Welcome to the CCR Microscopy Core Facility! Building 37, Room B114, Bethesda, MD!

The CCR Microscopy Core provides NCI investigators access to state-of-the-art imaging tools and techniques, including light sheet fluorescence, high-resolution confocal, multi-photon, and super-resolution microscopy. The mission of the CCR Microscopy Core Facility is to support the microscopy and digital imaging needs of investigators studying the biological structures and cellular processes involved in the cell biology of cancer by applying our diverse imaging resources, expertise and quality customer service. The goal is to provide cutting-edge imaging technology, expert consultation and training, image analysis, and data management for investigators to advance their cancer research. The Facility’s equipment includes:

- Nikon SoRa super-resolution spinning disk microscope
- Zeiss LSM 710 NLO for confocal imaging
- Zeiss LSM 780 for higher sensitivity confocal imaging (GaAsP detector)
- Zeiss LSM 780 ELYRA for fixed cells super-resolution SIM imaging
- Zeiss LSM 880/Airyscan for fixed and live cells confocal, super-resolution, & two-photon imaging
- Zeiss Lightsheet Z.1 for multiview imaging of large specimens

Techniques available in the Core include: 1) high resolution confocal microscopy, including live cell imaging methods of FRAP, FRET, FLIM, and photoactivation, 2) multi-photon imaging, including second harmonic generation, 3) super-resolution imaging by either structured illumination microscopy (SIM) or Airyscan detection, and 4) light sheet fluorescence microscopy for imaging live, fixed or cleared biological samples. Confocal microscopy for imaging fluorescently labeled specimens and permitting accurate optical sectioning for volumetric studies, such as large extended field of view tile imaging of tumor samples. Specialized microscopy-based assays and imaging techniques such as photoswitching of specialized fluorescent proteins to monitor the dynamics of sub-cellular structural components by live cell Airyscan super-resolution microscopy. Light sheet microscopy for optical sectioning of large intact samples, such as zebrafish embryos and iPSC derived organoids.

Advanced image processing and analysis workstations are also available with several software packages:

- Arivis Vision 4D
- Arivis InView VR (Virtual Reality)
- Bitplane Imaris Media Cybernetics Image Pro Plus/Premier and 3D constructor
- Fiji
- Adobe Photoshop
- Zeiss Zen