Thank you for your interest in the Pulmonary and Critical Care Medicine Fellowship Training Program at the University of California, Davis (UCD). The goal of our program is to produce skilled pulmonary and critical care clinicians, teachers, and investigators. An individualized curriculum with a minimum of eighteen months of clinical service provides patient care experience with a broad range of diseases, and hands-on experience in all diagnostic and therapeutic procedures. The balance of the three-year program is available for clinical and basic science research activities. An educational curriculum running the duration of the three-year program provides exposure to radiology, pathology, current literature, related disciplines, and research interests of division colleagues as well as collaborators in the UCD Center for Comparative Respiratory Biology and Medicine. Training in molecular and cellular biology, genetics, biochemistry, physiology, and immunology is available. Clinical research opportunities include patient- and disease-oriented studies and epidemiologic investigations. An optional fourth year of fellowship training may be available to those individuals desiring additional protected research time.
TRAINING SITES

- UC Davis Medical Center
  - Primary teaching hospital for UC Davis School of Medicine
  - 260,000 outpatient visits and 22,000 admissions per year
  - 455-bed inpatient facility with 76 adult ICU beds
  - Regional referral center for inland Northern California and neighboring states
  - Level I Trauma Center
  - Multi-Organ Transplant Services
  - Regional Burn Center
  - Region Poison Control Center

- Sacramento Veterans Administration Medical Center at Mather Field
  - 60-bed inpatient facility with 10 adult ICU beds
  - Sacramento Veteran’s Administration Outpatient Clinic
  - 2000 Outpatient Pulmonary Clinic Visits Annually

- UCD School of Medicine and School of Veterinary Medicine
- UCD California Regional Primate Research Center
- UCD Center for Comparative Respiratory Biology and Medicine
- UCD Institute for Toxicology and Environmental Health

FACULTY
The division’s faculty members include clinician-teachers, clinical investigators and basic science researchers. Collaborative arrangements are in place with investigators in other divisions and departments in the UCD School of Medicine, the UCD School of Veterinary Medicine, and at other universities in California and Europe.

STRUCTURE
The first fellowship year includes short rotations in pulmonary physiology, anesthesia, thoracic radiology, and research. The balance of the year is spent on clinical service on the MICU, Consult, and VA Services to provide a broad experience in clinical aspects of pulmonary and critical care medicine. Extensive training in diagnostic and therapeutic techniques such as flexible bronchoscopy, lung and pleural biopsy, tube thoracostomy and all critical care procedures is provided. During the first year, the fellow chooses a research advisor who assists in preparation of a research grant application and helps to plan the second and third year experiences.

The second and third fellowship years are primarily devoted to research experience under the guidance of the fellow’s chosen research advisor. This can be basic or clinical research carried out at any of the training sites. Fellows also complete the remaining clinical requirements for board certification in Pulmonary and Critical Care Medicine with a combination of electives and rotations at the Veteran Administration Hospital, and on the MICU and Consult services at UCDMC. This curriculum is individualized in consultation with the Program Director and research mentor. Clinically focused fellows generally spend a somewhat greater proportion of their time involved in clinical rotations.

Fellows attend clinics 1-2 times weekly throughout the training program. The outpatient experience in the first fellowship year is focused on the VA, and in the second and third years a University-based continuity clinic is added to the ongoing VA continuity clinic experience. Brief additional rotations through the various more specialized clinics are included in the first year. Clinically-focused fellows spend additional time in these specialty clinics in the second and third years.

Fellows have 24 days of paid vacation or educational leave each year. Fellow salary for the first year is currently $45,300 and increases to $49,900 in the third year. Fellows are not responsible for funding during their first three years of training, but are expected to apply for research funding during their first year with assistance from their research advisor.
CONFERENCES

Weekly:
- Center for Comparative Respiratory Biology and Medicine Basic Science/Research Seminar
- Current Lung Pathology
- Fellows’ Conference (core topics in Pulmonary and Critical Care Medicine and case based discussions)
- Internal Medicine Grand Rounds
- Multidisciplinary Thoracic Oncology Patient Management Conference

Monthly:
- Combined Case Management Conference (with Thoracic Surgery)
- Community Case Review
- CXR Review
- Interdisciplinary Critical Care Conference
- Journal Club
- Literature Review
- MICU/CQI Meeting

Several part-time and volunteer (community-based) pulmonary medicine faculty members assist the full-time clinical teaching faculty in the teaching and service responsibilities of the Division. In addition, we have a monthly journal club with our colleagues at Kaiser Permanente Medical Group.

RESEARCH FUNDING
The Division has fellows, graduate students, and research postdoctoral scholars supported by:
- The National Institutes of Health
- The American Lung Association
- The American Heart Association
- The Cystic Fibrosis Foundation
- Intramural Funding
- Tobacco-Related Disease Research Program

NIH/NHLBI TRAINING GRANT
The Division of Pulmonary and Critical Care Medicine, Center for Comparative Respiratory Biology and Medicine has been awarded a National of Institutes of Health Training Grant in Comparative Lung Biology and Medicine. Reen Wu, Ph.D. and Carroll E. Cross, M.D. are the Director/Co-Director of the NRSA training grant funded for 27-years. This program is designed to provide opportunities for pre-doctoral and postdoctoral trainees to become independent investigators in lung biomedical-related research. Below is a list of participating faculty:

Participating Faculty
Charles Bevins, Ph.D. - Innate Immunity; Mucosal Host Defense; Defensins
Alan Buckpitt, Ph.D. - Lung Toxicology and Metabolism
Mary M-J Chang, Ph.D. - Lung Cell Biology and Gene Expression
Carroll E. Cross, M.D. (Co-Director) - Lung Oxidative and Nitrosative Biology and Medicine
Jason P. Eiserich, Ph.D. - Inflammation and Oxidative and Nitrosative Biology
Michelle V. Fanucchi, Ph.D. - Developmental Lung Biology and Toxicology
Laurel J. Gershwin, D.V.M., Ph.D. - Lung Immunology and Asthma
Kishorchandra Gohil, Ph.D. - Oxidative Biology and Genomics
Tzipora Goldkorn, Ph.D. - Lung Cell Biology and Signalling Systems
Richard W. Harper, M.D. - Lung Cell Biology and Oxidative Biology
Dallas M. Hyde, Ph.D. - Comparative Lung Cell Biology and Inflammation
Jesse P. Joad, M.D. - Airway Pathobiology and Lung Nerves
Marc P. Kaufman, Ph.D. - Exercise Physiology and Lung Mediators
Jerold A. Last, Ph.D. - Lung Toxicology and Connective Tissue Biology
Fu-Tong Liu, M.D., Ph.D. - Allergic Inflammation, Glycobiology and Mast Cell Biology
K. C. Kent Lloyd, DVM, Ph.D. - Integrative Physiology, Murine Transgenics and ES Cell Biology
Leslie A. Lyons, Ph.D. - Genomics and Genetic Susceptibility
Lisa Miller, Ph.D. - Lung Immunology and Neonatal Immunity
TRAINING RECORD
Since 1968, 22 of our 68 fellows have pursued careers in academic medicine. The remainder have distinguished themselves in clinical practice.

Fellows have received training grant support from many sources, including:

- The National Institutes of Health
- The American Lung Association
- The Lung Association of California
- The Cystic Fibrosis Foundation
- Tobacco-Related Disease Research Program

One-third of recent fellows received research support from one or more of the above funding sources.

CLINICAL ACTIVITIES

- MICU Service, UCDMC
  - 1,300 admissions per year
- Pulmonary and Critical Care Medicine Consultation Service
  - 1,000 new consults per year
- UCD Health System Chest Outpatient Clinic (9,000 visits per year)
  - Adult Cystic Fibrosis Clinic
  - Amyotrophic Lateral Sclerosis/Neuromuscular Respiratory Diseases Clinic
  - Pulmonary Medicine Clinic (5 practice locations)
  - Multidisciplinary Thoracic Oncology Program Clinic
  - Pulmonary Transplant/End-Stage Lung Disease Clinic
  - Sleep Disorders Clinic
- Sacramento Outpatient VA Chest Clinics
  - 2,000 visits per year
- Comprehensive Pulmonary Services Laboratory, UCDMC
  - 1,000 bronchoscopies per year
  - 2,100 pulmonary function tests per year
  - 180 cardiopulmonary exercise tests per year
- Pulmonary Rehabilitation Program, UCDMC
  - 3,200 patient visits per year
- UCDMC Center for Sleep Disorders
  - 300 polysomnoenograms per year
- Invasive Bronchoscopy Program, UCDMC
  - Bronchoplasty
  - Hi-dose Rate Brachytherapy
  - ND: Yag Laser Bronchoscopy
  - Photodynamic Therapy
  - Rigid Bronchoscopy
  - Tracheobronchial Stent Placement
  - Whole Lung Lavage
TIMOTHY E. ALBERTSON, MD, PhD, FCCP, FACP, FCCM, FACEP, FACMT
Chief, Division of Pulmonary/Critical Care Medicine; Professor of Medicine and Pharmacology, and Anesthesiology; Vice Chair, Department of Internal Medicine

AREAS OF INTEREST
Neurotoxicology; neuropharmacology; hippocampal slice model; kindled amygdaloid seizure model; clinical pharmacology/drug trials; clinical poisonings; critical care/ventilator management; sepsis and septic shock.

RECENT PUBLICATIONS

ROBLEE P. ALLEN, MD, FCCP
Professor of Clinical Internal Medicine; Director of Interventional Bronchoscopy; Co-Director of the Medical/Surgical ICU; Co-Director of the UCDMC Lung Transplant Program

AREAS OF INTEREST
Critical care: septic shock; ARDS; immuno-therapy of sepsis; artificial surfactant in ARDS; Pulmonary: lung cancer laser therapy; photodynamic therapy; pulmonary transplant.

RECENT PUBLICATIONS
H. WILLIAM BONEKAT, DO  
Professor of Medicine and Neurology; Co-Director of the Center for Sleep Disorders

AREAS OF INTEREST
Sleep disordered breathing; abdominal muscle recruitment in COPD; neuromuscular disease and respiratory evaluation

RECENT PUBLICATIONS

ANDREW CHAN, MD, FACP, FCCP  
Assistant Professor of Clinical Internal Medicine

AREAS OF INTEREST
Interventional bronchology, including lasers and stents, photodynamic therapy, end stage, lung disease, critical care medicine, interstitial lung disease (especially IPF) and alpha-1 antitrypsin disease.

SELECTED PUBLICATIONS
MARY M-J CHANG, PHD
Assistant Research Biologist

AREAS OF INTEREST
Mucous gene regulation, its relationship with Rad, a Ras-like GTPase that shows suppression on both the secretion and gene expression of mucin. Signal transduction, gene expression regulation and structural functional relationships of the Rad gene are the focus of the study.

RECENT PUBLICATIONS

CARROLL E. CROSS, MD, FCCP
Professor of Medicine and Human Physiology; Director of the Pulmonary Research Training Program; Co-Director, UC Davis Adult Cystic Fibrosis Program

AREAS OF INTEREST
Inhalation toxicology; air pollution; oxidants; free-radicals. Oxides of nitrogen including nitric oxide, nitrogen dioxide, peroxynitrite, white cell oxidants; ozone.

RECENT PUBLICATIONS

KISHORCHANDRA GOHIL, PhD
Assistant Research Biochemist

AREAS OF INTEREST
Oxidative stress and global gene expression. Role of environmental oxidants and dietary antioxidants on regulation of mRNA metabolism.

RECENT PUBLICATIONS


2005 Last JA, Mathrani VA, Gohil K, Kenyon N. Systemic Responses to Inhaled Ozone in Mice: Cachexia and Down-Regulation of Liver Xenobiotic Metabolizing Genes. Toxicology and Applied Pharmacology in press

TZIPORA GOLDKORN, PhD
Professor of Medicine

AREAS OF INTEREST
Research interests stress modulation of tyrosine kinase receptors, sphingomyelin pathways and apoptosis in normal and malignant epithelial cells, sphingolipids as regulators of novel mechanisms in signal transduction; ceramide as an endogenous regulator of apoptosis and growth suppression; ceramide target proteins: isolation cloning and characterization; fumonisins elerangement of ceramide metabolism in primary and transformed epithelia cells.

RECENT PUBLICATIONS
2005 Goldkorn T, Ravid T, Khan EM. Life and death decisions: Ceramide generation and EGF receptor trafficking are modulated by oxidative stress. Antioxidant & Redox Signaling, 7:119-128.


KIMBERLY A. HARDIN, MD
Assistant Professor of Clinical Internal Medicine

AREAS OF INTEREST
Sleep and sedation in the critically ill; Obesity and sleep apnea; diagnostic techniques; COPD quality of life.

RECENT PUBLICATIONS


RICHARD W. HARPER, MD  
Assistant Professor in Residence

AREAS OF INTEREST
Signal transduction in airway epithelium, the function of thioredoxin in airway epithelium, signal pathways and gene regulation after exposure to cigarette smoke.

RECENT PUBLICATIONS

NICHOLAS J. KENYON, MD  
Assistant Professor in Residence

AREAS OF INTEREST
Airway inflammation and fibrosis; lung physiology; environmental effects on lung function; the role of nitric oxide in airway diseases; asthma; COPD; lung injury.

RECENT PUBLICATIONS
2005  Kenyon NJ, Last JA.  Reversible and irreversible airway inflammation and fibrosis in mice exposed to inhaled ovalbumin.  Inflamm Res. 54:57-65.
JEROLD A. LAST, PhD
Professor of Medicine and Biochemistry; Director of the University of California Systemwide Toxic Substances Research and Teaching Program

AREAS OF INTEREST
Biochemistry; toxicology; lung structure and function; lung disease; protein synthesis; protein structure; air pollution; collagen; ozone; fibrosis; asthma; acid rain and acid fog; transgenic mice; scientific writing; gene array; toxic wastes; molecular biology, DNA, RNA; monoclonal antibodies; polymerase chain reaction (PCR).

RECENT PUBLICATIONS
2005  Kenyon, N.J. and Last, J.A. Reversible and Irreversible Airway Inflammation and Fibrosis in Mice Exposed to Inhaled Ovalbumin. Inflammation Research, in press.

SAMUEL LOUIE, MD, FCCP
Professor of Clinical Internal Medicine; Medical Director of the Pulmonary Services Lab and Pulmonary Rehabilitation; Director, University of California Asthma Network (UCAN)

AREAS OF INTEREST
Antioxidant interventions in oxidative lung injury; effects of lung nutrition in oxidative lung injury; free radical mechanisms in lung injury; pulmonary rehabilitation; asthma; COPD.

RECENT PUBLICATIONS

BRIAN MORRISSEY, MD
Assistant Professor of Clinical Internal Medicine; Co-Director, UC Davis Adult Cystic Fibrosis Program

AREAS OF INTEREST
Nitric oxide and oxidant mediated airway diseases; genetic lung diseases; cystic fibrosis, osteoporosis in lung disease

RECENT PUBLICATIONS


SUSAN MURIN, MD, MsC, FACP, FCCP
Associate Professor of Clinical Internal Medicine; Vice Chair for Clinical Affairs, Department of Internal Medicine; Director of the Pulmonary and Critical Care Medicine Fellowship Program

AREAS OF INTEREST
Metastatic disease of the lung; cost effectiveness in clinical medicine; venous thromboembolism; smoking-related lung diseases.

RECENT PUBLICATIONS

GIBBE H. PARSONS, MD, FACP, FCCP
Professor of Medicine; Hospital Medical Director

AREAS OF INTEREST
Pulmonary: pulmonary vascular disease and physiology, respiratory therapy, intensive care, procedures in ICU’s invasive monitoring; management of respiratory failure; mechanical ventilation; bronchial circulation; asthma. Primary pulmonary hypertension; pulmonary thromboendarterectomy. Managed care. Medical Staff Administration; graduate medical education; risk management.

RECENT PUBLICATIONS

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ALLAN D. SIEFKIN, M., FACP, FCCP
Professor of Clinical Internal Medicine; Associate Director for Clinical Affairs/Executive Director, UCDMG

AREAS OF INTEREST
Obstructive lung disease; clinical pulmonary and critical care medicine; clinical affairs administration, including healthcare contracting, medical group administration and managed care.

RECENT PUBLICATIONS

R. STEVEN THARRATT, MD, MPVM, FACP, FACEP, FCCP, FCCM, FACMT
Professor of Clinical Internal Medicine; Chief of the Section of Clinical Pharmacology and Medical Toxicology; Medical Director of Sacramento County Emergency Medical Services; Associate Medical Director of the California Poison Control System

AREAS OF INTEREST
Terrorism and Public Policy, Management and treatment of severe respiratory failure in both adults and children. Innovations in the field of mechanical ventilation. Medical management of chemical/biological terrorism and hazardous materials exposures. Pre-hospital care, including emergency medical services, fire operations, special operations and tactical medicine.

RECENT PUBLICATIONS

REEN WU, PhD
Professor of Medicine, Pharmacology, and Toxicology

AREAS OF INTEREST
Cell differentiation and neoplastic cell development; mucus cell differentiation and retinoid; gene expression and regulation in airway epithelium; oxidant stress and injury/repair mechanism.

RECENT PUBLICATIONS

KEN Y. YONEDA, MD
Assistant Professor of Medicine in Residence

AREAS OF INTEREST
Tobacco smoke related gene regulation in respiratory epithelial cells; high altitude, sepsis, ARDS; idiopathic pulmonary fibrosis.

RECENT PUBLICATIONS


