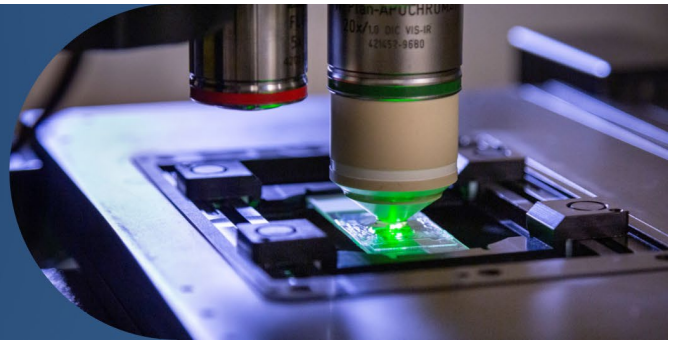


# Preclinical Imaging

Research Administration  
Seattle, WA • 501(c)(3) Nonprofit



Fred Hutch's Shared Resources are catalysts for lifesaving discoveries. This uniquely centralized program of 15 specialized core facilities and scientific services drives advances by integrating dedicated experts and cutting-edge technologies across the entire research pipeline, from basic science to clinical trial.

## Multiphoton Microscopy

Our two-photon microscope relies on two lower-energy photons simultaneously interacting with fluorescently labeled cellular probes that emit light upon excitation. This emitted light is measured with high speed detectors. Multiple fluorophores can be simultaneously imaged within the same sample and distinguished from one another to provide multiplexed information with high cellular specificity. The requirement of two photons simultaneously interacting yields high-resolution imaging almost exclusively within the focal volume (thus reducing out-of-focus fluorescence) and allows for deeper imaging into tissue.

The two-photon microscope is optimized for the imaging and tracking of single cells in vivo. The upright microscope configuration is perfectly optimized to allow for direct animal imaging. Popular applications include brain imaging, skin imaging, and ex vivo tissue studies. Thousands of fluorescent probes have been developed for multiphoton applications and can provide a wealth of genetic and functional information for cancer research.

**Spatial resolution limit:** ~ 400 nm

**Image acquisition time:** milliseconds – seconds

**Excitation Sources:** Chameleon laser (680 nm – 1080 nm), Chameleon Compact OPO (1080 nm – 1300 nm)

**Detection bands (Emission filters):** <485 nm, 500-550 nm, 570-610 nm, 645-710 nm

**Detectors:** two separate BiG non-descanned detectors with two channels each (for a total of four possible detection bands simultaneously)

**Objectives:** 5x Air; 20x/1.0 NA water immersion; 20x/1.0 NA water dipping

**Analysis software:** ZEN

## LEARN MORE

Preclinical Imaging  
206.667.3141  
[preclinicalimaging@fredhutch.org](mailto:preclinicalimaging@fredhutch.org)

