

**Core Use Document**

**To gain access to the Pittsburgh Center for Kidney Research resources, return the following by email to Dr. Thomas Kleyman (**[**kleyman@pitt.edu)**](mailto:kleyman@pitt.edu)) **or Dr. Ora Weisz (**[**weisz@pitt.edu)**](mailto:weisz@pitt.edu))**:**

**• Completed Core Use Document**

**• Your NIH Biosketch**

**• Your NIH-style Other Support information including current and pending grant support**

Principal Investigator:

Institution:

Address:

Phone:

Fax:

Email:

**Using “Xs,” Indicate below the Core resources being requested:**

**\_\_ CORE A: Physiology and Model Systems Core**

\_\_ 1. Microdissection and/or microperfusion of isolated tubules: Measurement of rates of ion transport; Fluorescent functional imaging (pH, intracellular Ca2+, Na/K/Cl ions) to assess live cell function

\_\_ 2. Single isolated tubule real-time PCR, immunoblotting, immunolabeling and/or enzyme/transporter assays

\_\_ 3. Electrophysiologic and functional expression assays of channels and membrane protein in single cell expression system (*Xenopus* oocytes, HEK cells)

\_\_ 4. Electrophysiologic and functional expression assays in organized epithelia (voltage clamp measurements of short-circuit current, TER, capacitance, impedance)

\_\_ 5. Analysis of post-translational modifications of transporters and associated proteins

\_\_ 6. Analysis of protein folding, transit through the secretory pathway, cell surface delivery.

\_\_ 7. Quantitative and qualitative PCR analysis

\_\_ 8. Yeast expression systems for wild type and disease-causing versions of proteins.

\_\_ 9. Functional in vitro assays using yeast derived factors

\_\_ 10. Establish kidney expressing transgenic zebrafish reporter lines for small molecule genetic screens, targeted gene expression studies

\_\_ 11. Use of chemical modulation to relieve cellular stresses and promote repair

\_\_ 12. Assist with design, synthesis, and characterization of novel chemical compounds including evaluation of efficacy in yeast, zebrafish, and organoid model systems

#### **\_\_ CORE B: Animal and Translational Core**

\_\_ 1. Analysis of kidney function including RBF, GFR, electrolyte excretion, as well as analysis of markers of kidney injury, fibrosis, and inflammation.

\_\_ 2. Analysis of cardiovascular function including measurements of acute blood pressure, chronic blood pressure, and cardiac function.

\_\_ 3. Measurements of sympathetic nervous system function including renal nerve recordings, bladder afferent/efferent nerve activity, optogenetic/chemogenetic manipulation of renal nerve function, assessments of renal sympathetic neurotransmission, and measures of neurotransmitter release.

\_\_ 4. Renal metabolomics including analysis of purine metabolomics, biomarkers, as well drug development and pharmacokinetics.

\_\_ 5. HPLC determination of energy molecules and mitochondrial function.

\_\_ 6. Animal models of kidney injury (including AKI) and hypertension and metabolic syndromes.

**\_\_ CORE C: Kidney Imaging Core**

**\_\_ 1.** Preparation, storage, and analysis of fixed kidney and bladder-associated epithelial cells and tissues, including imaging capture modalities (brightfield, DIC, darkfield, confocal) and image analysis (e.g., colocalization and 3D reconstruction)

\_\_ 2. Stereological measurements and 3D reconstruction of organelles, cells, tissues, and organs.

\_\_ 3. Fine structure analysis, immunoEM localization, scanning electron microscopy, ultrathin cyroelectron microscopy, freeze-fracture microscopy

\_\_ 4. Super-resolution light imaging using STED and STORM technologies.

\_\_ 5. Live cell/tissue/organ imaging using ultrafast confocal, TIRF, and two-photon microscopy.

\_\_ 6. Access to validated antibody collection

**\_\_ Request for hands-on training, or for undertaking a formal mini-sabbatical:**

**\_\_ Training/Mini-Sabbatical request for CORE A \_\_ , CORE B \_\_ , CORE C \_\_ .**

**Provide a brief summary of the goal of the project and your proposed studies for which you are requesting use of the Center resources. Please include a description of the relevance to kidney or urologic diseases, epithelial cell biology, or physiology:**

**If requesting a mini-sabbatical, describe your goals of the sabbatical:**