UC Irvine 趙 Chao Family Comprehensive Cancer Center

Optical Biology Core

Rahul Warrior, PhD

2026 Scientific Retreat

November 5, 2026

Mission & Leadership

MISSION

OBC is a matrix of 4 cores that provide access to cutting-edge imaging and sorting capabilities. To fulfill this mission, OBC operates the:

- **Self-Use Facility (SUF)** offers confocal, lightsheet and two photon microscopes
- **Laboratory of Fluorescence Dynamics (LFD)** is dedicated to the development and application of advanced fluorescence microscopy techniques
- **Non-Linear Optical Microscopy (NLOM)** specializes in multiphoton microscopy-based imaging with large fields of view and rapid scanning. NLOM focuses on collaborative equipment use, development and protocol design
- **Flow Cytometry Facility (FCF)** operates a suite of multi-parameter flow cytometers equipped for fluorescence activated cell sorting and/or analysis

Leadership



Rahul Warrior, PhD

Director



Adeela Syed, PhD

Manager, SUF



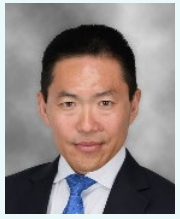
Michelle Digman

Manager, LFD



Mihaela Balu, PhD

Manager, NLOM

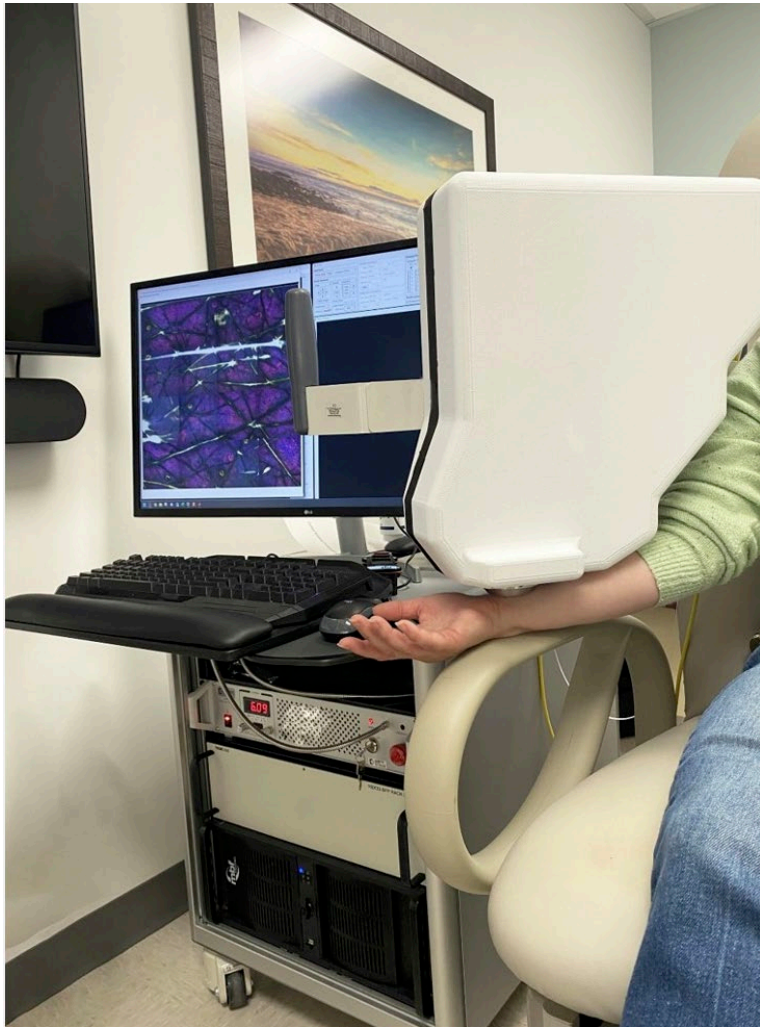


Michael Hou, PhD

Manager, FCF

Non-Linear Optical Microscopy (NLOM)

Development of multiphoton microscopy systems for clinical skin imaging



- **Fast Large Area Multiphoton Exoscop – FLAME**
- Developed by UCI
- In Use at BLI and Gavin Herbert Clinics

Capabilities:

- Macroscopic Imaging (25 mm2) microscopic resolution, label-free contrast

Applications:

- **Early Detection**: Early melanoma detection (non-invasive)
- **Treatment Monitoring** – Immune response – Melanoma + Vitiligo
- **Cell Dynamics** – Wound healing
- **Cell Phenotyping** – Inflammatory skin disease

Key Collaborators: Mihaela Balu, PhD, **Anand Ganesan, MD, PhD** (BIDD), **Kristen Kelly, MD** (Dermatology, BLI)

Self-Use Facility (SUF) - NEW Zeiss AxioScan.Z1 Automated Slide Scanner

High-Throughput Digital Slide Imaging System (with Colibri 7)



KEY CAPABILITIES & FEATURES

High-Throughput Scanning

Scans **up to 100 slides** in a single run. Supports **unattended, overnight imaging**.

Automated Tissue Detection

Automatic ROI mapping identifies sample areas accurately across each slide.

Multimodal Imaging

Produces high-quality **brightfield (color)** and **fluorescent** images.

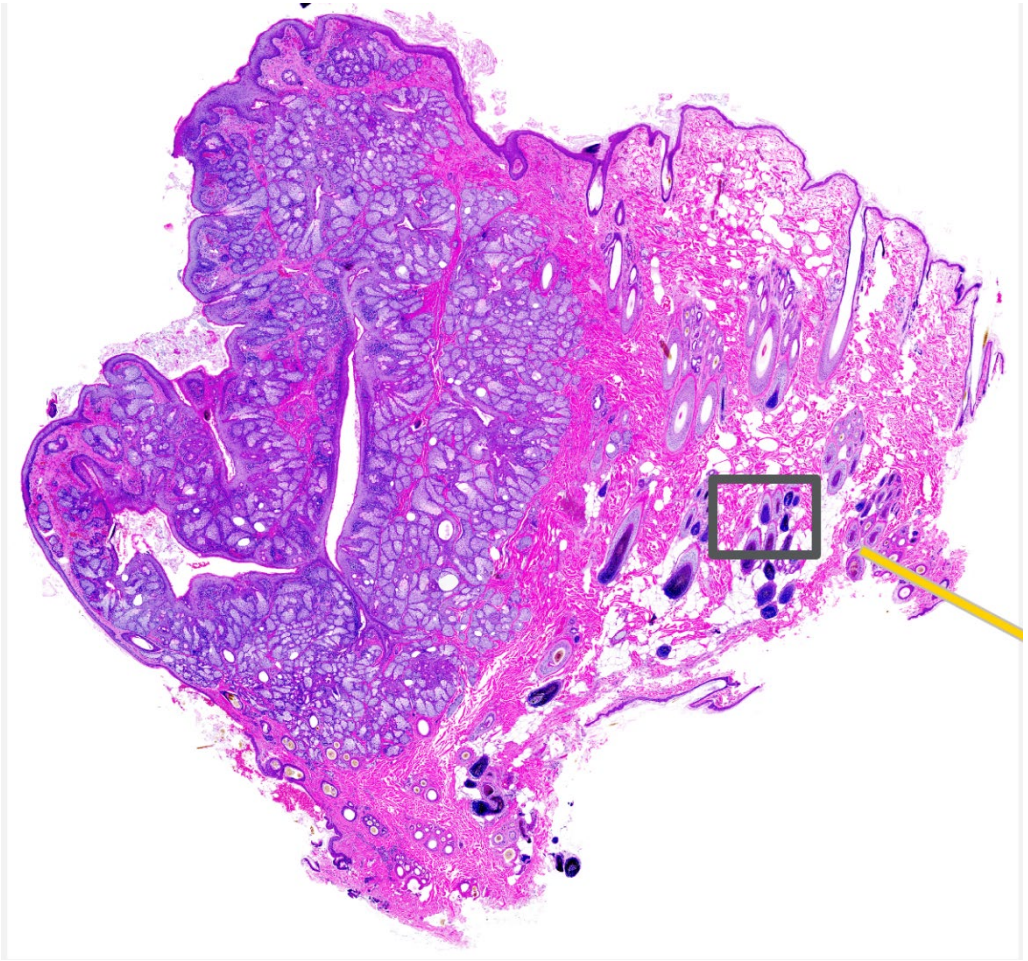
Research & Pathology

Tailored for pathology, histology, and large-scale quantitative research studies.

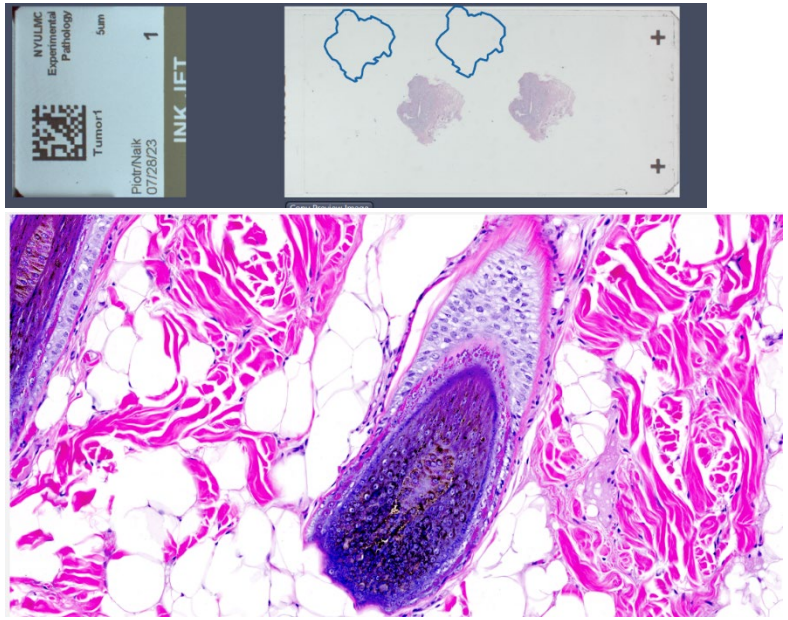
INSTALLED OBJECTIVES

5×	10×	20×	40×
Fluar	**Plan-Apochromat**	**Plan-Apochromat**	**Plan-Apochromat Korr**
NA 0.25	NA 0.45	NA 0.80	NA 0.95

Self-Use Facility (SUF) - NEW Zeiss AxioScan.Z1 Automated Slide Scanner



- Melanoma skin section
- Brightfield
- 40x objective
- 3019 tiles
- **4 minutes total scan time/section**
- Image shown at zoom-out 1% and 25%



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Questions? Contact us!

cancer.uci.edu/obc
adeelas@uci.edu