UC Irvine 趙 Chao Family Comprehensive Cancer Center



In Vivo Functional Onco-Imaging

Gultekin Gulsen, PhD

2026 Scientific Retreat

November 5, 2026

Mission & Leadership

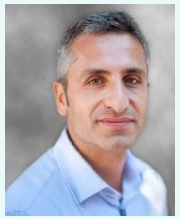
MISSION

Enhance and support basic and clinical cancer researchers by providing the necessary expertise, imaging instrumentation, and image analysis techniques

To fulfill this mission, **IVFOI**:

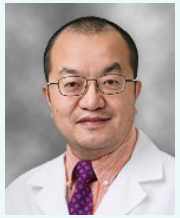
- Provides high-quality image acquisition and data analysis services for translational clinical studies
- Establishes several multi-modality imaging systems to support innovating imaging studies
- Develops several cutting-edge technologies for quantitatively accurate high-resolution small animal imaging and translates them to clinical settings

LEADERSHIP



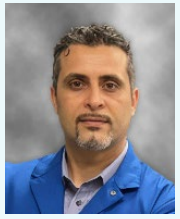
Gultekin Gulsen, PhD

Co-Director



Zhuoli Zhang, MD, PhD

Co-Director

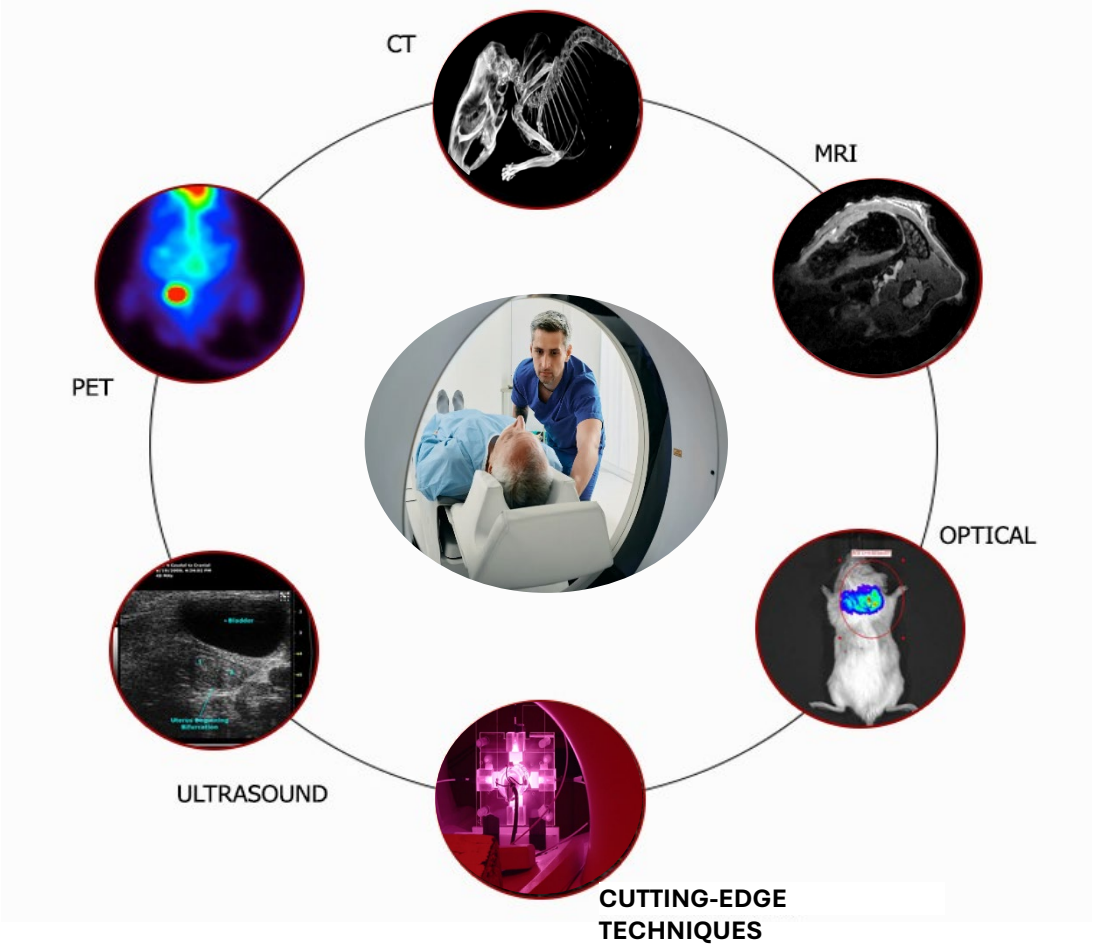


Farouk Nouizi, PhD

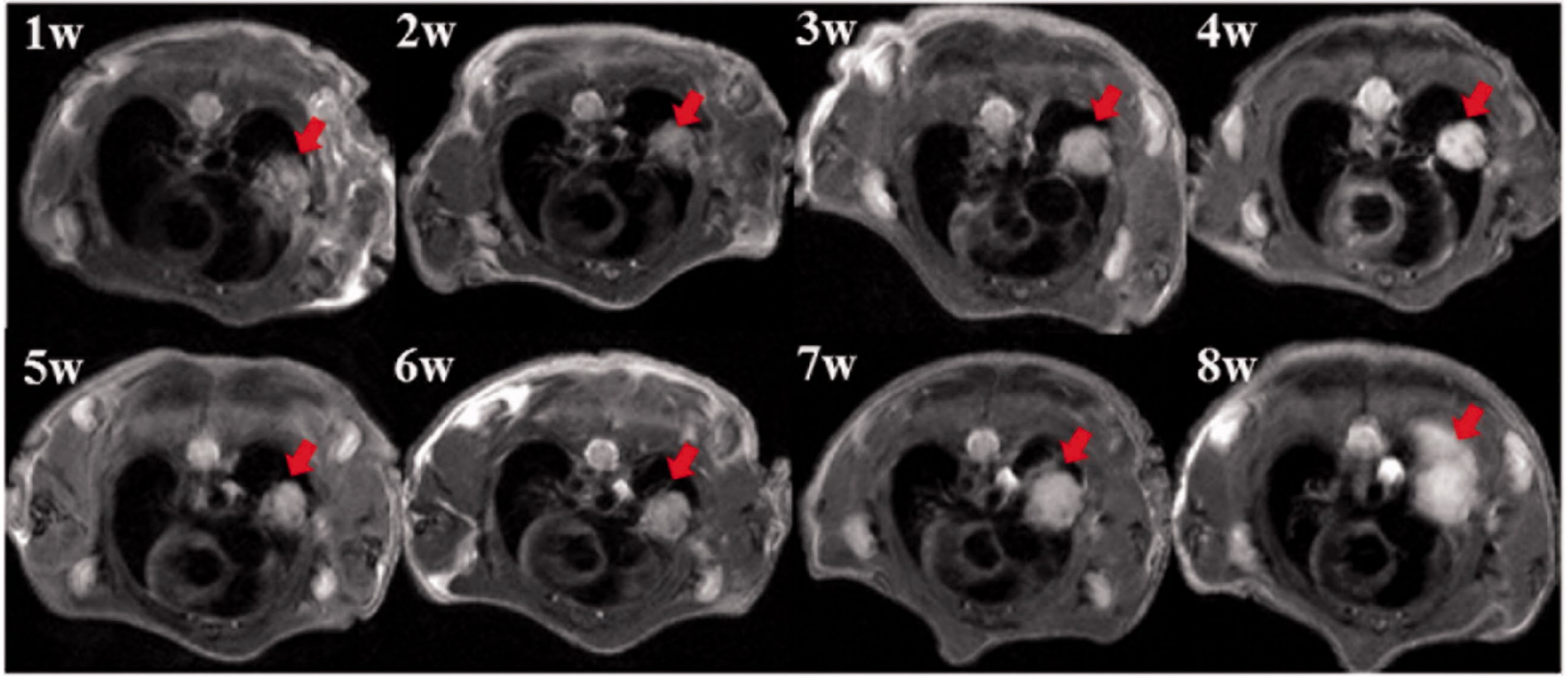
Manager

Support Preclinical and Clinical Imaging Activities

- Design
- Protocol
- Execution
- Data Analysis
- Translational



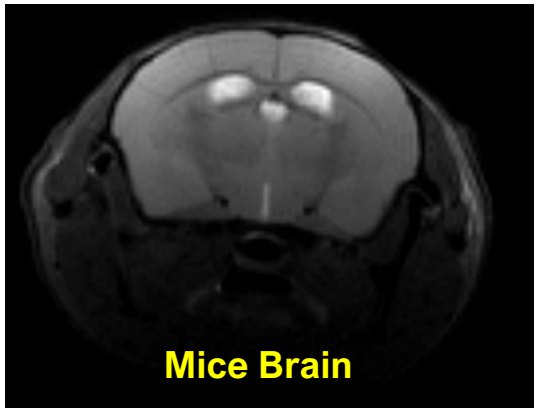
Measure Tumor Volume with Time?

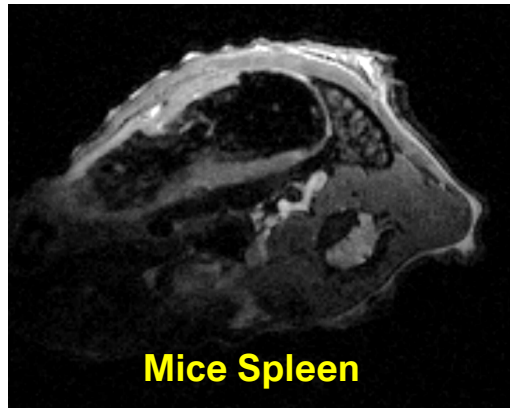


Key Equipment & Technologies

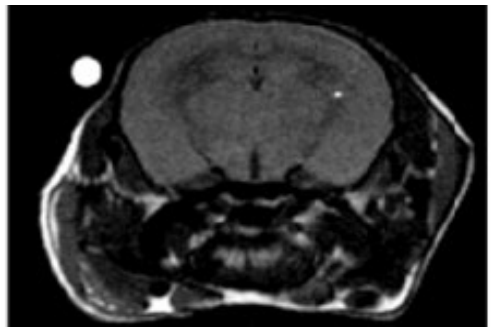
Bruker 9T MRI



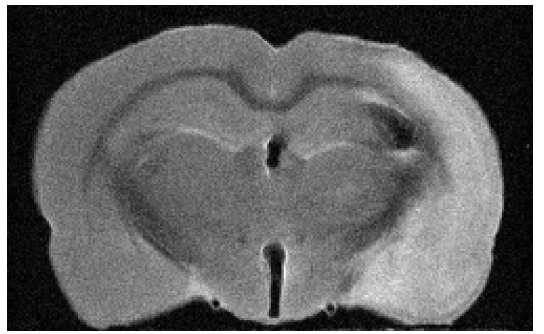


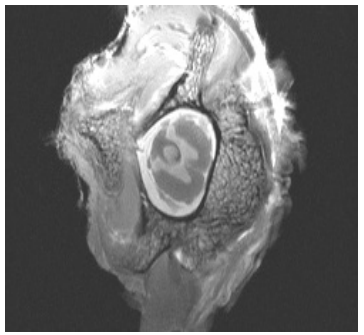


Dr. Xu mice injected with AAV



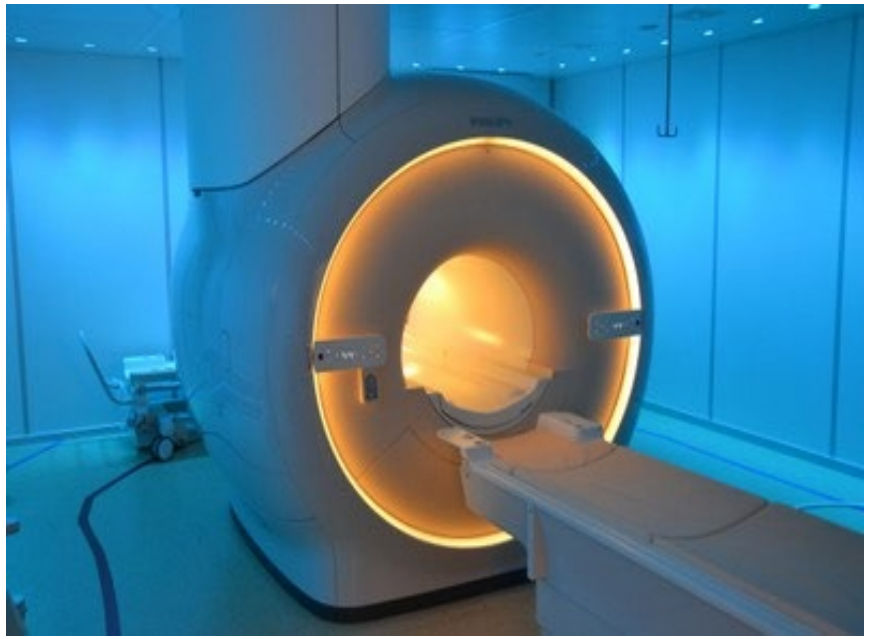
LSU Brain Trauma & Spine Injury Models

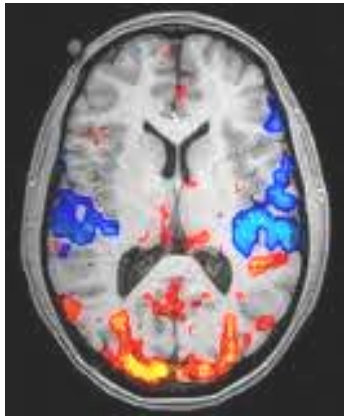


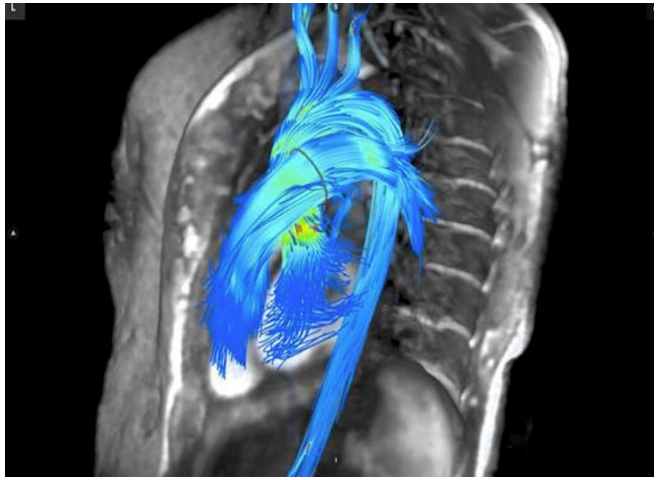


Key Equipment & Technologies

Phillips Achieva 3T MRI

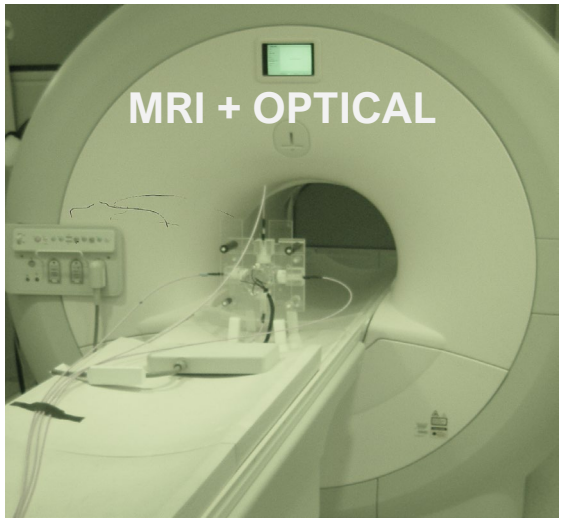








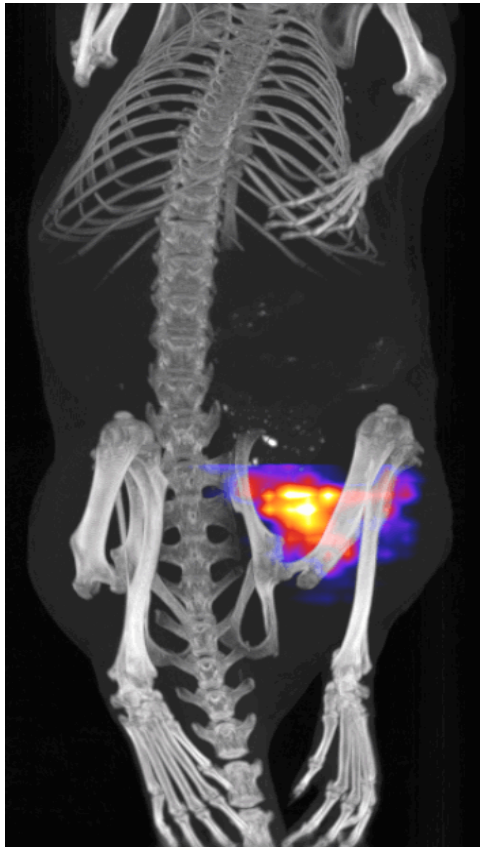
Key Equipment & Technologies





Xray + PET+OPTICAL

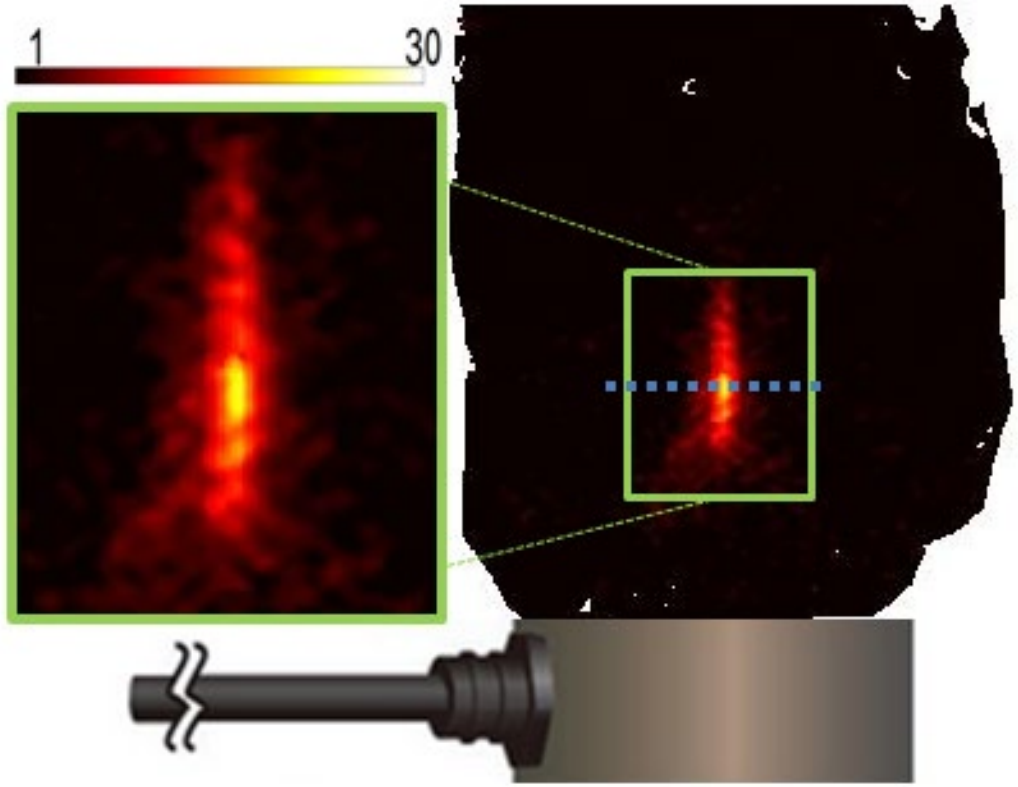




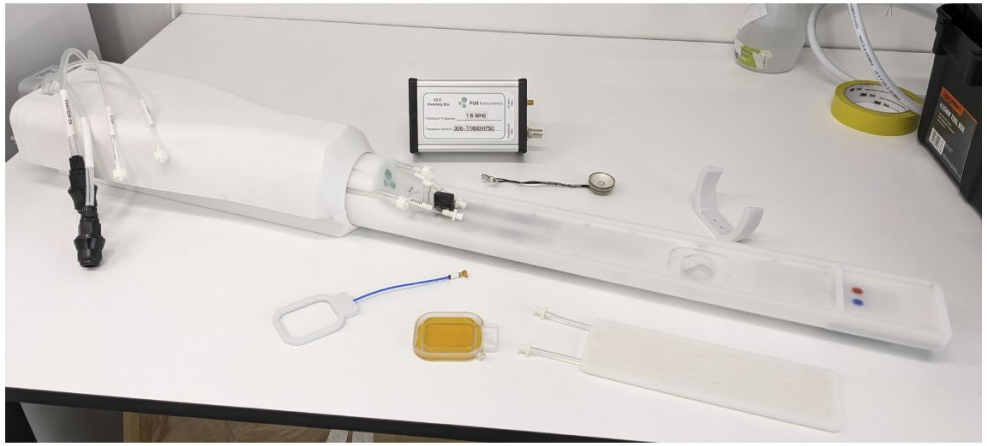
- **Infrared Fluorescent Protein**
- **Smart Targeting Probes such as MMP, VGEF targeting**

New Imaging Technologies

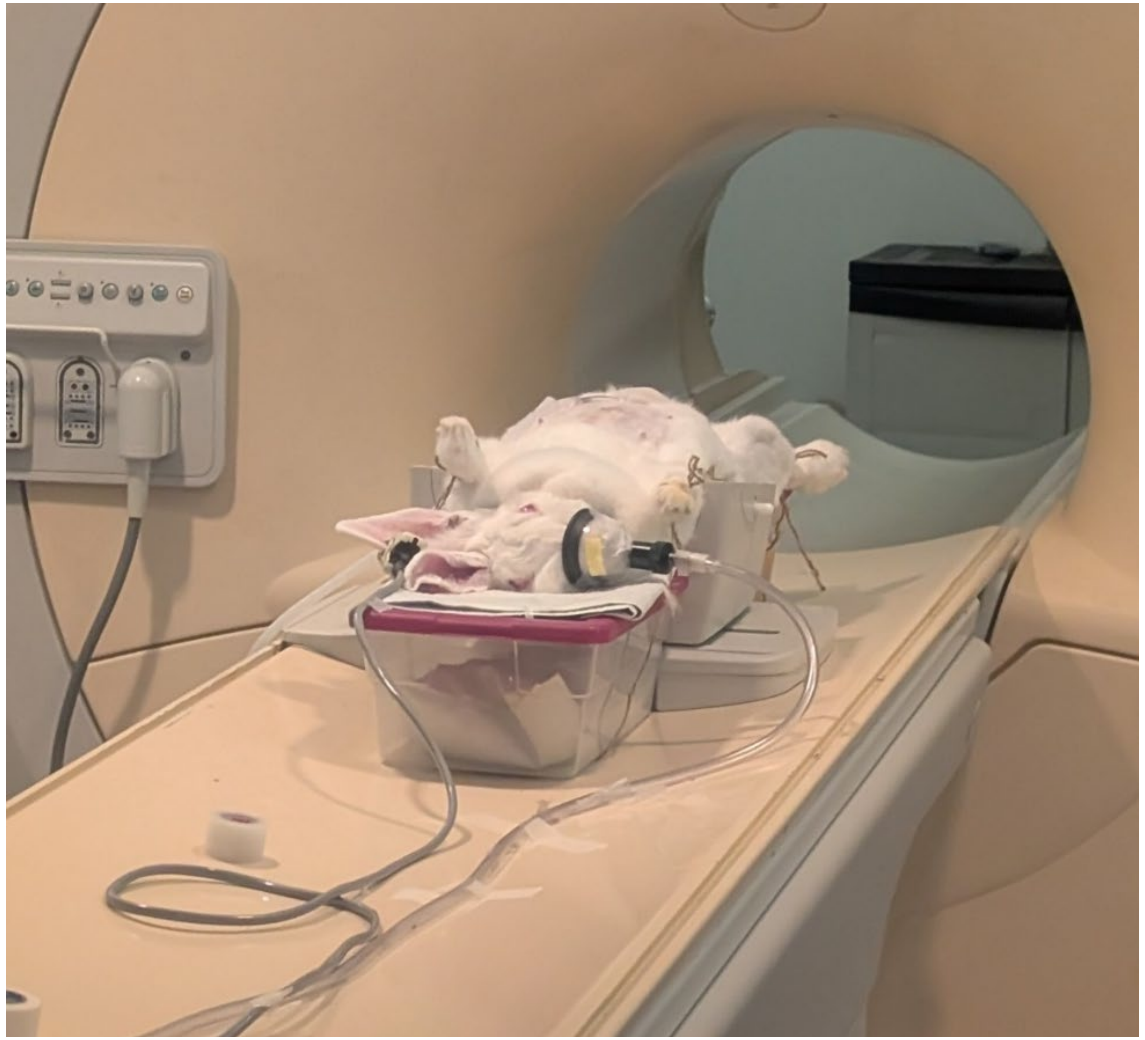
- **MRI Compatible High Intensity Focused Ultrasound**

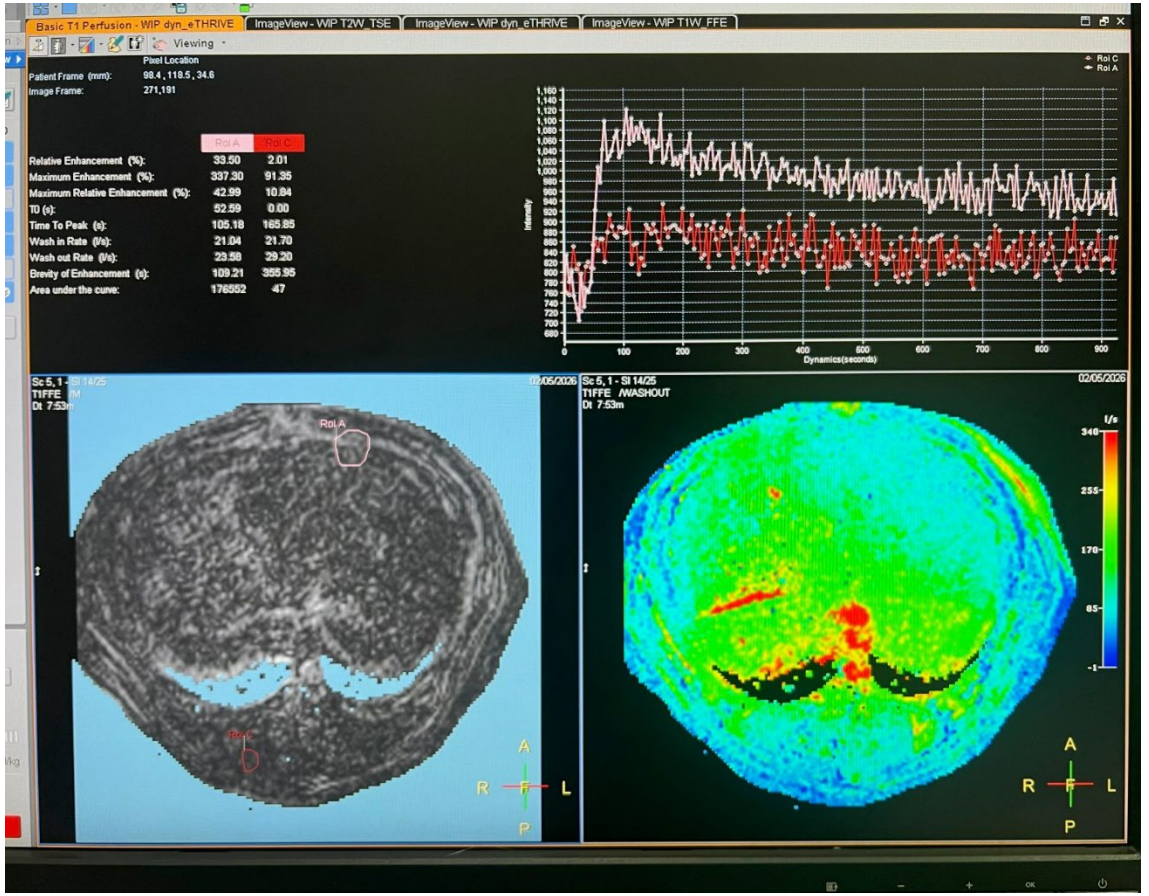


- **Commercial MR Compatible HIFU system for small animals**



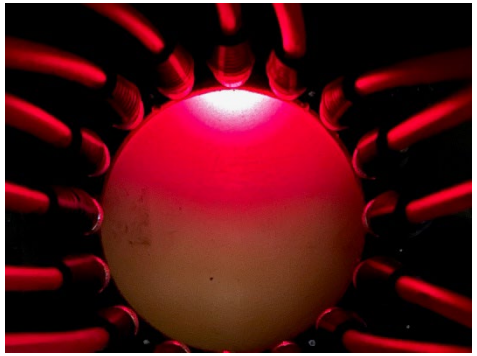
Transarterial chemoembolization (TACE) - Rabbit VX2 Liver Tumor Model





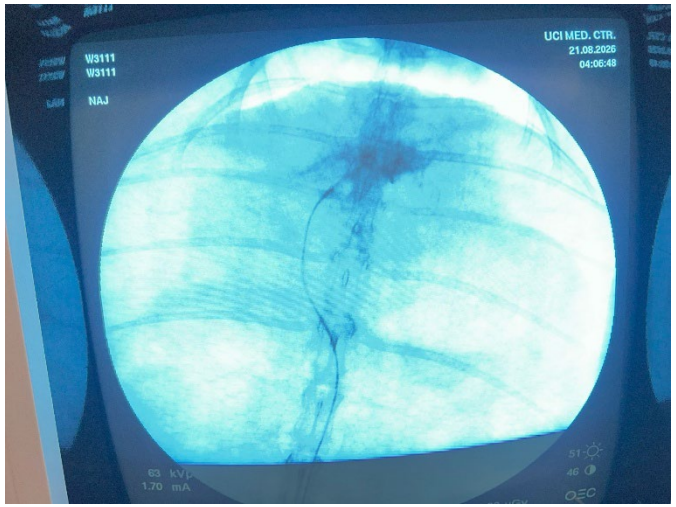
CCD-enabled Optical Tomography Approach for Monitoring Liver Oxygenation





Transarterial chemoembolization (TACE) - Rabbit VX2 Liver Tumor Model









Transarterial chemoembolization (TACE) - Rabbit VX2 Liver Tumor Model

IVFOI – Project Contributions

- **Grant Preparation**: Research proposals preparation
- **IACUC Protocol Development**
- **VX2 Tumor Model Development**: Tumor development and growth
- **MRI Imaging**: Development, optimization, and acquisition of MRI protocols
- **Optical Molecular Imaging**: Development of imaging techniques for assessing tumor oxygenation
- **Experimental Design and Execution**: Study planning, experimental optimization, and implementation
- **Data Analysis**: Image processing, quantitative analysis, and interpretation of results

UC Irvine 趙 Chao Family
Comprehensive Cancer Center

In Vivo Functional Onco-Imaging

Questions? Contact us!

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