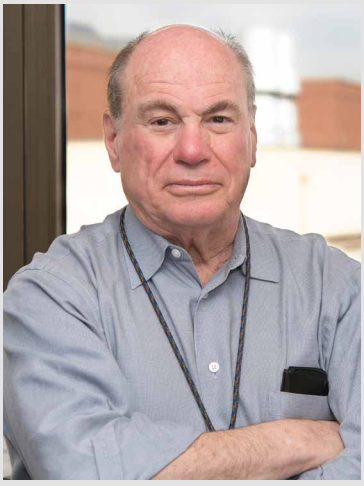
FACULTY NEWS AND HONORS

PAMELA ZEITLIN, MD, NEW CHAIR OF PEDIATRICS

Pamela Zeitlin, MD, PhD

In December 2016, nationally renowned pediatric pulmonologist **Pamela Zeitlin, MD, PhD**, was named Chair of the Silverstein Family Department of Pediatrics at National Jewish Health. Dr. Zeitlin comes to National Jewish Health from Johns Hopkins University School of Medicine, where she served as Professor of Pediatrics and Deputy Director for the Institute for Clinical and Translational Research. She was also director of the Eudowood Division of Pediatric Respiratory Sciences and co-director of the Pediatric Cystic Fibrosis Clinical Center.

Dr. Zeitlin received her medical degree and her doctorate in cell biology at Yale University. She completed her residency and fellowship at The Johns Hopkins Hospital. Following her education, Dr. Zeitlin spent 28 years at Johns Hopkins, where she built and oversaw many successful pediatric pulmonary, research and faculty education programs.



Erwin Gelfand, MD

Erwin Gelfand, MD, retired from the Pediatrics Chair position after serving for 29 years and is continuing to see patients and conduct research at National Jewish Health. Under Dr. Gelfand's leadership, the Pediatrics Department became a world leader in the treatment and research of pediatric allergies, asthma and atopic dermatitis. Innovative clinical programs, such as the Pediatric Day Program and the Severe Asthma Program, were introduced during Dr. Gelfand's tenure and continue to provide unparalleled care to children from around the world. During Dr. Gelfand's tenure, more than 75 clinical fellows graduated from the National Jewish Health Fellows Program. He trained more than 100 post-doctoral students in his laboratory, and clinical and basic research programs have thrived.

FACULTY NEWS AND HONORS

NATIONAL JEWISH HEALTH FACULTY HONORED BY AMERICAN THORACIC SOCIETY

Charles Daley, MD

Charles Daley, MD, chief of the Division of Respiratory and Mycobacterial Infections at National Jewish Health, received the 2016 World Lung Health Award for his efforts around the world to improve diagnosis and treatment of patients with tuberculosis, the world's most deadly infectious disease. For more than two decades, Dr. Daley has worked with physicians, hospitals, health ministers and others to stop the spread of tuberculosis in countries around the world, from Russia to China, India to South Africa. He currently holds leadership positions in the World Health Organization and the Stop TB Partnership.

Irina Petrache, MD

Irina Petrache, MD, chief of the Division of Pulmonary, Critical Care and Sleep Medicine at National Jewish Health, received the 2016 Elizabeth A. Rich, MD, Award, given each year to a woman who has made significant achievements in pulmonary medicine, demonstrated leadership and shown dedication to mentoring. Before leading one of the largest pulmonary divisions in the nation at National Jewish Health, Dr. Petrache was Vice Chair of Research at Indiana University. She also chaired the ATS International Conference for three years. She has provided training and mentoring to predoctoral and postdoctoral students, fellows, residents, and junior faculty at Johns Hopkins University, Indiana University and now National Jewish Health and University of Colorado.

SCIENTISTS RECOGNIZED FOR FUNDAMENTAL DISCOVERIES

Philippa Marrack, PhD, and **John Kappler, PhD**, received the 2016 Novartis Prize for Immunology for discoveries about the basic biology of the immune system. Drs. Marrack and Kappler and their colleague, Harald von Boehmer, PhD, discovered how the immune system distinguishes "self" from "non-self," which helps it determine what should be tolerated in the human body and what should be attacked as an external threat. The researchers demonstrated that the ability is acquired in the thymus through a process of positive and negative selection of T cells with different receptors.

Drs. Marrack and Kappler, both distinguished professors in the Department of Biomedical Research at National Jewish Health, have received numerous international awards and prizes for their discoveries about the immune system, especially T cells. Today, their research continues to reveal how the immune system develops, functions and malfunctions in autoimmune disease, vaccines and aging.

SELECTED 2016 PUBLICATIONS

National Jewish Health faculty members publish more than 400 articles each year in peer-reviewed scientific journals. Below is a selection of leading articles from the past year.

Asthma

Patterns of Growth and Decline in Lung Function in Persistent Childhood Asthma.

McGeachie MJ, Yates KP, Zhou X, Guo F, Sternberg AL, Van Natta ML, Wise RA, Szefler SJ, Sharma S, Kho AT, Cho MH, Croteau-Chonka DC, Castaldi PJ, Jain G, Sanyal A, Zhan Y, Lajoie BR, Dekker J, Stamatoyannopoulos J, Covar RA, Zeiger RS, Adkinson NF, Williams PV, Kelly HW, Grasemann H, Vonk JM, Koppelman GH, Postma DS, Raby BA, Houston I, Lu Q, Fuhlbrigge AL, Tantisira KG, Silverman EK, Tonascia J, Weiss ST, Strunk RC; CAMP Research Group. *N Engl J Med*. 2016 May 12;374(19):1842-52. doi: 10.1056/NEJMoa1513737. PubMed PMID: 27168434; PubMed Central PMCID: PMC5032024.

Acetaminophen versus Ibuprofen in Young Children with Mild Persistent Asthma.

Sheehan WJ, Mauger DT, Paul IM, Moy JN, Boehmer SJ, Szefler SJ, Fitzpatrick AM, Jackson DJ, Bacharier LB, Cabana MD, Covar R, Holguin F, Lemanske RF Jr, Martinez FD, Pongracic JA, Beigelman A, Baxi SN, Benson M, Blake K, Chmiel JF, Daines CL, Daines MO, Gaffin JM, Gentile DA, Gower WA, Israel E, Kumar HV, Lang JE, Lazarus SC, Lima JJ, Ly N, Marbin J, Morgan WJ, Myers RE, Olin JT, Peters SP, Raissy HH, Robison RG, Ross K, Sorkness CA, Thyne SM, Wechsler ME, Phipatanakul W; NIH/NHLBI AsthmaNet. *N Engl J Med*. 2016 Aug 18;375(7):619-30. doi: 10.1056/NEJMoa1515990. PubMed PMID: 27532828; PubMed Central PMCID: PMC5085065.

Maternal age and asthma in Latino populations.

Abid Z, Oh SS, Hu D, Sen S, Huntsman S, Eng C, Farber HJ, Rodriguez-Cintron W, Rodriguez-Santana JR, Serebrisky D, Avila PC, Thyne SM, Kim KA, Borrell LN, Williams LK, Seibold MA, Burchard EG, Kumar R. *Clin Exp Allergy*. 2016 Nov;46(11):1398-1406. doi: 10.1111/cea.12765.PubMed PMID: 27238356.

The nasal methylome and childhood atopic asthma.

Yang IV, Pedersen BS, Liu AH, O'Connor GT, Pillai D, Kattan M, Misiak RT, Gruchalla R, Szefler SJ, Khurana Hershey GK, Kercsmar C, Richards A, Stevens AD, Kolakowski CA, Makhija M, Sorkness CA, Krouse RZ, Visness C, Davidson EJ, Hennessy CE, Martin RJ, Togias A, Busse WW, Schwartz DA. *J Allergy Clin Immunol*. 2016 Oct 13. pii:S0091-6749(16)30955-1. doi: 10.1016/j.jaci.2016.07.036. [Epub ahead of print]PubMed PMID: 27745942.

Within-microenvironment exposure to particulate matter and health effects in children with asthma: A pilot study utilizing real-time personal monitoring with GPS interface.

Rabinovitch N, Adams CD, Strand M, Koehler K, Volckens J. *Environ Health*. 2016 Oct 10;15(1):96. PubMed PMID: 27724963; PubMed Central PMCID: PMC5057244.

Distinguishing characteristics of difficult-to-control asthma in inner-city children and adolescents.

Pongracic JA, Krouse RZ, Babineau DC, Zoratti EM, Cohen RT, Wood RA, Khurana Hershey GK, Kercsmar CM, Gruchalla RS, Kattan M, Teach SJ, Johnson CC, Bacharier LB, Gern JE, Sigelman SM, Gergen PJ, Togias A, Visness CM, Busse WW, Liu AH. *J Allergy Clin Immunol*. 2016 Oct;138(4):1030-1041. doi:10.1016/j.jaci.2016.06.059. PubMed PMID: 27720017.

Leveraging Partnerships: Families, Schools, and Providers Working Together to Improve Asthma Management.

Gleason M, Cicutto L, Haas-Howard C, Raleigh BM, Szefler SJ. *Curr Allergy Asthma Rep*. 2016 Oct;16(10):74. Review. PubMed PMID:27709456.

Mechanism of Th2/Th17-predominant and Neutrophilic, Th2/Th17-low Subtypes of Asthma.

Liu W, Liu S, Verma M, Zafar I, Good JT, Rollins D, Groshong S, Gorska MM, Martin RJ, Alam R. *J Allergy Clin Immunol*. 2016 Oct 1. pii: S0091-6749(16)31056-9. doi: 10.1016/j.jaci.2016.08.032. [Epub ahead of print] PubMed PMID: 27702673.

IL1RL1 asthma risk variants regulate airway type 2 inflammation.

Gordon ED, Palandra J, Wesolowska-Andersen A, Ringel L, Rios CL, Lachowicz-Scroggins ME, Sharp LZ, Everman JL, MacLeod HJ, Lee JW, Mason RJ, Matthay MA, Sheldon RT, Peters MC, Nocka KH, Fahy JV, Seibold MA. *JCI Insight*. 2016 Sep 8;1(14):e87871. PubMed PMID: 27699235; PubMed Central PMCID: PMC5033813.

Reslizumab in the management of poorly controlled asthma: The data so far.

Maselli DJ, Velez MI, Rogers L. *J Asthma Allergy*. 2016 Aug 31;9:155-62. doi: 10.2147/JAA.S94164. Review. PubMed PMID: 27621657; PubMed Central PMCID: PMC5012840.

Association of a PAI-1 Gene Polymorphism and Early Life Infections with Asthma Risk, Exacerbations, and Reduced Lung Function.

Cho SH, Min JY, Kim DY, Oh SS, Torgerson DR, Pino-Yanes M, Hu D, Sen S, Huntsman S, Eng C, Farber HJ, Rodriguez-Cintron W, Rodriguez-Santana JR, Serebrisky D, Thyne SM, Borrell LN, Williams LK, DuPont W, Seibold MA, Burchard EG, Avila PC, Kumar R. *PLoS One*. 2016 Aug 24;11(8):e0157848. doi: 10.1371/journal.pone.0157848. PubMed PMID: 27556405; PubMed Central PMCID: PMC4996454.

Psychosocial Factors in Severe Pediatric Asthma.

Booster GD, Oland AA, Bender BG. *Immunol Allergy Clin North Am*. 2016 Aug;36(3):449-60. doi: 10.1016/j.iac.2016.03.012. Review. PubMed PMID: 27401618.

Developing, Implementing, and Evaluating a School-Centered Asthma Program: Step-Up Asthma Program.

Liptzin DR, Gleason MC, Cicutto LC, Cleveland CL, Shocks DJ, White MK, Faino AV, Szefler SJ. *J Allergy Clin Immunol Pract*. 2016 Sep-Oct;4(5):972-979.e1. doi: 10.1016/j.jaip.2016.04.016. PubMed PMID: 27283054.

Analysis of Asthma-Chronic Obstructive Pulmonary Disease Overlap Syndrome Defined on the Basis of Bronchodilator Response and Degree of Emphysema.

Cosentino J, Zhao H, Hardin M, Hersh CP, Crapo J, Kim V, Criner GJ; COPDGene Investigators *Ann Am Thorac Soc*. 2016 Sep;13(9):1483-9. doi: 10.1513/AnnalsATS.201511-761OC. PubMed PMID: 27268723.

Personalized asthma therapy in blacks - the role of genetic ancestry.

Dunn RM, Wechsler ME. *J Allergy Clin Immunol*. 2016 May;137(5):1370-2. doi: 10.1016/j.jaci.2016.03.004. PubMed PMID: 27155033.

MiR-3162-3p Is a Novel MicroRNA That Exacerbates Asthma by Regulating β-Catenin.

Fang C, Lu W, Li C, Peng X, Wang Y, Huang X, Yao Z, Cai N, Huang Y, Zhang X, Tan J. *PLoS One*. 2016 Mar 9;11(3):e0149257. doi: 10.1371/journal.pone.0149257. Erratum in: *PLoS One*. 2016;11(4):e0153734. PubMed PMID: 26959414; PubMed Central PMCID: PMC4784915.

Is the Road to Precision Medicine in Chronic Lung Disease Paved with Degraded Chitin?

Wesolowska-Andersen A, Seibold MA. *Am J Respir Crit Care Med*. 2016 Jan 15;193(2):107-8. doi: 10.1164/rccm.201510-1925ED. PubMed PMID: 26771411.

1,25D3 prevents CD8(+)Tc2 skewing and asthma development through VDR binding changes to the Cyp11a1 promoter.

Schedel M, Jia Y, Michel S, Takeda K, Domenico J, Joetham A, Ning F, Strand M, Han J, Wang M, Lucas JJ, Vogelberg C, Kabesch M, O'Connor BP, Gelfand EW. *Nat Commun*. 2016 Jan 11;7:10213. doi: 10.1038/ncomms10213. PubMed PMID: 26750596; PubMed Central PMCID: PMC4712703.

Effects of omalizumab on T lymphocyte function in inner-city children with asthma.

Gruchalla RS, Sampson HA, Liu AH, Shreffler W, Wallace PK, Togias A, David G, Calatroni A, LeBeau P; Inner-city Asthma Consortium. *Pediatr Allergy Immunol*. 2016 May;27(3):328-31. doi: 10.1111/pai.12508. PubMed PMID: 26573086; PubMed Central PMCID: PMC4888877.

Vitamin D Supplementation and the Risk of Colds in Patients with Asthma.

Denlinger LC, King TS, Cardet JC, Craig T, Holguin F, Jackson DJ, Kraft M, Peters SP, Ross K, Sumino K, Boushey HA, Jarjour NN, Wechsler ME, Wenzel SE, Castro M, Avila PC; NHLBI AsthmaNet Investigators. *Am J Respir Crit Care Med*. 2016 Mar 15;193(6):634-41. doi: 10.1164/rccm.201506-1169OC. PubMed PMID: 26540136; PubMed Central PMCID: PMC4824938.

SELECTED 2016 PUBLICATIONS

Cystic Fibrosis

Nontuberculous mycobacterial infections in cystic fibrosis: To treat or not to treat?

Nick JA, Pohl K, Martiniano SL. *Curr Opin Pulm Med*. 201 Nov;22(6):629-36. doi: 10.1097/MCP.0000000000000317. PubMed PMID: 27583673.

Nontuberculous Mycobacterial Infections in Cystic Fibrosis.

Martiniano SL, Nick JA, Daley CL. *Clin Chest Med*. 2016 Mar;37(1):83-96. doi: 10.1016/j.ccm.2015.11.001. Review. PubMed PMID: 26857770.

Diagnosis of Adult Patients with Cystic Fibrosis.

Nick JA, Nichols DP. *Clin Chest Med*. 2016 Mar;37(1):47-57. doi: 10.1016/j.ccm.2015.11.006. Review. PubMed PMID: 26857767.

US Cystic Fibrosis Foundation and European Cystic Fibrosis Society consensus recommendations for the management of non-tuberculous mycobacteria in individuals with cystic fibrosis.

Floto RA, Olivier KN, Saiman L, Daley CL, Herrmann JL, Nick JA, Noone PG, Bilton D, Corris P, Gibson RL, Hempstead SE, Koetz K, Sabadosa KA, Sermet-Gaudelus I, Smyth AR, van Ingen J, Wallace RJ, Winthrop KL, Marshall BC, Haworth CS; US Cystic Fibrosis Foundation and European Cystic Fibrosis Society. *Thorax*. 2016 Jan;71 Suppl 1:i1-22. doi:10.1136/thoraxjnl-2015-207360. PubMed PMID: 26666259; PubMed Central PMCID: PMC4717371.

Inhaled alpha1-proteinase inhibitor therapy in patients with cystic fibrosis.

Gaggar A, Chen J, Chmiel JF, Dorkin HL, Flume PA, Griffin R, Nichols D, Donaldson SH. *J Cyst Fibros*. 2016 Mar;15(2):227-33. doi: 10.1016/j.jcf.2015.07.009. PubMed PMID: 26321218; PubMed Central PMCID: PMC4993024.

Effect of ivacaftor in patients with advanced cystic fibrosis and a G551D-CFTR mutation: Safety and efficacy in an expanded access program in the United States.

Taylor-Cousar J, Niknian M, Gilmartin G, Pilewski JM; VX11-770-901 investigators. *J Cyst Fibros*. 2016 Jan;15(1):116-22. doi:10.1016/j.jcf.2015.01.008. PubMed PMID: 25682022.

COPD

Pulmonary Predictors of Incident Diabetes in Smokers.

Kinney GL, Baker EH, Klein OL, Black-Shinn JL, Wan ES, Make B, Regan E, Bowler RP, Lutz SM, Young KA, Duca LM, Washko GR, Silverman EK, Crapo JD, Hokanson JE. *Chronic Obstr Pulm Dis*. 2016;3(4):739-747. PubMed PMID: 27795984; PubMed Central PMCID: PMC5084840.

A New Approach for Identifying Patients with Undiagnosed Chronic Obstructive Pulmonary Disease.

Martinez FJ, Mannino D, Leidy NK, Malley KG, Bacci ED, Barr RG, Bowler RP, Han MK, Houfek JF, Make B, Meldrum CA, Rennard S, Thomashow B, Walsh J, Yawn BP; High-Risk-COPD Screening Study Group. *Am J Respir Crit Care Med*. 2016 Oct 26. [Epub ahead of print] PubMed PMID: 27783539.

Obstructive sleep apnea and chronic obstructive pulmonary disease.

Borukhov I, Rizzolo D. Overlap syndrome: *JAAPA*. 2016 Nov;29(11):18-22. PubMed PMID: 27749401.

Quantitative computed tomography measurements to evaluate airway disease in chronic obstructive pulmonary disease: Relationship to physiological measurements, clinical index and visual assessment of airway disease.

Nambu A, Zach J, Schroeder J, Jin G, Kim SS, Kim YI, Schnell C, Bowler R, Lynch DA. *Eur J Radiol*. 2016 Nov;85(11):2144-2151. doi: 10.1016/j.ejrad.2016.09.010. PubMed PMID: 27776670.

Hemizygous Deletion on Chromosome 3p26.1 Is Associated with Heavy Smoking among African American Subjects in the COPDGene Study.

Begum F, Ruczinski I, Hokanson JE, Lutz SM, Parker MM, Cho MH, Hetmanski JB, Scharpf RB, Crapo JD, Silverman EK, Beaty TH. *PLoS One*. 2016 Oct 6;11(10):e0164134. doi: 10.1371/journal.pone.0164134. PubMed PMID: 27711239; PubMed Central PMCID: PMC5053531.

Biomarkers Predictive of Exacerbations in the SPIROMICS and COPDGene Cohorts.

Keene JD, Jacobson S, Kechris K, Kinney GL, Foreman MG, Doerschuk CM, Make BJ, Curtis JL, Rennard SI, Barr RG, Bleecker ER, Kanner RE, Kleerup EC, Hansel NN, Woodruff PG, Han MK, Paine Iii R, Martinez FJ, Bowler RP, O'Neal WK; for COPDGene and SPIROMICS Investigators. *Am J Respir Crit Care Med*. 2016 Aug 31. [Epub ahead of print] PubMed PMID: 27579823.

Acute Exacerbations and Lung Function Loss in Smokers With and Without COPD.

Dransfield MT, Kunisaki KM, Strand MJ, Anzueto A, Bhatt SP, Bowler RP, Criner GJ, Curtis JL, Hanania NA, Nath H, Putcha N, Roark SE, Wan ES, Washko GR, Wells JM, Wendt CH, Make BJ; COPDGene Investigators. *Am J Respir Crit Care Med*. 2016 Aug 24. [Epub ahead of print] PubMed PMID: 27556408.

What is asthma-COPD overlap syndrome? Towards a consensus definition from a round table discussion.

Sin DD, Miravitlles M, Mannino DM, Soriano JB, Price D, Celli BR, Leung JM, Nakano Y, Park HY, Wark PA, Wechsler ME. *Eur Respir J*. 2016 Sep;48(3):664-73. doi: 10.1183/13993003.00436-2016. PubMed PMID: 27338195.

Analysis of Asthma-Chronic Obstructive Pulmonary Disease Overlap Syndrome Defined on the Basis of Bronchodilator Response and Degree of Emphysema.

Cosentino J, Zhao H, Hardin M, Hersh CP, Crapo J, Kim V, Criner GJ; COPDGene Investigators. *Ann Am Thorac Soc*. 2016 Sep;13(9):1483-9. doi: 10.1513/AnnalsATS.201511-761OC. PubMed PMID: 27268723.

Persistent and Newly Developed Chronic Bronchitis Are Associated with Worse Outcomes in Chronic Obstructive Pulmonary Disease.

Kim V, Zhao H, Boriek AM, Anzueto A, Soler X, Bhatt SP, Rennard SI, Wise R, Comellas A, Ramsdell JW, Kinney GL, Han MK, Martinez CH, Yen A, Black-Shinn J, Porszasz J, Criner GJ, Hanania NA, Sharafkhaneh A, Crapo JD, Make BJ, Silverman EK, Curtis JL; COPDGene Investigators. *Ann Am Thorac Soc*. 2016 Jul;13(7):1016-25. doi: 10.1513/AnnalsATS.201512-800OC. PubMed PMID: 27158740; PubMed Central PMCID: PMC5015750.

Inflammatory triggers associated with exacerbations of COPD orchestrate plasticity of group 2 innate lymphoid cells in the lungs.

Silver JS, Kearley J, Copenhaver AM, Sanden C, Mori M, Yu L, Pritchard GH, Berlin AA, Hunter CA, Bowler R, Erjefalt JS, Kolbeck R, Humbles AA. *Nat Immunol*. 2016 Jun;17(6):626-35. doi: 10.1038/ni.3443. PubMed PMID: 27111143.

Understanding the impact of second-hand smoke exposure on clinical outcomes in participants with COPD in the SPIROMICS cohort.

Putcha N, Barr RG, Han MK, Woodruff PG, Bleecker ER, Kanner RE, Martinez FJ, Smith BM, Tashkin DP, Bowler RP, Eisner MD, Rennard SI, Wise RA, Hansel NN; SPIROMICS Investigators. *Thorax*. 2016 Mar 9. pii: thoraxjnl-2015-207487. doi: 10.1136/thoraxjnl-2015-207487. [Epub ahead of print] PubMed PMID: 26962015.

Early response to inhaled bronchodilators and corticosteroids as a predictor of 12-month treatment responder status and COPD exacerbations.

Calverley PM, Postma DS, Anzueto AR, Make BJ, Eriksson G, Peterson S, Jenkins CR. *Int J Chron Obstruct Pulmon Dis*. 2016 Feb 25;11:381-90. doi: 10.2147/COPD.S93303. PubMed PMID: 26952309; PubMed Central PMCID: PMC4772946.

Age-Related Differences in Health-Related Quality of Life in COPD: An Analysis of the COPDGene and SPIROMICS Cohorts.

Martinez CH, Diaz AA, Parulekar AD, Rennard SI, Kanner RE, Hansel NN, Couper D, Holm KE, Hoth KF, Curtis JL, Martinez FJ, Hanania NA, Regan EA, Paine R 3rd, Cigolle CT, Han MK; COPDGene and SPIROMICS Investigators. *Chest*. 2016 Apr;149(4):927-35. doi: 10.1016/j.chest.2015.11.025. PubMed PMID: 26836895; PubMed Central PMCID: PMC4944781.

Association Between Expiratory Central Airway Collapse and Respiratory Outcomes Among Smokers.

Bhatt SP, Terry NL, Nath H, Zach JA, Tschirren J, Bolding MS, Stinson DS, Wilson CG, Curran-Everett D, Lynch DA, Putcha N, Soler X, Wise RA, Washko GR, Hoffman EA, Foreman MG, Dransfield MT; Genetic Epidemiology of COPD (COPDGene) Investigators. *JAMA*. 2016 Feb 2;315(5):498-505. doi: 10.1001/jama.2015.19431. PubMed PMID: 26836732.

SELECTED 2016 PUBLICATIONS

Association between Functional Small Airway Disease and FEV1 Decline in Chronic Obstructive Pulmonary Disease.

Bhatt SP, Soler X, Wang X, Murray S, Anzueto AR, Beaty TH, Boriek AM, Casaburi R, Criner GJ, Diaz AA, Dransfield MT, Curran-Everett D, Galbán CJ, Hoffman EA, Hogg JC, Kazerooni EA, Kim V, Kinney GL, Lagstein A, Lynch DA, Make BJ, Martinez FJ, Ramsdell JW, Reddy R, Ross BD, Rossiter HB, Steiner RM, Strand MJ, van Beek EJ, Wan ES, Washko GR, Wells JM, Wendt CH, Wise RA, Silverman EK, Crapo JD, Bowler RP, Han MK; COPDGene Investigators. *Am J Respir Crit Care Med*. 2016 Jul 15;194(2):178-84. doi: 10.1164/rccm.201511-2219OC. PubMed PMID: 26808615; PubMed Central PMCID: PMC5003216.

COPD subtypes identified by network-based clustering of blood gene expression.

Chang Y, Glass K, Liu YY, Silverman EK, Crapo JD, Tal-Singer R, Bowler R, Dy J, Cho M, Castaldi P. *Genomics*. 2016 Mar;107(2-3):51-8. doi: 10.1016/j.ygeno.2016.01.004. PubMed PMID: 26773458; PubMed Central PMCID: PMC4761317.

Exome Sequencing Analysis in Severe, Early-Onset Chronic Obstructive Pulmonary Disease.

Qiao D, Lange C, Beaty TH, Crapo JD, Barnes KC, Bamshad M, Hersh CP, Morrow J, Pinto-Plata VM, Marchetti N, Bueno R, Celli BR, Criner GJ, Silverman EK, Cho MH; Lung GO.; NHLBI Exome Sequencing Project.; COPDGene Investigators. *Am J Respir Crit Care Med*. 2016 Jun 15;193(12):1353-63. doi: 10.1164/rccm.201506-1223OC. PubMed PMID: 26736064; PubMed Central PMCID: PMC4910887.

Identifying a Deletion Affecting Total Lung Capacity Among Subjects in the COPDGene Study Cohort.

Begum F, Ruczinski I, Li S, Silverman EK, Cho MH, Lynch DA, Curran-Everett D, Crapo J, Scharpf RB, Parker MM, Hetmanski JB, Beaty TH. *Genet Epidemiol*. 2016 Jan;40(1):81-8. doi: 10.1002/gepi.21943. PubMed PMID: 26643968; PubMed Central PMCID: PMC4679532.

Sex-specific features of emphysema among current and former smokers with COPD.

Hardin M, Foreman M, Dransfield MT, Hansel N, Han MK, Cho MH, Bhatt SP, Ramsdell J, Lynch D, Curtis JL, Silverman EK, Washko G, DeMeo D; COPDGene Investigators. *Eur Respir J*. 2016 Jan;47(1):104-12. doi: 10.1183/13993003.00996-2015. PubMed PMID: 26541532.

Patient Involvement in the Design of a Patient-Centered Clinical Trial to Promote Adherence to Supplemental Oxygen Therapy in COPD.

Holm KE, Casaburi R, Cerreta S, Gussin HA, Husbands J, Porszasz J, Prieto-Centurion V, Sandhaus RA, Sullivan JL, Walsh LJ, Krishnan JA. *Patient*. 2016 Jun;9(3):271-9. doi: 10.1007/s40271-015-0150-z. PubMed PMID: 26521057.

β-Blockers are associated with a reduction in COPD exacerbations.

Bhatt SP, Wells JM, Kinney GL, Washko GR Jr, Budoff M, Kim YI, Bailey WC, Nath H, Hokanson JE, Silverman EK, Crapo J, Dransfield MT; COPDGene Investigators. *Thorax*. 2016 Jan;71(1):8-14. doi: 10.1136/t

Interstitial Lung Disease

Plasma Leptin Is Elevated in Acute Exacerbation of Idiopathic Pulmonary Fibrosis.

Cao M, Swigris JJ, Wang X, Cao M, Qiu Y, Huang M, Xiao Y, Cai H. *Mediators Inflamm*. 2016;2016:6940480. doi: 10.1155/2016/6940480. PubMed PMID: 27642238; PubMed Central PMCID: PMC5014970.

Idiopathic Pulmonary Fibrosis: A Genetic Disease That Involves Mucociliary Dysfunction of the Peripheral Airways.

Evans CM, Fingerlin TE, Schwarz MI, Lynch D, Kurche J, Warg L, Yang IV, Schwartz DA. *Physiol Rev*. 2016 Oct;96(4):1567-91. doi: 10.1152/physrev.00004.2016. Review. PubMed PMID: 27630174.

Efficacy of pirfenidone in patients with idiopathic pulmonary fibrosis with more preserved lung function.

Albera C, Costabel U, Fagan EA, Glassberg MK, Gorina E, Lancaster L, Lederer DJ, Nathan SD, Spirig D, Swigris JJ. *Eur Respir J*. 2016 Sep;48(3):843-51. doi: 10.1183/13993003.01966-2015. PubMed PMID: 27471208.

Connective tissue disease-related interstitial lung disease.

Demoruelle MK, Mittoo S, Solomon JJ. *Best Pract Res Clin Rheumatol*. 2016 Feb;30(1):39-52. doi: 10.1016/j.berh.2016.04.006. Review. PubMed PMID: 27421215.

COUNTERPOINT: Should All Patients With Idiopathic Pulmonary Fibrosis, Even Those With More Than Moderate Impairment, Be Treated With Nintedanib or Pirfenidone? No.

Brown KK. *Chest*. 2016 Aug;150(2):276-8. doi: 10.1016/j.chest.2016.04.036. PubMed PMID: 27292046.

Three-dimensional characterization of fibroblast foci in idiopathic pulmonary fibrosis.

Jones MG, Fabre A, Schneider P, Cinetto F, Sgalla G, Mavrogordato M, Jogai S, Alzetani A, Marshall BG, O'Reilly KM, Warner JA, Lackie PM, Davies DE, Hansell DM, Nicholson AG, Sinclair I, Brown KK, Richeldi L. *JCI Insight*. 2016 Apr 21;1(5). pii: e86375. PubMed PMID: 27275013; PubMed Central PMCID: PMC4889020.

Understanding and optimizing health-related quality of life and physical functional capacity in idiopathic pulmonary fibrosis.

Olson AL, Brown KK, Swigris JJ. *Patient Relat Outcome Meas*. 2016 May 17;7:29-35. doi: 10.2147/PROM.S74857. Review. PubMed PMID: 27274328; PubMed Central PMCID: PMC4876092.

What's it like to live with idiopathic pulmonary fibrosis? Ask the experts.

Russell AM, Swigris JJ. *Eur Respir J*. 2016 May;47(5):1324-6. doi: 10.1183/13993003.00109-2016. PubMed PMID: 27132265.

The Unmet Educational Needs of Patients with Interstitial Lung Disease. Setting the Stage for Tailored Pulmonary Rehabilitation.

Morisset J, Dubé BP, Garvey C, Bourbeau J, Collard HR, Swigris JJ, Lee JS. *Ann Am Thorac Soc*. 2016 Jul;13(7):1026-33. doi: 10.1513/AnnalsATS.201512-836OC. PubMed PMID: 27064659.

Effect of continued treatment with pirfenidone following clinically meaningful declines in forced vital capacity: Analysis of data from three phase 3 trials in patients with idiopathic pulmonary fibrosis.

Nathan SD, Albera C, Bradford WZ, Costabel U, du Bois RM, Fagan EA, Fishman RS, Glaspole I, Glassberg MK, Glasscock KF, King TE Jr, Lancaster L, Lederer DJ, Lin Z, Pereira CA, Swigris JJ, Valeyre D, Noble PW, Wells AU. *Thorax*. 2016 May;71(5):429-35. doi: 10.1136/thoraxjnl-2015-207011. PubMed PMID: 26968970; PubMed Central PMCID: PMC4862066.

FG-3019 anti-connective tissue growth factor monoclonal antibody: Results of an open-label clinical trial in idiopathic pulmonary fibrosis.

Raghu G, Scholand MB, de Andrade J, Lancaster L, Mageto Y, Goldin J, Brown KK, Flaherty KR, Wencel M, Wanger J, Neff T, Valone F, Stauffer J, Porter S. *Eur Respir J*. 2016 May;47(5):1481-91. doi: 10.1183/13993003.01030-2015. PubMed PMID: 26965296.

Nintedanib in patients with idiopathic pulmonary fibrosis: Combined evidence from the TOMORROW and INPULSIS(®) trials.

Richeldi L, Cottin V, du Bois RM, Selman M, Kimura T, Bailes Z, Schlenker-Herceg R, Stowasser S, Brown KK. *Respir Med*. 2016 Apr;113:74-9. doi: 10.1016/j.rmed.2016.02.001. PubMed PMID: 26915984.

The Value of a Multidisciplinary Approach to the Diagnosis of Usual Interstitial Pneumonitis and Idiopathic Pulmonary Fibrosis: Radiology, Pathology, and Clinical Correlation.

Chung JH, Lynch DA. *AJR Am J Roentgenol*. 2016 Mar;206(3):463-71. doi: 10.2214/AJR.15.15627. Review. PubMed PMID: 26901003.

Clinical and economic burden of idiopathic pulmonary fibrosis: A retrospective cohort study.

Raimundo K, Chang E, Broder MS, Alexander K, Zazzali J, Swigris JJ. *BMC Pulm Med*. 2016 Jan 5;16:2. doi: 10.1186/s12890-015-0165-1. PubMed PMID: 26732054; PubMed Central PMCID: PMC4702364.

SELECTED 2016 PUBLICATIONS

Desmoplakin Variants Are Associated with Idiopathic Pulmonary Fibrosis.

Mathai SK, Pedersen BS, Smith K, Russell P, Schwarz MI, Brown KK, Steele MP, Loyd JE, Crapo JD, Silverman EK, Nickerson D, Fingerlin TE, Yang IV, Schwartz DA. *Am J Respir Crit Care Med*. 2016 May 15;193(10):1151-60. doi: 10.1164/rccm.201509-1863OC. PubMed PMID: 26669357; PubMed Central PMCID: PMC4872666.

Pirfenidone for idiopathic pulmonary fibrosis: Analysis of pooled data from three multinational phase 3 trials.

Noble PW, Albera C, Bradford WZ, Costabel U, du Bois RM, Fagan EA, Fishman RS, Glaspole I, Glassberg MK, Lancaster L, Lederer DJ, Leff JA, Nathan SD, Pereira CA, Swigris JJ, Valeyre D, King TE Jr. *Eur Respir J*. 2016 Jan;47(1):243-53. doi: 10.1183/13993003.00026-2015. PubMed PMID: 26647432; PubMed Central PMCID: PMC4697914.

Predictors of mortality in rheumatoid arthritis-associated interstitial lung disease.

Solomon JJ, Chung JH, Cosgrove GP, Demoruelle MK, Fernandez-Perez ER, Fischer A, Frankel SK, Hobbs SB, Huie TJ, Ketzer J, Mannina A, Olson AL, Russell G, Tsuchiya Y, Yunt ZX, Zelarney PT, Brown KK, Swigris JJ. *Eur Respir J*. 2016 Feb;47(2):588-96. doi: 10.1183/13993003.00357-2015. PubMed PMID: 26585429.

Idiopathic Pulmonary Fibrosis: Gender-Age-Physiology Index Stage for Predicting Future Lung Function Decline.

Salisbury ML, Xia M, Zhou Y, Murray S, Tayob N, Brown KK, Wells AU, Schmidt SL, Martinez FJ, Flaherty KR. *Chest*. 2016 Feb;149(2):491-8. doi: 10.1378/chest.15-0530. PubMed PMID: 26425858.

Mechanisms of Lung Injury & Repair

Transplantation of Airway Epithelial Stem/Progenitor Cells: A Future for Cell-based Therapy.

Ghosh M, Ahmad S, White CW, Reynolds SD. *Am J Respir Cell Mol Biol*. 2016 Sep 15. [Epub ahead of print] PubMed PMID: 27632244.

Tollip SNP rs5743899 modulates human airway epithelial responses to rhinovirus infection.

Huang C, Jiang D, Francisco D, Berman R, Wu Q, Ledford JG, Moore CM, Ito Y, Stevenson C, Munson D, Li L, Kraft M, Chu HW. *Clin Exp Allergy*. 2016 Dec;46(12):1549-1563. doi: 10.1111/cea.12793. PubMed PMID: 27513438; PubMed Central PMCID: PMC5125849.

Cistrome-based Cooperation between Airway Epithelial Glucocorticoid Receptor and NF-κB Orchestrates Anti-inflammatory Effects.

Kadiyala V, Sasse SK, Altonsy MO, Berman R, Chu HW, Phang TL, Gerber AN. *J Biol Chem*. 2016 Jun 10;291(24):12673-87. doi: 10.1074/jbc.M116.721217. PubMed PMID: 27076634; PubMed Central PMCID: PMC4933445.

Analysis of Glucocorticoid Receptor Activity in Bronchial Epithelial Cells Defines Novel Mechanisms of Steroid Efficacy.

Kadiyala V, Sasse SK, Altonsy MO, Phang TL, Gerber AN. Cistrome *Ann Am Thorac Soc*. 2016 Mar;13 Suppl 1:S103. doi: 10.1513/AnnalsATS.201508-534MG. PubMed PMID: 27027943; PubMed Central PMCID: PMC5015740.

Cigarette Smoke Induces Human Epidermal Receptor 2-Dependent Changes in Epithelial Permeability.

Mishra R, Foster D, Vasu VT, Thaikoottathil JV, Kosmider B, Chu HW, Bowler RP, Finigan JH. *Am J Respir Cell Mol Biol*. 2016 Jun;54(6):853-64. doi: 10.1165/rcmb.2014-0437OC. PubMed PMID: 26600084; PubMed Central PMCID: PMC4942212.

Mammary epithelial cell phagocytosis downstream of TGF-β3 is characterized by adherens junction reorganization.

Fornetti J, Flanders KC, Henson PM, Tan AC, Borges VF, Schedin P. *Cell Death Differ*. 2016 Feb;23(2):185-96. doi: 10.1038/cdd.2015.82. PubMed PMID: 26113040; PubMed Central PMCID: PMC4716300.

SOD3 R213G SNP Blocks Murine Bleomycin-induced Fibrosis and Promotes Resolution of Inflammation.

Mouradian GC Jr, Gaurav R, Pugliese S, El Kasmi K, Hartman B, Hernandez-Lagunas L, Stenmark K, Bowler RP, Nozik-Grayck E. *Am J Respir Cell Mol Biol*. 2016 Nov 2. [Epub ahead of print] PubMed PMID: 27805412.

Autotaxin activity increases locally following lung injury, but is not required for pulmonary lysophosphatidic acid production or fibrosis.

Black KE, Berdyshev E, Bain G, Castelino FV, Shea BS, Probst CK, Fontaine BA, Bronova I, Goulet L, Lagares D, Ahluwalia N, Knipe RS, Natarajan V, Tager *AM. FASEB J*. 2016 Jun;30(6):2435-50. doi: 10.1096/fj.201500197R. PubMed PMID: 27006447; PubMed Central PMCID: PMC4871797.

Cytosolic phospholipase A2 contributes to innate immune defense against Candida albicans lung infection.

Jayaraja S, Dakhama A, Yun B, Ghosh M, Lee H, Redente EF, Uhlson CL, Murphy RC, Leslie CC. *BMC Immunol*. 2016 Aug 8;17(1):27. doi:10.1186/s12865-016-0165-9. PubMed PMID: 27501951; PubMed Central PMCID:PMC4977843.

G2A Signaling Dampens Colitic Inflammation via Production of IFN-Y.

Frasch SC, McNamee EN, Kominsky D, Jedlicka P, Jakubzick C, Zemski Berry K, Mack M, Furuta GT, Lee JJ, Henson PM, Colgan SP, Bratton DL. 2016 Aug 15;197(4):1425-34. doi: 10.4049/jimmunol.1600264. PubMed PMID: 27402702; PubMed Central PMCID: PMC4975950.

Ly6C(+) monocyte efferocytosis and cross-presentation of cell-associated antigens.

Larson SR, Atif SM, Gibbings SL, Thomas SM, Prabagar MG, Danhorn T, Leach SM, Henson PM, Jakubzick CV. *Cell Death Differ*. 2016 Jun;23(6):997-1003. doi: 10.1038/cdd.2016.24. PubMed PMID: 26990659; PubMed Central PMCID: PMC4987733.

Catalytic Antioxidant Rescue of Inhaled Sulfur Mustard Toxicity.

McElroy CS, Min E, Huang J, Loader JE, Hendry-Hofer TB, Garlick RB, Rioux JS, Veress LA, Smith R, Osborne C, Anderson DR, Holmes WW, Paradiso DC, White CW, Day BJ. *Toxicol Sci*. 2016 Sep 7. pii: kfw170. [Epub ahead of print] PubMed PMID: 27605419.

Antioxidants as potential medical countermeasures for chemical warfare agents and toxic industrial chemicals.

McElroy CS, Day BJ. *Biochem Pharmacol*. 2016 Jan 15;100:1-11. doi: 10.1016/j.bcp.2015.10.003. Review. PubMed PMID: 26476351; PubMed Central PMCID: PMC4744107.

MUC18 Regulates Lung Rhinovirus Infection and Inflammation.

Berman R, Jiang D, Wu Q, Stevenson CR, Schaefer NR, Chu HW. *PLoS One*. 2016 Oct 4;11(10):e0163927. doi: 10.1371/journal.pone.0163927. PubMed PMID: 27701461; PubMed Central PMCID: PMC5049769.

α1-Antitrypsin reduces rhinovirus infection in primary human airway epithelial cells exposed to cigarette smoke.

Berman R, Jiang D, Wu Q, Chu HW. *Int J Chron Obstruct Pulmon Dis*. 2016 Jun 10;11:1279-86. doi: 10.2147/COPD.S105717. PubMed PMID: 27354786; PubMed Central PMCID: PMC4910614.

DJ-1 Modulates Nuclear Erythroid 2-Related Factor-2-Mediated Protection in Human Primary Alveolar Type II Cells in Smokers.

Bahmed K, Messier EM, Zhou W, Tuder RM, Freed CR, Chu HW, Kelsen SG, Bowler RP, Mason RJ, Kosmider B. *Am J Respir Cell Mol Biol*. 2016 Sep;55(3):439-49. doi: 10.1165/rcmb.2015-0304OC. PubMed PMID: 27093578; PubMed Central PMCID: PMC5023027.

Therapeutic Effects of β1-Antitrypsin on Psedumonas aeruginosa Infection in ENaC Transgenic Mice.

Nichols DP, Jiang D, Happoldt C, Berman R, Chu HW. *PLoS One*. 2015 Oct 28;10(10):e0141232. doi: 10.1371/journal.pone.0141232. PubMed PMID: 26509529; PubMed Central PMCID: PMC4624966.

SELECTED 2016 PUBLICATIONS

Mycobacterial Infections

Attenuated heme oxygenase-1 responses predispose the elderly to pulmonary nontuberculous mycobacterial infections.

Surolia R, Karki S, Wang Z, Kulkarni T, Li FJ, Vohra S, Batra H, Nick JA, Duncan SR, Thannickal VJ, Steyn AJ, Agarwal A, Antony VB. *Am J Physiol Lung Cell Mol Physiol*. 2016 Nov 1;311(5):L928-L940. doi: 10.1152/ajplung.00397.2015. PubMed PMID: 27694475.

Randomized Trial of Liposomal Amikacin for Inhalation in Nontuberculous Mycobacterial Lung Disease.

Olivier KN, Griffith DE, Eagle G, McGinnis Ii JP, Micioni L, Liu K, Daley CL, Winthrop KL, Ruoss S, Addrizzo-Harris DJ, Flume PA, Dorgan D, Salathe M, Brown-Elliott BA, Gupta R, Wallace RJ Jr. *Am J Respir Crit Care Med*. 2016 Oct 17. [Epub ahead of print] PubMed PMID: 27748623.

Nontuberculous mycobacterial infections in cystic fibrosis: To treat or not to treat?

Nick JA, Pohl K, Martiniano SL. *Curr Opin Pulm Med*. 2016 Nov;22(6):629-36. doi: 10.1097/MCP.0000000000000317. PubMed PMID: 27583673.

Clinical Characteristics, Treatment Outcomes, and Resistance Mutations Associated with Macrolide-Resistant Mycobacterium avium Complex Lung Disease.

Moon SM, Park HY, Kim SY, Jhun BW, Lee H, Jeon K, Kim DH, Huh HJ, Ki CS, Lee NY, Kim HK, Choi YS, Kim J, Lee SH, Kim CK, Shin SJ, Daley CL, Koh WJ. *Antimicrob Agents Chemother*. 2016 Aug 29. pii: AAC.01240-16. [Epub ahead of print] PubMed PMID: 27572413; PubMed Central PMCID: PMC5075083.

Adaptation of Mycobacterium tuberculosis to Impaired Host Immunity in HIV-Infected Patients.

Walter ND, de Jong BC, Garcia BJ, Dolganov GM, Worodria W, Byanyima P, Musisi E, Huang L, Chan ED, Van TT, Antonio M, Ayorinde A, Kato-Maeda M, Nahid P, Leung AM, Yen A, Fingerlin TE, Kechris K, Strong M, Voskuil MI, Davis JL, Schoolnik GK. *J Infect Dis*. 2016 Oct 15;214(8):1205-11. doi: 10.1093/infdis/jiw364. PubMed PMID: 27534685; PubMed Central PMCID: PMC5034964.

Peak Plasma Concentration of Azithromycin and Treatment Responses in Mycobacterium avium Complex Lung Disease.

Jeong BH, Jeon K, Park HY, Moon SM, Kim SY, Lee SY, Shin SJ, Daley CL, Koh WJ. *Antimicrob Agents Chemother*. 2016 Sep 23;60(10):6076-83. doi: 10.1128/AAC.00770-16. PubMed PMID: 27480854; PubMed Central PMCID: PMC5038230.

Sequence Analysis of Fluoroquinolone Resistance-Associated Genes gyrA and gyrB in Clinical Mycobacterium tuberculosis Isolates from Patients Suspected of Having Multidrug-Resistant Tuberculosis in New Delhi, India.

Singhal R, Reynolds PR, Marola JL, Epperson LE, Arora J, Sarin R, Myneedu VP, Strong M, Salfinger M. *J Clin Microbiol*. 2016 Sep;54(9):2298-305. doi: 10.1128/JCM.00670-16. PubMed PMID: 27335153; PubMed Central PMCID: PMC5005506.

Oral Macrolide Therapy Following Short-term Combination Antibiotic Treatment for Mycobacterium massiliense Lung Disease.

Koh WJ, Jeong BH, Jeon K, Kim SY, Park KU, Park HY, Huh HJ, Ki CS, Lee NY, Lee SH, Kim CK, Daley CL, Shin SJ, Kim H, Kwon OJ, *Chest*. 2016 May 7. pii: S0012-3692(16)48970-1. doi: 10.1016/j.chest.2016.05.003. [Epub ahead of print] PubMed PMID: 27167209.

Longitudinal whole genome analysis of pre and post drug treatment Mycobacterium tuberculosis isolates reveals progressive steps to drug resistance.

Datta G, Nieto LM, Davidson RM, Mehaffy C, Pederson C, Dobos KM, Strong M. *Tuberculosis* (Edinb). 2016 May;98:50-5. doi: 10.1016/j.tube.2016.02.004. PubMed PMID: 27156618.

Diagnosis and Treatment of Nontuberculous Mycobacterial Lung Disease: Clinicians' Perspectives.

Ryu YJ, Koh WJ, Daley CL. *Tuberc Respir Dis* (Seoul). 2016 Apr;79(2):74-84. doi: 10.4046/trd.2016.79.2.74. Review. PubMed PMID: 27066084; PubMed Central PMCID: PMC4823187.

Curcumin enhances human macrophage control of Mycobacterium tuberculosis infection.

Bai X, Oberley-Deegan RE, Bai A, Ovrutsky AR, Kinney WH, Weaver M, Zhang G, Honda JR, Chan ED. *Respirology*. 2016 Jul;21(5):951-7. doi: 10.1111/resp.12762. PubMed PMID: 27012592.

Network Analysis of Human Genes Influencing Susceptibility to Mycobacterial Infections.

Lipner EM, Garcia BJ, Strong M. *PLoS One*. 2016 Jan 11;11(1):e0146585. doi: 10.1371/journal.pone.0146585. PubMed PMID: 26751573; PubMed Central PMCID: PMC4713433.

Blood Transcriptional Biomarkers for Active Tuberculosis among Patients in the United States: A Case-Control Study with Systematic Cross-Classifier Evaluation.

Walter ND, Miller MA, Vasquez J, Weiner M, Chapman A, Engle M, Higgins M, Quinones AM, Rosselli V, Canono E, Yoon C, Cattamanchi A, Davis JL, Phang T, Stearman RS, Datta G, Garcia BJ, Daley CL, Strong M, Kechris K, Fingerlin TE, Reves R, Geraci MW. *J Clin Microbiol*. 2016 Feb;54(2):274-82. doi: 10.1128/JCM.01990-15. PubMed PMID: 26582831; PubMed Central PMCID: PMC4733166.

Radiology

Texture-based Quantification of Centrilobular Emphysema and Centrilobular Nodularity in Longitudinal CT Scans of Current and Former Smokers.

Ginsburg SB, Zhao J, Humphries S, Jou S, Yagihashi K, Lynch DA, Schroeder JD; COPDGene Investigators. *Acad Radiol*. 2016 Nov;23(11):1349-1358. doi: 10.1016/j.acra.2016.06.002. PubMed PMID: 27575837; PubMed Central PMCID: PMC5096977.

Quantitative computed tomography measurements to evaluate airway disease in chronic obstructive pulmonary disease: Relationship to physiological measurements, clinical index and visual assessment of airway disease.

Nambu A, Zach J, Schroeder J, Jin G, Kim SS, Kim YI, Schnell C, Bowler R, Lynch DA. *Eur J Radiol*. 2016 Nov;85(11):2144-2151. doi: 10.1016/j.ejrad.2016.09.010. PubMed PMID: 27776670.

Securing safe and informative thoracic CT examinations - Progress of radiation dose reduction techniques.

Kubo T, Ohno Y, Seo JB, Yamashiro T, Kalender WA, Lee CH, Lynch DA, Kauczor HU, Hatabu H. *Eur J Radiol*. 2016 Oct 13. pii: S0720-048X(16)30317-5. doi: 10.1016/j.ejrad.2016.10.012. [Epub ahead of print] Review. PubMed PMID: 27773483.

Bronchoarterial ratio in never-smokers adults: Implications for bronchial dilation definition.

Diaz AA, Young TP, Maselli DJ, Martinez CH, Maclean ES, Yen A, Dass C, Simpson SA, Lynch DA, Kinney GL, Hokanson JE, Washko GR, San José Estépar R. *Respirology*. 2016 Aug 18. doi: 10.1111/resp.12875. [Epub ahead of print] PubMed PMID: 27538197.

Computed Tomographic Scoring Systems in Sarcoidosis: Comparison With Cardiopulmonary Exercise Testing Parameters.

Jeong YJ, Lynch DA, Rho JY, Hamzeh NY, Suh YJ. *J Thorac Imaging*. 2016 Mar;31(2):104-10. doi: 10.1097/RTI.0000000000000198. PubMed PMID: 26891073.

Imaging Phenotypes of Pulmonary Fibrosis in the MUC5B Promoter Site Polymorphism.

Chung JH, Peljto AL, Chawla A, Talbert JL, McKean DF, Rho BH, Fingerlin TE, Schwarz MI, Schwartz DA, Lynch DA. CT *Chest*. 2016 May;149(5):1215-22. doi: 10.1016/j.chest.2015.11.009. PubMed PMID: 26836909; PubMed Central PMCID: PMC4944767.

Proton Magnetic Resonance Imaging for Initial Assessment of Isolated Mycobacterium avium Complex Pneumonia.

Chung JH, Huitt G, Yagihashi K, Hobbs SB, Faino AV, Bolster BD Jr, Biederer J, Puderbach M, Lynch DA. *Ann Am Thorac Soc*. 2016 Jan;13(1):49-57. doi: 10.1513/AnnalsATS.201505-282OC. PubMed PMID: 26633593.

SELECTED 2016 PUBLICATIONS

Focal pleural thickening mimicking pleural plaques on chest computed tomography: Tips and tricks.

Alfudhili KM, Lynch DA, Laurent F, Ferretti GR, Dunet V, Beigelman-Aubry C. *Br J Radiol*. 2016;89(1057):20150792. doi: 10.1259/bjr.20150792. Review. PubMed PMID: 26539633; PubMed Central PMCID: PMC4985966.

Assessing fibrosis in pulmonary sarcoidosis: Late-enhanced MRI compared to anatomic HRCT imaging.

Brady D, Lavelle LP, McEvoy SH, Murphy DJ, Gallagher A, Gibney B, Butler MW, Shortt F, McMullan M, Fabre A, Lynch DA, Abbara S, Donnelly SC, Dodd JD. *QJM*. 2016 Apr;109(4):257-64. doi: 10.1093/qjmed/hcv200. PubMed PMID: 26537956.

Pulmonary CT and MRI phenotypes that help explain chronic pulmonary obstruction disease pathophysiology and outcomes.

Hoffman EA, Lynch DA, Barr RG, van Beek EJ, Parraga G; IWPFI Investigators. *J Magn Reson Imaging*. 2016 Mar;43(3):544-57. doi: 10.1002/jmri.25010. Review. PubMed PMID: 26199216.

Normalizing computed tomography data reconstructed with different filter kernels: effect on emphysema quantification.

Gallardo-Estrella L, Lynch DA, Prokop M, Stinson D, Zach J, Judy PF, van Ginneken B, van Rikxoort EM. *Eur Radiol*. 2016 Feb;26(2):478-86. doi: 10.1007/s00330-015-3824-y. PubMed PMID: 26002132; PubMed Central PMCID: PMC4712239.

Sarcoidosis

Beryllium-induced lung disease exhibits expression profiles similar to sarcoidosis.

Li L, Silveira LJ, Hamzeh N, Gillespie M, Mroz PM, Mayer AS, Fingerlin TE, Maier LA. *Eur Respir J*. 2016 Jun;47(6):1797-808. doi: 10.1183/13993003.01469-2015. PubMed PMID: 27103383; PubMed Central PMCID: PMC5134922.

Computed Tomographic Scoring Systems in Sarcoidosis: Comparison With Cardiopulmonary Exercise Testing Parameters.

Jeong YJ, Lynch DA, Rho JY, Hamzeh NY, Suh YJ. *J Thorac Imaging*. 2016 Mar;31(2):104-10. doi: 10.1097/RTI.0000000000000198. PubMed PMID: 26891073.

Association Between Occupational Exposures and Sarcoidosis: An Analysis From Death Certificates in the United States, 1988-1999.

Liu H, Patel D, Welch AM, Wilson C, Mroz MM, Li L, Rose CS, Van Dyke M, Swigris JJ, Hamzeh N, Maier LA. *Chest*. 2016 Aug;150(2):289-98. doi: 10.1016/j.chest.2016.01.020. PubMed PMID: 26836934; PubMed Central PMCID: PMC4980546.

The effect of an oral anti-oxidant, N-Acetyl-cysteine, on inflammatory and oxidative markers in pulmonary sarcoidosis.

Hamzeh N, Li L, Barkes B, Huang J, Canono B, Gillespie M, Maier L, Day B. *Respir Med*. 2016 Mar;112:106-11. doi: 10.1016/j.rmed.2016.01.011. PubMed PMID: 26831541.

Sleep

Overlap syndrome: Obstructive sleep apnea and chronic obstructive pulmonary disease.

Borukhov I, Rizzolo D. *JAAPA*. 2016 Nov;29(11):18-22. PubMed PMID: 27749401.

Managing Comorbid Illness in Obstructive Sleep Apnea: What Can We Learn from Other Diseases?

Conwell WD, Tsai SC. *Sleep Med Clin*. 2016 Sep;11(3):313-21. doi: 10.1016/j.jsmc.2016.04.007. Review. PubMed PMID: 27542877.

Motivational Enhancement for Increasing Adherence to CPAP: A Randomized Controlled Trial.

Bakker JP, Wang R, Weng J, Aloia MS, Toth C, Morrical MG, Gleason KJ, Rueschman M, Dorsey C, Patel SR, Ware JH, Mittleman MA, Redline S. *Chest*. 2016 Aug;150(2):337-45. doi: 10.1016/j.chest.2016.03.019. PubMed PMID: 27018174; PubMed Central PMCID: PMC4980541.

Sleep Disturbance in Caregivers of Children with Respiratory and Atopic Disease.

Meltzer LJ, Booster GD. *J Pediatr Psychol*. 2016 Jul;41(6):643-50. doi: 10.1093/jpepsy/jsw016. PubMed PMID: 27017428.

Objective but Not Subjective Short Sleep Duration Associated with Increased Risk for Hypertension in Individuals with Insomnia.

Bathgate CJ, Edinger JD, Wyatt JK, Krystal AD. *Sleep*. 2016 May 1;39(5):1037-45. doi: 10.5665/sleep.5748. PubMed PMID: 26951399; PubMed Central PMCID: PMC4835301.

Sequential psychological and pharmacological therapies for comorbid and primary insomnia: Study protocol for a randomized controlled trial.

Morin CM, Edinger JD, Krystal AD, Buysse DJ, Beaulieu-Bonneau S, Ivers H. *Trials*. 2016 Mar 3;17(1):118. doi: 10.1186/s13063-016-1242-3. PubMed PMID: 26940892; PubMed Central PMCID: PMC4778294.

Sleep/Wake Patterns and Parental Perceptions of Sleep in Children Born Preterm.

Biggs SN, Meltzer LJ, Tapia IE, Traylor J, Nixon GM, Horne RS, Doyle LW, Asztalos E, Mindell JA, Marcus CL; Caffeine for Apnea of Prematurity-Sleep Study Group. *J Clin Sleep Med*. 2016 May 15;12(5):711-7. doi: 10.5664/jcsm.5802. PubMed PMID: 26857057; PubMed Central PMCID: PMC4865558.

A Collaborative Paradigm for Improving Management of Sleep Disorders in Primary Care: A Randomized Clinical Trial.

Edinger JD, Grubber J, Ulmer C, Zervakis J, Olsen M. *Sleep*. 2016 Jan 1;39(1):237-47. doi: 10.5665/sleep.5356. PubMed PMID: 26285003; PubMed Central PMCID: PMC4678353.

Sleep in pediatric primary care: A review of the literature.

Honaker SM, Meltzer LJ. *Sleep Med Rev*. 2016 Feb;25:31-9. doi: 10.1016/j.smrv.2015.01.004. Review. PubMed PMID: 26163054.

Assessing the influence of obesity on longitudinal executive functioning performance in patients with obstructive sleep apnea syndrome.

Hilsendager CA, Zhang D, McRae C, Aloia M. *Obes Res Clin Pract*. 2016 Jan-Feb;10(1):33-40. doi: 10.1016/j.orcp.2015.04.010. PubMed PMID: 26004188; PubMed Central PMCID: PMC4654996.

Start Later, Sleep Later: School Start Times and Adolescent Sleep in Homeschool Versus Public/Private School Students.

Meltzer LJ, Shaheed K, Ambler D. *Behav Sleep Med*. 2016;14(2):140-54. doi: 10.1080/15402002.2014.963584. PubMed PMID: 25315902; PubMed Central PMCID: PMC4397108.

Patient and Partner Experiences With Obstructive Sleep Apnea and CPAP Treatment: A Qualitative Analysis.

Luyster FS, Dunbar-Jacob J, Aloia MS, Martire LM, Buysse DJ, Strollo PJ. *Behav Sleep Med*. 2016;14(1):67-84. doi: 10.1080/15402002.2014.946597. PubMed PMID: 25203283; PubMed Central PMCID: PMC4363003.

RECOGNITION

National Jewish Health is the leading respiratory hospital in the nation and the only health care organization to be fully focused on respiratory and related illnesses. National Jewish Health has been recognized for this expertise through a variety of outside measurements and tangible achievements, including those listed below.

National Jewish Health has been ranked by *U.S. News & World Report* as #1 or #2 every year that the Pulmonology category has been included in the rankings (since 1997). Of those years, National Jewish Health was in the #1 spot for 15 years.

U.S. News & World Report recently added a new award category, "Best Hospitals for Common Care." This year, our COPD care and our Lung Cancer Surgery program were rated "high performing," the highest rating available.

National Jewish Health has more than 45 doctors named on various lists, including "America's Top Doctors" by Castle Connolly, and "Top Docs" in the *5280 magazine's* 2016 rankings of Denver-area physicians.

National Jewish Health is in the top 6 percent of institutions in the country funded by the NIH, in terms of absolute dollars. This is a tremendous achievement for a specialty hospital/research center.

BREAKTHROUGHS IN RESEARCH

National Jewish Health is responsible for many important scientific advances, including:

IgE, the molecule responsible for allergic reactions. This discovery has become the basis for many new treatments for asthma and allergies.

The T cell receptor gene, which plays a crucial role in recognizing foreign invaders and orchestrating an immune response. It opened the door to understanding how bodies fight viruses, bacteria and cancer.

Superantigens, extremely powerful bacterial toxins associated with particularly virulent diseases, such as toxic shock syndrome and Legionnaire's disease.

Combined chemotherapy for tuberculosis. National Jewish Health physicians were among the leaders in developing this crucial tool for fighting tuberculosis.

Mechanisms of apoptosis. Pioneering efforts have helped doctors understand how the body effectively removes and recycles up to two billion cells a day and resolves inflammation in the lung.

Allergies to artificial joints. Researchers have developed a blood test that can detect allergy to nickel used in artificial joints, a common cause of failure.

FOCUS, EXPERIENCE, COLLABORATION

With a 118-year history of transformative medicine, National Jewish Health is the only health care organization in the world dedicated exclusively to respiratory and related diseases. Today, National Jewish Health has an unparalleled pulmonary expertise, with internationally recognized physician-scientists bringing their extensive experience and knowledge to many of the most challenging respiratory cases in the nation. Pulmonologists work closely with their colleagues in cardiology, gastroenterology, allergy, immunology, oncology and radiology to understand the whole person and find solutions for our patients and for patients around the world.

For referrals and consults,
call our Physician Line at 800.652.9555.
Or learn more at njhealth.org/for-professionals.

National Jewish Health®

Breathing Science is Life.™

njhealth.org