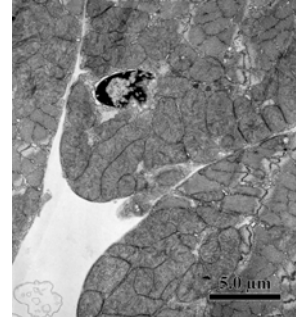
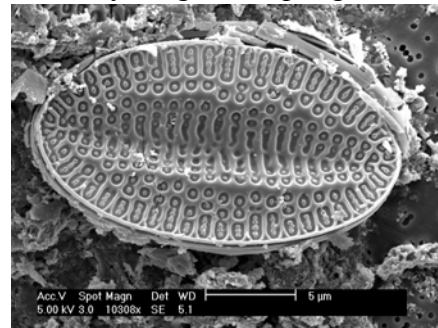


UNCW Microscopy Lab – comments by Dr. Richard M. Dillaman & Mark Gay
October 2004

Instrumentation: The UNCW Microscopy Lab is continuing to grow and offer students and faculty access to more and better instrumentation. The Philips EM 400 transmission electron microscope that served us so well for many years has been replaced with a Philips CM 12 transmission electron microscope (shown at left). In addition to more modern electronics, the CM 12 has expanded camera capabilities and excellent contrast and brightness up to 500,000X. In addition to allowing high resolution ultrastructural analysis, it also has electron diffraction capabilities that allow identification of crystals within samples. The transmission scope has supported the EM course over the years as well as numerous student and faculty research projects. Most recently it has been extensively used by students from Dr. Kinsey's lab (Melissa Ernst, Kim-Laura Boyle and Lisa Johnson [image at right]) who have been supplementing their biochemical and physiological measurements of muscle with ultrastructural analyses.



Our Philips XL30S FEG scanning electron microscope is also getting a lot of use by faculty and students from both Biology and Earth Sciences. This instrument, which has a resolution of 2-4 nm, has been essential for our research on biomineralization (see my student Samantha Johnson at left). It has also been used to examine everything from sponge tissue (Kristen Whalen – an honor student with Dr. Pawlik) to penguin egg shells (Ed Cavallerano – a student with Dr. Emslie), to diatoms (Dorian McGee – student of Dr. Laws [image at right]). The XL30S can also perform x-ray microanalysis of specimens.

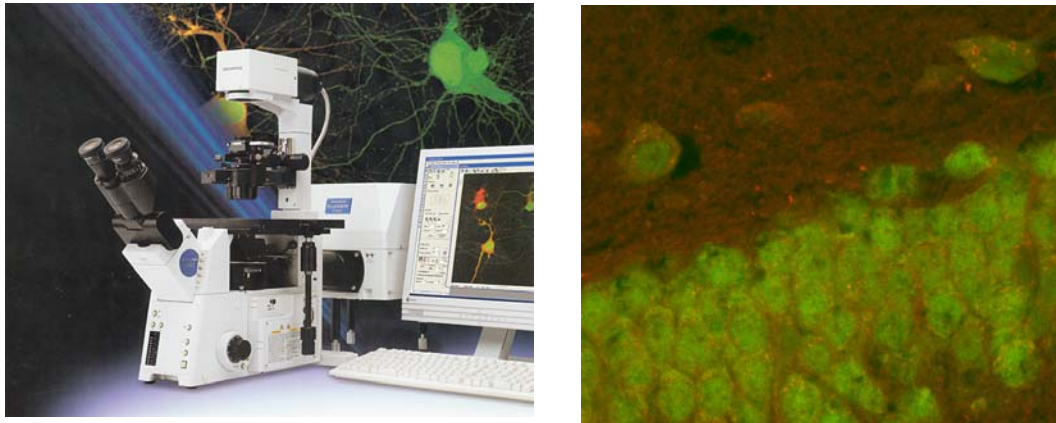


Several students have recently been doing histology and light microscopy projects in the lab. Anna Wynn and Dr. Francie Coblentz, both working in Dr. Shafer's lab, have been developing *in situ* hybridization techniques for crustacean tissue, and Jonathan Cowart, a Ph.D. student in Dr. Pawlik's lab, has been sectioning sponge tissue to determine the timing of sponge reproduction. Jennifer Ikerd, a Masters student from the lab of Drs. Karen and Lou Burnette at



the College of Charleston also spent four weeks at UNCW doing histology of crab gills. Presently light microscopy facilities include Olympus brightfield, phase contrast and epifluorescence microscopes (both upright and inverted) as well as Zeiss dissecting and upright polarizing microscopes (the latter two instruments being contributions of Dr. Ann Pabst). All light microscopes are also now equipped with color digital cameras in addition to film cameras. Digital images can be exported to computers linked to the EM lab or can be analyzed with digital image analysis software (Image Pro Plus) available in the lab. In addition, Photoshop software is available for the construction of plates for theses and publication as well as poster presentations. In fact those posters can now be printed in the EM lab on our large format Epson 9600 printer.

A coming attraction in the UNCW Microscopy Lab will be an Olympus FV 1000 confocal microscope. The instrument was funded by a NSF grant to Drs. Steve Kinsey, Rich Satterlie, Julian Keith and Richard Dillaman. The image below shows brain tissue prepared in Dr. Julian Keith's lab and examined with the FV1000.



Former students continue to do well. Recently Dr. Tony Capehart, now an assistant professor at ECU, gave a departmental seminar at UNCW on his research on limb formation. Laura Reuss, now working in Dr. Mike Dykstra's microscopy lab at NC State, was coauthor of their text on Biological Electron Microscopy. Liz Elliot also visited recently. Currently she is laboratory coordinator in the Dept. of Biology at Georgia Southern University. In the small world category, Liz Buda, a recent MS student working with Dr. Shafer just took a job with the Virginia State police after she interviewed with Brad Jenkins, a former masters student in my lab that is now a chief forensic scientist with that agency. We were also recently visited by Corinne Williams, a former honors student in my lab who is now in the Cell and Molecular Biology Ph.D. program at UC San Diego and has passed her preliminary examinations. News and visits from former students are always welcomed. Don't hesitate to contact us.