

Scientists-in-Residence

David Gruber, PhD

**Associate Professor of Biology, Baruch College, City University of New York
Fellow, John B. Pierce Laboratory**



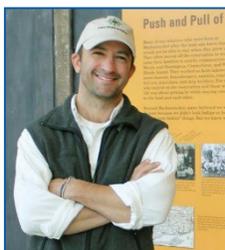
David Gruber completed a PhD in biological oceanography from the Rutgers University Institute of Marine and Coastal Sciences in 2007. His research pertains to marine microbial ecology and fluorescent proteins on coral reefs. From 2007 to 2008, Gruber was a postdoctoral fellow at the Brown University Division of Biology and Medicine, where he worked to develop fluorescent proteins into modulatable probes with neurobiological and medical applications. Gruber is a member of the City University of New York Macaulay Honors College, a visiting scientist at Brown

University and a research associate at the American Museum of Natural History and the Central Caribbean Marine Institute. In addition, Gruber is committed to communicating science to the general public. He serves as a scientific advisor and producer for the WNYC Studio 360's "Science and Creativity" series and his writings have appeared in *The New Yorker*, *Nature Medicine* and *The Best American Science Writing 2007*. A former tropical forester for the Smithsonian Tropical Research Institute, his research now utilizes remote operated vehicles (ROVs) and extended-range scuba to examine marine natural products, fluorescent proteins and bioluminescence on coral reefs. He is the co-author of *Aglow in the Dark: The Revolutionary Science of Biofluorescence* (Harvard University Press, 2006) and is currently co-producing a 3D IMAX film on bioluminescence. He holds master's degrees in coastal environmental management from Duke University and journalism from Columbia University.

In collaboration with fellow Scientist-in-Residence Vincent Pieribone, Gruber has utilized animals in the Mystic Aquarium collection for imaging fluorescence; these images have been published in various media outlets. He also partners with Pieribone on ROVs to capture images at depth and was heavily involved in an exhibit that premiered at the Natural History Museum in New York and focused on fluorescence and bioluminescence in both terrestrial and aquatic animals.

Jason Mancini, PhD

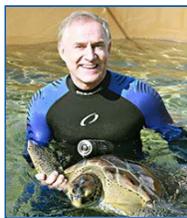
**Executive Director, Connecticut Humanities
Adjunct Professor of Anthropology, University of Connecticut
Visiting Assistant Professor of Anthropology, Connecticut College**



Jason Mancini holds a PhD in anthropology from the University of Connecticut and has expertise in the archaeology and ethnohistory of New England. His current research projects focus on Indian histories after 1700 and involve Indian social networks, Indian mariners, urban Indian communities, race and ethnicity in New England, cultural landscapes and oral histories. Mancini was instrumental in the restructuring and strategic direction of the Mashantucket Pequot Museum and Research Center. He currently is the Executive Director of Connecticut Humanities.

Mancini has been instrumental in carrying out the Mystic Aquarium Point Lay and Mashantucket Educational and Cultural Exchange program. For the past three years, he has coordinated the involvement of the Mashantucket tribe with this program. He has taken three trips to Point Lay, Alaska, as a chaperone for the Mashantucket students and has lent his expertise in anthropology to all aspects of the program.

Greg Marshall
Founder, Marshall Innovation



Greg Marshall is an inventor, marine biologist, conservationist, and Emmy Award-winning filmmaker who has dedicated his life to studying, exploring and documenting animal life in the ocean and across the globe. Marshall's most celebrated contribution to the research community is the invention of the National Geographic Crittercam, a small, lightweight camera that has the remarkable ability to travel unobtrusively with its animal hosts to capture never-before-seen footage of the hidden lives of wild animals.

Marshall has partnered with Mystic Aquarium in research, education and outreach. He participated in a "proof of concept" study on using Crittercam with the Aquarium's beluga whales and then travelled to Point Lay, Alaska, to launch Crittercam on wild belugas. He has also partnered with the Aquarium on a research project that utilizes Crittercam to study the behavior of snapping turtles, complementing health assessments of turtles in different environments. Marshall helped to launch the research and education program focused on the snapping turtle initiative by travelling to the Aquarium to address students and community members. In addition, Marshall participated in the launch of the National Geographic Crittercam exhibit at the Aquarium and was a featured speaker in the Aquarium's *Conservation in Action* series.

Vincent Pieribone, PhD
Professor of Cellular and Molecular Physiology and Neurobiology
Fellow, John B. Pierce Laboratory



Vincent Pieribone attended New York University's College of Arts and Sciences, where he received a baccalaureate degree in Biology and Chemistry in 1986. He then attended New York University's Graduate School of Arts and Sciences and received his PhD in 1992 in Neuroanatomy and Neurophysiology. From 1990 to 1992, Pieribone was a National Science Foundation and Fogarty Internal Fellow at the Nobel Institute of Neurophysiology at the Karolinska Institute in Stockholm, Sweden. Pieribone did postdoctoral work at the Rockefeller University in New York from 1992 to 1995 and became an Assistant Professor there in 1995. Pieribone joined the Pierce Laboratory in December 1997.

One of Pieribone's current research areas involves developing genetically encoded fluorescent probes of membrane electrical potential. These probes allow for the use of optical instruments (e.g., microscopes) to monitor the electrical activity of neurons. Such an approach is less invasive than alternative techniques and allows for the study of identified cell types over large regions of the cortical surface. Pieribone's laboratory has also engineered miniature imaging systems that can be head-mounted on mammals in order to allow for mobile recording of neuronal activity. These types of studies will improve scientists' understanding of the neuronal networks that encode information in the central nervous system.

Pieribone helped to create and design the fluorescent coral exhibit in the William E. Kelley gallery and has photographed Aquarium animals for education and outreach purposes in collaboration with fellow Scientist-in-Residence David Gruber.



Norman R Wainwright, Ph.D.
Senior Director of Research and Development
Charles River Laboratories, Charleston, SC

Dr. Wainwright, has been working on the primitive innate immune system found in the American horseshoe crab (*Limulus polyphemus*) for almost 30 years. Most recently, he has directed research and new product development at Charles River Laboratories in Charleston SC, a major manufacturer of the bacterial endotoxin test (LAL) derived from the blood cells of the horseshoe crab. LAL is an ultra-sensitive enzyme cascade, adapted from the immune response of the crab to bacterial infection. Miniaturization of the test and a development of a “hand-held” instrument to read it has resulted in a major decrease in the amount of horseshoe crab blood needed. The portable test has become a standard in the pharmaceutical manufacturing industry, assuring safety of injectable drugs. It has also been flown to the International Space Station as a test of new technology to rapidly assess microbial cleanliness of spacecraft. Prior to Charles River Laboratories, Dr. Wainwright was a Senior Scientist at the Marine Biological Laboratories in Woods Hole, Massachusetts, where the LAL test was discovered.

His recent research involves a continued interest conserving species of horseshoe crabs around the world as well as studying the molecular biology of marine invertebrates. Practical applications stemming from this technology include monitoring the health and safety of humans and animals. Dr. Wainwright also continues his work with NASA on the development of new life detection and planetary protection procedures using the rapid, point of use technology.

Amy Apprill, PhD
Associate Scientist, Woods Hole Oceanographic Institution



Amy Apprill is a marine microbial ecologist leading the “Microbial Ecology for Ocean Conservation” research program at the Woods Hole Oceanographic Institution (WHOI). She received a BA in Marine Sciences from the University of San Diego in 2001, and MS and PhD degrees in Biological Oceanography from the University of Hawaii in 2004 and 2009. Apprill is currently an associate scientist in the Marine Chemistry and Geochemistry Department at WHOI.

Apprill’s research seeks to understand the ecology of microbiomes that live in sensitive animal hosts and ecosystems of the ocean. She is interested in what drives microbial growth, interactions and cycle within these environments. She is also passionate about understanding the microbes’ functions and contributions to the health of their host or ecosystem. Apprill devotes much of her time to studying reef-building corals and the microorganisms that live in reef seawater. Much of the world’s reefs are threatened. Therefore, Apprill’s research is centered on defining the microbial characteristics of healthy, worldwide corals and reef waters. Apprill has also pioneered the exploration of microorganisms associated with marine mammals. She has studied worldwide species and populations, and seeks to determine if their microbial partners can be signatures for health or environmental changes.

Apprill utilizes various research tools to understand the diversity and composition, genetic make-up and spatial organization of animal-associated microbes. Taking advantage of inexpensive DNA-sequencing based microbiology, Apprill presents a holistic approach that examines the animal-microbial association using different methods. Her work has been featured in a number of widely read journals and has attracted attention and awards at international meetings. Apprill was also recently featured in *Science* magazine’s “XX Files: Extraordinary Science, Extraordinary Women” video series.

Emerging Scientists-in-Residence

Justin Richard, PhD

Teaching and Research Post-Doctoral Fellow, University of Rhode Island



Justin Richard has been involved at Mystic Aquarium since 1999, when he began as an Exhibit Educator volunteer. He completed two Husbandry internships at the Aquarium in 2001 and 2002. After graduating from Connecticut College in 2003, Richard was hired as a beluga whale trainer at the Aquarium. In 2011, Richard was awarded a National Science Foundation Graduate Research fellowship and completed his PhD in Integrative and Evolutionary Biology at URI in collaboration with Mystic Aquarium in 2016. Richard has participated in many field research projects where he has studied beluga behavior and took part in satellite tagging. Richard teaches two courses on animal behavior and two courses on marine mammal biology at URI, including the Seminar on Marine Mammals, which is held at Mystic Aquarium. Richard emphasizes experiential learning opportunities for URI students in all areas of his research.

Richard's research focuses on using minimally invasive techniques, such as behavioral observations, ultrasound, and the analysis of exhale samples, to improve our understanding of beluga whale reproductive biology and to develop tools that will allow researchers to effectively monitor wild beluga populations. The study of trained belugas in aquariums is essential to this research as it provides knowledge that would be logistically impossible to attain from wild belugas.

Andrea Bogomolni, PhD

Visiting investigator, Woods Hole Oceanographic Institution



Andrea Bogomolni received a BS in Wildlife Fisheries and Conservation Biology from UC Davis and a Master's degree in Biology from the Boston University Marine Program. For her thesis, she studied trophic status, contaminant burdens and biomarkers of exposure to contaminants in seals on Cape Cod. After spending six years working with marine mammals as the necropsy coordinator at the Cape Cod Stranding Network and as a research associate studying zoonotic marine pathogens at the Woods Hole Oceanographic Institution (WHOI), she obtained a PhD in Pathobiology in the Department of Veterinary Pathology at the University of Connecticut. Her thesis was aimed at understanding species differences in susceptibility to phocine distemper virus in seals and the effects of PCBs and saxitoxin during in-vitro replication of the virus. Since 2005, she worked with the Eastern Caribbean Cetacean Network as the stranding and database coordinator, published a marine mammals stranding guidebook and trained marine mammal stranding and response in the Spanish, English, Dutch and French Caribbean islands. Andrea is the co-founder and chair of the Northwest Atlantic Seal Research Consortium (NASRC) and is currently a visiting investigator at the Woods Hole Oceanographic Institution where her research has focused on dolphin morbillivirus. Her research also aims to address the challenges of rebounding marine mammal populations in the context of human dimension interactions, health and ecosystem function. Current research and outreach aimed at this goal includes a collaborative research project to characterize depredation and bycatch of seals in northeast U.S. fisheries; developing marine animal health risk guideline with fishers, the Massachusetts Department of Public Health and researchers; developing education guidelines and outreach material based on science for sharks, seals and fishers; and working with fishers, students and researchers to characterize diet of seals using prey DNA and sequencing technology. Through research and outreach, the goal is to be able to provide the knowledge needed to mitigate human impact on marine species, understand risks of these impacts, facilitate effective collaborations, and raise awareness of ocean health and its connection to human health.