UCI 趙 Chao Family Comprehensive Cancer Center

# In Vivo Functional Onco-Imaging (IVFOI)

Gultekin Gulsen, PhD | *Co-Director*
Zhuoli Zhang, MD, PhD | *Co-Director*
Farouk Nouizi, PhD | *Manager*

# Mission and 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, PhD**
Co-Director

**Farouk Nouizi**
Manager

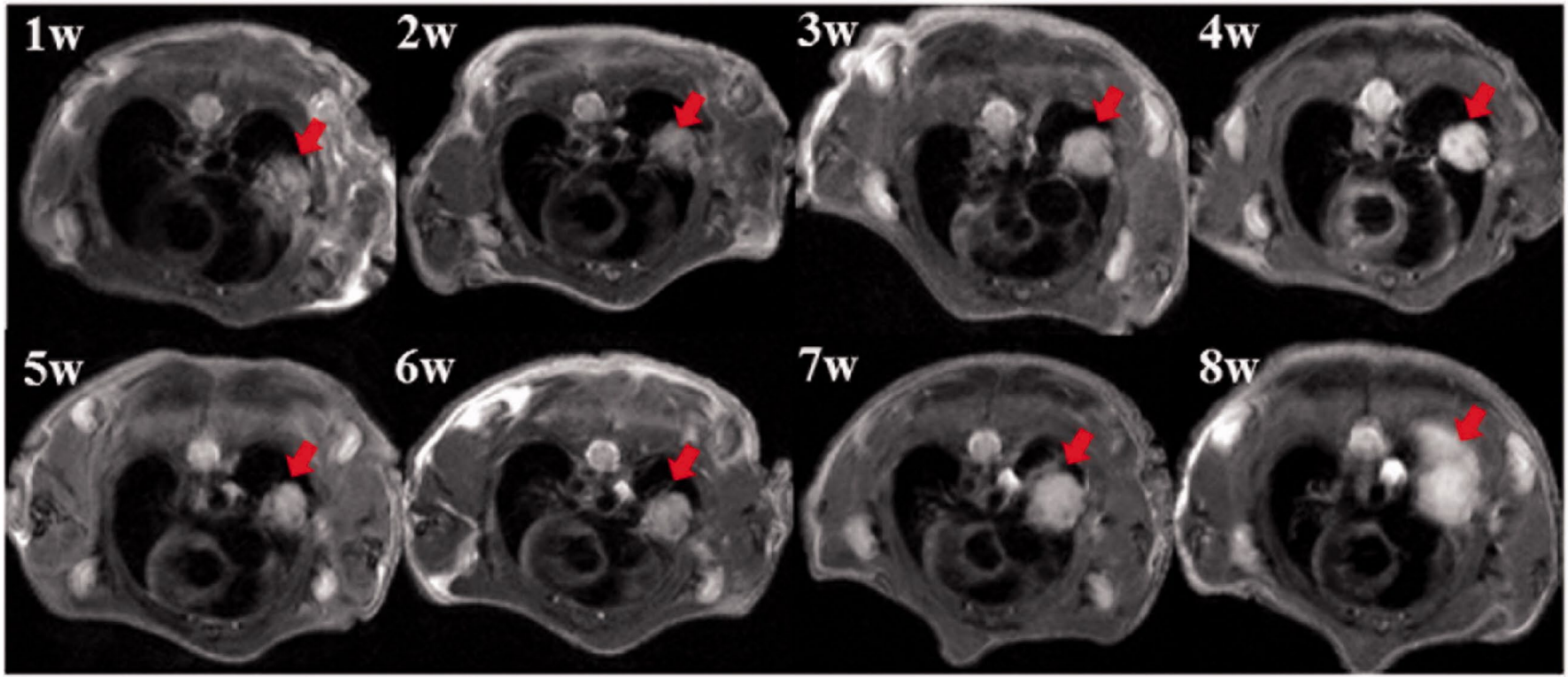
# In-Vivo Functional Onco-Imaging (IVFOI)

## Support Preclinical and Clinical Imaging Activities

- Design
- Protocol
- Execution
- Data Analysis
- Translational

# In-Vivo Functional Onco-Imaging (IVFOI)

## Measure Tumor Volume with Time?

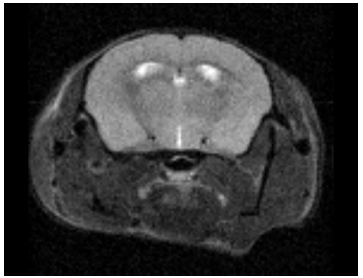


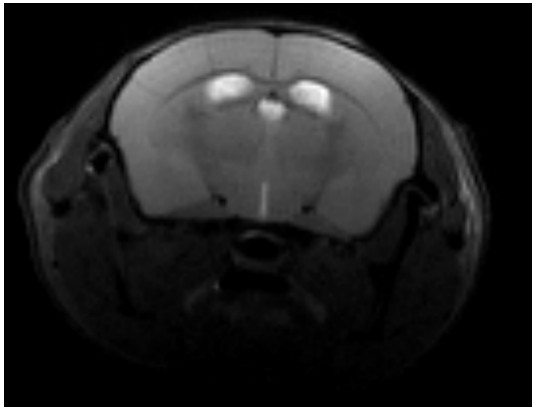
# Key Equipment & Technologies

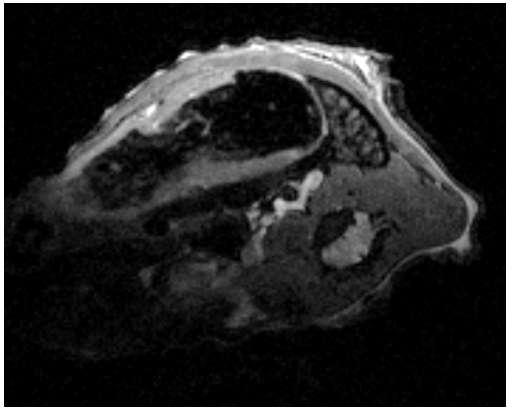
Bruker 9T MRI

Feb 2024

Jun 2024

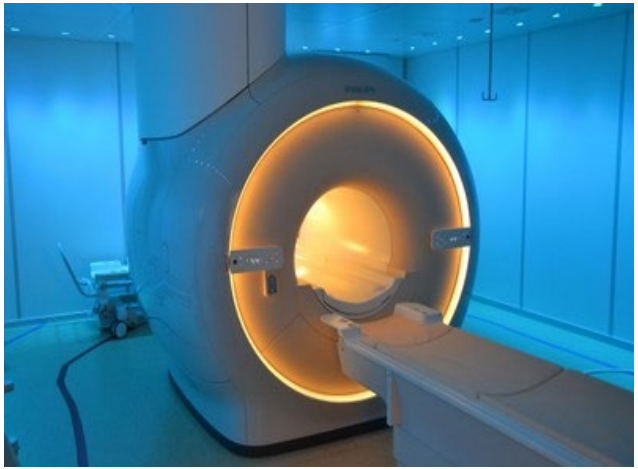


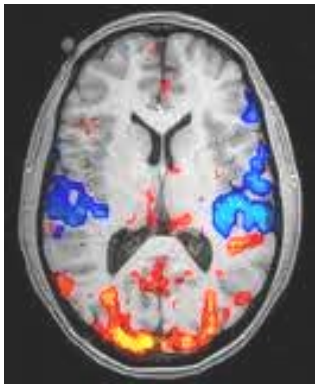


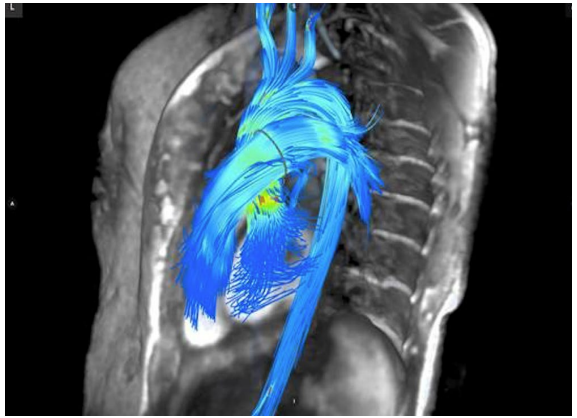


# Key Equipment & Technologies

Phillips Achieva 3T MRI

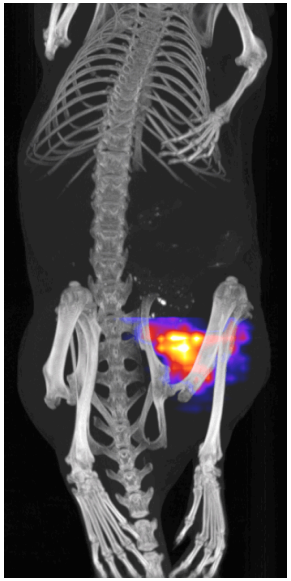






# Key Equipment & Technologies

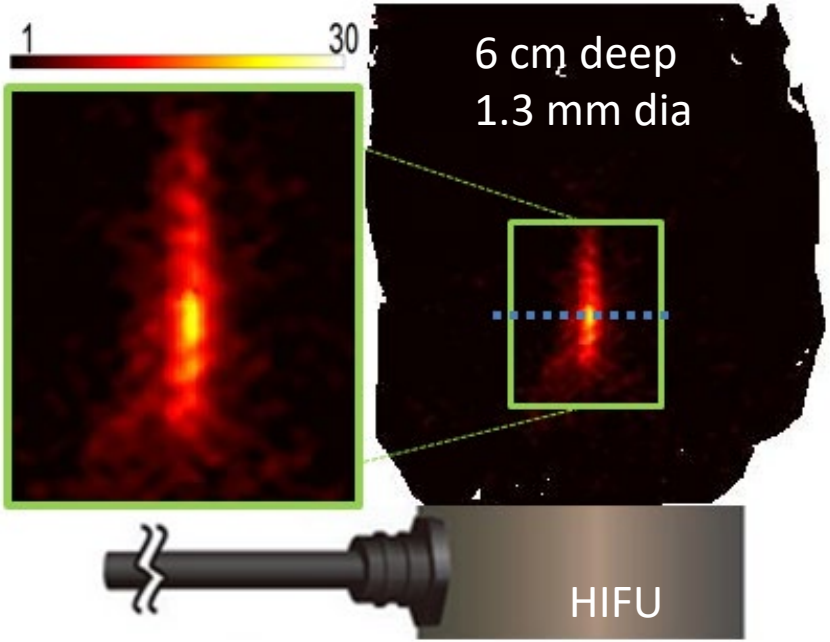
## Xray + PET+OPTICAL



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

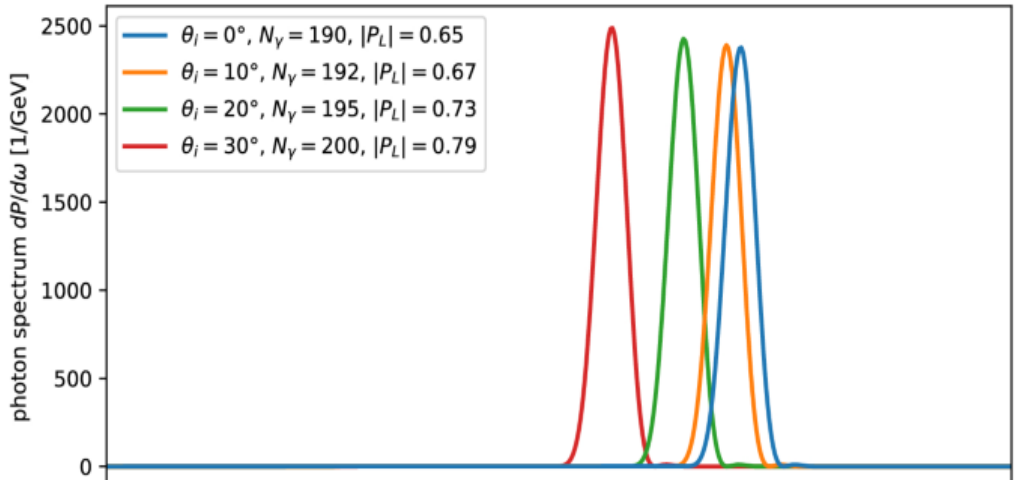
# Near Future Plans

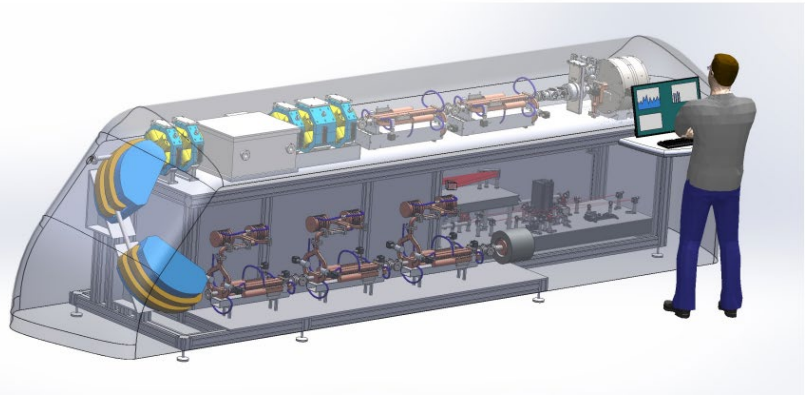
## MRI Compatible High Intensity Focused Ultrasound




## Commercial MR Compatible HIFU system for small animals

# LUMITRON Tunable Monoenergetic X-ray Source (TMXS)



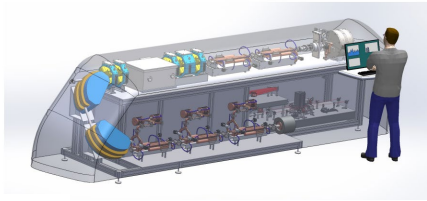
**Chris Barty, PhD (BIDD)**

**Lumitron**

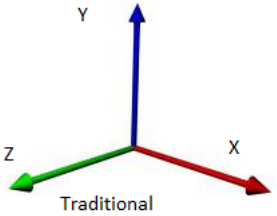
# LUMITRON Tunable Monoenergetic X-ray Source (TMXS)

4T1 Breast Cancer
Tumor Model

X-ray Beam
(Ultra Low Dose)



- Designing an interface
- Performing Simulations
- Contributing to UCI site design
- Waiting for the beam-time




**xyz translation stage (2D Planar Imaging)**
**+**
**rotation state (3D Tomographic Imaging)**

**Chris Barty, PhD (BIDD)** | **Lumitron**

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# Thank You

www.cancer.uci.edu