Why should we study kidney disease?

• 37,000,000 Americans have CKD (> 1 in 7)
• Kidney disease - 8th leading cause of death in the US
• Every 24 hours, 350 patients begin dialysis treatments for kidney failure
• 786,000 patients with ESRD
• Each month 3,000 new patients added to the kidney transplant wait list
• Annual Medicare spending in 2018
  • $81 billion - treatment of complications of kidney disease
  • Additional $36.6 billion - Treating patients on dialysis (annual NIH budget at the time was $36.6 billion).

Sources: CDC
(https://www.cdc.gov/kidneydisease/basics.html)
And National Kidney Foundation
Objectives

• Kidney Disease - Major Health Concern in the US
• Leadership and membership
• Mission
• Ongoing activities
NRTC Leadership (2009 – present)

Executive Committee
Timmy Lee, MD (Associate Director)
Kelly Andringa, PhD (Assistant Director)

Paul W. Sanders, MD (Director)

Internal Steering Committee
Tim Garvey, MD (SOHP)
Gary Cutter, PhD (SOPH)
Seth Landefeld, MD (SOM)

External Advisory Committee
Karl Nath (Mayo Clinic)
Peter Igarashi (Minnesota)
Christof Westenfelder (Utah)

Thematic areas
Vascular and epithelial biology related to kidney disease
(Dr. Brad Yoder)
Outcomes and epidemiology of kidney disease
(Dr. Orlando Gutierrez)
Clinical and translational research
(Dr. Michael Allon)
Membership

- 132 members
- 7 schools

- Business
- Nursing
- Engineering
- Health Professions
- Public Health
- Joint Health Sciences
- Medicine
Vision Statement

Improving kidney health through research and education
Tripartite Mission of the NRTC

• Provide a comprehensive interdisciplinary infrastructure to support kidney-related research
• Attract/retain investigators in kidney-related research
• Implement strategies that facilitate faculty interactions
Infrastructure and environment support of kidney-related research at UAB

Large P and U grants
P30 DK079337
U54 DK126087
U54 ES030246

Infrastructure development at UAB

Development of new techniques

Community Engagement
UAB Childhood Cystic Kidney Disease Core Center (UAB-CCKDCC)

PI: Bradley K. Yoder, PhD

1U54DK126087
UAB Research Center of Excellence in Arsenicals
(PI: Mohammad Athar, PhD)

https://sites.uab.edu/arsenicals/
1U54ES030246
Research infrastructure

• Partner with other school funding mechanisms, such as HSF-GEF, to support infrastructure
  • Bubble room (James George, Surgery)
  • Arcturus Laser Capture Microdissection system (Frances Lund, Micro)
  • Laboratory Automation: Enhancing Biochemical Genetic Clinical and Research Services (Dan Sharer, Genetics)

• Supported several S10 applications (Rowe, others)
• Supported several large NIH P and U awards (eg, Nita Limdi’s eMERGE, Ken Saag’s CORT application, others)
The core continues to use this isolation facility for investigators from around the country.
New techniques - Implantation of an optical window to permit kidney imaging in live mice over time

- Analyze tubule flow
- Changes in cilia behavior
- Alterations in innate and adaptive immune cell (bottom, CX3CR1-GFP; CCR2-RFP) interactions with the epithelium following injury and as cyst form.
Clinical Research Infrastructure

- Developed an AKI to CKD clinic (Dana Rizk)
- Refurbished a vascular biology/hypertension research clinic (Eric Judd)
- Facilitated the development of a Telemedicine clinic (Eric Wallace)
- Multidisciplinary Kidney Stone Clinic
- Inherited Kidney Disease Clinic
Community Engagement

- PKD Walk (2014 – Present)
- Equal Access Birmingham (2017 – Present)
- Alabama Kidney Foundation Walkathon – Team UAB
- World Kidney Day – seminars, patient awareness tables, outreach
- Jane Davis, CRNP – Kidney Outreach to Community Partners
- Phun Week – Science with Elementary School kids (Dr. Carmen De Miguel) – American Physiological Society supported event
- Discoveries in the Making – Conversations about science in the community by trainees (Jeremie Lever, Dingguo Zhang, Kasi McPherson, PhD)
- High school summer program for URM schools (Drs. Clare Lyas and Carmen de Miguel)
Tripartite Mission of the NRTC

• Provide a comprehensive interdisciplinary infrastructure to support kidney-related research.

• Attract/retain investigators in kidney-related research

• Design strategies that facilitate faculty interactions
Attract/retain investigators in kidney-related research

Jennifer Pollock, PhD

KURE Program (undergraduates)

Med. Stud. Summer Research Program

NIH Predoctoral T32 grant

NIH Postdoctoral T32 grant

SOM Core Center

Recruitment and Retention

NRTC supports the continuum from undergraduates to faculty
Recruitment / Retention

- Recruitment of faculty with kidney intensive research interests
  - Pediatric Nephrology (Tennille Webb, Michael Siefert, Erica Bjornstadt)
  - Pathology (Sooryanarayana Varambally)
  - Cardiovascular Diseases (Pankaj Arora)
  - Adult hypertension and nephrology (Jennifer and David Pollock, Ed Inscho, Takamitsu Saigusa)
  - Allergy and Immunology (Tony Merriman)
  - Urology (Tanesia Mitchell)
- Retention: Orlando Gutierrez, Timmy Lee, Michal Mrug
Tripartite Mission of the NRTC

• Provide a comprehensive interdisciplinary infrastructure to support kidney-related research.
• Attract/retain investigators in kidney-related research
• Design strategies that facilitate faculty interactions
Facilitate faculty interactions

- Academic enrichment program
- Partnerships in Intramural Research
- Promote MPI grant applications
Academic Enrichment
(A few highlights)

• Co-Sponsored five annual Renal Symposia at UAB and live-streamed to NRTC partners
  • NRTC also provides funding for the James A. Schafer lectureship, which honors the late Dr. Schafer.
• In honor of the late Dr. Dale Benos, the NRTC established the Benos Scholarship Award, which recognizes the postdoctoral trainee who has made the greatest progress during the first year. Recipients include Drs. Tanecia Mitchell, Colin Reily, Carmen de Miguel, Crystal Farrington, Megan Rollins, Cozette A. Killian.
• Support the Dale Benos Memorial Lecture (8th annual seminar was May 12, 2021)
• Supported a Fabry and PKD symposium and a Hypertension & Hyperuricemia Mini-Symposium at UAB
• Supported the UAB Metabolomics Workshops/symposia
• NRTC weekly seminar series
• Annual NRTC Core Concepts in Kidney Research series
• Annual Thomas E. Andreoli lectureship
Partnerships in Intramural Research

• UAB Minority Health & Health Disparities Research Center – co-sponsored pilot in Disparities in Kidney-Related Diseases (Dr. Clare Lyas)

• UAB CCTS Pilot Program (eg, Dr. Timmy Lee, who just received the NOA for an R01 for this work)

• Philanthropy
  • Tolwani Innovation Awards
  • UAB NRTC Anderson Innovation Awards
  • UAB NRTC Anderson COVID-19 Pilot Awards

• UAB O’Brien Center – Pilot and Catalyst Program
Success of the O’Brien Pilot and Catalyst Program at UAB (2013-present)

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<th>Extramural Funding Mechanism</th>
<th>Pilot Program</th>
<th>Catalyst Program</th>
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Kelly Hyndman, Ph.D.
Pilot and Catalyst Award recipient - now with 2 R01s
UAB Nephrology Research and Training Center
Anderson Innovation Awards for Multi-investigator Research

The UAB Nephrology Research and Training Center invites proposals for interested faculty to participate in the Anderson Innovation Awards.

The Anderson family has generously designated funds to the UAB Division of Nephrology to support innovative, high-impact and cutting-edge multi-investigator research projects. While co-investigators may be from outside of the division, the Principal Investigator must have a primary appointment in the Division of Nephrology.

Investigators may propose research involving pathophysiology, basic mechanisms, therapeutic approaches, translational studies and clinical outcomes related to kidney disease. The overall intent of this program is to provide seed monies for team research so that they may obtain subsequent extramural funding. If funded, the proposed start date for the grants will be May 1, 2016. Up to two projects may be funded based on merit. Awards will be evaluated based on National Institutes of Health standards of review and will be scored on the innovation of the proposal as well as the probability of extramural funding and high-impact publications.

These funds are intended to support areas focused on Team Science/Multi-Investigator Projects. These will be innovative projects designed to expand "team" research in kidney diseases.

**TERMS OF SUPPORT**

1. Up to $100,000 per year in project-related direct costs can be requested for the proposal, including appropriate staff salary support and supplies. No indirect costs will be allowed. Funds also may be used to facilitate core services toward the research proposed at other institutions but subawards are not allowed.

2. The successful applicants will be required to submit a progress report at the end of the first year of the funding period. The award is renewable for a second year dependent on the progress from the first year of funding.

**SUBMISSION OF APPLICATIONS**

Interested faculty should submit an application (four total pages for Specific Aims, Significance, Innovation and Approach), NIH format biosketches and budget pages due by 5 p.m. March 1, 2016. The application should also include benchmarks/milestones (1/2 to 1 page). These applications should use PHS Form 398, conform to the NIH instructions for submitting research grant applications, and must be submitted as a single PDF document.

**APPLICATION DEADLINES AND DATES**

- Application deadline: March 1, 2016 at 5 PM. Please send an electronic copy via email to andringa@uab.edu.
- Decision on initial applications: April 1, 2016
- Anticipated start date of funding: May 1, 2016

For additional information, please contact Dr. Anupam Agarwal (agarwal@uab.edu), Dr. Paul Sanders (psanders@uab.edu), or Dr. Kelly Andringa (andringa@uab.edu).
Functions of the NRTC

- Multi-PI Extramural Grants
- Core Facilities
- Training (R25, T32) Grants
- Enrichment Activities
- Pilot/Catalyst Grants Program
- Community Outreach
- Recruitment/Retention
- Philanthropy
- Patient Care
Benchmarks of success

• From 2011 to the present, NRTC membership increased about 58%.
• Provides a highly collaborative, intellectual environment
• Extramural funding for research in kidney disease at UAB increased 139%.
  • The O’Brien Center P30 received an exceptional score of 12 in 2018 and was funded for years 11-15.
  • The UAB Childhood Cystic Kidney Disease Core Center (UAB-CCKDCC) (PI: Yoder) was funded by an NIH U54 in 2020. (NIH Review spoke highly of involvement with the NRTC.)
• Increased extramural funding for training in kidney disease research
  • The Kidney Undergraduate Research Experience (KURE) (PI: J. Pollock) received 5 years of NIH funding (5 R25DK115353) in 2018.
  • A PRedOctoral phd and md research training in TEams (PROmoTE) training grant (contact PI: J. Pollock, PI: Gutierrez) was funded for five years by the NIH in 2019 (5 R25DK112731).
  • A PRedoctoral Interdisciplinary training in renal physiology and MEDicine (PRIME) (PI: J Pollock) was funded by the NIH for 5 years in 2018 (5 T32DK116672).
  • The NIH postdoctoral T32 training grant (PI: Agarwal) was funded in 2018 for years 31-35 (3 T32DK007545).
• UAB Small Animal Microsurgical Core Facility (PI: James George) is an intramurally funded SOM Core Facility
• Partnerships with multiple programs in funding intramural research