



# BEMF News

September 2009

*Biological Electron Microscope Facility, Pacific Biosciences Research Center,  
University of Hawai'i at Mānoa*

## Instruments

**NEW!**

Hitachi S-4800 Field Emission Scanning EM with Oxford INCA X-Ray Microanalysis System

LEO 912 (Zeiss) Energy Filtering TEM

**NEW!**

Zeiss PALM Laser Micro-dissection and Optical Trapping System

Olympus Fluoview 1000 Laser Scanning Confocal Microscope

Olympus BX-51 Upright Microscope with DIC, Epifluorescence and Digital Imaging

Most EM Prep Equipment

### Biological Electron Microscope Facility

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## Welcome back to BEMF News

BEMF News is brought to you at irregular intervals from the Biological Electron Microscopy Facility, PBRC, at the University of Hawai'i at Mānoa. In this issue we introduce two new microscopes that have been recently installed in the facility, a Hitachi S-4800 Field Emission Scanning Electron Microscope with Oxford INCA X-Ray Microanalysis System, and a Zeiss PALM Laser Microdissection/Optical Trapping System.

## \*OPEN HOUSE October 1, 2009\*

Join us for a facility open house on October 1, 2009, Snyder Hall rm. 118, from 9:00 - 4:00 to celebrate our new research instruments. There will be a short presentation at 2:00. Light refreshments will be served throughout the day. Representatives from Hitachi High Technologies, Zeiss Microlmaging, and PacRim Medical/Olympus will be on hand to answer questions about instruments and applications.

## Hitachi S-4800 FESEM with EDS



Our new Hitachi S-4800 Field Emission **Scanning Electron Microscope** provides optics for high resolution (1 nm at 1kV) imaging of the surface of structures and acquisition of digital images. An Oxford INCA X-Ray microanalysis (EDS) system facilitates localization and quantification of elements. Biological applications range from systematic identification of insects to visualization of proteins embedded within cell membranes. Engineering applications have so far included carbon nanotubes, hydrogen fuel cells and photovoltaic cells and other thin films.

## Zeiss Laser Microdissection and Optical Tweezers

We house and manage a Zeiss PALM **Laser Microdissection/Optical Trapping System**, utilizing an ultraviolet laser for precise dissection and catapulting of selected areas, suitable for selecting cells or portions of tissues for PCR or other applications. The optical trapping system uses an infrared laser to trap and move small objects within an area defined by objective lenses.



## Instruments and Preparative Equipment

In addition to our new Hitachi S-4800 Scanning Electron Microscope with Oxford EDS and Zeiss Laser Microdissection/Laser Tweezers, featured on Page 1, we have the following equipment:

Our LEO 912 Energy Filtering Transmission Electron Microscope utilizes the latest technologies for conventional TEM imaging as well as selected energy filtering for elemental analysis. It is equipped with a cooled Proscan CCD camera and a powerful image analysis package.

For laser scanning confocal microscopy our Olympus Fluoview 1000 is mounted on an Olympus IX-81 motorized inverted microscope and has 6 laser lines (able to visualize three colors plus transmitted light simultaneously).

We also have an Olympus BX51 upright compound microscope with widefield epifluorescence and DIC optics, and an Olympus SZX12 stereo zoom microscope, each outfitted with a digital camera.

We have a variety of preparative equipment, including ultramicrotomes, critical point dryer, sputter coater, vacuum evaporators, and vacuum oven.

Before embarking on an experiment or specimen prep for microscopes in our facility, please contact us to make sure your protocol is compatible with our equipment.

We are always willing to discuss the feasibility of projects and provide cost estimates without obligation.

### OPEN HOUSE

Thursday, October 1, 2009  
Snyder Hall 118  
9:00 am - 4:00 pm

The BEMF is supported by the Pacific Biosciences Research Center, the Office of the Vice Chancellor for Research and Graduate Education, and by user recharge fees.



## Training

We offer one-on-one or group training in a number of different techniques and on all of our instruments.

We are able to train individuals in all aspects of specimen preparation for viewing of ultrathin sections or negatively stained particles in TEM, and for most aspects of high resolution biological SEM, or we can perform any part as a service.

Specimen preparation for light, epifluorescence or laser scanning confocal microscopy takes many forms. Generally we can duplicate or modify many common techniques, including fixation, application of specific fluorescent dyes, and fluorescent immunolabeling.

We do not offer courses for academic credit at this time.



### *Sources of funding for the new instruments:*

Hitachi S-4800 FESEM: NSF Grant DBI-0821442 to Marilyn Dunlap, PI; Maqsudul Alam, Petra H. Lenz, Steven Robinow, Les Watling, co-PIs

Zeiss PALM CombiSystem: NSF Grant DBI-0723291 to Stuart Donachie, PI; Richard Allen, Sean Callahan, Tung Hoang, Athula Wikramanayake, co-PIs

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