

$$E = h\nu$$



Michael Hooker Microscopy Facility

http://microscopy.unc.edu 6129 Thurston-Bowles



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

About Us

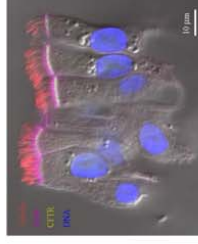
The Michael Hooker Microscopy Facility is a research light microscopy facility providing advanced digital light microscopy, image processing and analysis resources to users from the UNC Chapel Hill campus.

We offer instrumentation and instruction to enable users to acquire, process and analyze images from a wide variety of sample types.

Techniques

★ Laser Scanning Confocal Microscopy (2 systems)

- 4-color fluorescence + DIC = 5 channel imaging
- Fluorescence Recovery After Photobleaching (FRAP)
- Fluorescence Resonance Energy Transfer (FRET)
- Fast X-Z scanning
- 3D and 4D image acquisition
- Spectral Imaging – dye unmixing
- Co-localization
- Time lapse



Amvey Epithelium, Dr. Sibira Kasha

★ Live Cell Imaging

- 3-color Spinning-disk Confocal (FITC, Texas Red & Cy5 like dyes)
- Computerized control
- Simultaneous fluorescence and transmitted light (DIC)
- Heated stages
- Temperature and environmental control



Amvey epithelium, Dr. Karen Leichter

★ Advanced and Standard Widefield microscopy

- Ratio imaging on an inverted microscope, e.g. Ca²⁺ Fura-2
- Dual camera imaging
- Phase contrast and DIC/Nomarski
- Time-lapse (fluorescence and transmitted light)
- Intensified CCD camera for high sensitivity
- Fluorescence dissecting microscope/macroscop (motorized)

★ Laser micro-dissection system (Leica AS-LMD)

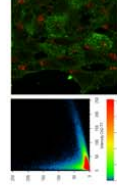
- Isolation of subcellular and tissue regions for DNA/RNA amplification or mass spectroscopy

★ Color brightfield imaging (high resolution)

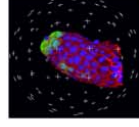
- Nikon DXM 1200 pixel-shift color camera (12 MegaPixels)

★ Image Processing and Analysis

- Co-localization
- Particle tracking
- 3-D image rendering
- Fluorescence quantification
- Densitometry
- Area measurements



Scattergram showing co-localization between the red & green antibody labels, Dr. Karen Leichter



Mouse Embryo 3D render, Dr. Jaime Rivera

MHMF Staff

Michael Chua

Director
6007 Thurston Bowles
843-3268
mchua@med.unc.edu



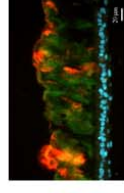
Dr. Neal Kramarcy

6129 Thurston Bowles
966-7051
kramarcy@med.unc.edu

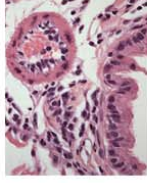


Microscope Equipment

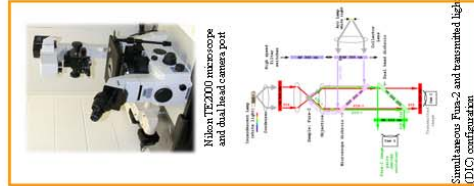
- Zeiss 510 META Laser Scanning Confocal with 3 lasers
- Leica SP2 AOBs Laser Scanning Confocal with 4 lasers (inc. UV)
- PE Yokogawa Spinning-disk Confocal with 3-line Kr/Ar Laser
- Leica DMIR8 inverted microscope with Black and White and color digital cameras; 5X-100X
- Leica MZ16 FA Combi III fluorescence dissecting scope
- Nikon upright microscope with color digital camera, 2X-100X
- Nikon TE2000 inverted microscope with ratio imaging, DIC and phase contrast, 2X-100X
- Laser micro-dissection system (Leica)
- Materials Atomic Force Microscope – Topometrix Explorer
- Bioprotechs heated stage system
- Zeiss Temperature Control system
- AirTherm air current incubator
- Solid dye color printer
- Windows based image analysis workstations
- Acquisition and analysis software packages
 - C-Imaging SimplePCI – measurements, 2D deconvolution
 - Metamorph v4.6 & v7.1
 - Velocity – 3D, quantification, co-localization, tracking
 - Zeiss AIM with 3D, Physiology, time lapse, FRAP, FRET
 - Leica LCS software with FRET, FRAP
- Adobe Creative suite, Premiere, MS-Office, etc.
- NuAir humidified CO2 incubator
- Refrigerator (4°C)
- RAID terabyte file server



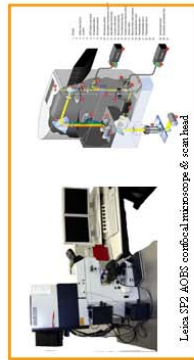
Amvey Epithelium, Dr. Ray Ficks



H & E Amvey epithelium



Nikon TE2000 microscope and dual head camera port



Leica SP2 AOBs confocal microscope & scan head



Zeiss 510 Meta confocal microscope & scan head light path

Support

Office of Research, School of Medicine; Dr. Bill Marzluft, Administration: **Dede Covinus, Pam Morrison, Annabelle Stein, Karen Stone, Debbi Windham.** Program grant affiliations: Cystic Fibrosis Center, Gene Therapy Center and Alconal Studies Center, Lab. affiliation: Suk-won Jin lab, User Departments: Biochemistry & Biophysics; Biology, Biomedical Engineering, Cell & Developmental Biology, Cell & Molecular Physiology, Chemistry, CT Surgery, Dentistry, Dermatology & Disposition, EPA, Epidemiology, Genetics, Medicine (multiple divisions), Molecular Pharmacaceutics, Neuroscience Center, Nutrition, Ophthalmology, Pathology, Pediatrics, Pharmacology, Pharmaceutical Sciences, Pharmacology, Pharmacy, Radiation Oncology and Pharmacology, Rheumatology, Surgery, and others. Administration: Dede Covinus, Pam Morrison, Annabelle Stein, Karen Stone, Debbi Windham.