



# UAB-UCSD O'Brien Center for Acute Kidney Injury Research

NIH P30 DK079337 <http://www.OBrienAKI.org>



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Associate Directors: Paul W. Sanders, MD, University of Alabama at Birmingham  
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## Abstract

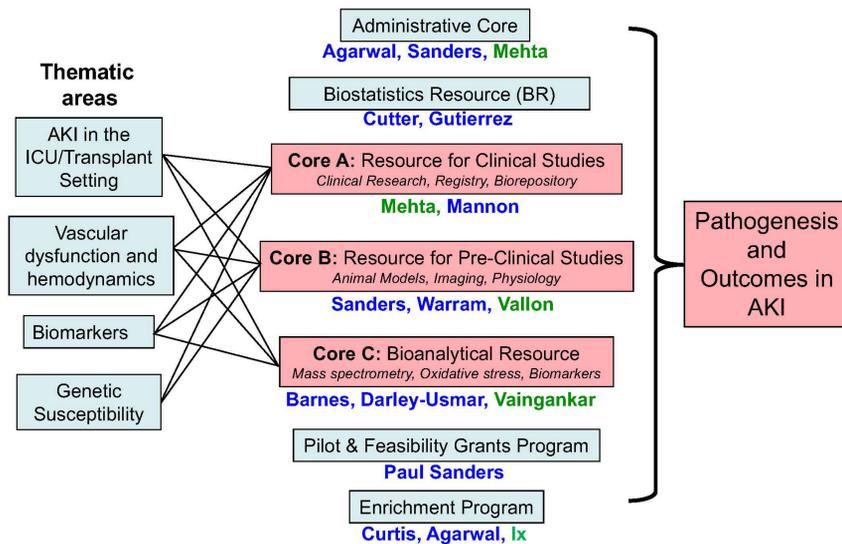
The University of Alabama at Birmingham (UAB)-University of California at San Diego (UCSD) O'Brien Center for AKI (NIH P30 DK079337) has established an interdisciplinary center of excellence in AKI-related research. The main objective of this core center is to provide scientifically rigorous, cost-effective, state-of-the-art methodologies to address questions that will advance our understanding of the pathophysiology, enhance our diagnostic specificity and expand our preventive and therapeutic approaches for AKI.

### This objective will be implemented in three specific aims:

- (i) Facilitate hypothesis-driven research through shared core facilities and leverage these core technologies into new projects, interactions and collaborations in AKI-related research,
- (ii) Foster multidisciplinary interactions among UAB-UCSD investigators and create an extended research base of investigators from multiple institutions at the regional, national and international levels,
- (iii) Provide, through the Biomedical Research Cores, a Pilot and Feasibility Program (PAF) and Scientific Enrichment program, the intellectual resources and the research infrastructure, to attract new and established investigators to AKI research.

The Center investigators will benefit from access to a set of three complementary Biomedical Research Cores that will integrate existing intellectual and technological resources of UAB and UCSD and provide a defined set of services that will facilitate the research of investigators pursuing AKI-related basic and clinical research. The Center includes a Biostatistical Resource that will provide support to the cores and pilot projects. These cores and the investigator base of clinical and basic investigators will provide unique expertise that is critical for innovative and productive research in AKI to advance our knowledge in this field.

## Overview



## Administrative Core

The administrative core coordinates and integrates the diverse activities of the UAB-UCSD O'Brien center, facilitates interactions and collaborations among the research base, ensures quality control of the core services and promotes scientific development. The administrative core includes a Biostatistical Resource (BR), which provides statistical support for the cores and research and pilot projects of the O'Brien Center. The Director and Co-Directors are advised by an Internal Advisory Committee. In addition, the center leadership is advised by an External Advisory Committee, a Pilot and Feasibility Program Committee and a Scientific Advisory Committee. The Administrative Core oversees the Pilot and Feasibility Studies Program and is responsible for evaluating the Pilot Program's efficacy in promoting high quality AKI-related basic and clinical science research that leads to extramural funding and publications. In addition, the Administrative Core organizes and supports an enrichment program consisting of seminars with visiting speakers, journal clubs/work-in progress sessions, mini-sabbaticals for furthering scientific knowledge and learning techniques and an Annual Comprehensive Research Symposium. The Administrative Core enables optimal coordination of the various Core Center components through its committees, regularly scheduled meetings, seminar series, web-based communication mechanisms and video conferences between participating institutions.

## Biostatistical Resource

Director: Gary Cutter, PhD, UAB (cutterg@uab.edu)  
Co-Directors: Orlando Gutierrez, MD, UAB, Hemant Tiwari, PhD, UAB

The primary objective of the BR is to provide statistical and bioinformatics support to the research projects, pilot projects and other Cores of the O'Brien Center.

### The specific aims of the BR are to:

- Provide statistical expertise in the conceptualization and design of projects
- Provide expertise in data management and analysis of research project data
- Assist with the preparation of project reports and presentations and manuscripts
- Assist the Administrative Core in scientific review of projects
- Contribute relevant statistical developments via publication and presentation

## Core A

Clinical Studies of AKI  
Director: Ravindra L. Mehta, MD, UCSD (rmehta@ucsd.edu)  
Co-Director: Roslyn Mannon, MD, UAB (rmannon@uab.edu)

The objective of the Clinical Research Core is to provide resources to enable interdisciplinary clinical investigation in AKI that will advance our understanding of the natural history and pathophysiology of human AKI, ascertain genetic contributions for susceptibility and prognosis of AKI, enhance our diagnostic specificity and expand our preventive and therapeutic approaches for this disorder. This objective will be implemented in three specific aims:

- (i) To facilitate and support the design and conduct of **clinical research** in AKI with appropriate tools to collect and record information for detailed phenotypic characterization of AKI patients
- (ii) Provide access to **comprehensive datasets** of well characterized patients with and without AKI from multiple sources for data mining and outcomes research;
- (iii) Provide a **biological sample repository** that includes human kidney tissue, blood and urine, linked to an accessible clinical database of patients with and without AKI to enable translational research studies.

See flyer for new features for Core A

## Core B

Pre-Clinical Studies of AKI  
Director: Paul W. Sanders, MD, UAB (psanders@uab.edu)  
Co-Directors: Jason Warram, PhD, UAB, Volker Vallon, MD, UCSD, James George, PhD, UAB

The major goals of Core B are to provide investigators with a resource for **animal models, small animal imaging and renal physiology** studies relevant to AKI.

The specific aims of Core B are to:

- 1) provide the facilities and skills to study murine models of AKI,
- 2) maintain a state-of-the-art small animal imaging facility,
- 3) provide the facilities and requisite skills to determine renal physiological changes in AKI.

### This core will specifically provide:

- expertise in the development and training in the use of rodent models of AKI specifically in the setting of ischemia/reperfusion injury, sepsis and renal transplantation,

- a multi-modality small animal imaging core that will provide state-of-the-art molecular imaging, including functional, structural and metabolic imaging using high frequency ultrasonography and microCT, gamma-ray imaging (gamma camera, microSPECT/CT), and optical imaging (bioluminescence and fluorescence)

- a physiology core that will provide expertise for micropuncture techniques and measurements of GFR, tubular reabsorption, renal hemodynamics with assessment of tubuloglomerular feedback, metabolic assessment of kidney oxygen consumption and nitric oxide in rodents.

- provide technical expertise for the isolation of primary renal and vascular cells in culture from rodents.

## Core C

Bioanalytical Resource  
Director: Stephen Barnes, PhD, UAB (sbarnes@uab.edu)  
Co-Director: Victor Darley-USmar, PhD, UAB  
Co-Director: Sucheta Vaingankar, PhD, UCSD

The objective of this Core is to provide state-of-the-art mass spectrometry and proteomics support and to provide a comprehensive resource that will allow access to optimized protocols and technology for the detection and characterization of changes occurring in AKI. This aspect will be integrated into a comprehensive educational activity that promotes existing core services, and updates on evolving proteomics technology. Using this approach AKI investigators both within and outside UAB can not only monitor progress of their sample analysis, but also view proteomics data from other experiments analyzed by the Core.

### Aims of this core include:

- Training in proteomics and mass spectrometry approaches
- Consultation for analysis of oxidative stress biomarkers in AKI
- Assays for oxidative stress markers
- Assays for post-translational modification of proteins
- 2D-gel approaches (e.g. CyDye, 2D, DIGE, blue native 2D gels)
- Protein identification by peptide mass fingerprint analysis (MALDI-TOF/TOF MS)
- Confirmation of protein modifications and quantitative analysis (LC-MS/MS)
- Assays for AKI related biomarkers

## Pilot & Feasibility Program

Director: Paul W. Sanders, MD, UAB (psanders@uab.edu)

The objective of the Pilot and Feasibility (PAF) Program is to provide seed funds for new, outstanding, and innovative research proposals related to AKI. These pilot funds will provide eligible investigators with one to two years of support along with the resources necessary to explore investigator-initiated projects related to AKI. The ultimate goal of the UAB-UCSD O'Brien Center PAF program is to provide sufficient resources and training for pilot investigators to pursue additional funding of AKI-related research through extramural mechanisms.

### Eligibility criteria

- New independent investigators (Instructor or Assistant Professor) who do not have current or past NIH research support (R01 level).
- Established investigators who have not worked in the field of AKI but want to explore a novel concept related to AKI or apply their expertise to a problem in this area.

### Solicitation of the Pilot and Feasibility Proposals

Request for Proposals (RFP) will be circulated four months prior to the award date (usually August 1) that will be distributed to all UAB-UCSD faculty by posting in local newsletters, notice boards, and e-mail and distributed to all members of the Extended Research Base by e-mail. A two-phased application process will be used.

## Enrichment Program

Director: Lisa M Curtis, PhD, UAB (lmc Curtis@uab.edu)  
Associate Director: Joachim H. Ix, MD (joix@ucsd.edu)

1. Facilitate interactions between Center members
2. Enhance the pipeline of students interested in careers in academic nephrology
3. Develop the renal scientific expertise of trainees and junior investigators in AKI research, utilizing a portfolio of training programs and didactic coursework designed to enhance kidney-related research across the continuum of research endeavors
4. Work synergistically with existing training grant programs to enhance the environment for these trainees
5. Foster mastering the art of reproducible science to maintain rigor, reproducibility and transparency.
6. Conduct a campus-wide monthly O'Brien Center Lecture Series
7. Sponsor targeted symposia and conferences that respond to the evolving interest of Center members and that introduce new ideas and technologies
8. Provide for new methods development, technology acquisition, and development of novel lines of investigation by sponsoring sabbaticals for investigators and by utilizing workshop-based hands on training.
9. Utilize a web-based interface to facilitate communication and dissemination of information

## Contact information

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