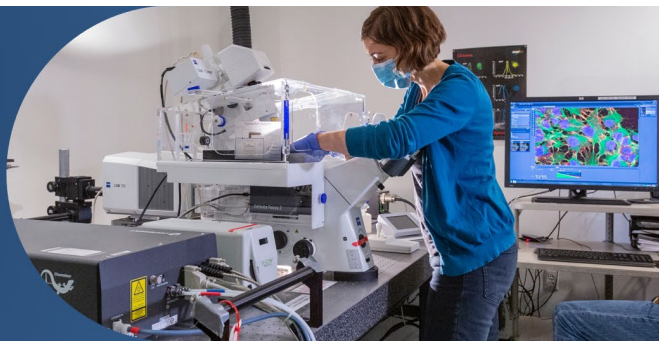


Cellular Imaging

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.

VisiTech instant Structured Illumination (VT-iSIM)

Fast super-resolution microscope

Light sources

- Excitation Lasers: 405, 440, 488, 514, 561, 642 nm
- Mosaic (Photoswitching) Laser: 405 nm
- MicroPoint (Ablation) Laser: 435 nm

Objectives

- 10x/0.32 (air)
- 63x/1.4 (oil)
- 100x/1.4 (oil)
- 160x/1.43 (oil)
- *40x/1.1 water available on request

Cameras

- Two Hamamatsu Orca-Fusion C14440 sCMOS cameras for single or fast dual-channel imaging

Capabilities

- Widefield and iSIM 6-color super-resolution fluorescence imaging
- High-speed imaging, with optional dual-channel simultaneous capture
- Z-stack acquisition with piezo stage, multi-point and tiled imaging
- Ablation or wounding using Andor MicroPoint 435 nm laser
- Fluorescence photoswitching using Andor Mosaic 405 nm laser

Recommended uses

- High-speed 2D and 3D imaging
- Live-cell super-resolution experiments
- FRAP, photoconversion, and optogenetics assays
- Ablation and wounding assays

General information

The VT-iSIM super-resolution microscope acquires images at the speed of a spinning disk confocal microscope, but with notably better resolution in x, y, and z. The ASI piezo stage allows for fast, precise Z-stack acquisition, limited only by camera exposure time. These features make the microscope ideal for the study of fast biological processes beyond the resolution limits of traditional confocals. Dual cameras extend the speed advantage to colocalization studies, allowing for simultaneous capture of the entire field of view in two channels. Five fluorescent channels, plus transmitted light, are available in total, with fast filter wheels to minimize time delay between sequential captures. The Leica microscope stand includes Adaptive Focus Control, ensuring the specimen remains in focus over hours long time courses. The patterned nature of the illumination and high sensitivity of the cameras minimize photobleaching/phototoxicity relative to other super-resolution technologies. Finally, the system includes both a high-power MicroPoint and lower-power Mosaic system for high-speed photoablation, photoconversion, and/or photoactivation of user-selectable ROIs.

LEARN MORE

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