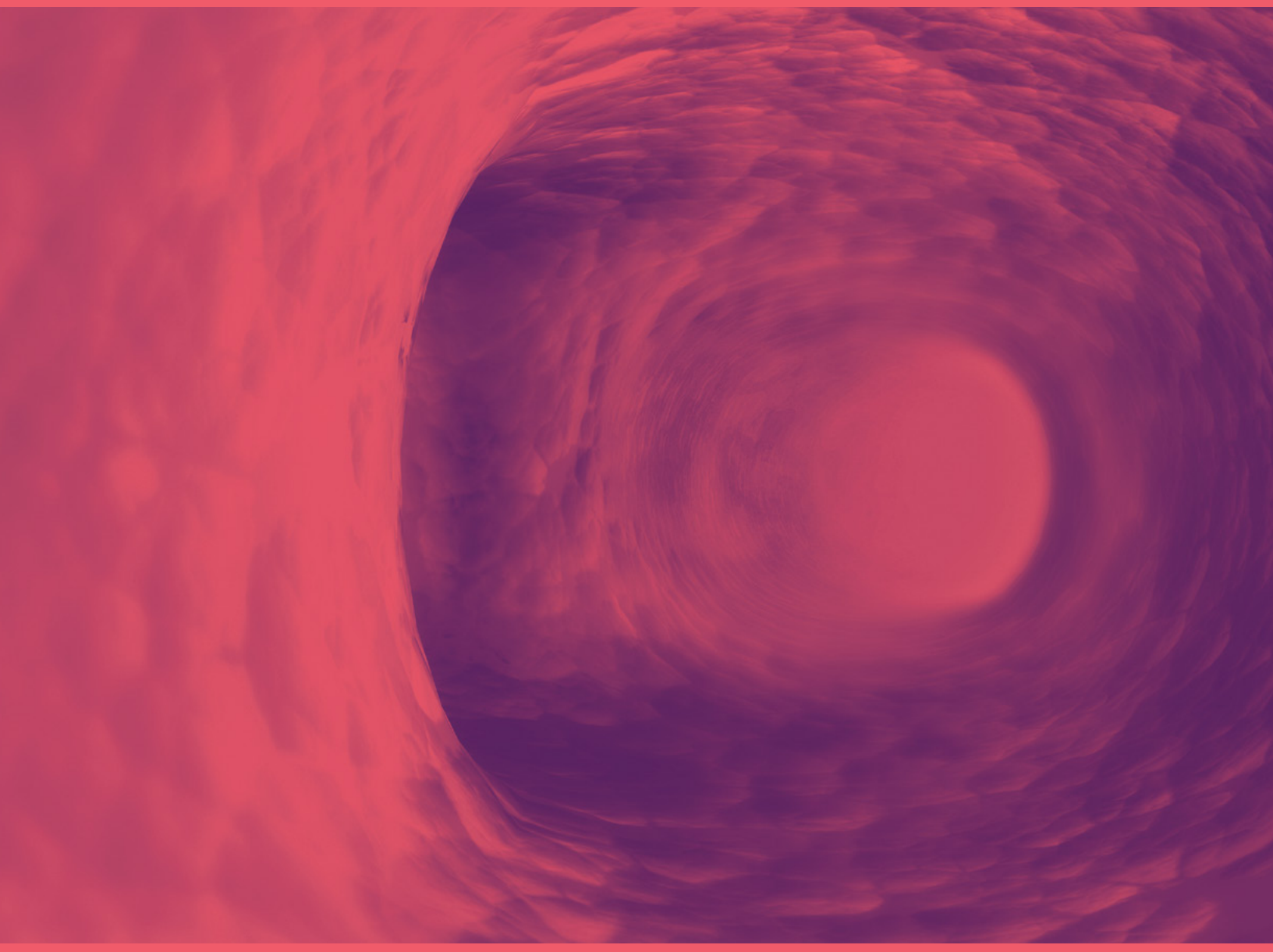
NYU Langone Health

Pulmonology

2017 YEAR IN REVIEW



21,981
OUTPATIENT VISITS IN 2017

113
FACULTY MEMBERS

$24M +
TOTAL RESEARCH FUNDING

Contents

On the cover: Respiratory Tract

MESSAGE FROM THE DIRECTOR

Dear Colleagues and Friends:

DANIEL H. STERMAN, MD

Thomas and Suzanne Murphy Professor of Pulmonary and Critical Care Medicine, Department of Medicine

Professor, Department of Cardiothoracic Surgery

Director, Multidisciplinary Pulmonary Oncology Program

Director, Division of Pulmonary, Critical Care & Sleep Medicine

I am delighted to share with you the achievements of a transformative year for the Division of Pulmonary, Critical Care and Sleep Medicine at NYU Langone Health.

In 2017, our already top-ranked pulmonary program took major steps toward establishing a comprehensive lung transplantation service. Co-directed by Luis F. Angel, MD, professor of medicine and cardiothoracic surgery, and Zachary N. Kon, MD, assistant professor of cardiothoracic surgery, the Lung Transplant Program, opened in early 2018, will be a key component of a truly comprehensive, elite division.

This signature addition to our clinical services represents a major step forward for our institution and for our patients, but it is only one part of the story of the past year. In this inaugural report, you will learn more about how our world-class faculty members, representing a broad range of subspecialty disciplines, are leading advances in pulmonary medicine and helping thousands of people to breathe easier.

The Division's other clinical accomplishments over the past year include:

- The launch of one of the nation's largest and most comprehensive pulmonary hypertension programs, under the leadership of fellowship-trained expert Roxana Sulica, MD, associate professor of medicine
- Establishment of the new Lung Cancer Center within Perlmutter Cancer Center, directed by internationally known thoracic surgeon and robotics pioneer Robert J. Cerfolio, MD, professor of cardiothoracic surgery
- Development of new treatment pathways and innovative diagnostic and therapeutic approaches for the management of benign and malignant pleural disease
- *Pathway to Excellence Silver Level* recognition for our extracorporeal membrane oxygenation (ECMO) program

Our comprehensive, robust research portfolio includes laboratory-based investigation, translational research, clinical trials and epidemiological studies focused on diseases ranging from cancer and inflammatory diseases such as chronic obstructive pulmonary disease and asthma to infectious respiratory disorders and environmental lung disease. Significant research milestones over the past year include:

- The award of a new five-year federal grant for our World Trade Center Health Program's (WTCHP) Clinical Center for Excellence, which continues to explore the mechanisms of WTC-related lung injury, develop biomarkers to identify individuals at particular risk for adverse pulmonary outcomes, and provide ongoing assistance to medically affected rescue and responder populations
- Development of significant immunotherapy trials that could offer new treatment potential for patients with lung cancer and mesothelioma who are not candidates for surgical intervention
- Groundbreaking research into the role of immunoglobulin E (IgE) antibodies in allergic disease
- Investigation of airway microbe-host interaction and the contribution of the microbiome to the development of lung diseases such as COPD and lung cancer

Our division has been a world leader in providing state-of-the-art pulmonary care, conducting pivotal research, and training the next generation of specialists for well over a century. Today, with a faculty that includes some of the most talented and experienced leaders in their respective fields, we are proud to continue that commitment to our patients and to the future of pulmonary, critical care and sleep medicine.

FACTS & FIGURES

Pulmonology

PATIENT CARE

21,981

OUTPATIENT VISITS IN 2017

Doubled

PATIENT VISITS

in Interventional Pulmonology

400+

PULMONARY HYPERTENSION PATIENTS

currently enrolled in program

FACULTY, RESIDENTS & FELLOWS

113

FACULTY MEMBERS

including voluntary faculty

25

RESIDENTS & FELLOWS

2

ADVANCED FELLOWSHIP PROGRAMS

in Interventional Pulmonology and Sleep Medicine

RESEARCH & FUNDING

114

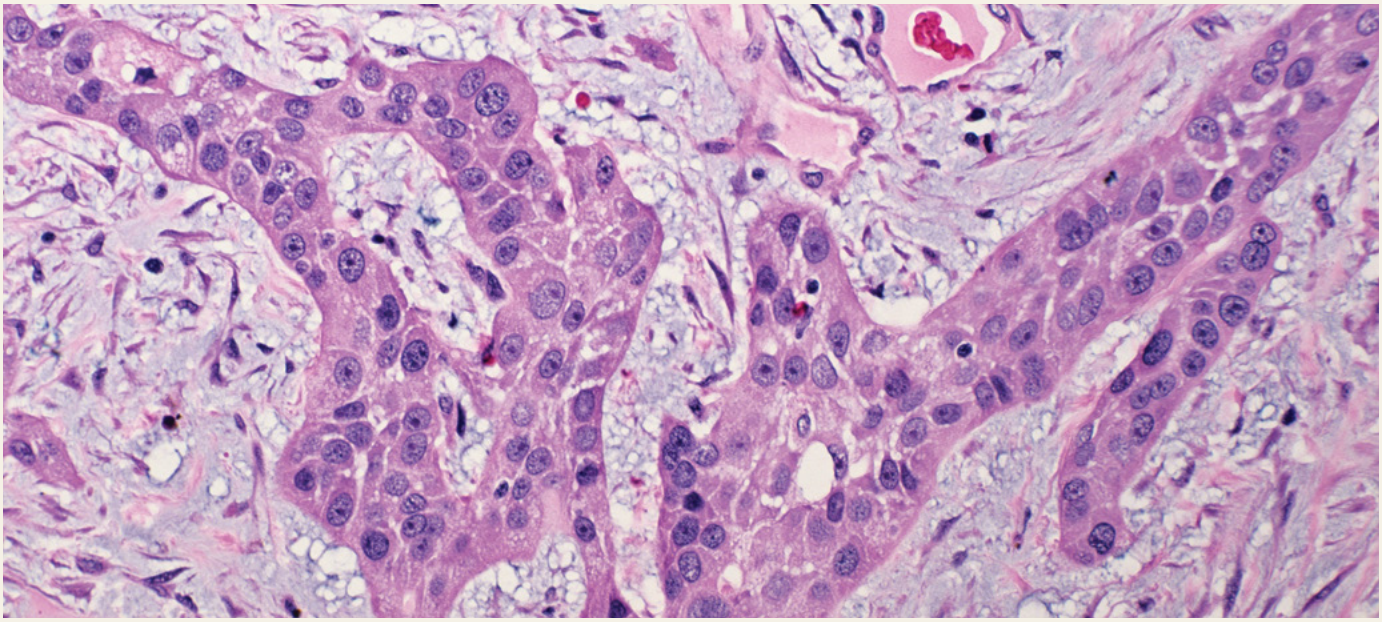
SCIENTIFIC PUBLICATIONS

3

TOTAL NIH GRANTS

$24M+

TOTAL RESEARCH FUNDING



Squamous carcinoma of the lung from a long-term elderly smoker

NYU Langone Health

View of NYU Langone Health's main Manhattan campus, including renderings of the new Science Building (left) and the Helen L. and Martin S. Kimmel Pavilion (right), both set to open in 2018.
(Image credit: Ennead Architects)

BEST HOSPITALS U.S.News & World Report HONOR ROLL 2017-18

#19

IN THE NATION

and nationally ranked in 12 specialties: Rehabilitation, Orthopedics, Rheumatology, Neurology & Neurosurgery, Geriatrics, Urology, Cardiology & Heart Surgery, Gastroenterology & GI Surgery, Diabetes & Endocrinology, Pulmonology, Cancer, and Nephrology

BEST GRAD SCHOOLS U.S.News & World Report MEDICAL RESEARCH 2018

#12

IN THE NATION
BEST MEDICAL SCHOOLS FOR RESEARCH

and a leader in innovation in medical education, including accelerated pathways to the MD degree

Bernard A Birnbaum, MD Quality Leadership Award 2017 Winner vizient

Leader

IN QUALITY CARE AND PATIENT SAFETY

For the past four years, NYU Langone has received top rankings for overall patient safety and quality of care from Vizient, Inc., formerly the University HealthSystem Consortium. In 2017, NYU Langone received two significant awards from Vizient—the Bernard A. Birnbaum, MD, Quality Leadership Award and the Ambulatory Care Quality and Accountability Award for demonstrated excellence in delivering high-quality, patient-centered outpatient care.

5 Star Rating

FROM CMS HOSPITAL COMPARE

NYU Langone Health is the only full-service hospital in New York State and one of 9 percent of hospitals nationwide to receive a five-star rating from the Centers for Medicare and Medicaid Services (CMS). The rating reflects overall safety, quality, and patient experience.

2017 IN BRIEF

Building on Existing Programs and Forging New Ground

Leopoldo N. Segal, MD

Research Uncovers the Microbial Roots of Lung Disease

The lungs were long thought to be sterile until groups of researchers—the team led by Leopoldo N. Segal, MD, assistant professor of medicine, at the fore—debunked the idea. Building on this research, Dr. Segal, a founding member of NYU Langone's Human Microbiome Project, launched the Lung Microbiome Program in 2010. This innovative program focuses on uncovering mechanisms of airway microbe-host interaction that contribute to disease or predisposition for enhanced or reduced response to treatments such as lung cancer immunotherapies. "There is actually a lot of exposure to microbes in the airway, not just in disease," says Dr. Segal, explaining that studying the microbiome in the lower airway is more challenging than in the gastrointestinal tract, skin, or oral cavity, where many microbiome projects are focused. "It's a very different microbial environment, with a much lower microbial load, that is more challenging to access and sample."

After defining the composition of the lung microbiome, his group now focuses on understanding microbe-host interactions and how the presence of these microbes leads to a defined host-immune phenotype—how the host is reacting to those microbes. Last year, their research included a double-blind, placebo-controlled trial of azithromycin (AZM) in 20 smokers with emphysema. In the study, published in *Thorax* in January 2017, they found that AZM treatment altered both lung microbiota and metabolome, which may contribute to the therapeutic effects of this commonly utilized antibiotic. "This highlights the relevance of understanding the metabolism of the resident microbes as potential targets for immunomodulation," says Dr. Segal.

Daniel H. Sterman, MD

Advancements in Interventional Pulmonology

NYU Langone's Interventional Pulmonology Program, one of the largest and most experienced in the country, is leading the way toward new treatment approaches for lung cancers and other pulmonary disorders. Over the past year, the five-member team, led by section chief, Gaetane C. Michaud, MD, associate professor of medicine and cardiothoracic surgery, has pioneered the use of a combination of pleuroscopy, biopsies of the lining of the thoracic cavity, and tunneled pleural catheter insertion for the outpatient treatment of recurrent, symptomatic pleural effusion. This novel approach more rapidly seals the chest cavity, alleviating symptoms and facilitating rapid diagnosis while avoiding toxicity of chemical instillation and an inpatient hospital stay. Interventional pulmonology is also leading trials of *in situ* immune therapy in combination with chemotherapy in mesothelioma, and has developed integrated, multidisciplinary pathways for the management of both benign and malignant airway disease.

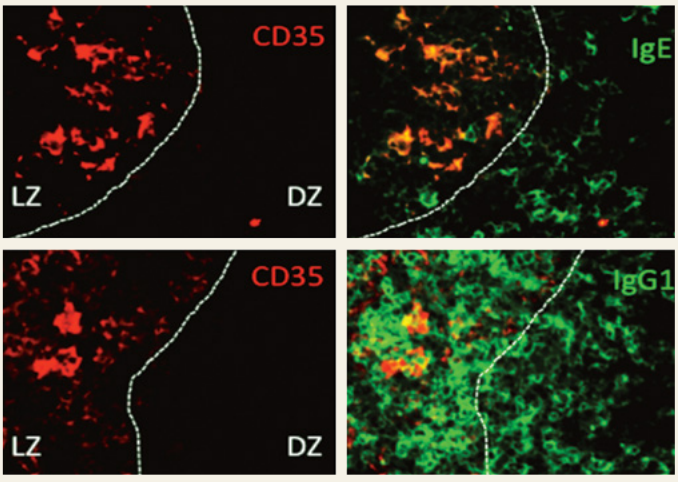
Read more on **PAGE 9**

Allergic Disease and the Memory of Immune Cells

New, NIH-funded research from NYU Langone could help to illuminate the role of immunoglobulin E (IgE) antibodies in generating and sustaining allergic reactions. The past decades have yielded a steady increase in the global presence of allergic disease, and today an estimated 30-40 percent of the world's population is affected by one or more allergic conditions. By binding to high-affinity receptors on mast cells, IgE antibodies play a key role in the allergic reaction. But although the benefits of anti-IgE therapy in chronic allergic disease are well known, the mechanism of how the IgE responses are generated and sustained remain poorly understood.

In 2017, Maria A. Curotto de Lafaille, PhD, associate professor of medicine and cell biology, received a National Institutes of Health Exploratory/Developmental Research Grant (R21) to investigate how human pathogenic IgE is produced. Her study's central premise is that the "memory" that produces immune response to allergens in IgE-producing cells—which do not appear to have their own functional memory cells—resides instead, in immunoglobulin G (IgG) memory cells. In people with allergies, researchers suggest, IgG memory B cells are able to more adeptly switch classes to IgE cells.

Dr. Curotto de Lafaille plans to assess this theory in individuals with allergies. In addition, she will identify the immune cells that help IgG memory B cells to switch to IgE, and characterize the cellular and molecular features associated with memory B cells' ability to produce IgE. "These studies may further our understanding of how pathogenic IgE is generated, and identify biomarkers that predict the risk of allergic disease," Dr. Curotto de Lafaille says.



IgE cells are under-represented in the light zone of the germinal cell

New Transplant Program Enhances Options for Advanced Lung Failure

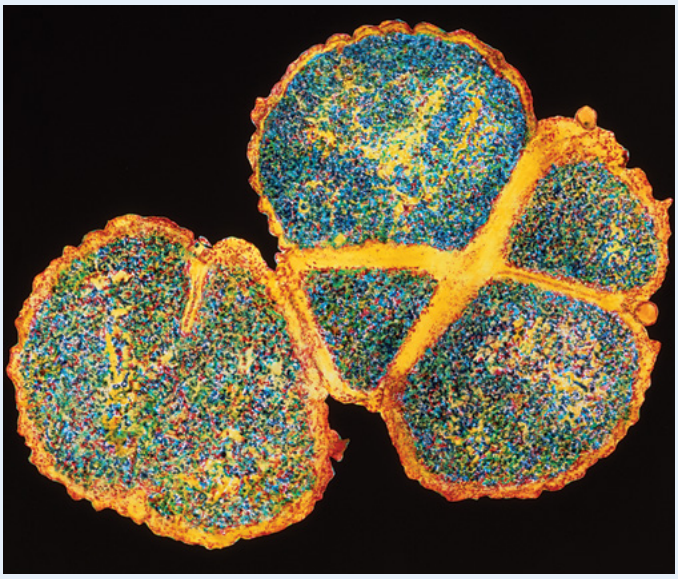
Lung transplantation is now offered as part of the Transplant Institute at NYU Langone, which joins a field of only three New York medical centers offering the service. With the opening of this program, co-led by Luis F. Angel, MD, professor of medicine and cardiothoracic surgery and medical director of lung transplantation, and cardiothoracic surgeon Zachary N. Kon, MD, assistant professor of cardiothoracic surgery, NYU Langone's Transplant Institute now offers transplantation for all major solid organs. The Lung Transplant Program is supported by an Extracorporeal Life Support Organization (ELSO)-accredited extracorporeal membrane oxygenation (ECMO) program, which provides complete mechanical circulatory support for the most critical lung failure patients. Dr. Angel and Dr. Kon are also leading major clinical studies designed to maximize the number of lungs available for transplant and reduce the risk of organ rejection.

Read more on **PAGE 11**

Pulmonary Hypertension Program Streamlines Care for Complex Disorder

In 2017, NYU Langone launched a comprehensive Pulmonary Hypertension Program, led by pulmonologist Roxana Sulica, MD, associate professor of medicine and a fellowship-trained expert in the condition. The program, one of the largest in the country, brings together pulmonologists, cardiologists, rheumatologists, clinical nurse specialists, pharmacists, nutritionists, and social workers to provide advanced, integrated clinical care for patients afflicted with the rare and complex disorder. The specialized treatment and clinical trials under way at NYU Langone continue to enhance the treatment and management of these patients.

Read more on **PAGE 13**



Staphylococcus aureus bacteria

New Guidelines Inform Management of Sepsis and Septic Shock

New guidelines issued by a multinational sepsis care campaign aim to enhance the care of sepsis, the leading cause of death from infection, of which reported incidence is on the rise. Laura E. Evans, MD, MSc, associate professor of medicine and director of critical care at NYC Health + Hospitals/Bellevue, co-chaired the guidelines committee for the Surviving Sepsis Campaign, which developed the 93 new, evidence-based statements on early management and resuscitation of patients with sepsis or septic shock. "The revised guidelines increase the quantitative evidence supporting our recommendations—not just for patients with septic shock, but sepsis as well," Dr. Evans said.

The updated guidelines, co-published in *Critical Care Medicine* and *Intensive Care Medicine* in March 2017, include important advancements for clinicians since the last iteration in 2012 addressing initial resuscitation and antimicrobial therapy. For initial resuscitation, the new guidelines recommend frequent clinician reassessment as a priority over specific targets such as central venous pressure and central venous oxygen saturation. "Several large studies published since the 2012 revisions find no difference in patient outcomes using those specific targets versus clinician reassessment," says Dr. Evans. "Our new recommendation reflects the belief that clinician reassessment is very important in regard to patient outcomes."

For antimicrobial therapy, the guidelines include a strong recommendation from the committee to administer antibiotics—ideally within the first hour—for patients at risk of sepsis and septic shock.

World Trade Center Health Program Receives New Grant

The World Trade Center Health Program (WTCHP) Clinical Center for Excellence at NYU Langone has been awarded a five-year, $12.5 million grant from the Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health to continue its work in the medical and mental health treatment of first responders of the 9/11 terrorist attacks.

"Our multidisciplinary team, composed of pulmonary specialists, occupational and internal medicine specialists, psychiatrists, psychologists, nurses, social workers and case managers, work together to provide treatment and management of WTC-associated health conditions, including specific airway and digestive disorders, mental health conditions, musculoskeletal disorders, and cancers," says Denise J. Harrison, MD, associate professor of medicine and environmental medicine, and director of the WTCHP. "This new grant allows us to continue to provide high-quality medical monitoring and treatment to responders of 9/11."

Established under the James Zadroga 9/11 Health and Compensation Act of 2010, the program provides medical monitoring exams, medical and mental health treatment for certified WTC-related health conditions, and social services assistance to emergency responders, recovery, restoration, clean-up workers, and volunteers who helped at the World Trade Center, the Pentagon, and the crash site near Shanksville, Pennsylvania. NYU Langone's WTCHP is part of a national consortium of centers that together have seen over 70,000 responders. Data collected from all clinical centers is analyzed to provide further insight into the health effects of the exposure, and provides a framework for further research investigations that may prove helpful for future disaster preparedness.

Additionally, the WTCHP also provides an initial health evaluation and treatment to those individuals who lived, worked, or attended school in the New York City disaster area on September 11th or the months that followed. This program, led by Joan Reibman, MD, professor of medicine and environmental medicine and director of the NYU Langone/NYC Health + Hospitals/Bellevue Asthma Airways Environment Program, has seen over 11,000 patients. The team was the first to document the damaging health effects of exposure to the World Trade Center disaster on first responders and others in the area.

Doreen J. Addrizzo-Harris, MD, and Joan Reibman, MD

2017 IN DEPTH

Smarter Approaches to Screening, Diagnosis and Treatment

Gaetane C. Michaud, MD

Pioneering New Treatment and Standards of Care in Pulmonary Medicine

NYU Langone's interventional pulmonary team is playing a leading role in the development of novel therapies that could significantly improve lung cancer patient outcomes.

The team, led by Gaetane C. Michaud, MD, associate professor of medicine and cardiothoracic surgery, and section chief for interventional pulmonology, includes five board-certified interventional pulmonologists—and one advanced interventional pulmonary fellow—who treat a comprehensive range of benign and malignant diseases of the lungs, including lung cancer, asthma, pleural disease, and tracheobronchomalacia.

The interventional pulmonology team works closely with thoracic surgeons and oncologists from NYU Langone's Perlmutter Cancer Center to diagnose and treat cancers of the chest. "This model of collaborative care integrates all areas of expertise to create one team for the patient," says Dr. Michaud. "Our joint teams provide all pulmonology services on-site at the center, so the patient has continuity of care without the need to travel."

THE PROMISE OF NEW PLEURAL TREATMENT PATHWAYS

With grant support from NYU Langone's Center for Healthcare Innovation and Delivery Science (CHIDS), the interventional pulmonary team has built integrated, multidisciplinary clinical pathways to ensure optimal quality of care throughout the management of benign and malignant pleural disease. Over the next year, those pathways, focused on enhancing areas such as time to appropriate definitive management, cost of care, and value of care, will be incorporated into the Epic electronic health record.

Members of the group are ideally positioned to develop such comprehensive pathways, having been involved in many of the major clinical trials in the history of interventional pulmonology. Dr. Michaud and her colleagues are currently leading several trials focused on understanding the immune response to lung cancer, including pioneering studies of immune profiling of tumor-involved lymph nodes in non-small cell lung cancer and mesothelioma. At the American Thoracic Society's International Conference in May 2017, Dr. Michaud presented research on the outpatient use of a combined pleuroscopy and tunneled pleural catheter insertion as a diagnostic and therapeutic tool for patients with recurrent pleural effusion.

"Rather than injecting chemicals such as talc into the cavity, which can lead to harsh side effects and toxicity, by combining pleuroscopy with tunneled catheter placement, we were able to seal the space, resolve the patient's symptoms, and determine the etiology of the effusion," says Dr. Michaud. "We are able to drain all fluid and get an immediate response, turning what used to be a four-day hospitalization into a one-hour outpatient procedure." To date, the group has performed this combined procedure on more than 40 patients with no significant complications, and is now designing a clinical trial to be investigated by other national centers of interventional pulmonology.

Patient volume has
doubled
since 2016

Clinical care has expanded outside Manhattan, to
Brooklyn
and
Long Island

In new trials led by Daniel H. Sterman, MD, chemo-immunogene therapy appeared safe, and overall survival was significantly higher than historical controls, supporting a multicenter randomized clinical trial of chemo-immunogene therapy versus standard chemotherapy alone.

HIGH-POTENTIAL TRIALS IN LUNG CANCER AND MESOTHELIOMA

New trials led by Daniel H. Sterman, MD, the Thomas and Suzanne Murphy Professor of Pulmonary and Critical Care Medicine, professor of cardiothoracic surgery, and director of the Division of Pulmonary, Critical Care and Sleep Medicine, could offer new treatment potential for patients with lung cancer and mesothelioma who are not candidates for surgical intervention. Dr. Sterman's research initiative, the NYU Langone Pulmonary Oncology Research Team (PORT), focuses on clinical and translational research in lung cancer, mesothelioma, metastatic pleural disease, and other thoracic malignancies. PORT is closely integrated with the NYU Langone Interventional Pulmonary Program, and is an integral component of Perlmutter Cancer Center's new Lung Cancer Center.

In 2016, Dr. Sterman published the results of a Phase I trial assessing *in situ* vaccination using immunogene therapy to induce clinically significant anti-tumor immune responses. In the study, published in *Clinical Cancer Research*, 40 patients with unresectable malignant pleural mesothelioma received two doses of an adenoviral vector containing the human IFNα2b gene (Ad.IFN), concomitant with a 14-day course of celecoxib followed by chemotherapy. The therapy appeared safe, and overall survival was significantly higher than historical controls, supporting a multicenter randomized clinical trial of chemo-immunogene therapy versus standard chemotherapy alone. This trial will start in mid-2018, and NYU Langone will be the coordinating center for this landmark clinical trial. NYU Langone is also a select site for an industry-sponsored study, led by Dr. Michaud, testing peripheral photodynamic therapy as an ablative technique for patients with lung tumors who are not candidates for surgical resection.

RENOWNED THORACIC SURGEON JOINS NYU LANGONE AS DIRECTOR OF NEW LUNG CANCER CENTER

Robert J. Cerfolio, MD, MBA

Robert J. Cerfolio, MD, MBA, professor of cardiothoracic surgery, whose innovations in robotics have led to practice-changing advances in lung cancer surgery in the United States and countries around the world—recently joined NYU Langone and its Perlmutter Cancer Center as director of clinical thoracic surgery and founding director of the Lung Cancer Center. Dr. Cerfolio previously served at the University of Alabama Hospital in Birmingham, Alabama, as the James H. Estes Family Lung Cancer Research Endowed Chair and chief of thoracic surgery. Having performed more than 17,000 operations, he is among the most prolific thoracic surgeons in the world. Equally important, he is known internationally for the highest standards of care and innovative leadership.

Lung Transplant Program Enhances Care for Patients with Advanced Lung Failure

In January 2018, NYU Langone became one of three institutions in New York State to offer lung transplantation. The addition of the program follows the December 2017 launch of the Heart Transplant Program, solidifying the establishment of the Transplant Institute at NYU Langone as a comprehensive center offering all types of solid organ transplantation.

MULTIDISCIPLINARY TRANSPLANT TEAM

Assistant professor of cardiothoracic surgery, Zachary N. Kon, MD, previously on the University of Maryland faculty, will serve as the program's surgical director, joining Luis F. Angel, MD, professor of medicine and cardiothoracic surgery, and medical director of the Lung Transplant Program.

The lung transplant team joins a center-wide institute comprising transplant surgeons and transplant physicians specializing in hepatology, nephrology, cardiology, endocrinology, infectious diseases, pulmonology, and radiology, along with specially trained transplant nurse coordinators. This multidisciplinary team approach to transplantation ensures comprehensive, personalized care.

"Although the program is new, it is developing within a long-standing transplant infrastructure, with a highly experienced transplantation team at its core," says Dr. Angel. "Since the program is starting relatively small, we will count on the support of a large academic medical center to make this program an innovative and dedicated program for the care of patients in the pre- and post-transplant phases. We will evaluate and use all existing technologies to improve the availability of organs for our patients on the transplant list."

Dr. Angel's team works closely with LiveOnNY, a federally designated nonprofit organ procurement organization that serves the greater New York metropolitan area. Potential transplant candidates can schedule evaluation appointments at both the Manhattan location and at NYU Winthrop on Long Island.

Luis F. Angel, MD, and Melissa B. Lesko, DO

LEADING ADVANCES IN TRANSPLANT MEDICINE

The program's early leadership includes a rigorous research emphasis. Through various clinical trials, Dr. Kon brings with him extensive experience in *ex vivo* lung perfusion technology. The *ex vivo* process treats donor lungs that appear marginal for transplantation with specialized solutions and gases that can reverse lung injury and remove excess fluids. This enhances the transplant viability of the donor's lungs, significantly increasing the number of lungs available for the more than 1,600 people now on the national waiting list.

RESEARCH TO PREDICT OUTCOMES FOR PATIENTS

One of lung transplantation's most pressing challenges is how to both predict outcomes post-lung transplantation, and identify those patients at heightened risk for chronic lung rejection as early as possible, to maximize the potential for intervention and to prevent declining lung function. Dr. Angel and his team have partnered with 18 transplant centers across the country to develop strategies to address this challenge. Researchers in this collaboration hope to identify the risk factors associated with acute rejection or early chronic lung allograft dysfunction (CLAD), which affects nearly half of all lung transplant recipients by five years post-transplant.

ECMO PROGRAM EARNS INTERNATIONAL *PATHWAY TO EXCELLENCE AWARD*

Deane E. Smith, MD

The multidisciplinary extracorporeal membrane oxygenation (ECMO) program at NYU Langone, which opened in 2015, has earned the *Pathway to Excellence in Life Support Award–Silver Level* from the Extracorporeal Life Support Organization (ELSO), an international nonprofit consortium that develops and evaluates novel therapies for failing organ systems.

ECMO can be used to provide cardiopulmonary support for patients with acute respiratory failure, to provide rapid salvage for individuals with an otherwise untreatable lung injury, or as a bridge to lung transplant. "With ECMO available, we can care for the most critically ill lung patients right here at NYU Langone, rather than send them to another institution," says Deane E. Smith, MD, assistant professor of cardiothoracic surgery, and surgical director of the ECMO and Cardiogenic Shock Program. "We can get them through their most acute illness and give them options for long-term therapy."

Pulmonary Hypertension Program Provides Specialty Point of Care for a Complex Disorder

The multidisciplinary care offered at NYU Langone for pulmonary hypertension (PH) has been formalized and expanded with the creation of the new Pulmonary Hypertension Program. Under the leadership of noted pulmonologist Roxana Sulica, MD, associate professor of medicine, who joined NYU Langone in July 2017 as the program's director, the program will offer comprehensive diagnostic and therapeutic services to patients with all forms of PH.

Dr. Sulica and her team will collaborate with the Interstitial Lung Disease Program directed by Rany Condos, MD, clinical professor of medicine and director of the Adult Cystic Fibrosis Program, the Heart Failure Advanced Care Center led by Alex Reyentovich, MD, associate professor of medicine and medical director of the Left Ventricular Assist Device Program, and with Luis F. Angel, MD, professor of medicine and cardiothoracic surgery, and medical director of the new Lung Transplant Program, part of the Transplant Institute.

The new NYU Langone program is one of the country's largest treating this rare, complex progressive disorder characterized by abnormally high blood pressure in the arteries of the lungs and leading to right ventricular failure and death. "We are currently caring for over 400 patients with this condition," says Dr. Sulica, a fellowship-trained expert in the condition who previously directed the pulmonary hypertension programs at Mount Sinai Hospital and Mount Sinai Beth Israel in New York. She notes that these patients come from New York City's five boroughs and beyond—Long Island, upstate New York, New Jersey, Pennsylvania, and Connecticut—seeking the highly specialized care the center offers.

"Untreated, the life expectancy of an individual with PH is less than three years, but with proper care, they can expect to live significantly longer," says Dr. Sulica. "Therefore, it is critical that the procedures involved—such as a right heart catheterization for accurate disease diagnosis—be performed with precision by experienced specialists."

Zachary N. Kon, MD, assistant professor of cardiothoracic surgery, and surgical director of lung transplantation, will lead a new program to treat chronic thromboembolic pulmonary hypertension. The recommended treatment, pulmonary thromboendarterectomy, is currently performed by only a small number of institutions across the country.

HIGHLY SPECIALIZED MEDICATION HELPS TO TREAT PH

Epoprostenol, the first medication approved by the Food and Drug Administration for treatment of PH, is only available as a continuous intravenous infusion. Patients carry a battery-operated pump that infuses the drug; because of its short half-life, any interruption in therapy from a pump malfunction or human error can be life-threatening. "If the system stops, the patient can die within 30 minutes," Dr. Sulica says. "For this reason, all our patients have 24/7 coverage and can reach me by phone at any time."

Over the past 15 years, additional drugs have been approved for the treatment of PH, with a total of 14 agents—including pills, inhaled agents, and subcutaneous injections—now available. Epoprostenol, however, remains the only drug to show survival benefit in a 3-month controlled trial, and the optimal choice for the very sick patients. Tailoring the appropriate drug regimen for each patient requires both expertise and long-standing experience, and studies from Europe have demonstrated better outcomes for patients treated in specialized centers from the moment of diagnosis as opposed to patients who had therapy initiated in non-expert centers.

Roxana Sulica, MD

"We are hopeful that three new classes of drugs on the horizon for PH may be even more effective," says Dr. Sulica. These drugs may also offer alternative administration routes, such as an implantable pump filled monthly or biweekly in the clinic, eliminating the need for patients to replace a cassette or syringe of medication every day or every other day. Dr. Sulica, who has been principal investigator in numerous multicenter PH therapeutic trials and registries for more than a decade, is preparing to enroll patients in multiple trials of these new agents, beginning in early 2018.

Academic Activities

PUBLICATIONS

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AWARDS & RECOGNITIONS

Jan Bakker, MD, PhD, FCCP, research associate professor of medicine, was elected to be deputy-chair of the Cardiovascular Section of the European Society of Intensive Care; as the first official visiting professor of the Medical School of the Pontificia Universidad Católica de Chile in Santiago; and as a member of the scientific committee of the Latin America Intensive Care Network.

Maria A. Curotto de Lafaille, PhD, associate professor of medicine and cell biology, received a National Institutes of Health Exploratory/Developmental Research Grant (R21) to investigate how human pathogenic IgE is produced.

Laura E. Evans, MD, MSc, associate professor of medicine, was elected to the Society of Critical Care Medicine (SCCM) Council.

The World Trade Center Health Program's (WTCHP) Clinical Center for Excellence at NYU Langone, led by **Denise J. Harrison, MD,** associate professor of medicine and environmental medicine, and **Joan Reibman, MD,** professor of medicine and environmental medicine, has been awarded a five-year, $12.5 million grant from the Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health to continue its work in the medical and mental health treatment of first responders from the 9/11 terrorist attacks.

Brian S. Kaufman, MD, professor of medicine; anesthesiology, perioperative care, and pain medicine; neurosurgery; and neurology, has been selected as a member of the inaugural class of recipients of the Distinguished CHEST Educator title by the American College of Chest Physicians (CHEST).

Benjamin G. Wu, MD, instructor of medicine, was awarded the National Institutes of Health (NIH) Loan Repayment Program for funding by the National Institute of Allergy and Infectious Diseases (NIAID).

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68,884
Patient Discharges

4,500,000
Outpatient Faculty Practice Visits

9,654
Births

3,633
Physicians

5,104
Nurses

516
MD Candidates

85
MD/PhD Candidates

263
PhD Candidates

418
Postdoctoral Fellows

1,327
Residents and Fellows

5,087
Original Research Papers

549,707
Square Feet of Research Space

$359M
NIH Funding

$364M
Total Grant Revenue

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