

Davidson Research Network Mentors and Sites 2021

Please note: Several mentors have agreed to support returning Davidson students whose opportunities were cancelled due to COVID-19 in the summer of 2021. These mentors are indicated with an asterisk (). Students may select these mentors as alternates but should select their mentor from the list of mentors without an asterisk.
Thank you for your patience and understanding.*

1. Anil K. Sood, M.D. (Davidson Alumnus)

Professor and Vice Chair for Translational Research
Departments of Gynecologic Oncology, Reproductive Medicine, and Cancer
Biology

Director, Ovarian Cancer Research Program

M.D. Anderson Cancer Center

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Lab manager: Nick Jennings

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Website: http://faculty.mdanderson.org/Anil_Sood

Research Focus

Gynecologic Cancer

Projects

RNA Interference

Non-coding RNA work

Angiogenesis

Influence of stress hormones

Techniques

RT-PCR

Protein analysis

Animal work

Immunohistochemistry

2. John McDevitt, Ph.D.

Chair, Department of Biomaterials and Biomimetics
New York University College of Dentistry
433 First Avenue, 8th floor
New York, N.Y. 10010
212-998-9204 office
212-995-4244 fax
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Research Focus

Development of lab-on-a-chip biosensors that will allow point of care diagnostic testing of human disease

Projects

- Bioengineering of lab-on-a-chip biosensors
- Biomarker discovery for various diseases
 - Cardiac disease
 - Various cancers
 - Substance abuse
 - Diabetes

Techniques

- Luminex assay for disease markers
- Engineering processes for nanochips
- Development of alpha and beta prototypes of chips and analyzers

3. *Tom Patterson, MD (2020 Student Priority)

Division Head-Infectious Disease

Department of Medicine

University of Texas Health Science Center

7703 Floyd Curl Drive

San Antonio, Texas 78229-3900

Contact through Spencer Redding, DDS, MEd (Davidson Alumnus '72)

Phone: 210-21302721

Email: redding@uthscsa.edu

(Best contact is Dr. Redding's Email or phone)

Website: www.sacmm.org

Research Focus

Medical Mycology (Fungal pathogens that cause human disease)

Projects

Diagnostic testing

Fungal resistance to current treatments

Animal models of fungal infections

Evaluation of new antifungal agents

Techniques

In vivo animal studies

RT-PCR

Antifungal susceptibility testing

4. Marty Javors, Ph.D.

Professor of Psychiatry and Pharmacology
University of Texas Health Science Center
7703 Floyd Curl Drive
San Antonio, Texas 78229-3900
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Research Focus

Biological Psychiatry/Pharmacology
Projects

Measuring biomarkers for psychiatric disorders
Analysis of drugs of abuse
Development of drug delivery solutions

Techniques

Mass spectrometry
Drug measurement

5. Andrew Bazemore MD MPH (Davidson Alumnus)

Senior Vice President for Research and Policy
American Board of Family Medicine
Co-director Center for Professionalism & Value in Healthcare
1016 16th Street NW, Suite 700
Washington, D.C. 20036
Also, Departments of Family Medicine, Georgetown University, Virginia
Commonwealth University and University of Cincinnati; Division of Health
Policy, George Washington University

Phone: 202-600-9447
Email: abazemore@theabfm.org

Website: <https://www.professionalismandvalue.org>

Research Focus:

- Health Workforce
- Primary Care Economics
- Needs Assessment
- Geospatial Analytics in Primary Health Care
- Social Accountability in Medical Education
- Integrated Primary Care

6. *Neil Alexis (2020 Student Priority)

Professor, Dept. of Pediatrics
Director of the Airway Immunobiology Laboratory at the UNC Center for
Environmental Medicine, Asthma, and Lung Biology (CEMALB)
University of North Carolina School of Medicine
US EPA Human Studies Facility
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Research Focus

Biology of the central airways, specifically trying to understand the cellular and biochemical host defense functions that occur in that region of the lung.

Innate and acquired immune responses in normal healthy people as well in individuals with pre-existing airway diseases such as asthma, chronic obstructive pulmonary disease (COPD) and cystic fibrosis (CF).

Immune-inflammatory pathophysiology of lung disease and how inhaled irritants affect patients with lung disease

Environmental exposure studies with the Environmental Protection Agency using state of the art exposure chambers

7. David Walker, MD (Davidson Alumnus)

Professor Department of Pathology
Executive Director, Center for Biodefense and Emerging Infectious Diseases
The University of Texas Medical Branch
301 University Blvd., Keiller Building
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Research Focus

Pathogenesis of tickborne infectious diseases

Immune function related to these infections with the goal of vaccine development

Techniques

Western Blot

ELISA

PCR

Animal studies

8. *Clyde Wright MD (Davidson Alumnus) (2020 Student Priority)

Assistant Professor
Section of Neonatology
Department of Pediatrics
Children's Hospital Colorado and
University of Colorado School of Medicine

Perinatal Research Center
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Office Phone: 303.724.6564
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There are two applications for this position-one to the Davidson Research Network and one to the GEMS Program at the University of Colorado. They must both be completed to apply to this site. Information about both applications are on the Davidson Research Network page

Research Focus

The contribution of the innate immune response to the pathogenesis of bronchopulmonary dysplasia (BPD) in very low birthweight infants (infants born less than 1500 grams).

BPD, a chronic lung disease of infancy, affects 25% of the very low birthweight infants and leads to significant long term morbidity. BPD results in part from multiple inflammatory and oxidant insults encountered in the perinatal period. The innate immune response to these insults is thought to contribute to the pathogenesis of BPD. The major focus of the research is to further define how the neonatal lung responds to these toxic exposures. Over 100 genes orchestrating the cellular response to these insults are regulated by the transcription factor NF- κ B. Clinical studies have correlated NF- κ B activation in the preterm lung to an increased risk of developing BPD. This lab is working to define how NF- κ B activation contributes to neonatal lung injury and abnormal development.

9. Kelly Carter Nelson MD. Davidson Alumnus

Associate Professor
Department of Dermatology
MD Anderson Cancer Center
The University of Texas
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Office: 713-745-1113
Fax: 713-745-3597

Research Interests: exploring barriers to and options for early melanoma diagnosis, including:
Cost of care impact of provider diagnostic accuracy for melanoma
Barriers to early melanoma diagnosis in the state of Texas
Providing dermoscopy education to enhance provider diagnostic education
Validating non-invasive diagnostic technologies to enhance early melanoma detection

10. *Xu Wu, Ph.D (Tom Horn) (2020 Student Priority)

Associate Professor
Cutaneous Biology Research Center, Massachusetts General Hospital
Harvard Medical School
Charlestown, MA 02129
Phone: 617-726-4438
Fax: 617-726-4453
Email: xwu@cbrc2.mgh.harvard.edu
Lab website: www.xwulab.org

Research focus:
Chemical biology, medicinal chemistry, cell signaling, and protein lipidation

Projects:
*Chemical approaches to study posttranslational protein lipidation and lipid metabolism in cellular processes
*Chemical approaches to dissect signal cross-talking and “rewiring” in degenerative diseases and cancers
*Chemical and functional genomic approaches to explore cellular senescence and terminal differentiation

Techniques
Chemical biology
Functional genomics

**11. *Shadmehr (Shawn) Demehri, M.D., Ph.D. (Tom Horn)
(2020 Student Priority)**

Assistant Professor
Department of Dermatology and MGH Cancer Center
Massachusetts General Hospital
Harvard Medical School
Center for Cancer Immunology
Cutaneous Biology Research Center
Building 149 13th Street, 3rd floor
Charlestown MA 02129
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Email: sdemehri1@mgh.harvard.edu

Webpage:

<http://www.massgeneral.org/cancer/research/researchlab.aspx?id=1648>

Research Focus

The focus of the Demehri laboratory is to determine the role of the immune system in regulating the early stages of cancer development in order to harness its anti-tumor potential for cancer therapy.

Projects

Mechanisms of T cell activation against cancer.
Mechanisms of natural killer (NK) cell recruitment and activation against cancer.
Mechanisms of tumor promotion by the immune system.

Techniques

Immunohistochemistry
Flow cytometry
PCR / qPcr

12. Duke University HIV Program

Dr. Saunders at Duke is able to take one student per session. The research will focus on HIV and will occur in the lab.

Kevin O. Saunders, Ph. D. (Davidson Class of 2005)

Assistant Professor

Director, Laboratory of Protein Expression

Associate Director of Research Duke Human Vaccine Institute

Department of Surgery

Duke University Medical Center

2 Genome Court^[SEP]MSRBII Bldg. Room 4074

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1503^[SEP]Email: kevin.saunders@duke.edu

Website: <https://dhvi.duke.edu/kevin-saunders>

Research Focus

HIV-1 immunity and immunogen design

Projects

Pathogen-specific monoclonal antibody repertoire analysis

Antibody engineering

Antibody recognition of glycans

HIV-1 Envelope design

B cell clonal persistence

Techniques

Illumina MiSeq

RT-PCR

Fast performance liquid chromatography purification

Luminex multiplex immunoassays for cytokines and glycans

Cell culture and transfection

Surface plasmon resonance

ELISA

Flow cytometry

Site-directed mutagenesis

12. Stokes Peebles, M.D. (Davidson class of 1982)

Elizabeth and John Murray Professor of Medicine
Division of Allergy, Pulmonary, and Critical Care Medicine
T-1218 Medical Center North
Vanderbilt University Medical Center
1161 21st Avenue South
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Phone: 615-322-3412
Email: stokes.peebles@vanderbilt.edu
Website: <https://medicine.mc.vanderbilt.edu/person/Ray%20%20Stokes-Peebles>

Research focus:

Lung Inflammation

Projects

Eicosanoid regulation of allergic airway inflammation
Glucagon-like peptide-1 receptor signaling in allergic airway inflammation
Respiratory syncytial virus pathogenesis

Techniques

Flow cytometry
Airway physiology
In vivo animal models of asthma and anaphylaxis
In vivo infection models

14. *Richard M. Peek, Jr., M.D. (Davidson Alumnus) (2020 Student Priority)

Director, Division of Gastroenterology, Hepatology, and Nutrition
Mina Cobb Wallace Chair in Immunology
Professor of Medicine
Professor of Cancer Biology
Professor of Pathology, Microbiology and Immunology
Vanderbilt University Medical Center
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Research Focus

Helicobacter pylori and gastric disease

Projects

Cell signaling/gastric inflammation and cancer
Microbial pathogenesis
Host pathogen interactions

Techniques

PCR/RT-PCR
Protein analysis
Cell and organoid culture
Molecular techniques
Cell imaging
Animal models of gastric cancer

Contact Dr. Spencer Redding for questions: redding@uthscsa.edu