Collaborative Research Training in Thrombosis and Inflammation

T32 Research Training Program

Mentor Catalog

Baylor College of Medicine

CTRID
CENTER FOR TRANSLATIONAL RESEARCH ON INFLAMMATORY DISEASES
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## About the Cover

**Fibrin Falls (2021)**

Justin Courson, Ph.D.  
CTRID T32 Trainee

This photograph was captured by CTRID T32 trainee Dr. Justin Courson using scanning electron microscopy. The image displays a small bleed frozen in time.
The goal of our Collaborative Research Training in Thrombosis and Inflammation NIH/NHLBI T32 research training program at the Center for Translational Research on Inflammatory Diseases (CTRID) is to train clinician-scientists and non-clinician scientists (PhD) for collaborative research careers in two inter-related topics: thrombosis and inflammation.

The program consists of 2-3 years of research training, enriched by didactic courses, an outstanding seminar series and a vibrant scientific environment. In addition to training clinician-scientists in biomedical research, PhD scientists will be trained in translational medicine offering a direct interaction with patients with clinical conditions related to the focus of this T32. Trainees have the opportunity to interact with basic, clinical, translational, and health services research and uniquely investigate both thrombosis and inflammation.

This brochure provides academic information and research interests about the faculty members committed to serving as primary mentors for trainees in our T32 research training program. The faculty mentors in our training program represent a total of 10 academic units within 5 departments at BCM and 3 neighboring Texas Medical Center institutions. The multidisciplinary, cross-departmental, collaborative nature of CTRID provides an outstanding environment for training of future independent clinician and PhD scientists.

Our T32 training program on thrombosis and inflammation continues to pave the way for new biological insights and novel ways of prevention and treatment of diseases accompanied by thrombosis and inflammation by educating future clinician- and non-clinician scientists for collaborative research careers in thrombosis and inflammation.

We encourage you to consider our Collaborative Research Training in Thrombosis and Inflammation T32 Program and our distinguished group of faculty mentors for your early-career research endeavors.
The thematic research interests of our T32 program mentors, stratified in a simplified manner according to primarily thrombosis, inflammation, and combined topics is shown below. This scheme is used to ensure that the mentoring groups selected for each trainee incorporates concepts relevant to both thrombosis and inflammation.

### Thrombosis
- **Platelet Signaling**  
  *Dr. Vijayan*
- **Platelet Microvesicles**  
  *Dr. Thiagarajan*
- **Markers of Platelet Activation**  
  *Drs. Thiagarajan and Vijayan*
- **von Willebrand Factor**  
  *Drs. Cruz, Sartain, & Yee*
- **Microvascular Thrombosis**  
  *Drs. Nguyen, Rumbaut, & Cruz*
- **3D Ultra-Structure of Thrombi**  
  *Drs. Burns and Rumbaut*

### Thrombosis & Inflammation
- **Thrombosis & Inflammation in Sepsis**  
  *Drs. Cruz, Nguyen, Rumbaut, Vijayan, Lam, & Sartain*
- **Thrombosis & Inflammation in Stroke**  
  *Drs. Cruz and Marrelli*
- **Thrombosis & Inflammation in Cancer**  
  *Drs. Yao and Afshar-Kharghan*

### Inflammation
- **Pulmonary Hypertension**  
  *Dr. Pandit*
- **Lung & Allergic Inflammation**  
  *Drs. Kheradmand, Rodriguez, & Corry*
- **Autoimmunity**  
  *Dr. Beeton*
- **Neutrophils & Endothelium**  
  *Drs. Lam and Rumbaut*
- **Cancer & Inflammation**  
  *Drs. Yao, Kheradmand, & Vijayan*
- **Sarcopenic Obesity & Inflammation**  
  *Dr. Villareal*
VAHID AFSHAR-KHARGHAN, MD

ACADEMIC APPOINTMENT

Professor,
Department of Pulmonary Medicine,
Section of Benign Hematology,
University of Texas MD Anderson Cancer Center

CONTACT INFORMATION

vakharghan@mdanderson.org

PRIMARY DEPARTMENT AND SECTION

PULMONARY MEDICINE - SECTION OF BENIGN HEMATOLOGY

RESEARCH INTERESTS

- Cancer-associated thrombosis
- Role of hemostatic factors in cancer progression
- Role of the complement system in the progression of cancer
- Immunoregulatory role of platelets
- The interaction between the complement system and hemostatic factors

RESEARCH OPPORTUNITIES FOR TRAINEES

- The impact of complement system on tumor growth and antitumor immune response
- Immunoregulatory role of platelets
- Pathogenesis of cancer associated venous thrombosis
- Clonal hematopoiesis and cardiovascular disease
- The impact of platelets on the growth of cancer

RELEVANT PUBLICATIONS


CHRISTINE BEETON, PhD

PRIMARY DEPARTMENT

INTEGRATIVE PHYSIOLOGY

RESEARCH INTERESTS

- Rheumatoid arthritis
- Autoimmunity
- Microthrombi
- Thrombo-inflammation
- Systemic inflammation
- Ion channels

RESEARCH OPPORTUNITIES FOR TRAINEES

- Phenotype and function of KCa1.1 channel in synoviocytes during rheumatoid arthritis
- Targeting Kv1.3 channels in thrombo-inflammation
- Development of new Kv1.3 blockers and their delivery

RELEVANT PUBLICATIONS


ACADEMIC APPOINTMENT

Associate Professor, Department of Integrative Physiology, Baylor College of Medicine

ADDITIONAL TITLES

Director, Graduate Program in Immunology & Microbiology, Baylor College of Medicine

Academic Director, Cytometry and Cell Sorting Core, Baylor College of Medicine

CONTACT INFORMATION

beeton@bcm.edu
ACADEMIC APPOINTMENTS

Professor,
Departments of Vision Sciences,
College of Optometry,
University of Houston

Adjunct Associate Professor,
Department of Pediatrics,
Section of Leukocyte Biology,
Baylor College of Medicine

CONTACT INFORMATION

aburns@central.uh.edu

RELEVANT PUBLICATIONS


PRIMARY DEPARTMENTS AND SECTIONS

VISION SCIENCES - OPTOMETRY

PEDIATRICS - LEUKOCYTE BIOLOGY

RESEARCH INTERESTS

- Biological imaging
- Electron microscopy
- Inflammation
- Leukocyte biology
- Platelets
- Wound healing
- Obesity
- Metabolic syndrome
- Ocular surface
- Cornea

RESEARCH OPPORTUNITIES FOR TRAINEES

- Mechanisms of platelet extravasation in the injured cornea
- Diet-induced obesity and its effect on corneal wound healing

ALAN BURNS, PhD
DAVID CORRY, MD

ACADEMIC APPOINTMENT
Professor,
Department of Medicine,
Section of Immunology, Allergy and Rheumatology,
Baylor College of Medicine

ADDITIONAL TITLE
Fulbright Endowed Chair in Pathology,
Pathology & Immunology and Medicine,
Baylor College of Medicine

CONTACT INFORMATION
dcorry@bcm.edu

PRIMARY DEPARTMENT AND SECTION
MEDICINE - IMMUNOLOGY, ALLERGY AND RHEUMATOLOGY

RESEARCH INTERESTS
- Asthma
- Immunity
- Fungi
- MicroRNAs
- Alzheimer’s Disease
- Colitis

RESEARCH OPPORTUNITIES FOR TRAINEES
- Fungal pathogenesis of allergic airway disease
- Fungal pathogenesis of chronic cerebritis and dementia
- MicroRNA-dependent control of inflammatory lung disease
- Design and testing of novel antifungal agents

RELEVANT PUBLICATIONS


MIGUEL A. CRUZ, PhD

ACADEMIC APPOINTMENT
Professor, Departments of Medicine, Pediatrics, Molecular Physiology & Biophysics, Baylor College of Medicine

CONTACT INFORMATION
miguelc@bcm.edu

ADDITIONAL TITLES
Research Health Scientist, Research Service Line, Michael E. DeBakey VA Medical Center

Co-Director, Center for Translational Research on Inflammatory Diseases (CTRID), Michael E. DeBakey VA Medical Center

PRIMARY DEPARTMENT AND SECTION
MEDICINE - CARDIOVASCULAR RESEARCH: THROMBOSIS RESEARCH

RESEARCH INTERESTS
• Thrombosis
• Inflammation
• von Willebrand factor
• Vimentin Platelet adhesion
• Extracellular hemoglobin and thrombosis

RESEARCH OPPORTUNITIES FOR TRAINEES
• Role of free hemoglobin in thrombosis in ECMO/LVAD
• Molecular mechanisms of thrombo-inflammatory diseases

RELEVANT PUBLICATIONS


FARRAH KHERADMAND, MD

ACADEMIC APPOINTMENTS
Professor,
Department of Medicine,
Section of Pulmonary Medicine,
Baylor College of Medicine

Nancy Chang, Ph.D. Endowed Professorship for the Biology of Inflammation Center,
Co-Director of Physician Scientist Training Program (CSTP),
Baylor College of Medicine

ADDITIONAL TITLE
Co-Director of Lung Precision Oncology Program (LPOP), Pulmonary and Critical Care, Medical Service Line, Michael E. DeBakey VA Medical Center

CONTACT INFORMATION
farrahk@bcm.edu

PRIMARY DEPARTMENT AND SECTION
MEDICINE - PULMONARY, CRITICAL CARE, AND SLEEP MEDICINE

RESEARCH INTERESTS
- Immune cells in lung disease: COPD and asthma
- Inflammation and biomarkers in the lungs
- Models of lung cancer

RESEARCH OPPORTUNITIES FOR TRAINEES
- Lung immunity under normal or diseased conditions
- Immune responses to lung tumors

RELEVANT PUBLICATIONS


ACADEMIC APPOINTMENT
Associate Professor, Department of Pediatrics, Division of Pediatric Critical Care Medicine, Baylor College of Medicine

ADDITIONAL TITLE
Research Scientist, Center for Translational Research on Inflammatory Diseases (CTRID), Michael E. DeBakey Veterans Affairs Medical Center

CONTACT INFORMATION
flam@bcm.edu

PRIMARY DEPARTMENT AND SECTION
PEDIATRICS - CRITICAL CARE

RESEARCH INTERESTS
- Platelets
- Neutrophils
- Endothelium
- Sepsis
- Thrombosis

RESEARCH OPPORTUNITIES FOR TRAINEES
- Novel drug/peptide development to combat viral adhesion and inflammation
- Testing novel microfluidic devices for apheresis in vivo and in vitro
- Identifying the role of platelet-leukocyte-endothelial interactions in liver diseases

RELEVANT PUBLICATIONS


SEAN MARRELLI, PhD

PRIMARY DEPARTMENT

NEUROLOGY

RESEARCH INTERESTS

- Vascular biology
- Stroke
- Thrombosis

RESEARCH OPPORTUNITIES FOR TRAINEES

- Regulation of cerebral blood flow in healthy and post-stroke conditions
- Therapeutic targeting of post-stroke thrombosis
- Novel methods of promoting therapeutic hypothermia following stroke

RELEVANT PUBLICATIONS


TRUNG NGUYEN, MD

ACADEMIC APPOINTMENT
Associate Professor, Department of Pediatrics, Division of Pediatric Critical Care Medicine, Baylor College of Medicine

ADDITIONAL TITLE
Staff Physician, Pediatric Critical Care Medicine, Texas Children's Hospital

CONTACT INFORMATION
trungn@bcm.edu

PRIMARY DEPARTMENT AND SECTION
PEDIATRICS - CRITICAL CARE

RESEARCH INTERESTS
- Multiple organ dysfunction syndrome
- Thrombosis
- Sepsis
- Immune dysregulation

RESEARCH OPPORTUNITIES FOR TRAINEES
- Sepsis – induced coagulopathy
- Sepsis – induced multiple organ dysfunction syndrome

RELEVANT PUBLICATIONS


ACADEMIC APPOINTMENT
Associate Professor, Department of Medicine, Section of Pulmonary, Critical Care, and Sleep Medicine, Baylor College of Medicine

ADDITIONAL TITLE
Staff Physician, Pulmonary and Critical Care, Medical Service Line, Michael E. DeBakey VA Medical Center

CONTACT INFORMATION
lpandit@bcm.edu

LAVANNYA PANDIT, MD, MS

PRIMARY DEPARTMENT AND SECTION
MEDICINE - PULMONARY, CRITICAL CARE, AND SLEEP MEDICINE

RESEARCH INTERESTS
- Physiologic and molecular mechanisms of pulmonary vascular disease
- Pulmonary hypertension
- COVID-19 clinical trials and mechanisms of hypoxemic respiratory failure and inflammation

RESEARCH OPPORTUNITIES FOR TRAINEES
- Anatomic microniches and their contribution to vascular remodeling in pulmonary hypertension
- COVID-19 Therapeutic Interventions and Vaccines
- Neutrophil Exosomes: New Pathogenic Entities in COPD
- Lung precision oncology

RELEVANT PUBLICATIONS


ANTONY RODRIGUEZ, PhD

ACADEMIC APPOINTMENT
Assistant Professor, Department of Medicine, Section of Immunology, Allergy & Rheumatology, Baylor College of Medicine

ADDITIONAL TITLES
Graduate Faculty Member, Immunology & Microbiology Graduate Program, Baylor College of Medicine
Graduate Faculty Member, Development, Disease Models & Therapeutics Graduate Program, Baylor College of Medicine

CONTACT INFORMATION
antonyr@bcm.edu

PRIMARY DEPARTMENT AND SECTION
MEDICINE - IMMUNOLOGY, ALLERGY, AND RHEUMATOLOGY

RESEARCH INTERESTS
- COPD
- Interstitial lung disease
- MicroRNAs
- Alveolar type 2 progenitor stem cells
- Lung Inflammation

RESEARCH OPPORTUNITIES FOR TRAINEES
- MicroRNAs regulation in COPD and interstitial lung disease
- Mechanism of microRNAs in Alveolar type 2 progenitor stem cells
- MicroRNAs in interstitial lung disease

RELEVANT PUBLICATIONS


ACADEMIC APPOINTMENT
Professor and Vice Chair for Research, Department of Medicine, Section of Pulmonary, Critical Care, and Sleep Medicine, Baylor College of Medicine

ADDITIONAL TITLES
Deputy Associate Chief of Staff for Research, Michael E. DeBakey VA Medical Center

CONTACT INFORMATION
rrumbaut@bcm.edu

RELEVANT PUBLICATIONS


PRIMARY DEPARTMENT AND SECTION
MEDICINE - PULMONARY, CRITICAL CARE, AND SLEEP MEDICINE

RESEARCH INTERESTS
- Microcirculation
- Inflammation
- Thrombosis

RESEARCH OPPORTUNITIES FOR TRAINEES
- Microvascular thrombosis in experimental sepsis
- Mechanisms of platelet-endothelial interactions in inflammation
- Role of platelets in inflammation

ROLANDO RUMBAUT, MD, PhD
SARAH E.
SARTAIN, MD

ACADEMIC APPOINTMENT
Assistant Professor,
Department of Pediatrics,
Section of Hematology and Oncology,
Baylor College of Medicine

ADDITIONAL TITLE
Director,
Hemostasis and Thrombosis Program,
Texas Children’s Hospital

CONTACT INFORMATION
sarah.sartain@bcm.edu

PRIMARY DEPARTMENT AND SECTION
PEDIATRICS - HEMATOLOGY AND ONCOLOGY

RESEARCH INTERESTS
- Thrombosis
- Inflammation
- Complement
- von Willebrand Factor

RESEARCH OPPORTUNITIES FOR TRAINEES
- Investigating non-canonical mechanisms of alternative complement pathway activation in thromboinflammation
- Investigating the interaction of complement and von Willebrand factor

RELEVANT PUBLICATIONS


PERUMAL THIAGARAJAN, MD

PRIMARY DEPARTMENTS AND SECTIONS

PATHOLOGY AND IMMUNOLOGY

MEDICINE - HEMATOLOGY AND ONCOLOGY

RESEARCH INTERESTS

- Hemostasis
- Platelets
- Lupus anticoagulant

RESEARCH OPPORTUNITIES FOR TRAINEES

- Transbilayer movement of anionic phospholipids in hemostasis: causes and consequences
- Mechanism of hypercoagulable state in Lupus anticoagulant/antiphospholipid antibody syndrome
- Utilization of cloned antibodies, patient samples and β2-glycoprotein I-deficient mice
- Investigate unexplained bleeding and thrombotic disorders to understand the control mechanisms in hemostasis
- Testing hypothesis that defective clearance of phosphatidylserine-expressing microvesicles and mitochondria predispose to the procoagulant state

RELEVANT PUBLICATIONS


BARBARA TRAUTNER, MD, PhD

ACADEMIC APPOINTMENTS
Professor, Department of Medicine
Baylor College of Medicine

ADDITIONAL TITLES
Director, Michael E. DeBakey VA Network of Dedicated Enrollment Sites (NODES) Program, Michael E. DeBakey VA Medical Center
Deputy Associate Chief of Staff for Clinical Research, Michael E. DeBakey VA Medical Center
Investigator, Center for Innovations in Quality, Effectiveness and Safety (IQuEst), Michael E. DeBakey VA Medical Center

CONTACT INFORMATION
Trautner@bcm.edu

PRIMARY DEPARTMENT AND SECTION
MEDICINE - INFECTIOUS DISEASES AND HEALTH SERVICES RESEARCH

RESEARCH INTERESTS
- Urinary tract infections
- Healthcare-associated infections
- Antimicrobial stewardship
- Bacteriophage
- Asymptomatic bacteriuria

RESEARCH OPPORTUNITIES FOR TRAINEES
- AHRQ R01: Reducing urine culture contamination in primary care
- AHRQ R01: reducing use of antibiotics without a prescription among outpatients in a safety net healthcare system
- AHRQ R18: A randomized, controlled trial of how to implement antibiotic stewardship for ASB
- VA RR&D and Neilsen Foundation: Bacteriophage to treat multidrug-resistant UTI in persons with spinal cord injury

RELEVANT PUBLICATIONS


Role of platelet signaling in lung cancer metastasis
Platelet phosphatases in inflammation
MEDICINE - THROMBOSIS
Platelets
Endothelial cells
Phosphoprotein phosphatase
Cancer metastasis
Sepsis

RESEARCH OPPORTUNITIES FOR TRAINEES
Role of platelet signaling in lung cancer metastasis
Platelet phosphatases in inflammation

RELEVANT PUBLICATIONS


ACADEMIC APPOINTMENT
Professor, Department of Medicine, Section of Endocrinology, Diabetes and Metabolism, Baylor College of Medicine

CONTACT INFORMATION
dennis.villareal@bcm.edu

PRIMARY DEPARTMENT AND SECTION
MEDICINE - ENDOCRINOLOGY, DIABETES AND METABOLISM

RESEARCH INTERESTS
- Sarcopenia
- Sarcopenic obesity
- Frailty

RESEARCH OPPORTUNITIES FOR TRAINEES
- Role of weight loss and exercise therapies in reversing sarcopenic obesity and frailty
- Mechanisms for the reversal of sarcopenic obesity and frailty by intensive lifestyle interventions
- Body composition and bone quality changes in response to intensive lifestyle intervention in older adults with obesity

RELEVANT PUBLICATIONS


QIZHI CATHY YAO, MD, PhD

ACADEMIC APPOINTMENTS
Professor, Department of Surgery, Division of Surgical Oncology, Baylor College of Medicine
Professor, Department of Molecular Virology & Microbiology, Baylor College of Medicine
Professor, Department of Pathology & Immunology, Baylor College of Medicine
Professor, Department of Pharmacology, Baylor College of Medicine

RELEVANT PUBLICATIONS


ACADEMIC APPOINTMENTS
Professor, Department of Surgery, Division of Surgical Oncology, Baylor College of Medicine
Professor, Department of Molecular Virology & Microbiology, Baylor College of Medicine
Professor, Department of Pathology & Immunology, Baylor College of Medicine
Professor, Department of Pharmacology, Baylor College of Medicine

RESEARCH INTERESTS
- Pancreatic cancer pathogenesis and therapy
- Virus-like particles (VLPs) vaccine and cancer immunotherapy
- Modulation of pancreatic cancer microenvironment for effective treatment

RESEARCH OPPORTUNITIES FOR TRAINEES
- Stratification of Pancreatic Cancer Subpopulations for Effective Immunotherapy
- Mesothelin mechanism of action in pancreatic cancer tumor microenvironment
- Role of fibrinogen in pancreatic cancer pathogenesis

CONTACT INFORMATION
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ADDITIONAL TITLE
Lead Health Research Scientist, Center for Translational Research on Inflammatory Diseases (CTRID), Michael E. DeBakey VA Medical Center
ANDREW YEE, PhD

ACADEMIC APPOINTMENT
Assistant Professor, Department of Pediatrics, Section of Hematology-Oncology, Baylor College of Medicine

CONTACT INFORMATION
ayee@bcm.edu

PRIMARY DEPARTMENT AND SECTION
PEDIATRICS - HEMATOLOGY AND ONCOLOGY

RESEARCH INTERESTS
- Hemostasis
- Thrombosis
- Inflammation
- von Willebrand factor

RESEARCH OPPORTUNITIES FOR TRAINEES
- Functional genomics of von Willebrand factor
- Cell type specific roles of von Willebrand factor
- Role of free hemoglobin in thrombosis
- Non-canonical activation of complement pathways

RELEVANT PUBLICATIONS


ACADEMIC APPOINTMENT

Professor, Department of Pediatrics, Section of Hematology & Oncology, Baylor College of Medicine

Professor, Department of Molecular Virology and Microbiology, Baylor College of Medicine

Professor. Department of Pathology & Immunology, Center for Cell and Gene Therapy, Baylor College of Medicine

ADDITIONAL TITLES

Director, Translational Biology and Molecular Medicine (TBMM) Graduate Program

Director, Translational Research Laboratories, Center for Cell and Gene Therapy

CONTACT INFORMATION

crooney@bcm.edu

CLIONA ROONEY, PhD

PRIMARY DEPARTMENT AND SECTION

PEDIATRICS - HEMATOLOGY AND ONCOLOGY

RESEARCH INTERESTS

- T-cell immunotherapy for virus-associated diseases and malignancies
- Improving the function and survival of T-cell immunotherapies
- Virus-specific T-cells
- Overcoming CAR T-cell mediated toxicity

RESEARCH OPPORTUNITIES FOR TRAINEES

- Enhancement of CAR-modified Epstein-Barr virus-specific T-cells in the patient using epigenetic activation of EBV
- Targeting the tumor environment to enhance therapeutic T-cell functions

RELEVANT PUBLICATIONS

