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

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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. Tom Patterson, MD

Division Head - Infectious Disease
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(Best contact is Dr. Redding’s Email or phone)
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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
3. **Brett Ginsburg, Ph.D.**

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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
4. 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
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Research Focus:

- Professionalism in Health Care
- Equity and Social Accountability in Health Workforce and Training
- Value-Based Payment and Measurement
- Access to Care, Geospatial Analytics
- Integrated Primary Care Practice and Delivery
5. Neil Alexis

Professor, Dept. of Pediatrics
Director of the Airway Immunobiology Laboratory at the UNC Center for Environmental Medicine, Asthma, and Lung Biology (CEMALB)
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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
6. David Walker, MD (Davidson Alumnus)

Professor Department of Pathology  
Executive Director, Center for Biodefense and Emerging Infectious Diseases  
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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
Clyde Wright MD (Davidson Alumnus)

Assistant Professor
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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-κB. Clinical studies have correlated NF-κB activation in the preterm lung to an increased risk of developing BPD. This lab is working to define how NF-κB activation contributes to neonatal lung injury and abnormal development.
7. Kelly Carter Nelson MD. (Davidson Alumnus)

Associate Professor
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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
8. Xu Wu, Ph.D (Tom Horn Davidson Alumnus and Contact)

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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
10. Shadmehr (Shawn) Demehri, M.D., Ph.D. (Tom Horn Davidson Alumnus and Contact)

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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
11. Kevin O. Saunders, Ph. D. (Davidson Alumnus)

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Associate Director of Research Duke Human Vaccine Institute
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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 Alumnus)

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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
13. Richard M. Peek, Jr., M.D. (Davidson Alumnus)

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
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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
14. Sallie Permar, M.D., Ph.D. (Davidson Alumnus)

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WCM Permar Lab Website: https://www.permarlabwcm.org/

Research focus

The development of immunologic strategies to eliminate neonatal pathogens – with the ultimate goal of providing every child with a healthy start to life and includes:

- Investigating the natural maternal and infant immune responses that contribute to impeding transmission of vertically transmitted viral pathogens, such as HIV, cytomegalovirus (CMV), and Zika, and how these effective immune responses can best be targeted by vaccine approaches.
- Developing and utilizing nonhuman primate models of vertical virus transmission to perform proof of concept studies to determine whether the vaccine approaches that target the naturally protective immune responses are effective.
- Focusing on both innate and adaptive immune responses at the maternal-fetal interface, including mucosal surfaces and the immunology of breast milk.
15. R. Brad Jones Ph.D.
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Research Focus
HIV-1 persistence and cure research

Projects
Mechanisms of cytotoxic T-cell resistance in HIV reservoirs
Development of mouse model of HIV vaccines
Nanoparticle-mediated targeted delivery of therapeutics
Clinical trials of IL-15 and broadly neutralizing antibodies in people with HIV

Techniques
Cloning cytotoxic T-cells and in vitro assays (killing/recognition)
Bulk and single cell RNA-Seq
Immunological and virological clinical trial endpoints
Flow cytometry
Mouse vaccination studies, and endpoints
Molecular techniques
16. Brad Ellison, MD MS (Davidson Alumnus)

Clinical Director of Orthopedic Adult Reconstruction Operations
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Musculoskeletal Clinical Research Coordinator for Davidson College Pre-Medical Program
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OrthoCarolina Research Institute Director: Christi Cadd (Christi.Cadd@orthocarolina.com)
Atrium Musculoskeletal Research Director: Susan Odum PhD (Susan.Odum@Atriumhealth.org)

Orthopedic Surgery is the medical and surgical discipline focused on treatment of musculoskeletal disease and injury. The OrthoCarolina Research Institute is one of the most prolific clinical research programs in the world, producing more publications, presentations and research studies in musculoskeletal sciences than any other single institution (84 publications in 2021). The experience will have two points of focus that will emphasize both clinical and research activity during the two-month opportunity. The first component will be working alongside leading researchers in analyzing data to contribute to research studies in a manner that would hopefully result in opportunity for authorship on a peer-reviewed publication and presentation at a national Orthopedic meeting. The second component will consist of an in-person opportunity to shadow live surgery in the Operating Room, as well as join in the clinic for direct patient interactions. Collectively, this experience will provide a comprehensive opportunity in Orthopedic Surgery that will generate meaningful clinical research, while also engaging in direct patient care experiences in the operating room and office settings.
17. Maria Blasi, Ph. D. (Duke University)

Maria Blasi, PhD  
Assistant Professor of Medicine  
Division of Infectious Diseases  
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Research Focus

- HIV vaccine development using an integrase defective lentiviral vector (IDLV) as delivery platform to induce durable immune responses.
- Coronavirus vaccine development using IDLV.
- Engineering of monoclonal antibodies against HIV and other viral infections
- HIV persistence in the kidney
- Development of therapeutic strategies against HIV and other viral infections

Techniques

- Cloning
- RT-PCR
- Sequencing
- Cell culture and transfection
- Antibody purification
- ELISA
- ELISPOT
- Flow cytometry
- High Containment BSL-3 work for coronavirus research
- Processing of human samples (fluids and tissues) from people with HIV and SARS-CoV-2
- Animal models (mouse and non-human primate)
18. William Stoops, PhD (Davidson Alumnus)

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Research focus

- Development and testing of novel interventions and outcomes for cocaine use disorder using Phase I, II and III clinical trial methods
- Human behavioral pharmacology of stimulants, opioids, nicotine and alcohol using tightly controlled human laboratory methods
- Identifying risk and vulnerability factors associated with substance use disorders
- Understanding psychosocial, immune and cardiovascular consequences of cocaine use

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