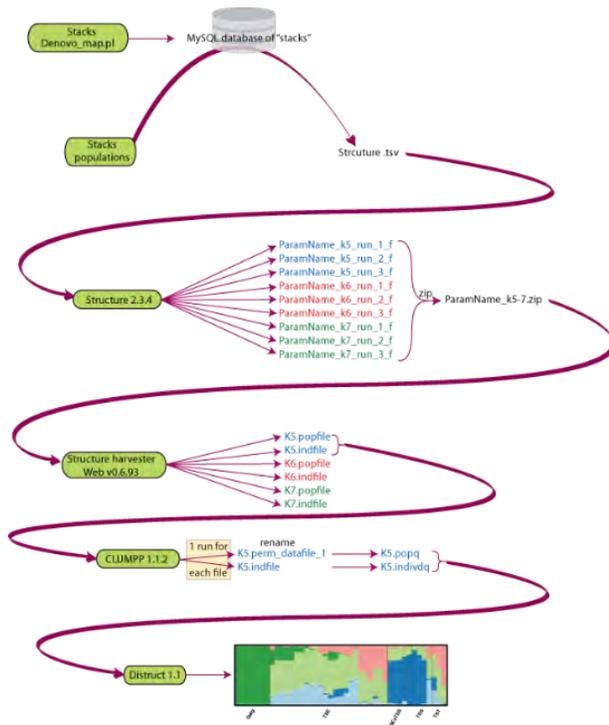


**CENTER FOR COMPARATIVE GENOMICS**



**Dr. W. Brian Simison**, Associate Curator  
[bsimison@calacademy.org](mailto:bsimison@calacademy.org)  
 415-379-5297

Brian Simison received his Ph.D. from UC Berkeley in 2000 and joined the Academy in 2007. Brian studies hybridizing systems to understand the processes associated with speciation; what generates, maintains and reduces biodiversity? He and his colleagues use modern comparative genomics tools available through the Academy's Center for Comparative Genomics to explore these questions. He currently collaborates on three systems, the fresh water turtle genus *Trachemys*, the coral reef angelfish *Centropyge*, and the microbiomes associated with spiders. Potential projects include:

- 1) Population genomics of Red eared slider turtles using high throughput sequencing and computational analyses.
- 2) Whole genome sequencing and assembly of the angelfish.
- 3) Metagenomics of spider communities.

## ENTOMOLOGY



**Dr. Lauren Esposito**, Assistant Curator, Schlinger Chair

[lesposito@calacademy.org](mailto:lesposito@calacademy.org)

415-379-5328

Lauren Esposito received her PhD in 2011 through the American Museum of Natural History/ City University of New York collaborative program, and joined the Academy in 2015. Lauren's research is focused on the systematics and evolution of arachnids, in particular scorpions. Her research has taken her on expeditions around the world, but much of her focus is on the arachnid communities in the Caribbean, Baja California, and the southwestern USA. Lauren uses a combination of methods including genomics, venomics, morphology, morphometrics and niche modelling to answer questions and test hypotheses about the biogeography, diversification, cryptic speciation, and adaptive radiations of arachnid life. Additionally, Lauren is the co-director of a non-profit organization, Islands & Seas, that is dedicated to promoting research, education outreach, and sustainable development in special places on earth. In 2015, there are two travel opportunities for interns: attending the tri-annual International Congress of Arachnology in Denver, CO; participating in a field course and field research in Baja California. Current research projects in the Arachnology Lab include:

- 1) Adapting to a life of salt: using genomics to understand the adaptation and diversification of arthropod communities on post-pleistocene salt flats in western North America.
- 2) Biogeography of Caribbean Arthropods: testing biogeographic hypotheses concerning the timing and colonization of the Caribbean using genetic datasets from multiple arthropod groups.
- 3) Cryptic Scorpions: Using genetic and morphological information to describe new species of scorpions.

## ICHTHYOLOGY



**Dr. Luiz Rocha**, Associate Curator, Follett Chair  
[lrocha@calacademy.org](mailto:lrocha@calacademy.org)  
415-379-5370

Luiz Rocha received his PhD from the University of Florida in 2003 and joined the Academy in 2011. His research interests and experience are centered on the evolution, phylogeography (or the geographic distribution of genetic lineages), biogeography, molecular systematics, genomics and community and behavioral ecology of coral reef and coastal marine fishes. He frequently tries to combine these fields, invoking ecology to help explain evolutionary patterns and using molecular tools to test biogeographic and systematic hypotheses. The overall objective of this interdisciplinary research is to test existing hypotheses (and propose new ones) about what generates and maintains the extremely high biodiversity in tropical coral reefs. Current projects include:

- 1) Phylogeography of Indo-Pacific and eastern Pacific reef fishes: using molecular markers to test biogeographic hypotheses and estimate species evolutionary histories.
- 2) Reef fish molecular systematics and taxonomy: using DNA sequences to estimate species relationships by generation cladograms, and compare DNA hypotheses with previously published morphological hypotheses.
- 3) Search for cryptic species: comparing DNA barcode sequences and morphological characters across several locations within a species to potentially find previously unrecognized taxa.

## INVERTEBRATE ZOOLOGY & GEOLOGY



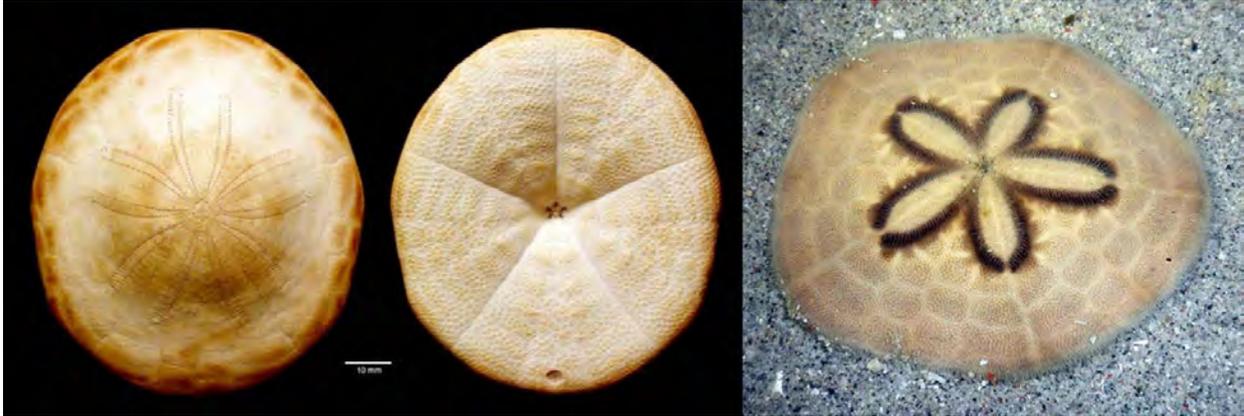
**Dr. Terrence M. Gosliner**, Senior Curator  
[tgosliner@calacademy.org](mailto:tgosliner@calacademy.org)  
415-379-5269

Terry's research on the systematics, phylogenetics and comparative biology of nudibranchs and other sea slugs focuses on the implications of phylogenies in understanding evolution of shell-loss, mimicry, and other comparative aspects of the evolution of these animals. He has studied the diversity of these mollusks along the California coast for more than 40 years. Most recently, this work employs evolutionary studies to develop new strategies for conservation of Philippine reefs in the center of the center of marine biodiversity. He develops key collaborations with research institutions, conservation organizations, and large public exhibits to bring these findings to diverse audiences. Potential projects include:

- 1) Systematics of Indo-Pacific nudibranchs.
- 2) Descriptions of new species of Philippine nudibranchs using molecular and morphological techniques.

You can learn more about Dr. Gosliner's research at:  
<http://research.calacademy.org/izg/staff/tgosliner>

## INVERTEBRATE ZOOLOGY & GEOLOGY

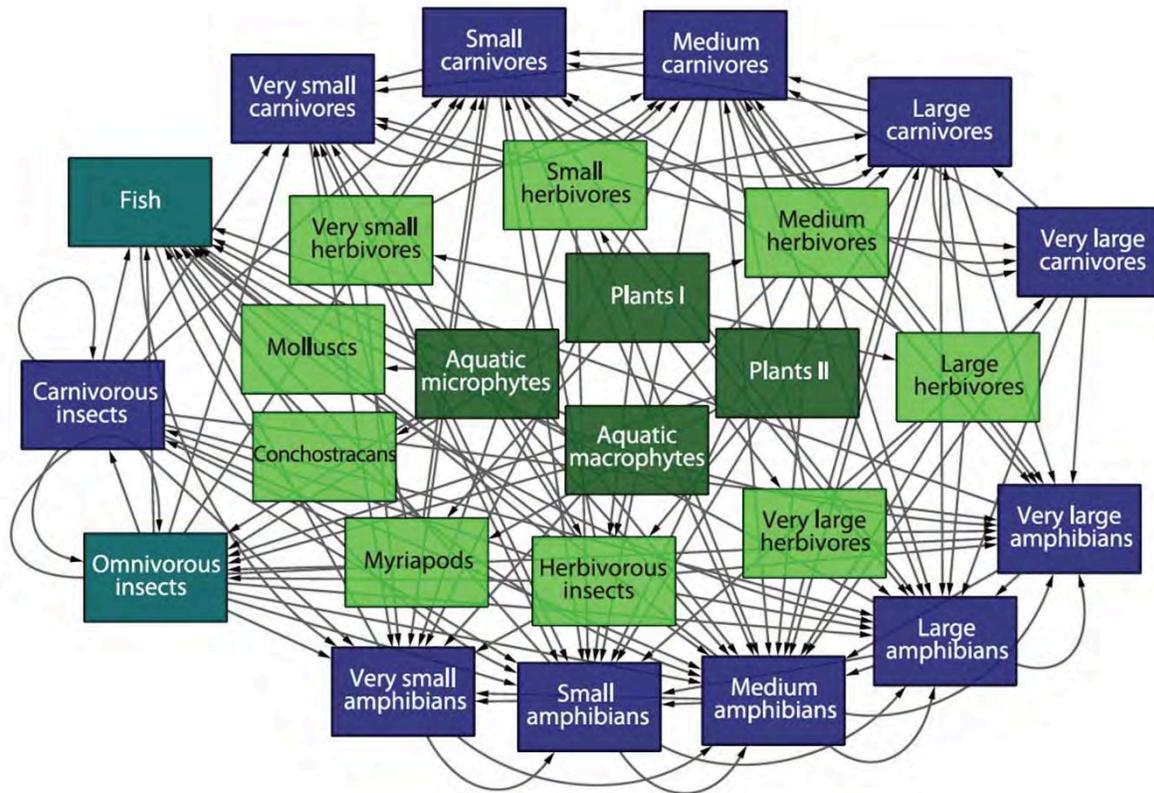


**Dr. Rich Mooi**, Curator and REU Site Director  
[rmooi@calacademy.org](mailto:rmooi@calacademy.org)  
415-379-5270

Rich Mooi received his Master's and Doctoral degrees from the University of Toronto, Canada, and has been with the Academy since 1990. He studies the systematics, phylogeny, paleontology, and biogeography of echinoderms, particularly sea urchins and sand dollars. His field work has included submersible dives off the Bahamas, paleontology in Alaska, ship-based collecting in Antarctica, and shallow- and deep-water expeditions in the Philippines. His research can be summarized as the study of the origins of evolutionary novelty, for which the Echinodermata constitutes an excellent model system. These studies are culminating in a theory that describes the homologies and evolutionary relationships among major clades throughout the phylum Echinodermata. Example projects include, but are not limited to:

- 1) Origin and evolution of the northeastern Pacific sand dollar fauna (Clypeasteroidea: Echinoidea). An examination of both Recent and fossil genera to develop cladistic and morphometric analyses that will examine the origins of this fauna.
- 2) Phylogenetics of the clypeasterine sand dollars. Although there are over 40 nominal species in the genus *Clypeaster*, morphometrics will be necessary to determine validity of these with the hope of using specimens to develop characters for a phylogenetic analysis.
- 3) Phylogenetic placement and biogeographic studies of Philippine sea urchins from any of a variety of major groups collected during the expeditions of 2011, 2014, and 2015.

## INVERTEBRATE ZOOLOGY & GEOLOGY



**Dr. Peter Roopnarine**, Curator  
[proopnarine@calacademy.org](mailto:proopnarine@calacademy.org)  
415-379-5271

Peter Roopnarine received his Ph.D. in Geology from the University of California Davis, and also holds degrees in Biology and Oceanography. He has been with the Academy since 1999. He studies a variety of topics in paleontology and evolutionary biology, including the dynamics of extinction, modelling ancient and modern ecosystems, and the evolutionary paleoecology of tropical American marine molluscs. Together, these topics focus on developing a theoretical basis for understanding the role of ecological diversity in the evolution and extinction of species. Potential projects include:

- 1) Morphometric description and biogeography of a widespread genus of marine bivalves in the tropical western Atlantic, ranging from the Oligocene to the Recent.
- 2) Building a food web for the San Francisco Bay and related offshore habitats, including more than 1,300 species, using the Academy's collections and other data.
- 3) Examining evolutionary and ecological change in Miocene-Pliocene marine communities of the Dominican Republic using morphometric analysis, quantitative ecological analysis, and multiple species of molluscs.

More information can be found at <http://zeus.calacademy.org/> and <http://zeus.calacademy.org/roopnarine/peter.html>

## INVERTEBRATE ZOOLOGY & GEOLOGY



**Dr. Gary Williams**, Curator  
[gwilliams@calacademy.org](mailto:gwilliams@calacademy.org)  
415-379-5244

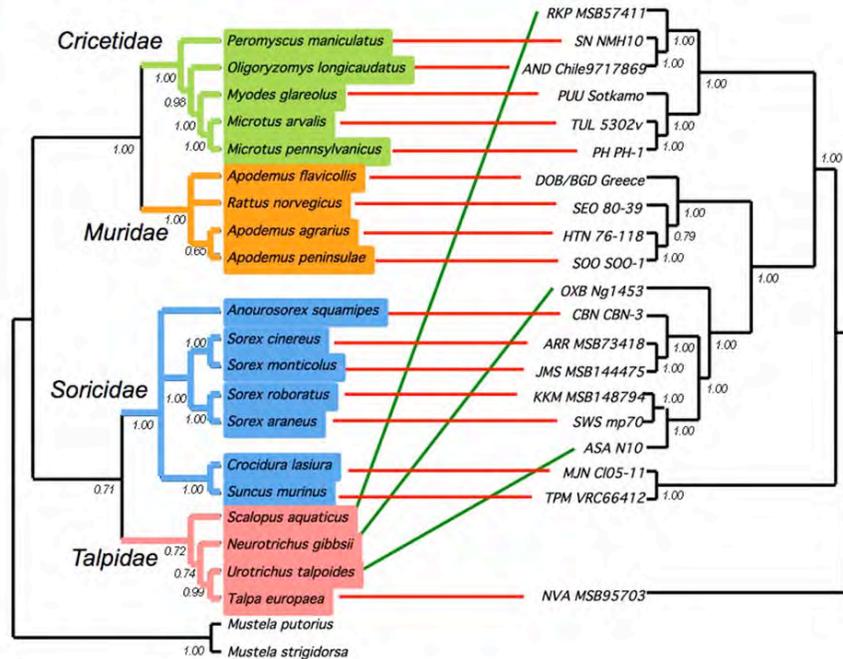
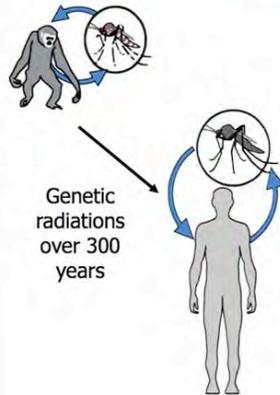
Gary Williams studies the systematics and biogeography of octocorals, as well as the history of research and exploration. His work involves coral communities from various parts of the world and includes coral reefs as well as deep-sea corals. Octocorals include some of the most beautiful and morphologically diverse animals in the world's oceans - these are the soft corals, sea fans, and sea pens. They are a group of corals characterized by having eight feathery tentacles surrounding the mouth of each polyp.

Potential projects include:

- 1) Systematics and biogeography of corals in different biogeographic regions, such as the Western Pacific, the Caribbean, and the Eastern Atlantic.
- 2) Systematics of coral reef octocorals in the Philippines using morphological and molecular techniques.
- 3) Phylogenetic analysis of gorgonian and pennatulacean octocorals in the Indo-West Pacific.

Additional information can be found at the *Octocoral Research Center* website:  
[http://researcharchive.calacademy.org/research/izg/orc\\_home.html](http://researcharchive.calacademy.org/research/izg/orc_home.html)

## MICROBIOLOGY



**Dr. Shannon N. Bennett**, Associate Curator, Patterson Scholar  
[sbennett@calacademy.org](mailto:sbennett@calacademy.org)  
 415-379-5334

Shannon Bennett received her Ph.D. from the University of British Columbia in 1999 and has been with the Academy since 2011. Her research focuses on the evolution, ecology and molecular drivers of viral diversity and emergence, integrating a combination of molecular biology, bioinformatics, virology, and invertebrate animal models of infection. She is particularly interested in the comparative molecular diversification of fast-evolving RNA viruses under different epidemiological and ecological conditions, transmission dynamics and life history modes.

Projects might include, but are not limited to:

- 1) Metagenomic analysis of mosquito-borne micro-organisms.
- 2) Identifying the phylogenetic structure and molecular drivers of diversification in dengue virus.
- 3) Exploring the biodiversity of Hantaviruses across small mammal populations.

## ORNITHOLOGY & MAMMALOLOGY



**Dr. Jack Dumbacher**, Curator  
[jdumbacher@calacademy.org](mailto:jdumbacher@calacademy.org)  
415-379-5377

Information about Dr. Dumbacher's research and academic interests can be found at:  
<http://research.calacademy.org/om/staff/jdumbacher>

Dr. Dumbacher's research focuses on describing the diversity in avian species and understanding the factors underlying this diversity. Using samples from an array of avian species, including birds from Papua New Guinea and from the Farallon Islands in the San Francisco Bay Area, Dr. Dumbacher uses high-throughput metagenomic sequencing to survey avian communities, then uses these data to explore the factors underlying the observed biogeography.

Potential projects include, but are not limited to:

- 1) Metagenomic and biogeographical analysis of bacterial communities of the Papua New Guinea avifauna.
- 2) Description of the viral communities of avian species nesting on the Farallon Islands.