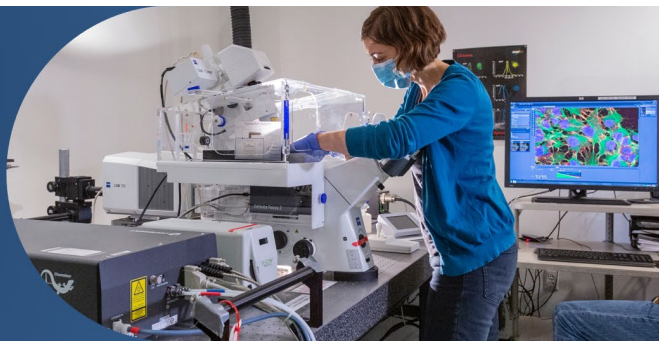


Cellular Imaging

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.

Leica Stellaris 8 confocal with STED

Laser scanning confocal and super-resolution microscope

Excitation sources

- Excitation Lasers: 405 nm and white light (440 to 790 nm)
- STED Lasers: 589 nm pulsed and 775 nm pulsed

Objectives

- 20x/0.75 (air)
- 40x/1.3 (oil)
- 63x/1.4 (oil)
- 93x/1.3, STED-compatible (glycerol), motorized correction collar
- 100x/1.4, STED-compatible (oil)

Detectors

- Spectral Detectors: HyD S (two), HyD X (two), and HyD R (one) for 410 to 850 nm emission
- Camera: Hamamatsu ORCA-Flash4.0LT (sCMOS for use with ablation software)

Capabilities

- Confocal imaging with up to 8 simultaneous excitation lines and 5 detection windows
- Z-stack acquisition with piezo stage
- Time lapse imaging with adaptive focus control (AFC) stability
- Large area acquisition image stitching
- FALCON fluorescence lifetime imaging (FLIM)
- Fluorescence recovery after photobleaching (FRAP)
- Fluorescence resonance energy transfer (FRET), including FLIM FRET
- STED 2D and 3D super-resolution, with down to 50 nm resolution
- TauSTED for super-resolution imaging with reduced laser dose
- Andor Micropoint module

Recommended uses

- Separating spectrally overlapping dyes by lifetime, including removing tissue autofluorescence
- Imaging unconventional fluorophores
- Colocalization studies, enabling ten or more dye labels on one sample
- FRAP, FRET, FLIM FRET, photoconversion, and optogenetics assays
- Ablation and wounding assays
- Super-resolution imaging of subcellular features with improved 2D or 3D resolution

General information

This inverted scanning confocal microscope uses optical methods to remove out-of-focus signal, thereby providing high-contrast, optically sectioned images of fluorescent specimens. The Stellaris 8 is a state-of-the-art instrument with outstanding versatility and sensitivity for imaging the broadest range of dyes and specimens. A white light laser allows users to freely choose up to eight excitation wavelengths. Five independent detection channels can be selected, including a HyD-R for improved near-infrared sensitivity. The detectors allow tau gating for added fluorophore specificity (for example, removal of autofluorescence). The system includes Leica's Lightning deconvolution modality, and a resonant scanner for high-speed imaging. Micropoint laser ablation is also available. Finally, the system is equipped with FALCON fluorescence lifetime imaging (FLIM) and stimulated emission depletion (STED) capabilities.

LEARN MORE

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