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**Microsurgery and Preclinical Research Core**

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COMPREHENSIVE TRANSPLANT CENTER

# MICROSURGERY AND PRECLINICAL RESEARCH CORE



## Mission

The Core's mission is to deliver high-quality, technically advanced microsurgical services and preclinical assays that enable and accelerate translational research.

The MPRC supports a broad array of experimental models and techniques, including:

- Complex small animal surgical models, particularly vascular microsurgeries
- Targeted drug delivery systems and immunotherapies. Perioperative diagnostics, including renal and liver function panels, as well as blood gas, etc.
- Custom model development, with tailored surgical procedures and study-ready animals provided on request.

## About the Microsurgery and Preclinical Research Core (MPRC)

MPRC is an institutionally unique facility housed within the Comprehensive Transplant Center (CTC) at the Northwestern University Feinberg School of Medicine (FSM). The Core was established in 2009, concurrent with the founding of the CTC. Currently, it occupies ~1,200 sq. ft. of dedicated laboratory and procedure space, operates four full microsurgical units with Zeiss operating microscopes, maintains a cell isolation and culture suite and a satellite animal facility, and two state-of-the-art blood bioanalyzers, enabling in-house perioperative diagnostic testing for renal, hepatic, and hematologic parameters.

The Core is staffed by experienced microsurgeons who have successfully performed rodent surgical procedures, such as vascularized organ transplantation, ischemia reperfusion injury and other surgeries.

Each year, the Core performs hundreds of microvascular procedures, including heart/kidney transplants, Myocardial infarction, etc., and thousands of various laboratory services, including cell isolations (e.g., bone marrow, islets), drug delivery, necropsy, and blood chemistry assays. The MPRC is also recognized outside NU, regularly fielding service inquiries from external academic institutions and biotech companies, underscoring its reputation as a regional and national leader in preclinical microsurgery. The Core's services have directly contributed to:

- Hundreds of publications in prestigious peer-reviewed journals and conference presentations at national and international venues.
- Successful external funding applications by NU investigators.
- Recruitment and retention of research-active faculty.
- Educational opportunities for students and fellows, across training levels.

## Services

The Microsurgery Core currently provides the following services to the investigators of the CTC, as well as other investigators at Northwestern University. Investigators will be responsible for the costs incurred for their projects, and prior to animal protocol approval.

### **Microsurgical services:**

- Kidney transplantation
- Liver transplantation
- Aortic transplantation
- Cardiac transplantation (abdominal or cervical)
- Lung and trachea transplantation
- Skin transplant and parabiosis models
- Models of ischemia reperfusion injury (hepatic/renal/intestinal/hindlimb)
- Models of arterial malformation and fistula formation
- Carotid artery balloon injury models
- Myocardial infarction models
- Unilateral ureteral obstruction and 5/6 Nephrectomy
- Models of bile duct ligation and short bowel syndrome
- Sepsis models - cecal ligation and puncture
- Cerebrospinal fluid extraction
- Probe implantation into the optic nerve and ophthalmic artery perfusion

### **Other custom services:**

- Drug deliveries (including intravenous and intracerebral injections)
- Alzet Osmotic Pump Implantation
- Serial blood collections (retro-orbital or tail vein, cardiac picture)
- Diagnostic tests including liver and renal function panels, blood gas.
- Training and consultations
- Developing any new microsurgical models, collaborations as needed

## Getting Started

To initiate a project with the Core, contact **Dr. Jenny Zhang** at [zjzhang@northwestern.edu](mailto:zjzhang@northwestern.edu) or 312-503-1682 or **Jiao-Jing Wang** at [jiao-jing-wang@northwestern.edu](mailto:jiao-jing-wang@northwestern.edu)

For additional information, please visit the CTC's websites:  
[www.feinberg.northwestern.edu/transplant/cores/microsurg.html](http://www.feinberg.northwestern.edu/transplant/cores/microsurg.html);  
<https://sites.northwestern.edu/microsurgerycore/>