

UAB Small Animal Microsurgical Core Facility

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Abstract

The UAB Small Animal Microsurgical Core Facility (UMCF) was originally established by the Departments of Medicine and Surgery in 2007 with the assistance of an HSF-GEF award to fulfill an acute need for complex rodent microsurgical services in a cost-effective and timely manner on the UAB campus. The UMCF is now supported by the U54 funded UAB-UCSD O'Brien Center for Acute Kidney Injury Research, the Nephrology Research and Training Center (NRTC), The Office of the Vice President for Research and by UAB - School of Medicine. Specific procedures include organ transplantation, models of ischemia reperfusion injury, cannulations, and other microvascular procedures. The core also provides customized surgical services for individual investigators. By providing critical pre-clinical research capabilities, the UMCF serves as a unique venue for collaborations among investigators across unit boundaries on the UAB campus and around the country.



Overview

The primary function of this core is to provide access to complex small animal microsurgical procedures for investigators in a cost-effective and timely manner. Table 1 lists the most common procedures currently offered. It should be noted that some of these procedures are available at only a limited number of institutions in the United States (e.g. orthotopic kidney transplantation). The category "miscellaneous surgical services" includes a variety of other procedures, including (but not limited to) thymectomy, splenectomy, pregnancy-related eclampsia models, and vascular surgery (e.g. testing of vascular biomaterials). The core also offers the use of surgical workstations, which consist of ARP-approved laminar flow hoods, microscopes, an isolation room and gaseous anesthesia delivery systems. The facility is located on the 6th and 9th floors of the Zeigler building with ancillary space on the fourth floor of the Lyons-Harrison building. There are three operating rooms on the 9th floor. Two of these (200 sq. ft. each) include an operating microscope and a video-capture/recording system that is used for documentation and for teaching purposes. The third room (400 sq. ft.) is dedicated to open and low complexity procedures (non-survival surgeries or terminal tissue acquisition). The 6th floor location occupies about 400 sq. ft. of space. This is used in conjunction with primary cell culture isolations performed in a separate space (~900 sq. ft.) on the 4th floor of the Lyons Harrison Building. Animal housing is located on the 8th floor of the Zeigler Building.

Table 1. Procedures / Services

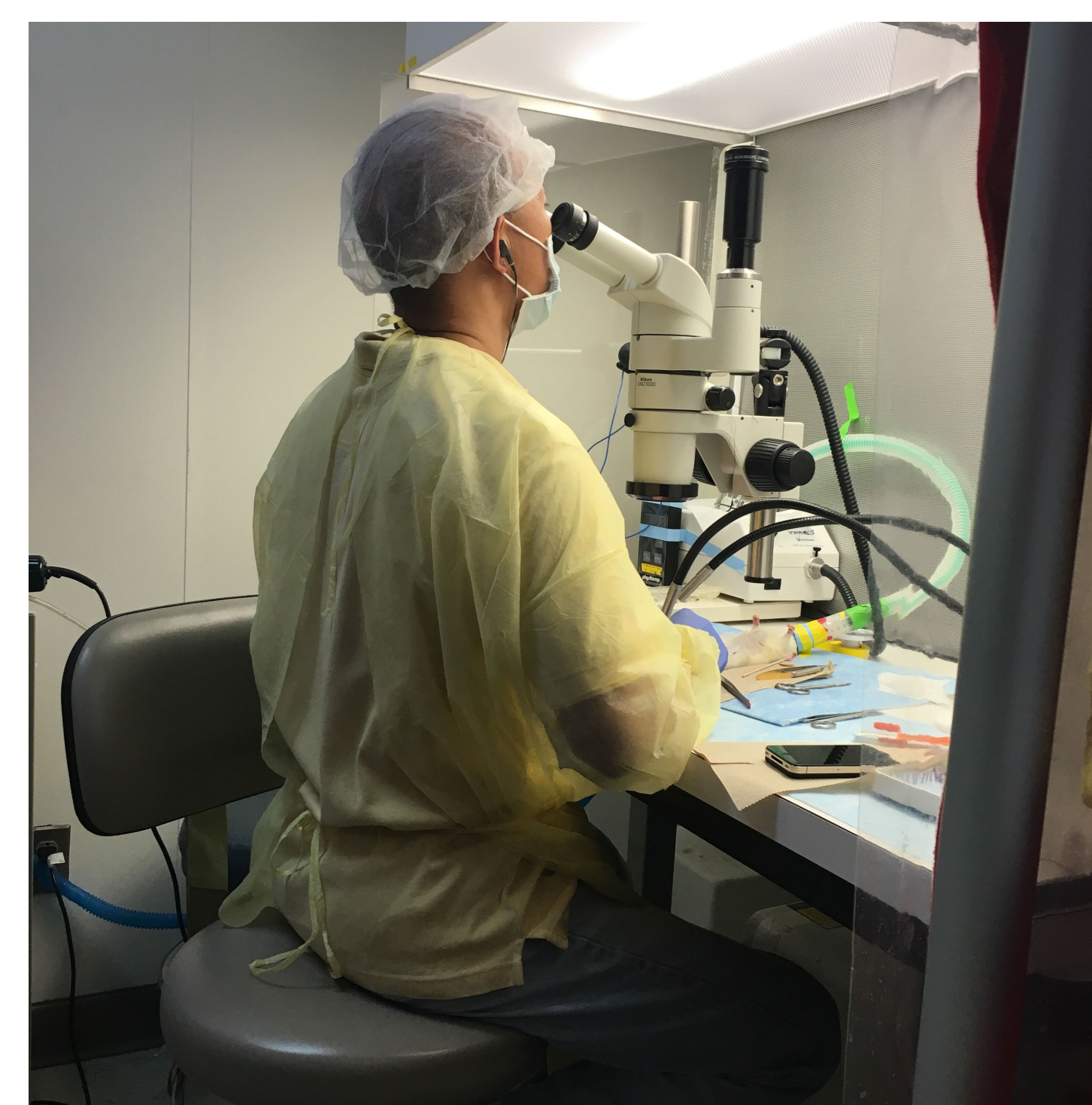
Kidney ischemia/reperfusion (IR)
Orthotopic abdominal aorta transplantation
Orthotopic kidney transplantation
Tail vein injection or venipuncture
Heterotopic heart transplantation
Unilateral Ureteral Obstruction
Arterio-venous fistula (carotid artery to jugular vein)
Use of a microsurgical workstation
Cannulation (indwelling with injection port)
Skin transplant
Misc. surgical services involving body wall penetration
Training
Tissue and blood collection
Cecal ligation and puncture
Stereotaxic surgery is under development

Isolation Facility



For our facility to work effectively with multiple investigators, a priority must be to avoid cross-contamination between animal colonies and to prevent the introduction of new organisms (pathogenic or not) into any colony. We therefore established an isolation facility ("Bubble Room") within the UMCF, with the help of funding from the HSF-GEF award mechanism. This allows animals to be received from myriad animal facilities, subject to the procedure, kept in isolation for limited time without contacting other animal facilities, thus limiting any exposure between colonies during procedures.

Surgical Workstation



UAB Microsurgeons. Dr. Yanlin Jiang (left) and Dr. Zhengqin Yang (right).

Support

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