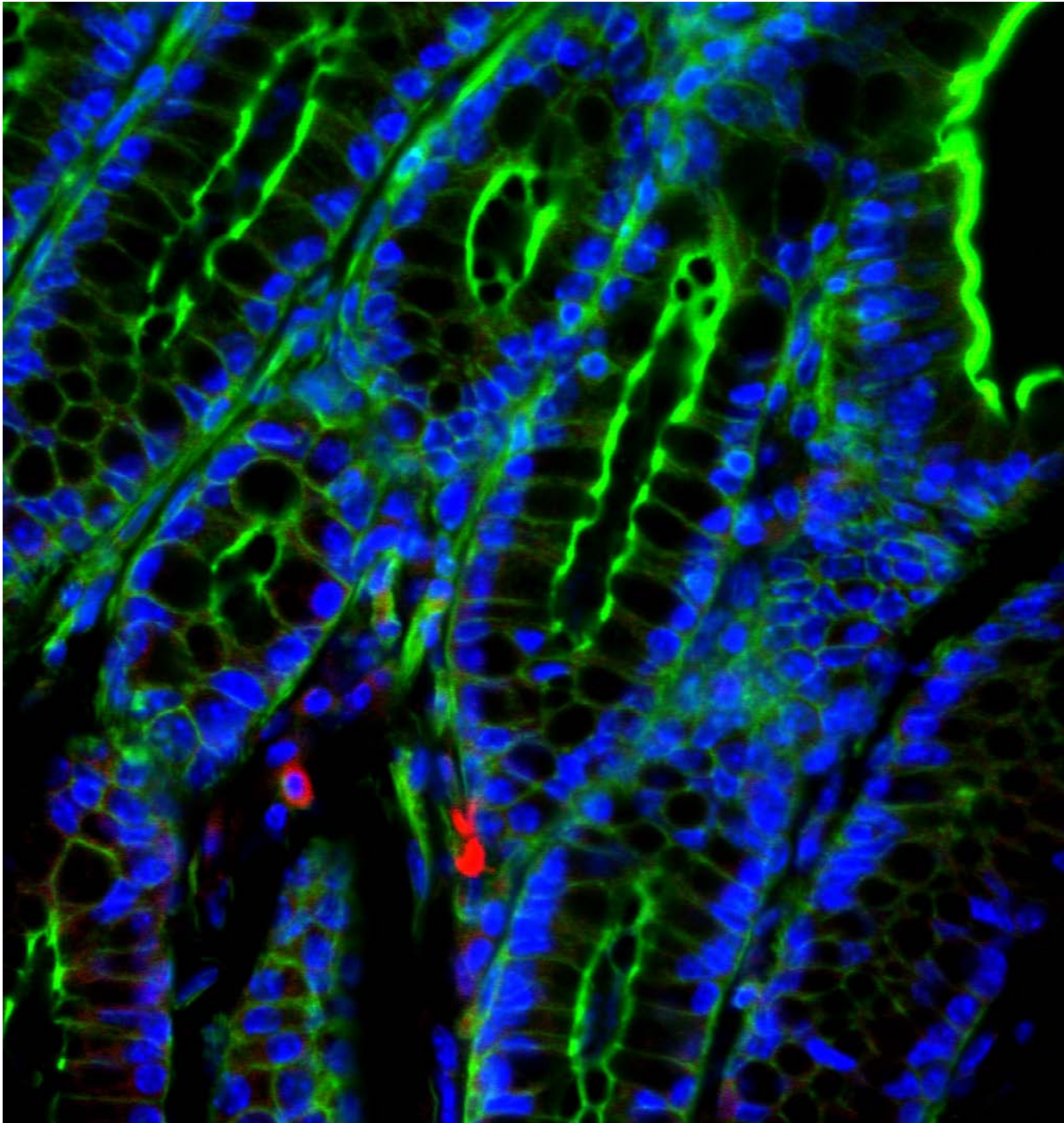


**Announcing the  
Fourth Annual Workshop on Basic Confocal Microscopy**



**June 15-19, 2009**

## **University of South Carolina School of Medicine Instrumentation Resource Facility**

The South Carolina EPSCoR/IDeA Program and the USC School of Medicine Instrumentation Resource Facility are pleased to announce the 5<sup>th</sup> annual workshop on Basic Confocal Microscopy. The hands-on workshop will target beginning and intermediate users of confocal microscopes and will provide lectures from experts in the field of confocal microscopy and the use of Adobe Photoshop and 3-D software for processing confocal images. Lecture material will provide information on the basics of fluorescence and fluorescent probes, biological specimen preparation (fixation, staining, optical properties and mounting materials), strategies and protocols for selection of antibody labeling, the basic components of a confocal microscope (lasers, dichroic mirrors, microscope objectives, photomultiplier tubes, etc.) and an overview of some applications of confocal microscopy.

During the laboratory portion of the workshop specimens will be processed for double and triple labeling and proper selection of user adjustable parameters to optimize image collection will be addressed and demonstrated. Participants are welcome to process their own samples or to use samples that will be provided. Several point scanning and spinning disk confocal systems from various manufacturers will be available for use so participants will have ample time for hands on use of the instruments during the workshop.

For further information contact [Bob Price](#).

## Workshop on Basic Confocal Microscopy

### Monday June 15, 2009

- 8:30-9:00 Registration and Continental Breakfast, Student Lounge, USC School of Medicine  
9:00-9:15 Welcome and Logistics  
9:15-10:30 Introduction and Overview of Confocal Microscopy: Price  
10:30-11:00 Break, Discussion, Meet with Workshop staff to arrange specimen processing  
11:00-12:00 Specimen Fixation and Processing: Jerome  
12:00-12:45 Lunch (Provided) and discussion  
12:45-2:00 Antigen: Antibody Interactions, Labeling Protocols and Strategies: Albrecht  
2:00-2:15 Break  
2:15-4:15 Antigen: Antibody Interactions, Labeling Protocols and Strategies – continued  
4:15-4:30 Organization of Lab Groups and Instructions - Price  
4:30-?? Lab – Specimen Preparation and Processing: Processing of own samples or samples will be provided. Fixation through overnight primary antibody incubation  
Dinner Provided

### Tuesday June 16, 2009

- 8:30-9:00 Continental Breakfast – Student Lounge  
9:00-10:00 Lab - Wash specimens and secondary antibody incubation  
10:00-11:00 Basics of Fluorescence, Dye Characteristics: Jerome  
11:00-12:00 Components, proper set up of operating parameters, and types of confocal microscopes: Price  
12:00-1:30 Lunch (Provided) and Specimen Processing  
1:30-2:30 Components, operating parameters, and types of confocal microscopes: Price  
2:30- 2:45 Break  
2:45-4:30 Lab – finish specimen processing  
4:30-?? Time on Instruments (Leica, Nikon, Olympus, and Zeiss systems are scheduled to be available)  
Dinner Provided

### Wednesday June 17, 2009

- 8:30-9:00 Continental Breakfast – Student Lounge  
9:00-10:30 Resolution, Digital Images, Image Formats: Jerome  
10:30-10:45 Break  
10:45-11:15 Resolution, Digital Images, Image Formats: Jerome  
11:15-12:00 Photoshop, etc with confocal images: Mackenzie  
12:00-12:45 Lunch  
12:45-2:00 Resolution, Digital Images, Image Formats: Jerome  
2:00-2:15 Break  
2:15-3:00 Resolution, Digital Images, Image Formats: Jerome  
3:00-?? Time on Instruments  
Dinner on own

### Thursday June 18, 2009

- 8:30-9:00 Continental Breakfast – Student Lounge  
9:00-10:30 3-D reconstruction of confocal data sets with AMIRA: Trusk 10:30-10:45  
Break  
10:45-12:00 3-D reconstruction of confocal data sets with AMIRA: Continued  
12:00–12:45 Lunch  
12:45-4:00 Additional Time on Confocal Instruments and Software; Time on Computers with Faculty for Image Enhancement and Analysis with Photoshop and AMIRA  
**6:00-?? Reception on the shore of Lake Murray**

## **Friday June 19, 2009**

8:30-9:00 Continental Breakfast – Room B59

9:00-10:00 Ethics in Use of Confocal Images, Available Resources, Discussion

10:00-12:00 Additional Time on Confocal Instruments and Software; Time on Computers with Faculty for Image Enhancement and Analysis with Photoshop and AMIRA

12:00-12:45 Lunch

12:45-3:00 Additional Time on Confocal Instruments and Software; Time on Computers with Faculty for Image Enhancement and Analysis with Photoshop and AMIRA

**Registration of \$750.00\* includes:**

- Continental breakfasts and lunches for five days and dinner for four days during the workshop
- Thursday evening reception on Lake Murray
- Supplies (buffers, primary and secondary antibodies for a cytoskeletal protein, phalloidin, DAPI) to process provided specimens
- Those wishing to process their own specimens for the workshop should provide the primary and secondary antibodies of their choice or contact Bob Price for further information on supplies that will be available

Registration fees (check or money order) should be sent to the following address:

Anna McNeal  
Instrumentation Resource Facility  
USC School of Medicine  
6439 Garner's Ferry Road  
Columbia, SC 29208  
803-253-5820

**Please send the following information to Anna McNeal at**

**[Anna.Mneal@uscmcd.sc.edu](mailto:Anna.Mneal@uscmcd.sc.edu)**

**Name:**

**Affiliation:**

**Mailing Address:**

**Email Address:**

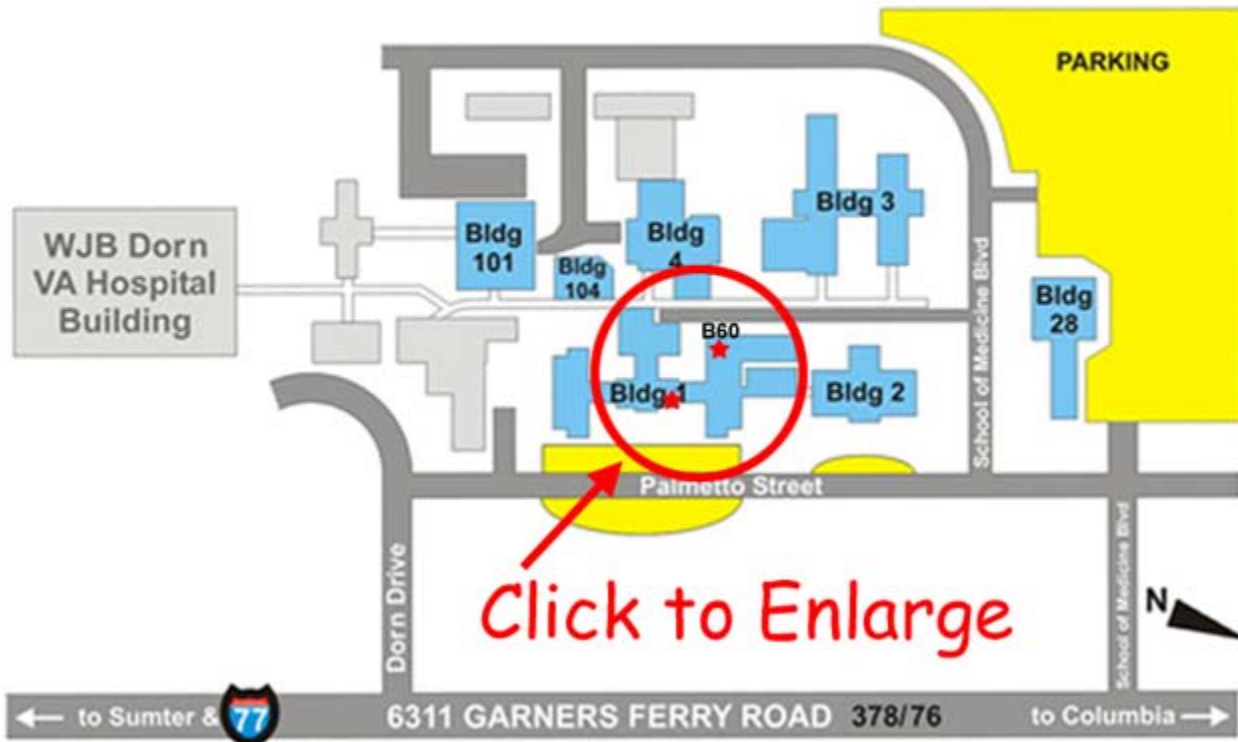
**Telephone:**

**Fax:**

\* - Tuition for participants from South Carolina colleges and universities is \$100.00. The remainder will be covered through the SC IDeA/INBRE programs. The previous four workshops have been overbooked so slots in the workshop will not be guaranteed until arrangements have been made for payment of the tuition.

## Travel and Hotel Information

# USC School of Medicine



The USC School of Medicine is located on the WJB Dorn VA Hospital campus approximately 0.5 miles off I-77 Exit 9 (Garner's Ferry Road/US378). Signs for both the School of Medicine and the VA Hospital are located at the exit.

Several hotels are conveniently located near Exit 9. For those without transportation a shuttle service will be provided to and from the Holiday Inn each day of the workshop.

The Holiday Inn off of Garners Ferry road is located 1 mile from our campus and is offering a discounted rate of \$89 per night. When calling to make your reservations, please let them know you are with the USC School of Medicine Workshop.

**Holiday Inn Express Hotel & Suites**  
COLUMBIA-FORT JACKSON  
7329 GARNERS FERRY ROAD  
COLUMBIA, SC 29209 UNITED STATES  
Hotel Front Desk: 1-803-695-1111 | Hotel Fax: 1-803-695-0008

## **A Workshop on Introductory Confocal Microscopy and Digital Imaging**

Confocal scanning laser microscopy has become a primary method in many laboratories for visualizing microscopic structure in the third and fourth dimensions. However, in many cases individual users are expected to understand and operate complex confocal microscopes without being given the opportunity to learn basic principles. The workshop will target beginning and intermediate users of confocal microscopy and will include information that students, technologists and researchers need to know to efficiently prepare samples and to collect and analyze data to obtain publication quality images.

The first part of the workshop will provide information on a number of topics including the basics of fluorescence and fluorescent probes, biological specimen preparation (fixation, staining, optical properties and mounting materials), strategies and protocols for antibody labeling, the basic components of a confocal microscope (lasers, dichroic mirrors, microscope objectives, photomultiplier tubes) and an overview of some confocal microscopy applications.

Hands-on time for sample preparation will be provided. A variety of specimens will be provided or attendees can bring their own samples to the workshop. Double and triple label staining protocols will be performed. Time will be available on a number of confocal microscopes supplied by Leica, Nikon, Olympus and Zeiss to examine specimens and to learn how to properly select user adjustable parameters to optimize image collection.

Enhancement, analysis, and 3-dimensional reconstruction of images collected by confocal microscopy are integral components of the imaging process. Often, users do not have a complete understanding of changes that are made in the structure of digital images when using imaging programs that are commonly available. The second part of the workshop will provide information about the structure and enhancement of digital confocal images. This includes the use of enhancement functions such as contrast, brightness, smoothing, sharpening, and unsharpening. Information concerning optimum resolution of digital images, printers that are available, and ethical considerations when handling digital images will also be presented. The final part of this section of the workshop will address programs and techniques available for the 3-dimensional reconstruction of data sets collected by confocal microscopy.

Instructors for the workshop will include:

**Robert Price**, Research Professor, Cell and Developmental Biology and Anatomy, and Director, Instrumentation Resource Facility, University of South Carolina School of Medicine  
(<http://dba.med.sc.edu/price/irf/irf.htm>)

**Dr. Ralph Albrecht**, Professor, Department of Animal Sciences, University of Wisconsin-Madison (<http://www.ansci.wisc.edu/facstaff/Faculty/pages/albrecht/index.htm>)

**Dr. Jay Jerome**, Associate Professor, Pathology and Cancer Biology, Vanderbilt University  
(<http://www.vicc.org/research/display.php?id=4150>)

**Dr. John Mackenzie**, Professor, Microbiology, North Carolina State University  
(<http://www.ncsu.edu/cem/index.html>)

**Dr. Tom Trusk**, Associate Professor, Department of Cell Biology and Anatomy, Medical University of South Carolina (<http://cba.musc.edu/faculty/TruskT.htm>)