

-Curriculum Vitae-
Santiago Herrera

CURRENT AFFILIATION

Massachusetts Institute of Technology & Woods Hole Oceanographic Institution Joint Program
Shank Laboratory of Molecular Ecology and Evolution

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EDUCATION

Ph.D. **Massachusetts Institute of Technology / Woods Hole Oceanographic Institution Joint Program, MA, USA**
Biological Oceanography, expected 2014

Timothy Shank PhD

M.Sc. **Universidad de los Andes, Bogotá, Colombia**
Biological Sciences, 2009

Juan A. Sánchez PhD

B.Sc. **Universidad de los Andes, Bogotá, Colombia**
Biology, 2008

Juan A. Sánchez PhD and Santiago Madriñán PhD

B.Sc. **Universidad de los Andes, Bogotá, Colombia**
Microbiology, 2008

Juan A. Sánchez PhD and Silvia Restrepo PhD

ADDITIONAL TRAINING

- Advanced SCUBA Diver (PADI), diving frequently since 2002. San Andres, Colombia.
2003
- Workshop on Molecular Evolution, Marine Biological Laboratory, Woods Hole, MA, USA
2009

RESEARCH INTERESTS

Oceanography, evolutionary biology, adaptation, molecular systematics, phylogenomics, population connectivity, and bio/phylogeography of marine organisms; conservation of deepsea ecosystems, worldwide.

PROFESSIONAL SOCIETIES

Sigma Xi, The Scientific Research Society 2007; Society of Systematic Biologists (SSB) 2008; American Association for the Advancement of Science (AAAS) 2009; The Oceanography Society (TOS) 2010; American Geophysical Union (AGU) 2010.

AD HOC JOURNAL REVIEWER

Molecular Phylogenetics and Evolution.

POSITIONS

- **Mentor**, *Woods Hole Oceanographic Institution*, Woods Hole, MA.
Training of WHOI summer fellow (Elizabeth Sibert) and intern volunteer (Catriona Munro) in molecular techniques: DNA extraction, PCR, sequencing, and data analysis.
2010
- **Web co-coordinator and developer**, *Woods Hole Oceanographic Institution*, Woods Hole, MA.
sba.who.edu, Barcoding Seamount Life: Advancing the capacity to discover, conserve, and manage biodiversity on seamounts, Seamount Barcoding Association.
2010-Present
- **Graduate Research Assistant**, *Woods Hole Oceanographic Institution*, Woods Hole, MA.
Timothy Shank PhD
2009-Present
- **Graduate Teaching Assistant** and tutor of the **Phylogenetic Systematics** laboratory, *Universidad de los Andes*, Bogotá, Colombia. Juan A. Sánchez PhD
2009
- **Fellow; Smithsonian Graduate Fellowship**, National Museum of Natural History, *Smithsonian Institution*, Invertebrate Zoology Department & Laboratories of Analytical Biology, Washington, DC.
Project Title: **Connectivity across the deep ocean: phylogeography and morphological variation of the cosmopolitan bubblegum octocoral *Paragorgia arborea* (Linnaeus)**.
Stephen D. Cairns PhD and Allen G. Collins PhD
2008-2009
- **Intern; United States Antarctic Program**, Marine Invertebrate Collections. National Museum of Natural History, *Smithsonian Institution*, Invertebrate Zoology Department. Washington, DC.
Project Title: **Transformation of the USAP collection into a web-based tool**.
Rafael Lemaitre PhD, Jerry Harasewych PhD, Jennifer Hammock PhD, Stephen D. Cairns PhD.
2008
- **Fellow; External Fellowship** National Museum of Natural History, *Smithsonian Institution*, Invertebrate Zoology Department & Laboratories of Analytical Biology. Washington, DC.
Research Focus: **Systematics and Phylogeography of *Paragorgia* spp. and *Craspedacusta* spp.**
Stephen D. Cairns PhD, Allen G. Collins PhD & Juan A. Sánchez PhD
2008
- **Participant** of the **Research Training Program (RTP)** of the National Museum of Natural History, *Smithsonian Institution*, Invertebrate Zoology Department & Laboratories of Analytical Biology. Washington, DC.
Project Title: **Molecular Diversity of the Freshwater Medusa *Craspedacusta sowerbii***.
Stephen D. Cairns PhD and Allen G. Collins PhD
2007
- **Teaching assistant** and tutor of the **Marine Ecology** class and laboratory, *Universidad de los Andes*, Bogotá, Colombia. Juan A. Sánchez PhD
2007
- **Teaching assistant** and tutor of the **Phylogenetic Systematics** class and laboratory, *Universidad de los Andes*, Bogotá, Colombia. Juan A. Sánchez PhD

2007

- **Teaching assistant** and tutor of the **Cell Biology** class laboratory, *Universidad de los Andes*, Bogotá, Colombia.
René Cuéllar MS

2006

- **Member** and **Volunteer** at the Natural History Museum of the *Universidad de los Andes*, Herbarium, Botany and Systematics Laboratory (Material collection/preparation. Primary organizer of the collections database). Bogotá, Colombia.

2006-2007

- **Research Assistant** at the BIOMMAR (Molecular Marine Biology-Lab) Research Institute, Biological Sciences Department, *Universidad de los Andes*, Bogotá, Colombia.

2006-Present

- **Volunteer Forest Ranger** at the Tayrona Natural National Park, *National Natural Parks of Colombia-PNN*, Colombian Department of Environment, Magdalena, Colombia.

2004-2005

AWARDS & HONORS

- WHOI Graduate Research Fellowship

2009-Present

- Smithsonian Graduate Fellowship, National Museum of Natural History, *Smithsonian Institution*.

2008-2009

- Travel Grant. Foundation for the Promotion of Research and Technology, Bank of the Republic of Colombia.

2008

- Systematics Research Fund Award of the Systematics Association & the Linnean Society of London.

2008

- 11th ICRS (International Coral Reef Symposium) scholarship.

2008

- Grant. CenSeam (Global Census of Marine Life on Seamounts CenSeam- part of the worldwide Census of Marine Life CoML) grant. Co - Juan A. Sánchez.

2007

- Sigma Xi Grant-In-Aid of Research

2007

- Participant in the Research Training Program-RTP program of the National Museum of Natural History, *Smithsonian Institution*. Founded by the Alice Eve Kennington.

2007

- Admitted for the “co-terminal” program of the *Universidad de los Andes* for students with highest academic GPAs (began the Master of Biological Sciences education program before graduating from college undergraduate education). Bogotá, Colombia.

2006-2009

PEER-REVIEWED PUBLICATIONS

- **Herrera S, & JA Sánchez (*in prep.*) Phylogenetic Systematics of the deep-sea octocoral genus *Paragorgia* (Paragorgiidae, Octocorallia).**

- **Herrera S, SD Cairns, TD Peard, T Jankowski, C Lewis & AG Collins (*in prep.*) Freshwater Jellyfishes: Molecular diversity and phylogeny of the cosmopolitan hydrozoans, *Craspedacusta spp.* BMC Evolutionary Biology.**

- **Herrera S & JA Sánchez (*submitted*) Genetic connectivity across the deep ocean: ITS2 (rDNA) variation in the bipolar distributed bubblegum coral *Paragorgia arborea*. Marine Ecology.**

- Sánchez JA, **S Herrera**, R Navas-Camacho, A Rodríguez-Ramírez, P Herron, V Pizarro, AR Acosta, P A Castillo, P Montoya & C Orozco. (2010) **White plague-like coral disease in remote reefs of the Western Caribbean**. International Journal of Tropical Biology, 58 (Suppl. 1): 145-154
- **Herrera S**, A Baco-Taylor & JA Sánchez (2010) **Molecular systematics of the bubblegum coral genera (Paragorgiidae, Octocorallia) and description of a new deep-sea species**. Molecular Phylogenetics and Evolution, 55: 123-125

NON PEER-REVIEWED PUBLICATIONS

- **Herrera S**, CA Hernandez & E Bahamon (2008) **Gerreros Fantasmales: comportamiento competitivo en el cangrejo *Ocypode gaudicaudii* de la isla Gorgona (Ghostly Warriors: competitive behavior of the crab *Ocypode gaudicaudii* in the Gorgona island)**. Revista Hipótesis: apuntes científicos uniandinos. Universidad de los Andes. Bogotá. (9): 34-35.

PRESENTATIONS

- **Herrera S** (2010), presented a talk in the Deep-Sea Exploration in Sangihe-Talaud 2010 (INDEX-SATAL 2010) Scientific Results Colloquium, Sam Ratulangi University, Manado, North Sulawesi, Indonesia. **Biological Observations in the INDEX-SATAL 2010 Expedition**.
- **Herrera S** (2010), presented a talk in the Indonesia-US Science Team Workshop, Deep-Sea Exploration in Sangihe-Talaud 2010 (INDEX-SATAL 2010), Manado, North Sulawesi, Indonesia. **Deep-sea biogeographical patterns in the Sangihe-Talaud region**.
- **Herrera S**, JA Sánchez & A Baco-Taylor (2008), presented a poster in the 4th Deepsea Coral Symposium, University of Victoria, Wellington, New Zealand. **Evolution in the Bubblegum Octocorals: DNA vs. Morphology**.
- **Herrera S** & Sánchez JA (2008), presented a poster in the 11th International Coral Reef Symposium, Ft. Lauderdale, FL, U.S.A. **On the White Plague Disease in Corals, With Remarks on the Interactions Between Disease, Environment and Host**.
- **Herrera S**, AG Collins, SD Cairns, T Jankowski, TL Peard (2008), presented a talk in the Evolution Meeting 2008, University of Minnesota, Minneapolis, MN. **Molecular Diversity of the Freshwater Medusa *Craspedacusta sowerbii* (Hydrozoa, Olindiasidae)**.

OUTREACH PRODUCTS

Weblogs

- [High Biodiversity in the Deep-Sea](#), Herrera S (2010) Signature Exploration: Indonesia-USA Deep-Sea Exploration of the Sangihe Talaud Regions, NOAA, Office of Ocean Exploration and Research. July 11, 2010
- [Coral reefs in the deep sea](#), Herrera S (2010) KARMA Cruise: Kermadec ARc MinerAls, CenSeam, Census of Marine Life on Seamounts, Census of Marine Life. June, 2010
- [Seeing it First Hand!](#) Herrera S (2009), Signature Exploration: Lophelia II 2009: Deepwater Coral Expedition: Reefs, Rigs and Wrecks, NOAA, Office of Ocean Exploration and Research. August 23, 2009

SCIENTIFIC EXPEDITIONS

- **Scientist (biology).** R/V *Ronald H. Brown*, ROV *Jason II*, [Lophellia II](#) 2009 Cruise: Deepwater Coral Expedition: Reefs, Rigs, and Wrecks. August 18 – September 5, **2009**. Gulf of Mexico, USA. Co-chief scientists: C. Fisher and E. Cordez.
- **Scientist (biology).** R/V *Tangaroa*, Deep Towed Camera System DTIS (NIWA), [KARMA TAN1007](#) Cruise: Kermadec ARc MinerAls. May 29 – June 11, **2010**. Kermadec arc, New Zealand. Chief scientist: Malcom Clark.
- **Participant scientist (telepresent).** R/V *Okeanos Explorer*, ROV Little Herc, EX1004 leg 2, cruise: [INDEX-SATAL 2010](#): Indonesia-USA Deep-Sea Exploration of the Sangihe Talaud Region. June 24 – July 14, **2010**. Sangihe Talaud, Indonesia. Chief scientist: Jim Holden.
- **Lead Scientist (on-board).** R/V *Okeanos Explorer*, ROV Little Herc, EX1004 leg 3, cruise: [INDEX-SATAL 2010](#): Indonesia-USA Deep-Sea Exploration of the Sangihe Talaud Region. July 21 – August 7, **2010**. Sangihe Talaud, Indonesia. Chief scientist: Tim Shank.

RELEVANT COURSEWORK

UNDERGRADUATE:

Molecular Biology (UniAndes); Phylogenetic Systematics (UniAndes); Evolutionary Biology; Evolutionary Genetics (UniAndes); Biogeography (UniAndes); Biodiversity (UniAndes); Marine Ecology (UniAndes); Developmental Biology (UniAndes); Zoology of Invertebrates and Vertebrates (UniAndes).

GRADUATE:

Topics in Evolutionary Ecology (UniAndes); Advanced Phylogenetic Systematics (UniAndes); Bioinformatics (UniAndes); Molecular Phylogenetics (UniAndes); Microsatellites Development, (UniAndes); Phylogenetics in the Era of Genomics (Harvard); Deep-sea Biology (Harvard); Biological Oceanography (MIT/WHOI), Evolutionary Genetics (Harvard); Statistics for Biology (Harvard); Chemical Biology (MIT).