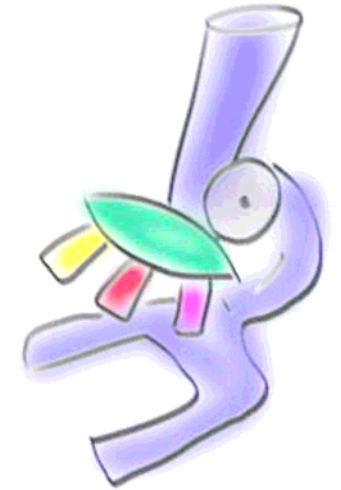


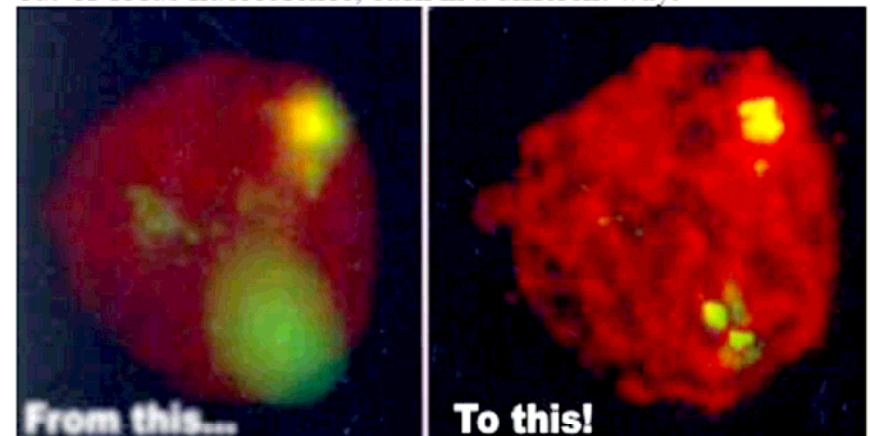
Welcome to the UCHSC Light Microscopy Facility



There are **4** fluorescence microscopes (see map on back)

1. Room 7402A1: Olympus **TIRF** microscope
2. Room 7402B: Deltavision digital **deconvolution** microscope
3. Room 7402C: Olympus **Spinning Disk Confocal** microscope
4. Room 7206: Zeiss **two-photon** microscope

These state-of-the-art microscopes 'deblur' images, removing out-of-focus fluorescence, each in a different way.



Find us on the web at:

www.uchsc.edu/lightmicroscopy

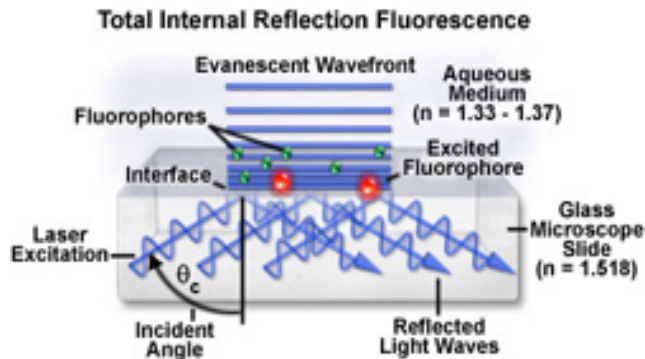
Additional resources. Users from the Ninth Avenue and Downtown (UCD) campuses find a complete laboratory workbench, incubator, refrigerator and freezer for their use. A complete computer workstation is available for image processing, and a *Fuji printer* produces publication-quality images.

It is not difficult to become a user. A speed-type is required. Training is not time consuming or expensive. See our web site – www.uchsc.edu/lightmicroscopy - or contact Manager Steve Fadul (303 724 4508; steven.fadul@uchsc.edu).

1. Room 7402A1 houses the Olympus TIRF microscope.

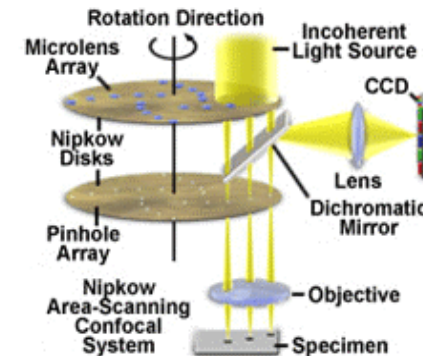
TIRF stands for “Total Internal Reflection Fluorescence.”

A laser, shown at a low angle into a glass coverslip reflects totally at the interface between the glass and the overlying fluid, in which cells lie. An evanescent wave probes a short distance (~100nm) into the overlying fluid exciting fluorophores only in this region that lies close to the glass. This scope also has a heating enclosure so experiments can be done at a specific temperature. TIRF is ideal for live culture imaging with specimens adhering to the bottom of a dish. TIRF provides the best Z-axis resolution of any of any microscope-as long as the sample is adjacent to the coverslip. It’s ideal for membrane studies but not for whole sample Z stacks.



2. Room 7402B contains the Deltavision Digital Deconvolution rig. This workhorse is an inverted microscope and highly automated. The illumination comes from a mercury arc-lamp. A powerful dual processor Linux-PC computer employs a mathematical algorithm to digitally deblur the images. This system is excellent for time lapse studies in culture as photodamage is lower than with laser illumination. The stage is motorized in all three dimensions and the software permits one to visit up to 8 different regions repeatedly and with great reliability ($\pm 100\text{nm}$), creating multiple time lapse movies in a single experiment.

3. Room 7402C holds the Olympus Spinning Disk confocal microscope. A disk that contains thousands of tiny slits spins at several kilohertz. The disk blocks out-of-focus fluorescence, and a CCD camera collects the image. This way a real-time confocal image is obtained. This is the only microscope capable of real-time confocality. This rig is ideal for immunocytochemistry, and other brightly stained samples.



4. Room 7206 houses the Zeiss LSM 510 Two Photon Confocal system. This upright scope has many features and is the most sophisticated in the facility. It can function as a traditional laser scanning microscope-with regular lasers and pinholes to generate the confocality. It also has a Meta Detector which can analyze the complete emission spectra from a sample in 10nm increments. It is equipped with a tunable near-infra-red two-photon laser. This laser only excites the sample within the focal plane and is far less damaging than coherent wave lasers. It can also excite any fluorescent molecule with an excitation wavelength from ~350-550nm. The software is very advanced, capable of remembering and restoring experimental settings to ensure consistency. The software has advanced analysis and data presentation abilities as well.

