Ester Peters, CMS MS 1978

Many moons ago, when CMS was still DMS, my master’s thesis advisor, Norm Blake, said to me, “You need to be in teaching.” Fast forward some 30+ years (yikes!), and I am now a Term Associate Professor in the Department of Environmental Science & Policy at George Mason University, Fairfax, Virginia. I had no idea what he meant about that career or how to get there, but I did learn there are lots of different ways to get to where you are going. I hope my story will inspire other CMS grads, or at least help them along their own tortuous routes to the future.

After completing my MS in Marine Science, I had doubts about my understanding of coral histology, which had been the focus of my research in St. Pete, after learning how to put coral tissue sections on glass slides to study them with a microscope from Dodi Borsay, Norm’s lab tech. Dodi and Norm had learned how to do this from Paul Yevich, at the U.S. Environmental Protection Agency’s Environmental Research Laboratory (ERL), in Narragansett, Rhode Island. So I worked on my Ph.D. degree as one of Michael E.Q. Pilson’s students at URI’s Graduate School of Oceanography (GSO)—that may ring a bell for others at DMS/CMS, aka “GSO South.” Mike was a devoted “Friend of Astrangia” and other scleractinian corals, a renaissance scientist, and had no qualms about my spending most of my time at the ERL. I worked in Paul’s Histopathology Laboratory, making many more histoslides of diverse marine organisms from lab toxicology experiments and field collections than I ever did with Dodi in Norm’s lab (Paul’s mantra, “Look at anything and everything!”). But I wasn’t learning how to “read” the data contained in the tissue sections.

Histology is the study of cells, tissues, organs, and organ systems using light or electron microscopy to understand their function in relation to their molecular structure. After fixing, processing, and embedding tissue samples in paraffin or plastic, ~ 5-μm thick sections are mounted on microscope slides and stained with various compounds to reveal their condition. Like reading a book, you have to know the composition of the sample (what molecules are present, like letters and numbers in a book), how they are arranged (into organelles, cells, and tissues, following rules like those about words, grammar, punctuation), and what this means for function (like how to interpret the formation and content of sentences, paragraphs, stories). I kept asking Paul to teach me, but he brushed me off. I applied to take a histopathology short course at the Armed Forces Institute of Pathology. When I told him that, he immediately made time to
train me at the microscope; he had buddies at the AFIP and did not want my ignorance to show! My dissertation research covered the histology of 25 species of scleractinian corals, effects of sedimentation stress on *Astrangia danae* (now *poculata*), and the histopathology of some tropical reef corals from St. Croix and Puerto Rico exposed to different environmental stressors and some with newly discovered diseases. Histopathology was not boring; there was so much to learn about cell structure and function. But jobs in the field were scarce.

I married another GSO’er and we moved to northern Virginia when I received a postdoctoral fellowship in the Department of Invertebrate Zoology at the Smithsonian Institution’s National Museum of Natural History, to study whether histology could distinguish two morphological species of corals in the genus *Dichocoenia*. The jury is still out, since genome sequencing is now needed, but I traveled to Carrie Bow Cay in Belize for field sampling and continued working on the histopathology of coral diseases with new colleagues (Paul told me, “Never be afraid to collaborate.”). I had met the director of the Registry of Tumors in Lower Animals (RTLA) at the museum when I was sent corals with “white spot disease.” Based on histopathological examination, we decided that these protuberant masses of coral tissue and skeleton were a neoplasm (cancer) of the coral. To learn more about neoplasia, I received a National Research Service Award Postdoctoral Fellowship from the National Cancer Institute to study all of the invertebrate cases in the RTLA with cellular proliferative and other disorders, publishing several papers and learning more about toxicology.

As this postdoc ended, I looked for faculty positions, but my lack of teaching experience was a problem. My husband was working in environmental consulting and encouraged me to do the same, questioning being in academia with the uncertainties of obtaining research funds and tenure. I was hired by Tetra Tech, Inc., in the Fairfax, Virginia, office, despite their reservations about my being a “real scientist” when that type didn’t always work out, in contrast to “real engineer.” My flexibility and broad training in marine science and oceanography eventually won them over. I worked on aquatic toxicology and risk assessment projects for our main client, the USEPA, but Quality Assurance Manager for the Fairfax Center was the position that best used my science background and details obsession. Mostly I wrote in “a document factory,” but I learned so much from our skilled technical editor! Still, I felt adrift and like a fish out of water, so to speak. I did have a few marine biology/coral reef-related work assignments and I was the subcontracted Invertebrate Pathologist for the RTLA for 5 years when the NCI contract went to
another company. Fortunately, Tetra Tech tolerated my collaborations with colleagues on coral and bivalve diseases research. I participated in several USEPA cruises to survey the prevalence of coral diseases in the Florida Keys National Marine Sanctuary and Biscayne and Dry Tortugas National Parks, read histosides of clams collected from the Chesapeake Bay for Maryland’s Department of Natural Resources, and kept publishing. Norm’s former student Bruce Barber and I collaborated on special sessions of bivalve neoplasia and sea urchin diseases at National Shellfisheries Association meetings.

One coral colleague, director of Mote Marine Laboratory’s fledgling Florida Keys facility, invited me to teach a 1-week summer course on diseases of corals and other reef organisms in 1997. With experience from developing an ecological risk assessment training workshop, I went for it. Just before the course started, I learned that a microbiologist, Bob Jonas, from nearby George Mason University, was going to be a student. Since I was decidedly weak in that field, I asked him if he might help teach. That collaboration grew into a 14-year project and opened other doors! Another of Norm’s former students, Tom Cuba, joined our course for several years to help with the diving and provide his perspective on successional ecology—an important perspective, for when corals lose their tissue due to diseases we need to figure out how the reefs will recover. We also conducted staghorn and elkhorn coral population research with NOAA funding through Stillwater Research Group. My histopathology research continued and I began teaching coral tissue slide reading workshops at the RTLA, Mote’s Tropical Research Laboratory, Hawaii Institute of Marine Biology, and other locations. I worked with the Coral Disease and Health Consortium when it was started in 2002 and participated in research with colleagues at Hollings Marine Laboratory and NOAA’s Center for Coastal Environmental Health and Biomolecular Research near Charleston, South Carolina—bringing me back to my home state and family more frequently. I was invited to join the Southeast Florida Coral Reef Initiative’s Land-based Sources of Pollution Technical Advisory Committee, and have been serving on it since 2003.

My university teaching career finally started after the second summer of the Mote course. Bob Jonas told me their histology professor had retired and they had lab equipment, would I like to teach histology as an adjunct? I did this for one semester each year for several years, in between budget cuts, and also taught and advised grad students, set up (and moved frequently) the histology equipment so I could get back to making histosides again for research, in my
abundant spare time, while still at Tetra Tech and caring for my family, which had grown with two children. My daughter referred to me as the crazy lady, but at last I was spending more time being a marine biologist, my original career goal. My husband and I parted, no longer on the same page. I was offered a 9-month full-time term assistant professor position in 2008 and finally quit Tetra Tech in 2009.

As the Mote courses ended in 2011 due to burnout and dealing with long undiagnosed health issues, I reconsidered my situation. I’d been appointed an adjunct at Nova Southeastern University’s Oceanographic Center, home of the National Coral Reef Institute, for a few years and decided that I could teach a graduate-level coral histopathology course there in the summer, an overall improvement for me and the students. A molecular study reporting the presence of a Rickettsiales-like organism in corals affected by white-band disease led me to dig out my dissertation histoslides of staghorn and elkhorn corals affected by this disease. Making contacts and following multiple leads, I realized that what had puzzled me 30 years before about a particular cell type in those corals was actually the suspect bacteria infecting the mucus-secreting cells. Working with my own graduate students and more colleagues, as well as the Coral Restoration Foundation’s and Mote’s coral nurseries, has been exciting as we continue to investigate why the corals are dying. I’ve also been able to work with colleagues at Florida’s Fish and Wildlife Research Institute on coral diseases and visit St. Pete occasionally, seeing how DMS has amazingly morphed into CMS!

I have learned that it is never too late to learn, and admitting you were wrong or overlooked something can be a good thing. I am thankful I have had the opportunity to discover why Norm said “you need to be in teaching.” Histopathology continues to fascinate me, especially as I share my knowledge with my students around the world, and even at USF CMS. But I am also learning to relax more (Paul advised “Find a life outside of science, too!”). I’ve added paddleboarding to my adventures in RI, SC, and the Keys, thanks to my daughter (URI grad), and gardening when home, thanks to my son (currently in college).
Reading slides at the Invertebrate Pathology Short Course, Marine Biological Laboratory, Woods Hole, January 1979.

Relaxing (a bit), June 2014.