



# PULMONARY AND CRITICAL CARE MEDICINE FELLOWSHIP TRAINING PROGRAM



School of Medicine  
TEMPLE UNIVERSITY®



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## General Information

### Introduction

Fellowship training in pulmonary, critical care, sleep, and transplantation medicine at Temple University Hospital is sponsored by the Division of Pulmonary and Critical Care Medicine of the Temple University School of Medicine. The division is made up of a diverse group of physician-educators and physician-scientists who are interested in training physicians in every aspect of the clinical and basic sciences of the respiratory system. Temple University Hospital is the sole teaching institution for all of this activity and includes state-of-the-art inpatient and outpatient facilities, including the Temple Lung Center, a regionally and nationally famous diagnostic and treatment center for advanced lung diseases. At the end of a three year fellowship, trainees will be board eligible for certification in pulmonary, critical care and transplantation medicine. All trainees will have access to a variety of research programs that focus on the physiology, pathophysiology, cell biology and molecular biology of the respiratory system in both health and disease. The integration of research with patient care assures proper training in pulmonary and critical care medicine, thus providing the opportunity for a trainee to enter either academic medicine or private practice.

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## Temple University Hospital

Temple University Hospital (TUH), which has nearly 600 acute care beds, provides primary care for nearly the entire North Philadelphia region (over 1,000,000 population) and tertiary care for the greater Philadelphia metropolitan area (approximately 14,000,000). TUH has the most active emergency department in the state of Pennsylvania, a level 1 trauma center, treating over 40,000 patients annually. The medical environment at TUH provides diverse and abundant clinical material for the training of medical students, residents and fellows.



## Division Activities

The Division of Pulmonary and Critical Care Medicine at TUH is under the direction of Gerard Criner, M.D. There are 16 full-time faculty members, 2 research Ph.D's, 12 fellows, 14 nurse coordinators, and 14 support staff. The Division supervises a 26-bed respiratory / medical intensive care unit; a 10 bed thoracic / surgical intensive care unit; a state-of-the-art pulmonary function laboratory; an invasive procedure laboratory; several outpatient clinics; a multi-institutional sleep disorders center; a ventilator rehabilitation unit; an asthma inpatient unit; a pulmonary medicine inpatient service, and a pulmonary consult service. An active lung and heart-lung transplantation and lung volume reduction surgery program is part of the clinical experience that a fellow would be involved with during their training at TUH. TUH is a cardiac transplantation center and also performs kidney transplants. Finally, the faculty is actively engaged in numerous and diversified clinical and basic science research projects and programs. As part of Temple University Hospital, the Temple Lung Center provides both medical and surgical treatment for patients with advanced lung disease.



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## Ventilator Rehabilitation Unit

The ventilator rehabilitation unit (VRU) is the only national chronic ventilator demonstration site of the Healthcare Finance Administration. This unit includes a comprehensive, multidisciplinary rehabilitation program for the ventilator-dependent patient which includes respiratory, occupational and physical therapies, nutritionists, speech pathologists, physiatrists, and dedicated nurse coordinators. Clinical research opportunities abound in the VRU and this research involves the study of respiratory muscle dysfunction, new modalities of noninvasive ventilation, and outcome and costs of long-term care for such a unit. Fellow involvement in the VRU provides ample opportunities for an intense exposure to noninvasive mechanical ventilation and opportunities for clinical research.

## Transplantation

The fellowship includes a broad exposure to patients with a variety of advanced lung diseases that require lung or heart-lung transplantation. The transplantation program is fully operational, with the first transplantation performed in October 1993. Patients with a diverse variety of complex and advanced cardiopulmonary diseases are evaluated for candidacy for single and double lung transplantation, and when necessary, heart-lung transplantation on a regular basis.

TUH has been an extremely active performing lung volume reduction surgery for advanced emphysema. In collaboration with cardiothoracic surgery, numerous patients have had this surgery. TUH is fully involved in the National Emphysema Treatment Trial (NETT) sponsored by NIH/HICFA.

## Pulmonary Diagnostics

The pulmonary function laboratory at TUH is a state-of-the-art facility, which on a daily basis performs the most comprehensive range of diagnostic tests in the Philadelphia area. Complete pulmonary function testing, cardiopulmonary exercise testing, outpatient arterial line placement, assessment of control of breathing by either hypoxic or hypercapnic challenges, bronchoprovocation testing, and assessment of diaphragm strength and phrenic nerve conduction via electrophrenic stimulation are done routinely.

The invasive procedures suite provides a full range experience in biopsy techniques for the diagnosis of infectious and noninfectious diseases of the chest, including malignancy. Bronchoscopic and transthoracic needle biopsies are performed with video recording and fluoroscopic imaging technology. When necessary, airway and pulmonary vascular stent placement are performed in collaboration with interventional radiology. Thoracentesis, pleural biopsies, and chest tube placement are done on a routine basis in this unit.



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## Sleep Program

The sleep disorders center at TUH performs routine and more sophisticated sleep studies. Nocturnal polysomnography and multiple sleep latency testing are performed on a nightly basis. When necessary, nocturnal seizure disorder monitoring, penile tumescence, and titration of noninvasive mechanical ventilation are done. Two additional satellite sleep laboratories, at Jeannes and Northeastern Hospitals, are fully functional and studies performed at these facilities are interpreted by the faculty and fellows that are covering the sleep disorders center. There is a centralized interpretation center at TUH for all studies done at the 3 hospitals. Urology, Neurology and Psychiatry actively participate.

## Clinical Research

The Center for Clinical Research conducts inpatient and outpatient studies, often sponsored by the pharmaceutical industry. Each year, a variety of studies are performed generally focusing on asthma, chronic obstructive pulmonary disease, sepsis, respiratory infection, and cancer therapeutics. Additionally, medical device testing, such as new mechanical ventilators can be part of this centers activity. Fellows can participate in these activities, on an optional basis.



## Ambulatory Care

The ambulatory care experience for fellows occurs at Temple Lung Center. Fellows who are assigned to patients in the pulmonary medicine outpatient clinic are considered the primary pulmonary physician for that patient's care. Faculty guidance is available at all times since there are two faculty members present during all pulmonary fellow's clinics. A fellow will follow the care of their patient through the whole diagnostic and therapeutic process.

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# FELLOWSHIP DESCRIPTION

## Philosophy

This fellowship is designed to train pulmonary and critical care physicians for careers in either academic medicine or clinical practice. We believe that clinical and research training in pulmonary and critical care medicine should be highly individualized and flexible enough to accommodate the diverse backgrounds and career interests of our trainees. We encourage trainees to participate actively in structuring the clinical and research aspects of their training program to meet their own needs. An investigative track, for those interested in pursuing careers in basic or clinic research which would likely lead to an academic appointment, is available. A clinical track, for those who wish to acquire advanced training in specific areas of applied clinical practice, can be pursued.

We believe that the increasingly rapid acquisition of new knowledge in medicine makes it likely that current approaches will soon become obsolete. Trainees must be able to incorporate significant changes in scientific information and technical approaches into their base of knowledge, many years after their formal training has been completed. We believe that this can best be accomplished when the educational emphasis is placed on providing a solid foundation in the fundamental concepts of respiratory biology and physiology, and in acquiring the necessary skills to take an analytical approach when studying the medical literature.



## Goals and Objectives

The specific goals of the training program in pulmonary and critical care medicine are as follows:

1. To develop excellence in the practice of pulmonary and critical care medicine.
2. To encourage and foster an attitude that fellows should teach pulmonary and critical care medicine to each other, students, house staff and attending physicians.
3. To teach the appropriate technical skills to utilize and interpret a large variety of diagnostic imaging studies, complex physiologic data, and modern informational and communicative technology used in pulmonary and critical care medicine.
4. To make fellows aware of the many ethical issues encountered in modern medicine.
5. To teach basic administration and management skills necessary for physician directorship of critical care units, pulmonary function laboratories, sleep laboratories and respiratory therapy departments.
6. To instill an initial interest in basic science and clinical research and to provide an opportunity for fellows to experience a research project from its beginning to its completion, including a presentation of data at a national meeting, and eventual publication of these research data.

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## Conferences

Informal teaching at the bedside during work rounds occurs on a daily basis. The fellows receive more formalized instruction through a variety of conferences sponsored by the Division.

Conferences are held in the divisional conference room in the Temple Lung Center four days a week and include both didactic lecture series and interactive case management and research conferences. The following conferences are conducted under the auspices of the division of pulmonary and critical care medicine:

**Pulmonary Journal Club:** The fellow selects a potentially important recent journal article for careful review and discussion. A critical evaluation of the article's contents is done in unison by the fellows and faculty.

**Pulmonary Grand Rounds:** On a weekly basis, on Tuesdays, Pulmonary Grand Rounds are delivered by faculty or fellow. This lecture series is intermixed with case presentations on clinical topics by first through third year fellows based on a systematic and critical review of the pertinent literature. At times, a radiologist and pathologist contribute to the discussion along with divisional faculty members.

**Critical Care Conference:** Each week on Thursday, fellows, residents and students participate in case presentations of clinical topics or topical presentations involving critical care medicine. Often, case management is discussed by a variety of specialists including intensivists, anesthesiologists and surgeons. Emergency medicine and anesthesiology, as well as cardiologists, may be involved from time to time in the discussions that occur during this conference.

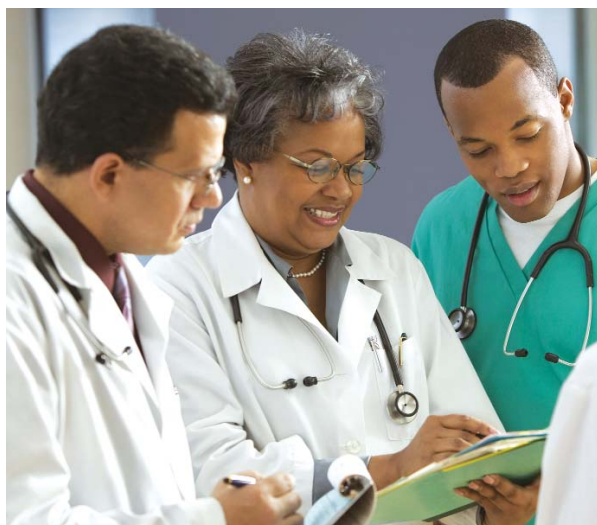
**Pulmonary Oncology Conference:** Presentation of lung cancer cases in a multidisciplinary setting involving pulmonary medicine, oncology, radiation

oncology and thoracic surgery specialist occur on a weekly basis on Fridays. Fellows and staff present interesting and challenging cases, and care plans evolve quickly from the group in attendance.

**Research Seminars:** Twice monthly, informal presentations by members of the section, pertaining to on-going research, occur at this conference. At times, invited faculty from other institutions participate and present their data.

On a regular basis, lectures and research seminars by eminent visiting professors enrich the educational program. Finally, optional 7:00 a.m. lectures occur each week. On a weekly basis, there is a Sleep Conference with a structured curriculum involving every fellow who is interested in pursuing certification in sleep medicine. Also, ICU conferences, additional research conferences and a transplantation work conference occur early in the morning throughout the week.

The fellow's teaching skills are enhanced by frequent presentations at many of the conferences. Faculty assistance in the presentation of these conferences is an important part of the training program. Fellows acquire the necessary skills for proper medical and scientific presentation, and acquire the ability to use the latest technology in education.



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## Research Training

The Division has a strong commitment to research and education. Exposure to research in respiratory biology, physiology and pharmacology is considered an essential component of fellowship training. The fellowship is designed to familiarize all fellows in these areas through frequent research conferences and participation in research projects. For those fellows who intend to pursue careers in academic medicine, the third year of fellowship training can be used to pursue research. Faculty members from inside and outside the pulmonary and critical care division, are readily available to serve as mentors for targeted research training. The fellows are encouraged from their first year to take full advantage of the many opportunities for collaboration with investigators throughout the medical center. Fully equipped laboratories that allow for physiologic, cellular and molecular, and pharmacologic studies exist. The pulmonary function laboratory at Temple University Hospital has the full capabilities for a large variety of studies in physiology, including respiratory muscle function, control of breathing, breathing perception, and exercise performance.

Nearly every fellow publishes in major pulmonary and critical care journals and presents at pulmonary and critical care medicine national meetings. During the last several years, fellows have been involved in the development and eventual publication of 2 textbooks, one focusing on pulmonary pathophysiology and the other on critical care. Annually, the division publishes 10-15 peer reviewed articles and presents 20-25 abstracts at national meetings.



## The Fellowship Schedule

The two first years of fellowship scheduling are very similar. These years are designed to provide a core clinical experience in all aspects of pulmonary, critical care and sleep medicine. Three first-year fellows are accepted annually, and the fellowship program is three years in duration.

During the first two years, each fellow will have an adequate experience in the medical intensive care unit, the ventilator rehabilitation unit, lung transplantation, pulmonary consultation, procedural services, surgical and burn consultation, and all aspects of sleep medicine. Outpatient pulmonary clinic exposure and research will also occur.

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## Intensive Care Units

The medical/respiratory intensive care unit at Temple consists of 26 dedicated beds, equipped with state-of-the-art monitoring and ventilator capabilities. All aspects of medical and respiratory intensive care are experienced by the fellow who helps manage this service. Both respiratory and non-respiratory critical care are done in this unit. There are four ICU teams with two fellows and two attending physicians. Each fellow and attending physician manages two ICU teams. Often, the fellow serves in an advisory role to the house staff, assisting them in patient management, providing teaching sessions on pertinent topics in critical care, and supervising invasive procedures. Fellows gain essential experience in ventilator management, weaning techniques, nutritional assessment and supplementation, hemodynamic monitoring, and airway management while on this service.

## Ventilator Rehabilitation and Transplantation

The ventilator rehabilitation unit and lung transplantation service is managed entirely by a pulmonary fellow and attending physician. The ventilator rehabilitation unit consists of 18 beds where patients are admitted to have sophisticated mechanical ventilation support initiated or sustained, and when possible, modified with the eventual goal of discharge to either home or an extended care facility. A large variety of noninvasive mechanical ventilation techniques are experienced, and a multidisciplinary team involving specialized nursing, respiratory therapy, dietitians, and occupational and physical therapists, work with each patient every day. All aspects of this unit's care closely involve the fellow and attending. In addition, the fellow participates in the evaluation and management of patients undergoing lung volume reduction surgery and transplantation.

## Consultations

The pulmonary consultation service involves the evaluation and care of a broad range of patients with lung disease, including immunocompromised patients and transplant recipients. There are over 1,000 inpatient consultations performed each year. The pulmonary consultation fellow evaluates all new consults and presents them to the attending physician and works with residents on this consultation service preparing each consultation for initial review and follow-up care. This service also manages a four-bed inpatient asthma unit.

## Procedures

Fellows perform a varied number of procedures during their month on the pulmonary procedure service. With the help of a dedicated technician and a nurse, the diagnostic procedure unit is equipped with fluoroscopy and video technology ideal for interactive teaching. Bronchoalveolar lavage, transbronchial biopsies and transbronchial needle aspirations are routinely performed. From time to time, brachytherapy, laser endoscopy and bronchial stenting are performed. Transthoracic needle aspiration biopsy, thoracentesis, closed pleural biopsy and tube thoracostomy are routinely done by the fellow with the assistance and guidance of the attending physician. Well over 700 fiberoptic bronchoscopies are done yearly on the pulmonary procedure service.

While on the procedural month, fellows are totally involved in the physiologic principles, performance, and interpretation of routine and sophisticated pulmonary function testing. Included are spirometry, body plethysmography, diffusion capacity, bronchoprovocation testing, cardiopulmonary exercise testing, measurement of transdiaphragmatic pressure, airway occlusion pressures (P0.1), and the use of metabolic measurement for nutritional needs.

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## Sleep Service

During a month on the sleep service, each fellow is carefully instructed in the many aspects of sleep physiology and pathophysiology, and play an important role in set-up and interpretation of sleep studies. Sleep studies include polysomnography, multiple sleep latency testing, and nocturnal penile tumescence evaluation. A variety of noninvasive mechanical ventilation techniques are employed. Nasal, nasal-oral, and full-face CPAP and BiPAP are applied by a registered technician and titrated according to the patient's needs. The fellows will have the opportunity to receive clinical training possibly leading to board certification, and perform research in sleep medicine.

## Third Year of Fellowship

It is during the third year that the investigative and clinical tracks of the fellowship program diverge. During the first two years, each fellow will have an opportunity to initiate research, more so in the second year than the first year. The third year is devoted exclusively to research and other scholarly endeavors. Under the supervision of a faculty preceptor, each fellow electing the investigative track is expected to identify a particular area of clinical or basic science investigation, to review relevant background literature, and to design and initiate a research protocol. Fellows are encouraged to present their research findings at a national meeting and to submit a manuscript for publication at the conclusion of their project.

Fellows often get involved in the development and writing of a variety of educational tools, such as review articles and book chapters. Regularly, faculty get involved in writing such chapters and books, and the fellows are encouraged to participate in this activity.

For fellows wishing to pursue a clinical track during their third year, a variety of advanced training is available in areas of pulmonary, critical care, and sleep medicine.

## Fringe Benefits

Fellows are entitled to two to three weeks paid vacation each year. Funds are provided to attend at least one scientific meeting a year. In addition to a basic salary, each fellow and their family will be provided with health, dental and life-insurance coverage.



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# FACULTY

**Gerard J. Criner, M.D.,**

Professor of Medicine  
Director, Division of Pulmonary and  
Critical Care Medicine  
Director, Medical Intensive Care Unit and  
Ventilatory Rehabilitation Unit

**Interests:** Respiratory muscle function,  
mechanical ventilation, transplantation  
**Fellowship:** Boston University Medical Center

**Gilbert D'Alonzo, D.O.,**

Professor of Medicine  
Director, Fellowship Program  
Deputy Director, Division of Pulmonary and  
Critical Care Medicine  
**Interests:** Pathogenesis and treatment of airway  
obstruction; pharmacotherapy of asthma,  
pulmonary vascular disease  
**Fellowship:** University of Michigan  
Medical Center

**Steven G. Kelsen, M.D.,**

Professor of Medicine  
Director, Basic Science Research Program  
**Interests:** Respiratory muscle function,  
cell biology of airway epithelium, control  
of breathing  
**Fellowship:** University of Pennsylvania  
Medical Center

**Friedrich Kueppers, M.D.,**

Professor of Medicine  
**Interests:** Regulation of a 1-antitrypsin  
production, inflammatory cytokines, genetics  
**Fellowship:** Mayo Clinic

**David E. Ciccolella, M.D.,**

Associate Professor of Medicine  
Director, Asthma Center  
**Interests:** Asthma, Chronic obstructive  
lung disease  
**Fellowship:** Boston University Medical Center

**Samuel Krachman, D.O.,**

Professor of Medicine  
Director, Sleep Disorders Center  
**Interests:** Sleep Disorders, Control of respiration  
**Fellowship:** University of Texas Health Science  
Center, Houston

**John Travaline, M.D.,**

Associate Professor of Medicine  
Director, Invasive Procedure Laboratory,  
Medical Ethics Program, Lung Cancer Program  
**Interests:** Respiratory muscle function,  
lung cancer and medical ethics  
**Fellowship:** Temple University Medical Center

**Kathleen Brennan, M.D.,**

Assistant Professor of Medicine  
Director, Pulmonary Outpatient Clinic  
**Interests:** Airways Disease, phosphodiesterase and  
cytokine interactions  
**Fellowship:** Temple University Medical Center

**Francis Cordova, M.D.,**

Assistant Professor of Medicine  
Director, Transplantation  
**Interests:** Respiratory Muscle Function,  
transplantation medicine  
**Fellowship:** Temple University Medical Center

**Wissam Chatila, M.D.,**

Associate Professor of Medicine  
Co-Director, Sleep Center;  
Director, Pulmonary Pathophysiology course  
**Interests:** Sleep physiology and pathophysiology  
**Fellowship:** Bridgeport Hospital and Yale New  
Haven University Hospital; University Health  
Center of Pittsburgh

**Victor Kim, M.D.,**

Assistant Professor of Medicine  
**Interests:** COPD  
**Fellowship:** Temple University Medical Center

**Nathaniel Marchetti, D.O.,**

Assistant Professor of Medicine  
**Interests:** COPD  
**Fellowship:** Temple University Medical Center

**Namrata Patel, M.D.,**

Assistant Professor of Medicine  
**Interests:** Transplantation Medicine  
**Fellowship:** Temple University Medical Center

**Sheila Weaver, D.O.,**

Assistant Professor of Medicine  
**Interests:** Pulmonary Hypertension  
**Fellowship:** Temple University Medical Center

**James Mamary, M.D.,**

Assistant Professor of Medicine  
**Interests:** Community Outreach  
**Fellowship:** Temple University Medical Center