



**National Jewish  
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**#1** in Respiratory Care

**2017**

# PULMONARY HIGHLIGHTS



**Clinical Expertise, Research and Education**

# THE TUCHMAN FAMILY

DIVISION OF PULMONARY,  
CRITICAL CARE AND SLEEP MEDICINE



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**National Jewish Health acknowledges The Tuchman Family Foundation and Debra and Ken Tuchman for their generous gift to establish The Tuchman Family Division of Pulmonary, Critical Care and Sleep Medicine.**

**For more than 20 years, Debra and Ken Tuchman and the Tuchman Family have been committed to National Jewish Health through board service and as outstanding advocates for the institution.**



**Dear Colleague,**

With great pleasure, we present *National Jewish Health Pulmonary Highlights 2017*, our annual compilation of clinical, research and educational capabilities in pulmonary medicine.

At National Jewish Health, we solve hard problems.

Patients come to us from around the nation — and the world — seeking answers. They have often spent years working with their physicians and experimenting with treatment options, only to have their conditions continue and sometimes worsen. Our team of expert pulmonologists conducts intensive evaluations in collaboration with cardiologists, gastroenterologists, allergists, oncologists, rheumatologists and others. Once we develop a diagnosis and treatment plan, we work with each patient's hometown physicians to implement the plan.

We are an academic medical institution that has focused on respiratory and related diseases for more than 119 years. We have one of the largest pulmonary divisions in the nation. This year we were named the #1 respiratory hospital in the nation by *U.S. News & World Report* in its 2017–2018 Best Hospitals rankings.

Our dedicated faculty includes recognized national leaders in their fields, who continue to pass along their knowledge by training medical students, residents and postgraduate fellows in affiliation with the University of Colorado School of Medicine and through our robust, nationwide continuing medical education program.

Our dynamic research program is continuously seeking answers to the many questions and challenges that remain in pulmonary medicine.

Please take a few moments to review this publication and discover how the work we do here is vital to the advancement of pulmonary medicine, and how it improves treatment options available to you for 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

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National Jewish Health provides unparalleled care for complex, symptomatic pulmonary patients. People come to National Jewish Health from around the nation and the world for comprehensive evaluations, diagnoses and treatment plans from our expert pulmonary specialists and their colleagues in cardiology, gastroenterology, oncology, immunology, rheumatology and radiology. Our intensivists and hospitalists provide exceptional inpatient care. Physicians and staff work with each patient's hometown physician to implement, monitor and adjust care as needed.

## Allergy and Immunology

Our multidisciplinary team of nationally recognized experts uses the latest testing and treatments to diagnose and manage allergies and other immune disorders, which can impact respiratory health. Our patients have access to the latest clinical trials.

## Asthma

Through upper and lower airway evaluations in our multi-day asthma programs, we phenotype patients and discover complicating factors. Our faculty members lead numerous National Institutes of Health (NIH) studies and industry-sponsored clinical trials.

## Behavioral Health

Our expert team helps patients understand and manage behavioral health issues that often accompany chronic respiratory diseases. In addition, our prevention and wellness programs help with tobacco cessation and weight management.

## 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.

## 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.

## COPD

A complete medical and nonmedical evaluation allows our team of physicians and therapists to address COPD medications, education, compliance, nutrition and rehabilitation. Our faculty is advancing pulmonary medicine with COPD Gene and other studies. We are a leading center in the diagnosis and management of alpha-1 antitrypsin deficiency.

## Cystic Fibrosis

We have the largest and most experienced adult cystic fibrosis program in the United States. Our team of experts provides multi-faceted treatment to patients from around the nation. We have more than two dozen ongoing clinical trials to evaluate new cystic fibrosis therapies.

## Electrophysiology

Our electrophysiology program manages the outpatient and surgical needs of patients with arrhythmias, including atrial fibrillation, cardiomyopathy, ventricular tachycardia, bradycardia, palpitations, syncope and sudden cardiac death/familial genetic syndromes. We offer clinical trials and the latest treatment options.

## Environmental Health

Our multidisciplinary team has helped define, diagnose and treat patients with a broad range of occupational, environmental and granulomatous lung diseases, including chronic beryllium disease, bronchiolitis obliterans and respiratory disease among warfighters returning from deployment in the Middle East.

## Gastroenterology

We diagnose and treat the entire range of GI illnesses, including liver disease, biliary disorders, inflammatory bowel disease, GERD and esophageal disorders, pancreatic disease, gut motility disorders and functional disorders of the gut.

# CLINICAL EXPERTISE

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## Interstitial Lung Disease

We have vast experience with interstitial lung disease (ILD). Through detailed evaluations, we accurately diagnose the wide range of ILDs of idiopathic, exposure and autoimmune origins. Our plans 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.

## 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.

## NTM

Although we started as a hospital for destitute tuberculosis patients, today we see primarily nontuberculous mycobacterial (NTM) infections. Our experience with thousands of complex mycobacterial infections has given us a deep knowledge of antibiotic regimens and surgical options.

## 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

We are shaping 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 evaluations, education and management plans for children with pulmonary and atopic diseases.

## Pulmonary Pathology

Our pathologists' vast experience examining lung tissue and diagnosing respiratory diseases contributes to our unparalleled diagnostic capabilities and draws consultations for cases from around the nation.

## Pulmonary Hypertension

Cardiologists and pulmonologists work as a team to provide comprehensive and sophisticated diagnoses and detailed treatment plans for patients with pulmonary hypertension.

## Pulmonary Physiology Services

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

## Radiology

Our highly experienced team of radiology technologists and radiologists performs imaging studies on more lungs than any other facility. Our experts provide

interpretations of imaging test results and consultations to help doctors make accurate and timely diagnoses. We are known around the world for our expertise in thoracic imaging.

## Rare Lung Diseases

Our position as a national pulmonary referral center gives us extensive experience diagnosing and managing a variety of rare lung diseases, including pulmonary alveolar proteinosis (PAP); lymphangiomyomatosis (LAM); and eosinophilic syndromes; that most pulmonologists rarely see.

## Rheumatology

Our rheumatologists work to manage a variety of rheumatological disorders. Our Autoimmune Lung Center specializes in ILDs caused by systemic autoimmune diseases.

## Sarcoidosis

Our experts 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

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

# CLINICAL RESEARCH

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National Jewish Health is constantly searching for new, more effective treatments and medications for patients around the world. Today, we have more than 300 active clinical trials offering 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 2017 CLINICAL RESEARCH RESULTS

### E-cigarettes and Smoking Cessation

**Russell Bowler, MD**, and his colleagues reported that about 5 percent of 4,600 smokers and former smokers in the COPD Gene and Spiromics studies use electronic cigarettes. E-cigarette users were less likely to reduce or quit smoking conventional cigarettes, countering claims that e-cigarettes can be an effective harm reduction strategy for smokers. *Gen Intern Med.* 2017 Dec;32(12):1315-1322.

### Mesalamine for Granulomatous Lung Diseases

**Lisa Maier, MD; Brian Day, PhD**; and their colleagues showed that 5-aminosalicylic acid (mesalamine/5-ASA) modulates the immune response in chronic beryllium disease patients, while significantly improving quality of life. The findings suggest that 5-ASA may be useful in other non-infectious granulomatous diseases such as sarcoidosis. *Lung.* 2017 Oct 27. [Epub ahead of print]

### Combination Therapy for Cystic Fibrosis

**Jennifer Taylor-Cousar, MD**, and her colleagues reported that a novel combination of ivacaftor and tezacaftor improved lung function 3.4 percent and reduced disease exacerbations 35 percent in cystic fibrosis patients homozygous for the most common CFTR mutation, F508Del. The medications also caused fewer negative side effects than approved combination medications. *N Engl J Med.* 2017 Nov 23;377(21): 2013-2023.

### Mepolizumab Helps Churg-Strauss Patients

**Michael Wechsler, MD**, and colleagues reported that mepolizumab, an anti-IL5 monoclonal antibody, demonstrated significant benefits for patients with refractory cases of the rare autoimmune disease Churg-Strauss Syndrome, also known as eosinophilic granulomatosis with polyangiitis. The phase III trial increased remission rates, cut exacerbations in half and reduced the need for ongoing corticosteroid therapy. *N Engl J Med.* 2017 May 18;376(20):1921-1932.

### IPF Diagnosis

Radiologist **David Lynch, MD**, and his colleagues published updated criteria for diagnosis of idiopathic pulmonary fibrosis. The new criteria include a checklist for clinical evaluation and an expanded role for CT scans, which should reduce the need for lung biopsies. *Lancet Respir Med.* 2017 Nov 15. [Epub ahead of print]

### Evidence-based Noninvasive Ventilation

Strong evidence supports use of noninvasive ventilation (NIV) for respiratory distress from COPD and heart failure, but not for other respiratory conditions. **Anuj Mehta, MD**, and colleagues found that hospitals varied widely in their use of NIV. Those that most used evidence-based NIV more often had better outcomes for all patients. *Ann Am Thorac Soc.* 2017 Nov;14(11):1667-1673.

# CLINICAL RESEARCH

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## SELECTED OPEN CLINICAL TRIALS

### Asthma

#### Severe Asthma Investigational Medication

Richard Weber, MD

#### Steroid-Resistant Asthma Medication Study

Donald Leung, PhD, MD, and Elena Goleva, PhD

### COPD

#### COPD & Heart Function

Barry Make, MD

#### Preventing COPD with Beta Blockers

Barry Make, MD

#### COPD Study of Current & Former Smokers

James Finigan, MD

### Cystic Fibrosis

#### Cystic Fibrosis Medication & Lung Function

Jerry Nick, MD

### Lung Cancer

#### Lung Cancer Screening Study of Current & Former Smokers

James Finigan, MD

### Pulmonary Fibrosis

#### Pulmonary Fibrosis & Genetic Factors

Kevin Brown, MD

### Pulmonary Hypertension

#### Pulmonary Hypertension & Lung Disease

Amy Olson, MD, MSPH

## COPDGene® STUDY RENEWED

COPDGene®, the largest, longest and most comprehensive study of chronic obstructive pulmonary disease (COPD), led jointly by National Jewish Health and Brigham and Women's Hospital in Boston, has been renewed with a five-year, \$32 million grant for years 11-15 of the study.

In the first 10 years of the study, researchers identified 22 genes associated with the risk of developing COPD and several subtypes of disease-based radiological data, and genetic and epidemiological factors. The renewal will allow co-principal investigator **James Crapo, MD**, and his National Jewish Health colleagues **Barry Make, MD**; **Russ Bowler, MD**; **Elizabeth Regan, MD**; and **David Lynch, MD**; to gather invaluable longitudinal data on disease progression among the 10,000 patients enrolled in the study. They will also assess numerous biomarkers for their ability to detect early disease and predict progression and severity of the disease.



**James Crapo, MD**

## ASTHMA INSTITUTE ADVANCES TOWARD A CURE

In 2017, the Cohen Family Asthma Institute at National Jewish Health made significant progress on understanding the causes of, finding new treatments for and, ultimately, preventing asthma. The Institute has become a clinical center for the NHLBI Precision Interventions for Severe and Exacerbation Prone Asthma (PreclSE) Network. It has begun collecting samples and characterizing phenotypes of all National Jewish Health asthma patients. Studies of several novel treatments, including anti-IL4/IL13, anti-TSLP, anti-IL33 and anti-IL17, are underway.

On February 28, 2018, the Asthma Institute will host the Denver Asthma Conference. The Cohen Family Asthma Institute is led by Director **Michael Wechsler, MD**, and Associate Director **Ronina Covar, MD**.

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 2017 RESEARCH REPORTS

### Orchestrating Lung Repair

Associate Professor of Medicine **William Janssen, MD**, has identified a subset of macrophages that migrate to the injured lung, where they drive lung repair.

These macrophages use an alternative energy system that allows them to thrive in damaged, oxygen-poor tissue and to secrete molecules that promote repair of injured tissue. He is testing the hypothesis that a molecule known as HIF-1 drives the development of those macrophages into critical orchestrators of lung repair.

*Am J Respir Cell Mol Biol.* 2017 Sep;57(3):294-306. doi: 10.1165/rcmb.2017-0061OC. PMID: 28421818

### Genetic Susceptibility to Cold Viruses

**Erwin Gelfand, MD; Jordan Abbott, MD**; and their colleagues recently reported the discovery of a genetic mutation that predisposes children to recurrent rhinovirus infections. The gene, IFIH1, codes for the protein MDA5, which senses double-stranded RNA and is part of the innate immune response to viral infections. The particular mutation affects response only

to rhinovirus, which causes the common cold, but not other viruses. *Nat Genet.* 2017 Aug;49(8):1192-1201. doi: 10.1038/ng.3898. Epub 2017 Jun 19. PMID: 28628108

### Diesel Exhaust and Asthma

**Magdalena Gorska, MD, PhD**, and her colleagues have shown that a female's exposure to diesel exhaust can have long-lasting, detrimental effects that extend to her offspring. The researchers showed that pre-pregnancy exposure to diesel exhaust predisposes a female mouse's subsequent offspring to asthma. The mechanism involves cytokines IL-1B and IL-17a and the AHR pathway. *J Allergy Clin Immunol.* 2017 Sep 21. pii: S0091-6749(17)31476-8. doi: 10.1016/j.jaci.2017.09.002. [Epub ahead of print] PMID: 28943469

### Trigger for Autoimmune Disease

Researchers at National Jewish Health have identified a trigger for autoimmune diseases such as lupus, rheumatoid arthritis and sarcoidosis. The transcription factor T-bet drives the development of Age-Associated B Cells (ABCs), which are suspects in the development of various

autoimmune diseases. When T-bet was deleted inside B cells, mice prone to developing autoimmune disease remained healthy. The researchers believe the same process occurs in humans with autoimmune disease, more often in elderly women. *J Clin Invest.* 2017 Apr 3;127(4):1392-1404. doi: 10.1172/JCI91250. Epub 2017 Feb 27. PMID: 28240602

### HIF-1 Promotes Lung Repair

During acute respiratory distress, epithelial cells die and slough off, resulting in enhanced permeability. Alveolar type II cells proliferate and spread onto the denuded basement membrane to reseal the barrier. **Jazalle McClendon, PhD; Rachel Zemans, MD**; and their colleagues found that hypoxia-inducible factor promotes lung repair by driving the proliferation and spreading of alveolar type II cells. *Am J Pathol.* 2017 Aug;187(8):1772-1786. doi: 10.1016/j.ajpath.2017.04.012. Epub 2017 Jun 12.



## NOTEWORTHY ONGOING RESEARCH

### **Mechanisms & Treatment of Deployment-Related Lung Injury**

Gregory P. Downey, MD

### **Genetic Epidemiology of Nontuberculous Mycobacteria**

Rebecca M. Davidson, PhD

### **EPA: Environmental Determinants of Airway Disease in Children**

Tasha Fingerlin, PhD

### **Transcriptomic and Pharmacogenetic Asthma Endotypes**

Max A. Seibold, PhD

### **COPDGene – Genetic Epidemiology of COPD**

James D. Crapo, MD

### **Macrophage Endocytosis in Resolving Lung Inflammation**

Peter M. Henson, MD, PhD

### **Induction of Cytotoxic T Cells by Pulmonary Dendritic Cells**

Claudia V. Jakubzick, PhD

### **DUSP1 as a Therapeutic Target in Fibroproliferative Acute Lung Injury**

David W. Riches, PhD

### **Molecular Mechanism of MHCH Recognition by CD8 T Cells in HIV Non-Progressor Patients**

John W. Kappler, PhD

### **Characteristics of T Cell Receptors**

Philippa Marrack, PhD

## RECENT PATENT

### **Markers for diagnosis of pulmonary inflammation and methods related thereto (pat. #9,624,543)**

Inventors: Milene Saavedra, MD, and Jerry Nick, MD

Our experts developed methods for using a panel of systemic biomarkers (CD64, ADAM9, CD36, IL32, HPSE, PLXND1, HCA112, CSPG2, TLR2, and CD163) to detect pulmonary inflammation before changes in lung function occur. The panel could be used to rapidly evaluate response to therapy for cystic fibrosis exacerbations and other lung diseases.



**Dennis Voelker, PhD**

## PREVENTING ASTHMA ATTACKS

Rhinoviruses cause not only the common cold, but also the majority of asthma exacerbations. Exacerbations drive worsening health and rising health care costs.

**Dennis Voelker, PhD**, and his colleagues, including **Tasha Fingerlin, PhD**, and **Max Seibold, PhD**, have earned an \$8.9 million grant from the National Institutes of Health to apply the most advanced genetic techniques and research tools to intensively study asthma patients susceptible to exacerbations caused by rhinoviruses. Personal exposure monitors, changing patterns of gene activation and suppression, and immune defenses will all be evaluated and analyzed to understand the specific mechanisms that drive an exacerbation and to identify potential diagnostic and therapeutic strategies to prevent exacerbations.

# EDUCATION

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## 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 through 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 at the Graduate School of the University of Colorado Denver have the opportunity to perform their thesis research in the laboratories 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.



## CONTINUING MEDICAL EDUCATION

Building on the expertise of world-renowned faculty at National Jewish Health, the Office of Professional Education strives to create innovative educational activities for physicians, pharmacists, nurses and other health care providers to develop and enhance their knowledge and competency related to the diseases National Jewish Health treats and researches.

Through robust educational offerings, with the ultimate goal of improved patient outcomes, we work to deliver on our mission to educate as a preeminent health care institution.

### The 13th Annual Respiratory Disease Young Investigators' Forum

Held October 12-15, 2017, in Denver, Colorado, the Forum provided a unique educational opportunity designed specifically for Fellows actively enrolled in a pediatric, pulmonary, allergy or immunology fellowship program conducting research. Fellows submitted abstracts of their research (clinical or basic science) to a panel of expert faculty for assessment. The top 31 young investigators were invited to attend the Forum and present their research to the expert panel, and the top three presenters in each category received a grant award and plaque.

The goal of the Forum is to engage and support our future physician scientists with a collegial environment that provides guidance and feedback on research and career development from leaders in respiratory medicine.

The Forum was supported by an educational grant from AstraZeneca Pharmaceuticals LP. To learn more about the Respiratory Disease Young Investigators' Forum and for the list of winners, please go to [njhealth.org/YoungInvestigatorsAwards](http://njhealth.org/YoungInvestigatorsAwards).

### National Outreach in Person and Online

In 2017, the Office of Professional Education managed more than 30 symposia and conferences in cities coast to coast, including three separate educational initiatives on the topics of **Severe Asthma, COPD** and **IPF**. These three initiatives also offer complimentary online CME-certified activities, making the same valuable educational resource/tool accessible to health care professionals around the country well into 2018.

To access these online educational activities and to learn about our educational offerings please visit [njhealth.org/CMEOnline](http://njhealth.org/CMEOnline).



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**To see all of our courses and learn more about the Office of Professional Education, please visit [njhealth.org/CME](http://njhealth.org/CME) or call 800.844.2305 or email [proed@njhealth.org](mailto:proed@njhealth.org).**

# FACULTY LEADERSHIP



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Shannon H. Kasperbauer, MD

# COLLABORATIONS THRIVE ACROSS THE NATION

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From Denver to New York and Philadelphia and hospitals across the West, collaborations with other leading health care organizations are an important component of growth and an extension of the unique model of care practiced at National Jewish Health. We are able to extend our expertise and our unique approach to respiratory care and research to more people through these collaborations. In addition to elevating respiratory care for patients around the nation, these collaborations create opportunities for research and training of health professionals.

Our collaborative approach is linked into new technology, best exemplified through a program where National Jewish Health physicians provide Tele-ICU services for 25 Banner Health hospitals across the West.

## National Jewish Health | Saint Joseph Hospital

In 2017, our joint operating agreement with Saint Joseph Hospital in Denver and its nonprofit parent SCL Health continued to grow in both range and depth. We have formed integrated leadership teams with physician and staff management to drive excellence in all programs, including pulmonology, cardiology and oncology. We are also delivering integrated, specialized outpatient and inpatient care to meet the unique needs of patients with a variety of lung-related illnesses.

One example of this approach is our Adult Cystic Fibrosis Program. Based on our Denver campus, this program is the largest of its kind in the country and now includes a fully integrated inpatient unit at Saint Joseph Hospital.

As part of the collaboration, National Jewish Health physicians take the lead for the intensive care unit based at Saint Joseph Hospital, providing hospitalist care and continuity for our patients who need an inpatient stay.



# COLLABORATIONS THRIVE ACROSS THE NATION

MOUNT SINAI - NATIONAL JEWISH HEALTH

## Respiratory Institute



Icahn School  
of Medicine at  
Mount  
Sinai



National Jewish  
Health®

### Mount Sinai — National Jewish Health Respiratory Institute Grows

The Mount Sinai — National Jewish Health Respiratory Institute in New York City, led by Respiratory Institute CEO Charles “Cap” Powell, MD, saw continued growth in 2017. Four new pulmonologists joined our experts in cardiology, gastroenterology, rheumatology and allergy. This integrated approach allows for more efficient and seamless care for patients and valuable collaboration among caregivers.

We also launched several disease specific video conferences that allow physicians in Denver and New York to share insights and expertise on the most challenging cases of interstitial lung disease, asthma and chronic obstructive pulmonary disease.

National Jewish Health and Mount Sinai physicians jointly delivered a series of professional education events to help physicians learn best practices for diagnosis and management of severe asthma.

A focus on research included a symposium that highlighted discoveries at both institutions and identified opportunities for future research collaborations.

### Collaboration with Jefferson Health Launches Respiratory Institute in Philadelphia

In the spring of 2017, a new collaboration with Jefferson Health in Philadelphia was announced, expanding the successful Respiratory Institute we began in 2014 with the Icahn School of Medicine at Mount Sinai in New York City.

The new relationship established the Jane and Leonard Korman Respiratory Institute Jefferson Health — National Jewish Health. This new Respiratory Institute is enabled in part by the continuing support of the Jane and Leonard Korman Family Foundation.

The Respiratory Institute will provide a comprehensive patient care experience built on the multidisciplinary, team-based model of care practiced at National Jewish Health, tailored for the unique capabilities of Jefferson Health. The Respiratory Institute will also focus on research, bringing together investigators from both institutions to advance care for complex respiratory diseases.

Together, Jefferson Health and National Jewish Health bring an extraordinary level of expertise in addressing complex respiratory illnesses.

In addition, our work in Philadelphia is in concert with the work we do with the Mount Sinai — National Jewish Health Respiratory Institute in New York City. Together, we collaborate on research, clinical trials and other programs that serve patients throughout the Northeast in an unparalleled respiratory network.

## Jane and Leonard Korman Respiratory Institute™



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# SELECTED 2017 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

### **KIT Inhibition by Imatinib in Patients with Severe Refractory Asthma.**

Cahill KN, Katz HR, Cui J, Lai J, Kazani S, Crosby-Thompson A, Garofalo D, Castro M, Jarjour N, DiMango E, Erzurum S, Trevor JL, Shenoy K, Chinchilli VM, Wechsler ME, Laidlaw TM, Boyce JA, Israel E. *N Engl J Med*. 2017 May 18;376(20):1911-1920. doi: 10.1056/NEJMoa1613125. PubMed PMID: 28514613; PubMed Central PMCID: PMC5568669.

### **Importance of the leukotriene B4-BLT1 and LTB4-BLT2 pathways in asthma.**

Gelfand EW. *Semin Immunol*. 2017 Oct;33:44-51. doi: 10.1016/j.smim.2017.08.005. Review. PubMed PMID: 29042028; PubMed Central PMCID: PMC5679233.

### **Severe Asthma and the Primary Care Provider: Identifying Patients and Coordinating Multidisciplinary Care.**

Yawn BP, Wechsler ME. *Am J Med*. 2017 Dec;130(12):1479. doi: 10.1016/j.amjmed.2017.10.001. Epub 2017 Oct 3. PubMed PMID: 28986071.

### **Pre-pregnancy exposure to diesel exhaust predisposes offspring to asthma through IL-1 and IL-17A**

Lenberg J, Qian Q, Sun Z, Alam R, Gorska MM. *J Allergy Clin Immunol*. 2017 Sep 21. pii: S0091-6749(17)31476-8. doi: 10.1016/j.jaci.2017.09.002. [Epub ahead of print] PubMed PMID: 28943469.

### **Extrafine Versus Fine Inhaled Corticosteroids in Relation to Asthma Control: A Systematic Review and Meta-Analysis of Observational Real-Life Studies.**

Sonnappa S, McQueen B, Postma DS, Martin RJ, Roche N, Grigg J, Guilbert T, Gouder C, Pizzichini E, Niimi A, Phipatanakul W, Chisholm A, Dandurand RJ, Kaplan A, Israel E, Papi A, van Aalderen WMC, Usmani OS, Price DB. *J Allergy Clin Immunol Pract*. 2017 Sep 20. pii: S2213-2198(17)30557-3. doi: 10.1016/j.jaip.2017.07.032. [Epub ahead of print] PubMed PMID: 28941668.

### **Concern of underdiagnosing asthma-COPD overlap syndrome if age limit of 40 years for asthma is used.**

Sin DD, Leung JM, Wechsler ME. *Eur Respir J*. 2017 Aug 3;50(2). pii: 1701120. doi: 10.1183/13993003.01120-2017. Print 2017 Aug. PubMed PMID: 28775052; PubMed Central PMCID: PMC5593371.

### **Competency-Based Framework and Continuing Education for Preparing a Skilled School Health Workforce for Asthma Care: The Colorado Experience.**

Cicutto L, Gleason M, Haas-Howard C, Jenkins-Nygren L, Labonde S, Patrick K. *J Sch Nurs*. 2017 Aug;33(4):277-284. doi: 10.1177/1059840516675931. Epub 2016 Nov 30. PubMed PMID: 28726584.

### **Asthma in the elderly and late-onset adult asthma.**

Dunn RM, Busse PJ, Wechsler ME. *Allergy*. 2017 Jul 19. doi: 10.1111/all.13258. [Epub ahead of print] Review. PubMed PMID: 28722758.

### **American Thoracic Society/National Heart, Lung, and Blood Institute Asthma-Chronic Obstructive Pulmonary Disease Overlap Workshop Report.**

Woodruff PG, van den Berge M, Boucher RC, Brightling C, Burchard EG, Christenson SA, Han MK, Holtzman MJ, Kraft M, Lynch DA, Martinez FD, Reddel HK, Sin DD, Washko GR, Wenzel SE, Punturieri A, Freemer MM, Wise RA. *Am J Respir Crit Care Med*. 2017 Aug 1;196(3):375-381. doi: 10.1164/rccm.201705-0973WS. PubMed PMID: 28636425; PubMed Central PMCID: PMC5549872.

### **Obesity's effect on asthma extends to diagnostic criteria.**

Lugogo N, Green CL, Agada N, Zhang S, Meghdadpour S, Zhou R, Yang S, Anstrom KJ, Israel E, Martin R, Lemanske RF Jr, Boushey H, Lazarus SC, Wasserman SI, Castro M, Calhoun W, Peters SP, DiMango E, Chinchilli V, Kunselman S, King TS, Icitovic N, Kraft M. *J Allergy Clin Immunol*. 2017 Jun 15. pii: S0091-6749(17)30932-6. doi:10.1016/j.jaci.2017.04.047. [Epub ahead of print] PubMed PMID: 28624608.

### **Vitamin D Add-On Therapy Enhances Corticosteroid Disparities Working Group members on behalf of the AsthmaNet investigators. Income is an independent risk factor for worse asthma outcomes.**

Cardet JC, Louisias M, King TS, Castro M, Codisoti CD, Dunn R, Engle L, Giles BL, Holguin F, Lima JJ, Long D, Lugogo N, Nyenhuis S, Ortega VE, Ramratnam S, Wechsler ME, Israel E, Phipatanakul W; *J Allergy Clin Immunol*. 2017 May 20. pii: S0091-6749(17)30792-3. doi:10.1016/j.jaci.2017.04.036. [Epub ahead of print] PubMed PMID: 28535964; PubMed Central PMCID: PMC5696111.

### **Staphylococcus aureus colonization is associated with increased inhaled corticosteroid requirements in patients with atopic dermatitis and asthma.**

Uong P, Curran-Everett D, Leung DYM. *J Allergy Clin Immunol Pract*. 2017 Nov - Dec;5(6):1782-1783. doi: 10.1016/j.jaip.2017.03.039. Epub 2017 May 16. PubMed PMID: 28526276.

### **Airway microbiome and responses to corticosteroids in corticosteroid-resistant asthma patients treated with acid suppression medications.**

Goleva E, Harris JK, Robertson CE, Jackson LP, Martin RJ, Leung DYM. *J Allergy Clin Immunol*. 2017 Sep;140(3):860-862.e1. doi: 10.1016/j.jaci.2017.03.011. Epub 2017 May 3. PubMed PMID: 28477847.

### **Finding Asthma: Building a Foundation for Care and Discovery.**

Beuther DA, Krishnan JA. *Am J Respir Crit Care Med*. 2017 Aug 15;196(4):401-402. doi: 10.1164/rccm.201704-0840ED. PubMed PMID: 28475356.

### **Steroid resistance of airway type 2 innate lymphoid cells from patients with severe asthma: The role of thymic stromal lymphopoietin.**

Liu S, Verma M, Michalek L, Liu W, Sripada A, Rollins D, Good J, Ito Y, Chu H, Gorska MM, Martin RJ, Alam R. *J Allergy Clin Immunol*. 2017 Apr 20. pii: S0091-6749(17)30660-7. doi: 10.1016/j.jaci.2017.03.032. [Epub ahead of print] PubMed PMID: 28433687; PubMed Central PMCID: PMC5650571.

### **Glucocorticoid Receptor ChIP-Seq Identifies PLCD1 as a KLF15 Target that Represses Airway Smooth Muscle Hypertrophy.**

Sasse SK, Kadiyala V, Danhorn T, Panettieri RA Jr, Phang TL, Gerber AN. *Am J Respir Cell Mol Biol*. 2017 Aug;57(2):226-237. doi: 10.1165/rcmb.2016-0357OC. PubMed PMID: 28375666; PubMed Central PMCID: PMC5576583.

### **The Nasal Methylome: A Key to Understanding Allergic Asthma.**

Yang IV, Richards A, Davidson EJ, Stevens AD, Kolakowski CA, Martin RJ, Schwartz DA. *Am J Respir Crit Care Med*. 2017 Mar 15;195(6):829-831. doi: 10.1164/rccm.201608-1558LE. PubMed PMID: 28294656; PubMed Central PMCID: PMC5363969.

### **Mitogen-activated protein kinases as therapeutic targets for asthma.**

Khorasanizadeh M, Eskian M, Gelfand EW, Rezaei N. *Pharmacol Ther*. 2017 Jun;174:112-126. doi: 10.1016/j.pharmthera.2017.02.024. Epub 2017 Feb 14. Review. PubMed PMID: 28223227.

### **Airway and serum biochemical correlates of refractory neutrophilic asthma.**

Alam R, Good J, Rollins D, Verma M, Chu H, Pham TH, Martin RJ. *J Allergy Clin Immunol*. 2017 Oct;140(4):1004-1014.e13. doi: 10.1016/j.jaci.2016.12.963. Epub 2017 Feb 3. PubMed PMID: 28163052; PubMed Central PMCID: PMC5540819.

### **Changing Paradigms in the Treatment of Severe Asthma: The Role of Biologic Therapies.**

Katial RK, Bensch GW, Busse WW, Chipps BE, Denson JL, Gerber AN, Jacobs JS, Kraft M, Martin RJ, Nair P, Wechsler ME. *J Allergy Clin Immunol Pract*. 2017 Mar - Apr;5(2S):S1-S14. doi: 10.1016/j.jaip.2016.11.029. Epub 2017 Jan 29. Review. PubMed PMID: 28143691.



# SELECTED 2017 PUBLICATIONS

## Dual RNA-seq reveals viral infections in asthmatic children without respiratory illness which are associated with changes in the airway transcriptome.

Wesolowska-Andersen A, Everman JL, Davidson R, Rios C, Herrin R, Eng C, Janssen WJ, Liu AH, Oh SS, Kumar R, Fingerlin TE, Rodriguez-Santana J, Burchard EG, Seibold MA. *Genome Biol.* 2017 Jan 19;18(1):12. doi: 10.1186/s13059-016-1140-8. PubMed PMID: 28103897; PubMed Central PMCID: PMC5244706.

## Inhalation devices, delivery systems, and patient technique.

Nelson HS. *Ann Allergy Asthma Immunol.* 2016 Dec;117(6):606-612. doi: 10.1016/j.anai.2016.05.006. Review. PubMed PMID: 27979017.

## Mechanism of T(H)2/T(H)17-predominant and neutrophilic T(H)2/T(H)17-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.* 2017 May;139(5):1548-1558.e4. doi: 10.1016/j.jaci.2016.08.032. Epub 2016 Oct 1. PubMed PMID: 27702673; PubMed Central PMCID: PMC5376378.

## COPD

### Handgrip Strength in Chronic Obstructive Pulmonary Disease. Associations with Acute Exacerbations and Body Composition.

Martinez CH, Diaz AA, Meldrum CA, McDonald MN, Murray S, Kinney GL, Hokanson JE, Curtis JL, Bowler RP, Han MK, Washko GR, Regan EA; COPD Gene Investigators. *Ann Am Thorac Soc.* 2017 Nov;14(11):1638-1645. doi: 10.1513/AnnalsATS.201610-821OC. PMID: 29090990

### Disease Severity Dependence of the Longitudinal Association Between CT Lung Density and Lung Function in Smokers.

Diaz AA, Strand M, Coxson HO, Ross JC, San Jose Estepar R, Lynch D, van Rikxoort EM, Rosas IO, Hunninghake GM, Putman RK, Hatabu H, Yen A, Kinney GL, Hokanson JE, Silverman EK, Crapo J, Washko GR. *Chest.* 2017 Oct 21. pii: S0012-3692(17)32907-0. doi: 10.1016/j.chest.2017.10.012. [Epub ahead of print] PMID: 29066389

### The value of blood cytokines and chemokines in assessing COPD.

Bradford E, Jacobson S, Varasteh J, Comellas AP, Woodruff P, O'Neal W, DeMeo DL, Li X, Kim V, Cho M, Castaldi PJ, Hersh C, Silverman EK, Crapo JD, Kechris K, Bowler RP. *Respir Res.* 2017 Oct 24;18(1):180. doi: 10.1186/s12931-017-0662-2. PMID: 29065892 Free PMC Article

### Meta-analysis of peripheral blood gene expression modules for COPD phenotypes.

Reinhold D, Morrow JD, Jacobson S, Hu J, Ringel B, Seibold MA, Hersh CP, Kechris KJ, Bowler RP. *PLoS One.* 2017 Oct 9;12(10):e0185682. doi: 10.1371/journal.pone.0185682. eCollection 2017. PMID: 29016655 Free PMC Article

### Electronic Cigarette Use in US Adults at Risk for or with COPD: Analysis from Two Observational Cohorts.

Bowler RP, Hansel NN, Jacobson S, Graham Barr R, Make BJ, Han MK, O'Neal WK, Oelsner EC, Casaburi R, Barjaktarevic I, Cooper C, Foreman M, Wise RA, DeMeo DL, Silverman EK, Bailey W, Harrington KF, Woodruff PG, Drummond MB; for COPD Gene and SPIROMICS Investigators. *J Gen Intern Med.* 2017 Dec;32(12):1315-1322. doi: 10.1007/s11606-017-4150-7. Epub 2017 Sep 7. PMID: 28884423

### Understanding the Relevance of the Mouse Cigarette Smoke Model of COPD: Peering through the Smoke.

Vandivier RW, Ghosh M. *Am J Respir Cell Mol Biol.* 2017 Jul;57(1):3-4. doi: 10.1165/rcmb.2017-0110ED. No abstract available. PMID: 28665224

### The Role of Chest Computed Tomography in the Evaluation and Management of the Patient with COPD.

Labaki WW, Martinez CH, Martinez FJ, Galbán CJ, Ross BD, Washko GR, Barr RG, Regan EA, Coxson HO, Hoffman EA, Newell Jr JD, Curran-Everett D, Hogg JC, Crapo JD, Lynch DA, Kazerooni EA, Han MK. *Am J Respir Crit Care Med.* 2017 Jun 29. doi: 10.1164/rccm.201703-0451PP. [Epub ahead of print] PMID: 28661698

### Risk of pneumonia in obstructive lung disease: A real-life study comparing extra-fine and fine-particle inhaled corticosteroids.

Sonnappa S, Martin R, Israel E, Postma D, van Aalderen W, Burden A, Usmani OS, Price DB; Respiratory Effectiveness Group, Small Airways Study Group. *PLoS One.* 2017 Jun 15;12(6):e0178112. doi: 10.1371/journal.pone.0178112. eCollection 2017. PMID: 28617814 Free PMC Article

### Multiple biomarkers predict disease severity, progression and mortality in COPD.

Zemans RL, Jacobson S, Keene J, Kechris K, Miller BE, Tal-Singer R, Bowler RP. *Respir Res.* 2017 Jun 13;18(1):117. doi: 10.1186/s12931-017-0597-7. PMID: 28610627 Free PMC Article

### GDF-15 plasma levels in chronic obstructive pulmonary disease are associated with subclinical coronary artery disease.

Martinez CH, Freeman CM, Nelson JD, Murray S, Wang X, Budoff MJ, Dransfield MT, Hokanson JE, Kazerooni EA, Kinney GL, Regan EA, Wells JM, Martinez FJ, Han MK, Curtis JL; COPD Gene Investigators. *Respir Res.* 2017 Feb 28;18(1):42. doi: 10.1186/s12931-017-0521-1. PMID: 28245821 Free PMC Article

### Biomarkers of extracellular matrix turnover are associated with emphysema and eosinophilic-bronchitis in COPD.

Bihlet AR, Karsdal MA, Sand JM, Leeming DJ, Roberts M, White W, Bowler R. *Respir Res.* 2017 Jan 19;18(1):22. doi: 10.1186/s12931-017-0509-x. PMID: 28103932 Free PMC Article

### Early efficacy of budesonide/formoterol in patients with moderate-to-very-severe COPD.

Calverley PM, Eriksson G, Jenkins CR, Anzueto AR, Make BJ, Persson A, Fagerås M, Postma DS. *Int J Chron Obstruct Pulmon Dis.* 2016 Dec 19;12:13-25. doi: 10.2147/COPD.S114209. eCollection 2017. PMID: 28031707 Free PMC Article

### Chronic obstructive pulmonary disease and sleep related disorders.

Tsai SC. *Curr Opin Pulm Med.* 2017 Mar;23(2):124-128. doi: 10.1097/MCP.0000000000000351. Review. PMID: 27984243

### Clinical, physiologic, and radiographic factors contributing to development of hypoxemia in moderate to severe COPD: a cohort study.

Wells JM, Estepar RS, McDonald MN, Bhatt SP, Diaz AA, Bailey WC, Jacobson FL, Dransfield MT, Washko GR, Make BJ, Casaburi R, van Beek EJ, Hoffman EA, Sciruba FC, Crapo JD, Silverman EK, Hersh CP; COPD Gene Investigators. *BMC Pulm Med.* 2016 Dec 1;16(1):169. PMID: 27903260 Free PMC Article

### Sex-Based Genetic Association Study Identifies CELSR1 as a Possible Chronic Obstructive Pulmonary Disease Risk Locus among Women.

Hardin M, Cho MH, Sharma S, Glass K, Castaldi PJ, McDonald ML, Aschard H, Senter-Sylvia J, Tantisira K, Weiss ST, Hersh CP, Morrow JD, Lomas D, Agusti A, Bakke P, Gulsvik A, O'Connor GT, Dupuis J, Hokanson J, Crapo JD, Beaty TH, Laird N, Silverman EK, DeMeo DL; COPD Gene and Evaluation of COPD Longitudinally to Identify Predictive Surrogate End-Points Investigators. *Am J Respir Cell Mol Biol.* 2017 Mar;56(3):332-341. doi: 10.1165/rcmb.2016-01720C. PMID: 27854507

### 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.* 2017 Mar 15;195(6):748-756. doi: 10.1164/rccm.201603-0622OC. PMID: 27783539

### Genome-Wide Association Study of the Genetic Determinants of Emphysema Distribution.

Boueiz A, Lutz SM, Cho MH, Hersh CP, Bowler RP, Washko GR, Halper-Stromberg E, Bakke P, Gulsvik A, Laird NM, Beaty TH, Coxson HO, Crapo JD, Silverman EK, Castaldi PJ, DeMeo DL; COPD Gene and ECLIPSE Investigators. *Am J Respir Crit Care Med.* 2017 Mar 15;195(6):757-771. doi: 10.1164/rccm.201605-0997OC. PMID: 27669027

# SELECTED 2017 PUBLICATIONS

## **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, Kleeerup EC, Hansel NN, Woodruff PG, Han MK, Paine R 3rd, Martinez FJ, **Bowler RP**, O'Neal WK; COPDGene and SPIROMICS Investigators. *Am J Respir Crit Care Med*. 2017 Feb 15;195(4):473-481. doi: 10.1164/rccm.201607-13300C. PMID: 27579823

## **Acute Exacerbations and Lung Function Loss in Smokers with and without Chronic Obstructive Pulmonary Disease.**

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*. 2017 Feb 1;195(3):324-330. doi: 10.1164/rccm.201605-10140C. PMID: 27556408

## **Examining the Effects of Age on Health Outcomes of Chronic Obstructive Pulmonary Disease: Results From the Genetic Epidemiology of Chronic Obstructive Pulmonary Disease Study and Evaluation of Chronic Obstructive Pulmonary Disease Longitudinally to Identify Predictive Surrogate Endpoints Cohorts.**

Parulekar AD, Martinez C, Tsai CL, Locantore N, Atik M, Yohannes AM, Kao CC, Al-Azzawi H, Mohsin A, Wise RA, Foreman MG, Demeo DL, **Regan EA**, **Make BJ**, Boriek AM, Wiener LE, Hanania NA. *J Am Med Dir Assoc*. 2017 Dec 1;18(12):1063-1068. doi: 10.1016/j.jamda.2017.09.028. PMID: 29169736

## **A machine learning approach to triaging patients with chronic obstructive pulmonary disease.**

Swaminathan S, Qirko K, Smith T, Corcoran E, Wysham NG, Bazaz G, Kappel G, **Gerber AN**. *PLoS One*. 2017 Nov 22;12(11):e0188532. doi: 10.1371/journal.pone.0188532. eCollection 2017. PMID: 29166411

## **New Strategies and Challenges in Lung Proteomics and Metabolomics. An Official American Thoracic Society Workshop Report**

**Russell P. Bowler**, Chris H. Wendt, Michael B. Fessler, Matthew W. Foster, Rachel S. Kelly, Jessica Lasky-Su, Angela J. Rogers, Kathleen A. Stringer, and Brent W. Winston; on behalf of the American Thoracic Society Workgroup on Metabolomics and Proteomics. *Ann Am Thorac Soc*. 2017 Dec;14(12):1721-1743. doi: 10.1513/AnnalsATS.201710-770WS. PMID: 29192815

## **Cystic Fibrosis**

### **Impact of azithromycin on the clinical and antimicrobial effectiveness of tobramycin in the treatment of cystic fibrosis.**

**Nichols DP**, **Happoldt CL**, **Bratcher PE**, **Caceres SM**, Chmiel JF, **Malcolm KC**, **Saavedra MT**, Saiman L, **Taylor-Cousar JL**, **Nick JA**. *J Cyst Fibros*. 2017 May; 16(3):358-366. doi: 10.1016/j.jcf.2016.12.003. Epub 2016 Dec 24. PMID: 28025037

### **Tezacaftor-Ivacaftor in Patients with Cystic Fibrosis Homozygous for Phe508del.**

**Taylor-Cousar JL**, Munck A, McKone EF, van der Ent CK, Moeller A, Simard C, Wang LT, Ingenito EP, McKee C, Lu Y, Lekstrom-Himes J, Elborn JS. *N Engl J Med*. 2017 Nov 23;377(21):2013-2023. doi: 10.1056/NEJMoa1709846. Epub 2017 Nov 3. PMID: 29099344

### **Nontuberculous mycobacteria in cystic fibrosis: Updates and the path forward.**

Martiniano SL, **Davidson RM**, **Nick JA**. *Pediatr Pulmonol*. 2017 Nov;52(S48):S29-S36. doi: 10.1002/ppul.23825. Epub 2017 Sep 7. Review. PMID: 28881094

### **Standardized Treatment of Pulmonary Exacerbations (STOP) study: Observations at the initiation of intravenous antibiotics for cystic fibrosis pulmonary exacerbations.**

Sanders DB, Solomon GM, Beckett VV, West NE, Daines CL, Heltsh SL, VanDevanter DR, Spahr JE, Gibson RL, **Nick JA**, Marshall BC, Flume PA, Goss CH; STOP Study Group. *J Cyst Fibros*. 2017 Sep;16(5):592-599. doi: 10.1016/j.jcf.2017.04.005. Epub 2017 Apr 29. PMID: 28460885

### **Standardized Treatment of Pulmonary Exacerbations (STOP) study: Physician treatment practices and outcomes for individuals with cystic fibrosis with pulmonary Exacerbations.**

West NE, Beckett VV, Jain R, Sanders DB, **Nick JA**, Heltsh SL, Dasenbrook EC, VanDevanter DR, Solomon GM, Goss CH, Flume PA; STOP investigators. *J Cyst Fibros*. 2017 Sep;16(5):600-606. doi: 10.1016/j.jcf.2017.04.003. Epub 2017 Apr 29. PMID: 28457954

### **Proteomic profiling identifies novel circulating markers associated with bronchiectasis in cystic fibrosis.**

DeBoer EM, Kroehl ME, Wagner BD, Accurso FJ, Harris JK, **Lynch DA**, Sagel SD, Deterding RR. *Proteomics Clin Appl*. 2017 Sep;11(9-10). doi: 10.1002/prca.201600147. Epub 2017 May 29. PMID: 28452194

### **Pharmacokinetics and safety of civosonstat (N91115) in healthy and cystic fibrosis adults homozygous for F508DEL-CFTR.**

Donaldson SH, Solomon GM, **Zeitlin PL**, Flume PA, Casey A, McCoy K, Zemanick ET, Mandagere A, Troha JM, Shoemaker SA, Chmiel JF, **Taylor-Cousar JL**. *J Cyst Fibros*. 2017 May;16(3):371-379. doi: 10.1016/j.jcf.2017.01.009. Epub 2017 Feb 13. PMID: 28209466

### **Pregnancy among cystic fibrosis women in the era of CFTR modulators.**

Heltsh SL, Godfrey EM, Josephy T, Aitken ML, **Taylor-Cousar JL**. *J Cyst Fibros*. 2017 Nov;16(6):687-694. doi: 10.1016/j.jcf.2017.01.008. Epub 2017 Feb 10. PMID: 28190780

### **Diagnosis of Cystic Fibrosis in Nonscreened Populations.**

Sosnay PR, White TB, Farrell PM, Ren CL, Derichs N, Howenstine MS, **Nick JA**, De Boeck K. *J Pediatr*. 2017 Feb;181S:S52-S57.e2. doi: 10.1016/j.jpeds.2016.09.068. PMID: 28129813

### **Environmental/Occupational Pulmonary Medicine**

5-Aminosalicylic Acid Modulates the Immune Response in Chronic Beryllium Disease Subjects. **Day BJ**, **Huang J**, **Barkes BQ**, **Gillespie M**, **Li L**, **Maier LA**. *Lung*. 2017 Oct 27. doi: 10.1007/s00408-017-0062-x. [Epub ahead of print] PMID: 29080069

### **Genetic, Immunological and Environmental Basis of Sarcoidosis.**

Moller DR, Rybicki BA, **Hamzeh NY**, Montgomery CG, Chen ES, Drake W, Fontenot A. *Ann Am Thorac Soc*. 2017 Oct 26. doi: 10.1513/AnnalsATS.201707-565OT. [Epub ahead of print] PMID: 29073364

### **Clinical Course of Sarcoidosis in World Trade Center-Exposed Firefighters.**

Hena KM, Yip J, Jaber N, Goldfarb D, Fullam K, Cleven K, Moir W, Zeig-Owens R, Webber MP, Spevack DM, Judson MA, **Maier L**, Krumerman A, Aizer A, Spivack SD, Berman J, Aldrich TK, Prezant DJ; FDNY Sarcoidosis Clinical Research Group. *Chest*. 2017 Oct 21. pii: S0012-3692(17)32916-1. doi: 10.1016/j.chest.2017.10.014. [Epub ahead of print] PMID: 29066387

### **Utility of Lung Clearance Index Testing as a Noninvasive Marker of Deployment-related Lung Disease.**

**Kreffit SD**, **Strand M**, **Smith J**, **Stroup C**, **Meehan R**, **Rose C**. *J Occup Environ Med*. 2017 Aug;59(8):707-711. doi: 10.1097/JOM.0000000000001058. PMID: 28665837

### **Clinical tool for disease phenotyping in granulomatous lung disease.**

**Silveira LJ**, **Strand M**, Van Dyke MV, **Mroz MM**, **Faino AV**, Dabelea DM, **Maier LA**, **Fingerlin TE**. *PLoS One*. 2017 Nov 16;12(11):e0188119. doi: 10.1371/journal.pone.0188119. eCollection 2017. PMID: 29145499 Free Article

### **Increasing Severity of Pneumoconiosis Among Younger Former US Coal Miners Working Exclusively Under Modern Dust-Control Regulations.**

Graber JM, Harris G, Almborg KS, **Rose CS**, Petsonk EL, Cohen RA. *J Occup Environ Med*. 2017 Jun;59(6):e105-e111. doi: 10.1097/JOM.0000000000001048. PMID: 28598937

### **Using DR52c/Ni2+ mimotope tetramers to detect Ni2+ reactive CD4+ T cells in patients with joint replacement failure.**

**Zhang Y**, **Wang Y**, **Anderson K**, **Novikov A**, **Liu Z**, **Pacheco K**, **Dai S**. *Toxicol Appl Pharmacol*. 2017 Sep 15;331:69-75. doi: 10.1016/j.taap.2017.05.020. Epub 2017 May 26. PMID: 28554661

# SELECTED 2017 PUBLICATIONS

## Assessing Tobacco Use Among Working Adults in the United States: the Need to Consider Poly-tobacco Use.

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## 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 named the #1 respiratory hospital in the nation by *U.S. News & World Report* in its 2017-2018 Best Hospitals rankings. National Jewish Health has ranked #1 or #2 all 21 years that *U.S. News* has ranked pulmonology in its Best Hospitals list. This is the 16th time we have ranked #1.



*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 programs were rated "high performing," the highest rating available.



National Jewish Health has more than 55 doctors named on various lists, including "America's Top Doctors" by Castle Connolly and "Top Docs" in *5280 Magazine's* 2017 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. Identifying this gene 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 Legionnaires' disease.

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

**Mechanisms of apoptosis**, Our 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**, National Jewish Health researchers have developed a blood test that can detect allergy to nickel used in artificial joints, a common cause of failure.





## **FOCUS, EXPERIENCE, COLLABORATION**

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