In Vivo Optical Imaging Shared Resource
Director: Arunasalam Navaraj, PhD

LEGORRETA CANCER CENTER
BROWN UNIVERSITY

Overview

The Optical Imaging Core Facility offers bioluminescence and fluorescence imaging services. The services provided allow LCC members to perform noninvasive longitudinal monitoring of disease progression, cell trafficking and gene expression pattern in living animals in addition to cell viability and apoptosis assay.

Key Services

- Bioluminescence imaging of cells overexpressing Luciferase
- Fluorescence imaging of cells overexpressing GFP and YFP
- Imaging of near-IR probes
- Longitudinal, non-invasive small animal imaging
- Tumor growth kinetics
- Metastatic tumor spread detection
- Drug efficacy monitoring
- Protein-protein interactions

Value Added

- Supports translational research
- Supports interdisciplinary collaboration
- Interaction with drug screening shared resource

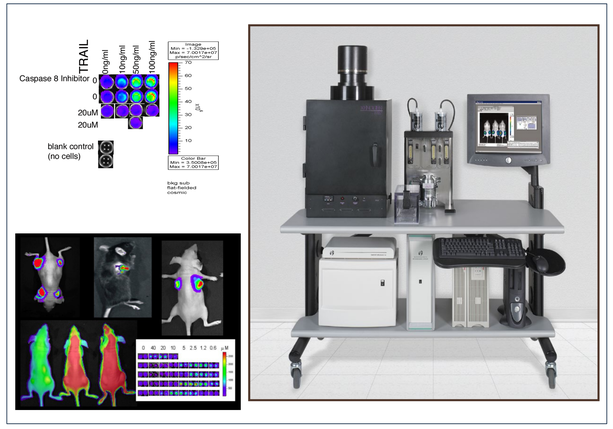
Major Equipment /Technologies

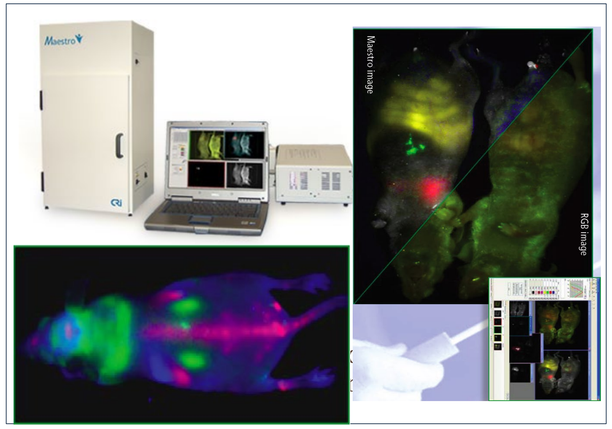
- Xenogen IVIS Imaging System
- CRI Maestro Imaging System
- PARISS Hyperspectral Imaging System
- Nuance Microscope

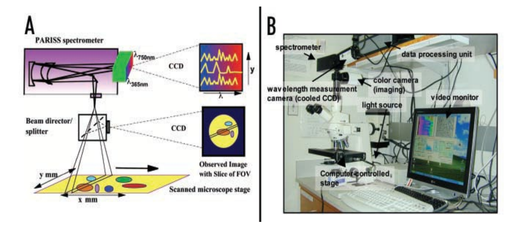
Key Personnel

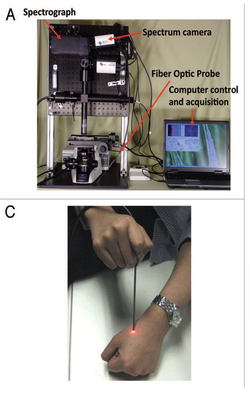
- Arunasalam Navaraj
- Email: arunasalam_navaraj@brown.edu
- Phone: 401-863-9884

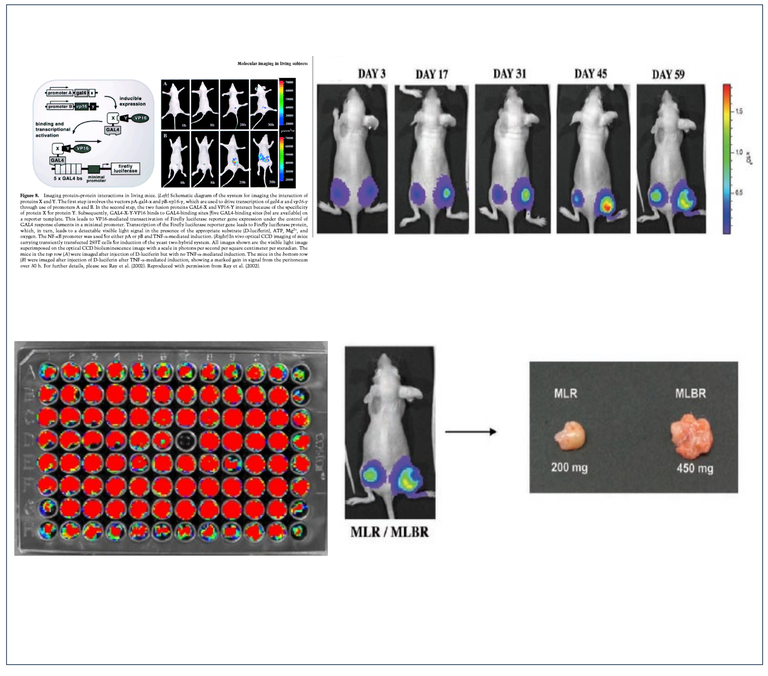
Examples of Scientific Impact



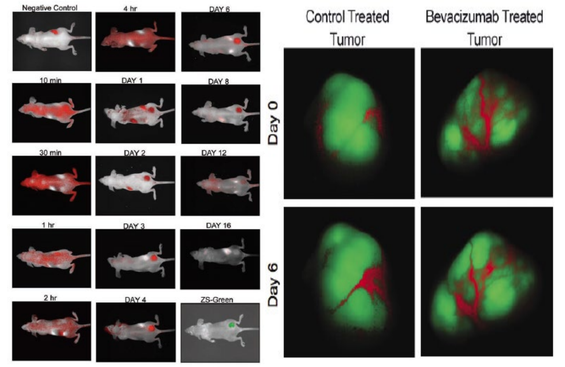








Tumor Imaging – Maestro & Nuance



User Profile

- Total Users: 7
- Cancer Center Members: 6 (86%)
- Rhode Island Hospital: 1 (14%)
- Number of Programs: 2

Key Publications (2020-2023)

1) Synergistic activity of ABT-263 and ONC201/TIC10 against solid tumor cell lines is associated with suppression of anti-apoptotic Mcl-1, BAG3, pAkt, and upregulation of pro-apoptotic Noxa and Bax cleavage during apoptosis. Di Cristofano FR, Fong MW, Huntington KE, Carneiro BA, Zhou L, El-Deiry WS. Am J Cancer Res. 2023 Jan 15;13(1):307-325.

2) Advanced Strategies for Therapeutic Targeting of Wild-Type and Mutant p53 in Cancer. Zhang S, Carlsen L, Hernandez Borrero L, Seyhan AA, Tian X, El-Deiry WS. Biomolecules. 2022 Apr 6;12(4):548.

3) Small-Molecule NSC59984 Induces Mutant p53 Degradation through a ROS-ERK2-MDM2 Axis in Cancer Cells. Zhang S, Zhou L, El-Deiry WS. Mol Cancer Res. 2022 Apr 1;20(4):622-636.

4) Anti-cancer efficacy including Rb-deficient tumors and VHL-independent HIF1α proteasomal destabilization by dual targeting of CDK1 or CDK4/6 and HSP90. Zhao S, Zhou L, Dicker DT, Lev A, Zhang S, Ross E, El-Deiry WS. Sci Rep. 2021 Oct 22;11(1):20871.

5) A high-throughput customized cytokinome screen of colon cancer cell responses to small-molecule oncology drugs. Huntington KE, Louie A, Zhou L, El-Deiry WS. Oncotarget. 2021 Sep 28;12(20):1980-1991.

6) P53-independent partial restoration of the p53 pathway in tumors with mutated p53 through ATF4 transcriptional modulation by ERK1/2 and CDK9. Tian X, Ahsan N, Lulla A, Lev A, Abbosh P, Dicker DT, Zhang S, El-Deiry WS. Neoplasia. 2021 Mar;23(3):304-325.

Future Plans

- Assist Investigators with experimental plan
- Assist Investigators with imaging on approved IACUC protocols
- Assist Investigators with grant submission
- Increase the users base
- Interaction with other shared resources
- Work with administrative fee structures
- Become self-sustainable