

Curriculum Vitae

Angel Anne Yanagihara

Address	Pacific Cnidaria Research Laboratory University of Hawai'i at Mānoa 1993 East-West Road, Honolulu, Hawaii 96822. Phone: (808) 956-8328; E-mail: ayanagih@hawaii.edu
Birth	Anchorage, Alaska
Citizenship	United States of America
Education	
1982	B.A., Chemistry, Honors; B.A., Biology, Honors; University of Virginia, Charlottesville, Virginia
1983-1988	Doctoral Candidate, Fidia-Georgetown Institute for Neurosciences and Department of Biochemistry, Georgetown University School of Medicine, Washington, District of Columbia Dissertation Research: Expression of Adenylate Cyclase Component mRNAs in <i>Xenopus laevis</i> Oocytes ABD Ph.D., January 1987: Leave-of-absence, after birth of special-needs child.
1995-1997	Doctoral Candidate, Cell and Molecular Biology, University of Hawai'i at Mānoa, Honolulu, Hawaii
1997	Ph.D., Cell Molecular Neuro Science, Békésy Laboratory of Neurobiology, Pacific Biomedical Research Center, University of Hawai'i at Mānoa, Honolulu, Hawaii Dissertation: A Novel Approach to Structure-Function Relationship of the Sodium Ion Channel
Professional History	
1997-2003	Principal Investigator, Junior Research Professor, Békésy Laboratory of Neurobiology, Pacific Biomedical Research Center, University of Hawai'i at Mānoa, Honolulu, Hawaii
1999-present	Principal Investigator, Director, Pacific Cnidaria Research Laboratory, University of Hawai'i at Mānoa, Honolulu, Hawaii
2003-2016	Assistant Research Professor, Békésy Laboratory of Neurobiology, Pacific Biosciences Research Center, University of Hawai'i at Mānoa, Honolulu, Hawaii
2008-2016	Assistant Research Professor, Department of Tropical Medicine, Medical Microbiology and Pharmacology, John A. Burns School of Medicine, University of Hawai'i at Mānoa, Honolulu, Hawaii
2017-present	Associate Research Professor, Békésy Laboratory of Neurobiology, Pacific Biosciences Research Center, University of Hawai'i at Mānoa, Honolulu, Hawaii
2017-present	Associate Research Professor, Department of Tropical Medicine, Medical Microbiology and Pharmacology, John A. Burns School of Medicine, University of Hawai'i at Mānoa, Honolulu, Hawaii
2018-present	Adjunct Visiting Professor, Faculty of Medicine Hang Tuah University, Surabaya, Indonesia
2019-present	Visiting Science Research and Extension Consultant, Leyte Normal University, Tacloban, Leyte, Philippines
2019-present	Adjunct Professor, University of San Carlos, Cebu, Philippines
2019-present	Visiting Professor in Life Sciences, Polytechnic University of the Philippines, Manila, Philippines
2019-present	Visiting Professor, Mindanao State University-Iligan Institute of Technology, Iligan City, Philippines
2019-present	Visiting Professor in Marine Sciences, University of the Philippines, Diliman Campus, Manila, Philippines

2019-Present	Affiliated Visiting Professor, Translational Medicine, Mahidol University, Faculty of Medicine Ramathibodi Hospital
Fall 2019-Present	Problem Based Learning Faculty, John A. Burns School of Medicine, University of Hawai'i at Mānoa, Honolulu, Hawaii
Fall 2020-Present	Polytechnic University of the Philippines College of Science, Visiting Professor in Life Sciences, Director and Mentor: Cubozoan Envenomations in the Philippines: Field Ecology, Venom Biochemistry and Sting Management

Extramural Research Funding

PENDING

Commission of Higher Education (CHED), Philippines P10,000,000.00 (~\$200,000 USD)
6/01/2022-5/31/2024

Title: Community Education through Science Communication (CESC): Ecological Biodiversity and Risk Reduction Management of Jellyfishes and Neo-gastropods Venomous Stings in Southern Luzon, Philippines

The goals of this project are to conduct 1) field ecology and bioassays of chirodropid family box jellyfish; 2) public health assessment of envenomation based health burdens; 3) educational outreach to disseminate work products developed in aim 1 and 2 to local stakeholders and leaders in Southern Luzon, Philippines.

Proponent Institution: Polytechnic University of the Philippines

Role: Co-Principal Investigator

Department of Science and Technology, Philippines P500,000.00 (~\$10,000 USD)
12/01/2020- 11/30/2021

Prevention and Mitigation of Health Burden of Lethal Box Jellyfish Stings in Cebu Province, Philippines

The goal of this project is to conduct public health assessments, field ecology as well as bioassay of chirodropid family box jellyfish in Cebu and island in the Visaya region of the Philippines.

Proponent Institution: University of San Carlos-Talamban Campus

Role: Co-Investigator

PAST

W81XWH-16-R-SOC1 05/07/2019–11/6/2020
DOD/NAMRU-SA \$120,000

Jellyfish Venom Inhibition Services

The goal of this project is to develop a first-responder treatment to reduce local envenomation pathologies and to increase post-envenomation survival time targeting venom hyaluronidases, metalloproteinases, and phospholipase A2 with broad spectrum enzyme inhibitors.

Role: Co-Investigator

17339 Research Collaborative Agreement (Yanagihara) 11/26/2018–11/25/2019
Genentech \$35,000

Venom Biochemistry, Sequencing, Genome Assembly and Annotation of Select Cubozoa

The goal of this project is to collect diverse cubozoa for “venomic” analysis using state of the art molecular biological and biochemical approaches.

Role: Principal Investigator

5R21ES027230-02 (Yanagihara) 09/01/2016–08/31/2019
NIH/NIEHS \$423,500

Pathogenesis of Life-Threatening Box Jellyfish Envenomation and Irukandji Syndrome

The overall goal of this project is to utilize a previously validated piglet model to elucidate the mechanistic pathways involved in the onset and progression of cubozoan venom-induced Irukandji syndrome.

Role: Principal Investigator

5P30GM1147379-03 (Yanagihara R)	07/07/2017–06/30/2019
NIH/COBRE	\$20,000
Improving Outcomes of Life-Threatening Box Jellyfish Sting Injuries in the Philippines	
The goal of this project is to	
Role: Pilot Project Leader	
CADES Fund (Castelfranco-Yanagihara)	01/01/2017–12/30/2018
Békésy Lab Collaborative Project	\$3,000
The goal of this project is to develop mathematical modeling and empirical determination of box jellyfish venom porin binding.	
Role: Principal Investigator	
5U54MD008419-10 (Ofili)	10/01/2016–06/30/2017
NIH/NIMHD	\$40,000
RCMI Translational Research Network	
Pilot Project: Clinical Trial of Box Jellyfish Sting Treatment	
The overall goal of this project is to compare the effectiveness of conventional first-aid treatments and newly developed technologies for box jellyfish sting injuries.	
Role: Pilot Project Leader	
USSOCOM H92222-14-P-0058 (Yanagihara)	10/01/2016–12/31/2016
Department of Defense, Special Operations Command	\$26,000
Common Mechanisms of Envenomation	
The overall goal of this project is to prepare an in-depth review of mechanisms of envenomation.	
Role: Principal Investigator	
5P30GM114737-02 (Yanagihara R)	07/01/2016–10/31/2016
NIH/NIGMS	\$20,000
Pacific Center for Emerging Infectious Diseases Research	
Pilot Project: Pathogenesis of Irukandji Syndrome	
The overall goal of this project is to elucidate the pathogenesis of Irukandji syndrome.	
Role: Pilot Project Leader	
USSOCOM H92222-15-P-0067 007960-00002 (Yanagihara)	09/28/2015–09/27/2016
Department of Defense, Special Operations Command	\$78,500
Nematocyst Treatment for Combat Divers	
The overall goal of this project was to develop, test and fully translate topical therapeutics into deliverables compliant with military and civilian rules and regulations.	
Role: Principal Investigator	
1P30GM114737-01 (Yanagihara R)	07/01/2015–06/30/2016
NIH/NIGMS	\$40,000
Pacific Center for Emerging Infectious Diseases Research	
Pilot Project: Pathogenesis of Irukandji Syndrome	
The overall goal of this project was to elucidate the pathogenesis of Irukandji syndrome using a whole human blood model.	
Role: Project Leader	
USSOCOM H92222-14-P-0058 006719-00002 (Yanagihara)	09/04/2014–09/03/2015
Department of Defense, Special Operations Command	\$ 182,312
Nematocyst Treatment for Combat Divers	
The overall goal of this project was to identify cubozoan marine threats using various field sampling techniques including night and day SCUBA surveys in areas identified from nautical analysis of Key West and Approaches. Other goals include the translational deliverables of topical venom inhibitors.	
Role: Principal Investigator	

0000 (Yanagihara) 06/10/2014–01/31/2015
Sea Grant Hawaii and Puerto Rico Mayaguez, \$3,300 and \$3,720
Coastal Ecosystem Assessment: Identification and Characterization of Cubozoans in Puerto Rico that Pose a Threat to Human Health
The overall goal of this project was to identify cubozoan marine threats using various field sampling techniques including night and day SCUBA surveys in areas identified from nautical and case report analysis.
Role: Principal Investigator

Pew Foundation (Gillan, Program Director) 06/20/2012–06/30/2012
Mary and Robert Pew Public Education Fund \$5,000
Tiny Things Lead to Big Ideas: Nanobiology, SEM, TEM and HD Microscopy for the Next Generation
The overall goal of this project was to write, film, edit and produce a STEM film for 6th–9th grade students.
Role: Project Leader

NA09OAR4170060 (McManus, Yanagihara) 02/01/2012–01/31/2014
Sea Grant \$10,166
Biological and Physical Coupling in Māmalā Bay: Completing our Understanding of the Field Ecology of *Alatina moseri* in Hawaiian Waters
The overall goal of this project was to identify cubozoan marine threats using various field sampling techniques including night and day SCUBA surveys in areas identified from nautical and case report analysis.
Role: Co-Principal Investigator

001644-00001 (Yanagihara) 12/15/2011–06/15/2012
Waterlife Research \$9,979
Fire Ant Venom Blocker Testing
The overall goal of this project was to analyze fire ant venom and identify potential venom inhibitors.
Role: Principal Investigator

U54MD007584 (Hedges) 06/12/2011–08/01/2011
NIH/NIMHD \$20,548
RCMI Multidisciplinary and Translational Research Infrastructure Expansion (RMATRIX)
Identification and Characterization of Cryptic Fleming Bay Marine Stingers
The overall goal of this project was to identify cubozoan marine threats using various field sampling techniques including night and day SCUBA surveys in areas identified from nautical and case report analysis.
Role: Project Leader

0000 (Yanagihara) 01/01/2011–12/31/2011
UH Foundation Upside Fund \$65,000
Physalia Fluorescent Protein Gene Identification
The goals of this project were to purify fluorescent proteins, conduct basic biophysical characterization studies and utilize bioinformatics to mine transcriptome data guided by N-terminal Edman sequence data.
Role: Principal Investigator

5R01AR059388-04 (Yanagihara) 01/10/2011–12/31/2015
NIH/NIAMS \$1,000,000
Early Metazoan Nano-collagens for Promotion of Wound Healing
The goals of this project were to purify non-cysteine collagens, conduct N-terminal Edman sequencing, and utilize bioinformatics to mine transcriptome data.
Role: Principal Investigator

HCF 47031 (Yanagihara) 06/08/2010–12/08/2012
Hawaii Community Foundation \$50,000
Inflammatory Cytokines in Box Jellyfish Envenomation

The overall goal of this project was to elucidate cubozoan venom effects on a whole human blood model.

Role: Principal Investigator

5R25RR024281-02 (Withy) 09/15/2009–07/31/2010
NIH/NCRR \$8,000

Science Education Partnership Award

The overall goal of this project was to write, edit and produce curricula related to box jellyfish for 6th–9th grade students.

Role: Co-Investigator

P20RR016453 (Shohet) 10/01/2008–09/30/2009
NIH/NCRR \$25,000

COBRE Center for Cardiovascular Research

Pilot Project: Developing a Model of Cubozoan Venom-Induced Cardiovascular Collapse in Mice

The overall goal of this project was to characterize dose dependent outcomes in venom inject while recording echocardiography and electrocardiography data.

Role: Project Leader

5R21DA024444-02 (Yanagihara) 06/01/2008–05/31/2010
NIH/NIDA \$275,000

Novel TRPV Pharmacophores from Cnidarian Venom

The overall goal of this project was to isolate bioactive lipid fractions from cubozoan venoms for use in TRPV channel assays.

Role: Principal Investigator

20071368 (Yanagihara) 10/01/2007–07/31/2009
Hawaii Community Foundation \$50,000

Isolation and Characterization of Cardioactive Compounds from Hawaiian Box Jellyfish Venom

The overall goal of this project was to characterize cubozoan venom fraction effects in mice while recording echocardiography and electrocardiography data.

Role: Principal Investigator

5U54NS056883-03 (Chang) 09/01/2007–03/31/2011
NIH/NINDS \$22,000

Imaging Studies in Neurotoxicity and Neurodevelopment

The overall goal of this project was to characterize glutamate levels in cerebrospinal samples obtained from HIV-positive patients.

Role: Co-Investigator Project 3

5G12RR003061-22 (Shomaker) 02/15/2007–07/31/2009
NIH/NCRR \$75,000

Research Outcomes Accelerating Discoveries for Medical Applications and Practice

RCMI Clinical and Translational Science Bridging Fund

Novel TRPV Pharmacophores from Cnidarian Venom

The overall goal of this project was to isolated bioactive lipid fractions from cubozoan venoms for use in TRPV channel assays.

Role: Project Leader

20061497 (Yanagihara) 10/18/2006–04/18/2008
Hawaii Community Foundation \$50,000

Potent Inflammatory Effector Molecules in Hawaiian Box Jellyfish Venom

The overall goal of this project was to isolate and characterize bioactive lipid fractions from cubozoan venoms.

Role: Principal Investigator

NSF OCE Division of Ocean Sciences 0432479 (Laws) 02/01/2004–12/31/2008
2021-11-04

NSF/NIH/NIEHS	(\$3,816,943)
Pacific Research Center for Marine Biomedicine	\$200,000
Project #1 Ciguatera – Dinoflagellate Nutrient Profile and Ecology, Rapid Detection Methods, and Human Health	
The overall goal of this project was to develop an FTIR-based algorithm for the detection of polyterpenoid class toxins.	
Role: Co-Project Leader	
NA04OAR4600206 (Bidigare)	2004–2007
NOAA/OHH	\$150,000
Novel Antibiotic Terpenoid and Sterol Compounds from Hawaiian Cnidaria	
The overall goal of this project was to isolate terpenoid and sterol class compounds from cubozoa.	
Role: Project Principal Investigator	
20011908 (Yanagihara)	01/01/2002–12/31/2002
Hawaii Community Foundation	\$48,000
Treatment of Hawaiian Box Jellyfish Sting: Therapeutic Intervention for Dermatologic Inflammatory Response Associated with <i>Carybdea alata</i> Envenomation	
The overall goal of this project was to elucidate effective treatments for cubozoan envenomations.	
Role: Principal Investigator	
20001741 (Yanagihara)	01/01/2001–12/31/2001
Hawaii Community Foundation	\$48,000
Hawaiian and Australian Box Jellyfish Venom: Characterization of Neuromuscular Junction Effects and Isolation of Acetylcholine Receptor Specific Toxin	
The overall goal of this project was to conduct acetylcholine receptor assays.	
Role: Principal Investigator	
991879 (Yanagihara)	01/01/2000–12/31/2000
Hawaii Community Foundation	\$49,985
Hawaiian Box Jellyfish Venom: Characterization of a Hemolytic Lectin and a Factor Affecting Muscle Acetylcholine Receptors	
Role: Principal Investigator	
5U54NS039406-05 (Rayner)	09/01/1999–08/31/2004
NIH/NINDS	\$1,100,000
Specialized Neuroscience Research Program	
Project #1 Characterization of Novel Neuroactive Compounds from Cnidaria Venoms	
Role: Project Leader	
991879 (Yanagihara)	01/01/1999–12/31/1999
Hawaii Community Foundation	\$44,863
Characterization of Novel Neurohemolytic Toxins form Hawaiian Box Jellyfish Venom	
Role: Principal Investigator	
0000 (Yanagihara)	01/01/1998–12/31/1998
Cades Foundation	\$36,921
Characterization of the Biochemistry and Physiological Effects of Hawaiian Box Jellyfish Venom	
Role: Principal Investigator	
0000 (Yanagihara)	09/01/1998–12/31/1999
Queen Emma Foundation	\$35,000
Biochemistry and Mechanism of Action of Hawaiian Box jellyfish Venom	
Role: Principal Investigator	
958935 (Yanagihara)	01/01/1998–12/31/1998

Hawaii Community Foundation \$32,221
 Mechanism of Action of Hawaiian Box Jellyfish Venom
 Role: Principal Investigator

958935 (Yanagihara) 01/01/1998–12/31/1998
 Hawaii Community Foundation \$44,413
 Immune Mediated Dysfunction of Tissue-Specific Sodium Ion Channels in the Pathogenesis of
 Hantavirus Disease
 Role: Principal Investigator

0000 (Yanagihara) 01/01/1997–12/31/1998
 University Research Council \$13,000
 Construction and Characterization of Novel Sodium Ion Channel Monomers
 Role: Principal Investigator

Honors and Awards

1986 Sigma Xi Honors Society, First Place Award, Student Research Forum, Georgetown
 University, Washington, DC, April 9.
 1997 Tester Symposium, First Place Award, University of Hawaii, Honolulu, HI, April 2.
 2014 Scientist of the Year Award, Achievement Rewards for College Scientists, Hawaii
 Chapter, March 3.
 2014 TEDxHonoluluED, Innovator Award and Invited Speaker, April 12
 2014 Fellow, The Explorers Club
 2014 Research Fellow, The Royal Geographical Society
 2015 Distinguished Member, National Academy of Inventors, University of Hawaii Chapter
 2016 Fulbright Specialist, U.S. Department of State, project appointment June-August,
 Mitigation of Cnidarian Envenomation in Swimmers and of Salmon in Aquaculture,
 National University of Ireland Galway
 2017 Honorary Life Member of Philippine Organization of Science and Technology Educators
 (POSTE)
 2018 Fulbright Specialist, U.S. Department of State project appointment August-October, Field
 Ecology, Venom Biochemistry and Pathophysiology of Life Threatening Chirodroids in
 the Gulf of Thailand, Mahidol University

Specialized Credentials and Certifications

2011 Professional Association of Diving Instructors (PADI)
 2012 American Academy of Underwater Sciences (AAUS) Certified Member
 2012 National Association of Underwater Instructors (NAUI Worldwide) NAUI Dive Master
 2012 NAUI Rescue Diver
 2012 NAUI EANX Diver
 2014 Technical Divers International, Rebreather Certified
 2015 SCUBA, Dry Suit Certification
 2012-present O2, CPR Advanced Life Saving Certified, Divers Alert Network, DAN
 2015-present DAN Professional Diver Advanced Life Saving Certified
 2016-present Fulbright Specialist Roster
 2016 Scuba Dry Suit Certified, Technical Divers International
 2018 Ice Diving Certified, Antarctica, Diving Unlimited International

Professional Societies

American Chemical Society
 International Society of Toxinology
 Hydrozoan Society
 Biophysical Society
 Royal Geographical Society of London
 The Explorers Club Fellow '14

Issued Patents

Family of Physalia (sp.) Fluorescent Proteins, **Angel Yanagihara**, TLG 337, Granted August 22, 2001; US 60/314,378

Centipede Fluorescent Compounds, **Angel Yanagihara**, TLG 347, Granted March 14, 2002; US 60/365,220

Treatment of Cnidaria Intoxication, **Angel Yanagihara**, Jan Tytgat, Eva Cuypers, Everett Karlsson, filed June 9, 2006; W02007BE00056 20070611

Treatment of Cnidaria Intoxication with Vanilloid Receptor Antagonists, **Angel Yanagihara**, Jan Tytgat, et al., filed November 6, 2007; 07784888.6-1216 PCT/BE2007000056

Methods and Compositions for Treating and/or Inhibition toxins Using Copper-Containing Compounds, **Angel Yanagihara**, Granted January 8, 2019 US 10,172,883.

Provisional Patent Applications

(GPQ)_n Nano Collagen, **Angel Yanagihara**, filed May 29, 2009; Provisional Patent Docket No UH-00750

Zinc-Containing Compositions for the Treatment of Diseases, Illnesses and Syndromes Associated with Exposure to Pore Forming Toxins, **Angel Yanagihara**, filed October 2009; Provisional Patent Application Number: 61245238

Compositions and Multi-Step Methods of Using the Same for the Treatment of Jellyfish Stings, **Angel Yanagihara**, filed February 18, 2011; 61/444,656

Box Jellyfish Venom Toxin Inhibitor Formulation-Sting Treatment. University of Hawaii, Inventor: **Angel Yanagihara**, Application Number 61/217,880, filed June 4, 2009.

Zinc-Containing Compositions for the Treatment of Diseases, Illnesses and Syndromes Associated with Exposure to Pore Forming Toxins. University of Hawaii, Inventor: **Angel Yanagihara**, Application Number 61/245,238, filed September 23, 2009.

Compositions and Multi-Step Methods of Using the Same for the Treatment of Jellyfish Stings. University of Hawaii, Inventor: **Angel Yanagihara**, Application Number 61/444,656, filed February 18, 2011

US Provisional patent application filed. Application Number 61/554,936. Fluorescent Protein coding sequence determination of PFP1.A, PFP1.B, PFP1.C, PFP1.D and cloning of PFP1.C and 1.D November 2, 2011.

US Provisional patent application filed. Application Number 61/605,704. Inhibition of membrane lytic principals by copper-containing compounds, March 1, 2012.

Treatment for envenomation caused Inflammation University of Hawaii, Inventor: **Angel Yanagihara**, Application Number 61709953, filed October 4, 2012.

Topical Jellyfish Sting Inhibitor (Sting Stopper) University of Hawaii, Inventor: **Angel Yanagihara**, Application Number 61711151, filed October 8, 2012.

Full Patent Applications

ZINC-CONTAINING COMPOSITIONS FOR THE TREATMENT OF DISEASES, ILLNESSES AND SYNDROMES ASSOCIATED WITH EXPOSURE TO PORE FORMING TOXINS. University of Hawaii, Inventor: **Angel Yanagihara**, Application Number PCT/US10/50061 filed September 23, 2010.

COMPOSITIONS AND MULTI-STEP METHODS OF USING THE SAME FOR THE TREATMENT OF JELLYFISH STINGS. University of Hawaii, Inventor: **Angel Yanagihara**. US patent application filed February 21, 2012. This application claims priority from U.S. Provisional Application Serial No. 61/444,656, filed on February 18, 2011.

COMPOSITIONS AND MULTI-STEP METHODS OF USING THE SAME FOR THE TREATMENT OF JELLYFISH STINGS. University of Hawaii, Inventor: **Angel Yanagihara**. PCT application filed February 18, 2012. This application claims priority from U.S. Provisional Application Serial No. 61/444,656, filed on February 18, 2011.

BOX JELLYFISH VENOM TOXIN INHIBITOR FORMULATION-STING TREATMENT WITH ZINC COMPOSITIONS, University of Hawaii, Inventor: **Angel Yanagihara**, Full Patent Application August, 2011.

COMPOSITIONS AND MULTI-STEP METHODS OF USING THE SAME FOR THE TREATMENT OF JELLYFISH STINGS University of Hawaii, Inventor: **Angel Yanagihara**, filed February 18, 2012.

International Patent Application corresponding to the United States Provisional Application 61/444,656 University of Hawaii, Inventor: **Angel Yanagihara**, filed February 18, 2012.

COMPOSITIONS AND MULTI-STEP METHODS OF USING THE SAME FOR THE TREATMENT OF JELLYFISH STINGS US Utility patent application filed. Application Number 13/401,640. University of Hawaii, Inventor: **Angel Yanagihara**, filed February 21, 2012.

Other Professional Activities

Principal and President, Alatalab Solutions, LLC, Honolulu, HI

Funding by the United States Department of Defense (DOD) required formulation and submission of a “commercialization plan” for any funding-based, innovative discoveries from the mandate that publicly funded science has the goal of making positive contributions to society. Subsequent discovery of a novel and skin-safe inhibitor of jellyfish venom, initiated our efforts to comply with the previously proposed commercialization plan (produced in collaboration with University of Hawaii School of Business students) to explore the feasibility and efficacy of potential topical formulations for use in relieving jellyfish sting related signs and symptoms. Basic bench research together with collaborative efforts with UH Hilo College of Pharmacy compounding pharmacists led to the development of a topical cream formulation. Since UH Office of Technology Transfer and Economic Development quit claim on the previously disclosed technologies, a small business entity was created, Alatalab Solutions, LLC, to file necessary intellectual property and regulatory applications and then produce and distribute over-the-counter (OTC) preparation spray and cream under the registered trademark name, Sting No More[®] and US Patent Number 10,172,883, (Inventor Angel Yanagihara, January 8, 2019). The products are also internationally registered in GS1 system and granted UPC codes. This product line is comprised of an OTC “soap-category” relief cream and spray. These are fully FDA and FTC complaint. All ingredients are pharmaceutical grade in purity and Generally Recognized as Safe (GRAS) for topical use in OTC skin relief products by the FDA. Military and civilian entities can order these technologies through a web site, StingNoMore.com and from various retailers.

Published underwater photographer and videographer (credits include CNN)

Box Jellyfish Field Ecology Consultant, Diver

Open-ocean long-distance swimmer, Diana Nyad, contacted me in the winter of 2011 requesting assistance with expedition planning for her swim across the Florida straits from Havana, Cuba to Key West, Florida. Her three previous attempts had failed due to encounters with box jellyfish that resulted in severe life-threatening stings. Over the course of two years, I served as a consultant, inventor and diver, directing her efforts at jellyfish-sting prevention, avoidance and mitigation. I also accompanied her on the unsuccessful 2012 swim and successful 2013 swim, as a night diver performing in-water surveillance and sting avoidance or treatment activities.

Field Research Efforts

2019 Philippines: Barangay Talao-Talao, Lucena, Quezon Province; Cavite; Marabut and Guiuan, Samar; Tacloban, Leyte; Iligan, Malalag and Davao Del Sur, Mindanao; Tubbataha Reserve Sulu Sea; Lapu-lapu City and Panglao Bohol, Cebu, and Manila

Dates	March 21–April 1, April 22–June 1, June 28–July 4, Aug 23–Sept 6
March 17-18	Tacloban and Eastern Samar public health outreach activities
March 20	Lucena Disaster Risk Reduction Management Office (DRRMO) presentation
March 22	Cavite Special Hall presentation to 250 local stakeholders public health outreach
March 23–29	Tubbataha Reserve Sulu Sea surveys and public health outreach activities
March 30	Cebu USC meeting of director and presentation to students
April 23	Dalipuga, Pangan River and off shore Iligan at 1000 fathom drop surveys
April 25	Malalag, Bulacan, Baybay free diving surveys and public health outreach activities
May 23	Mr. Bryan Matillano, PhD proposal defense Cebu University of San Carlos and

2021-11-04

	presentation to students
Aug 23-Sep 6	University of the Philippines Diliman Campus, Visiting Professor to deliver Special Course in Marine Biotechnology, Venom Pathophysiology and Laboratory Bioassay Methods
Objectives	Deliver research and public health presentations related to cubozoan sting associated morbidity and mortality. Develop collaborations and partnerships; build research capacity, teach and mentor students.
Specific Roles	Visiting Science Research and Extension Consultant, Leyte Normal University, Tacloban, Leyte; Adjunct Professor, University of San Carlos, Cebu; Visiting Professor in Life Sciences, Polytechnic University of the Philippines, Manila; Visiting Professor, Mindanao State University-Iligan Institute of Technology, Iligan City, Mindanao; Visiting Professor University of the Philippines Diliman Campus, Marine Science Institute. Communicate evidence-based best practices to Rural Health Unit workers. Train Provincial Health Officer Staff in experimental assays to explore efficacy of potential envenomation treatment protocols as well as newly developed venom inhibitors. Demonstration of in country capacity building and outreach.
Results Sharing	<p>A manuscript is in preparation. The talks were recorded and broadcast locally. Multiple social media posts have also been made based upon the research presentations delivered.</p> <p>Yanagihara AA, The Science of the Sting and Translational Research, Plenary Speaker, 2019 Polytechnic University of the Philippines International Science, Technology and Engineering Conference (ISTEC), Panglao, Bohol, Philippines, May 28, 2019.</p> <p>Yanagihara AA, The Science of the Sting: Box Jelly Sting Prevention, Management and Mitigation, Tigil Pinsala At Sagip Buhay Mula Sa Salabay Panglao, University of the San Carlos Marine Biological Station, Maribago, Lapu-lapu City, Cebu, Philippines, May 23, 2019.</p> <p>Yanagihara AA, (Bilingual Tagalog English presentation), Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Caluwayan resort staff first aid and CPR training (three sessions), Marabut, Samar, Philippines, May 9–10, 2019.</p> <p>Yanagihara AA, Invited Presentation (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Invited presentation, Hollywood Barangay and Rural Health Unit, Guiuan, Samar, Philippines, May 7, 2019.</p> <p>Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives Pagsagop sa Kinabuhi ug Paglikay sa Piligrong Dala sa Salabay (Cebuano Translated by Jamaica Mae MSU from Tagalog version originally prepared by Carla Esquivel, University of Hawaii)</p> <p>Yanagihara AA, Box Jellyfish Envenomation Pathophysiology, Field Ecology and Experimental assays, Adjunct Faculty Instructional activity, Crash Course Lecturer, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 22–May 2, 2019.</p> <p>Yanagihara AA, Field Ecology of Cubozoan in the Philippines, Adjunct Faculty Instructional activity, Crash Course Lecturer, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 22–25, 2019.</p> <p>Yanagihara AA, Cubozoan biodiversity, Adjunct Faculty Instructional activity, Crash Course Lecturer, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 26–27, 2019.</p> <p>Yanagihara AA, Envenomation Pathophysiology, Adjunct Faculty Instructional activity, Crash Course Lecturer, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 28–29, 2019.</p> <p>Yanagihara AA, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside, Adjunct Faculty Instructional activity, Crash Course Lecturer, Symposium, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 30, 2019</p>

Yanagihara AA, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Invited Presentation, Baumbayan Rural Health Unit, Poblacion, Malalag, Davao del Sur, Mindanao, Philippines, April 25, 2019

Yanagihara AA, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Invited Presentation, Bulacan Rural Health Unit, Malalag, Davao del Sur, Mindanao, Philippines, April 25, 2019.

Yanagihara AA, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Invited Hospital presentation Jose J. Golingay General Hospital, Malalag, Davao del Sur, Mindanao, Philippines, April 25, 2019

Yanagihara AA, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside, Invited Speaker, Azores, Tubbataha Reserve, Sulu Sea, Philippines, March 27, 2019

Yanagihara AA, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Invited Speaker, Azores, Tubbataha Reserve, Sulu Sea, Philippines, March 23, 2019.

Yanagihara AA, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside, Outreach Event sponsored by Polytechnic University of the Philippines, (300 attendees) Cavite, Luzon, Philippines, and March 22, 2019.

Yanagihara AA, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside”, Guest Speaker for the 2019 A Sea of Opportunities: Recent Developments in Marine Biology and its Advantages Seminar on Marine Biology Southern Luzon State University, Lucban, Quezon, March 21, 2019.

Yanagihara AA, Improving Outcomes in Box Jellyfish Stings in the Philippines, Featured Speaker Leyte Normal University MOU signing ceremony, Tacloban, Leyte, Philippines, March 18, 2019.

Yanagihara AA, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Binokyahan Barangay (means box jellyfish!) Rural Health Unit, Basey Marabut, Samar, Philippines, March 17, 2019.

Yanagihara AA, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Marabut Rural Health Unit, Marabut, Samar, Philippines, March 17, 2019.

2019 Indonesia: Surabaya and Madura Island

Dates May 2019

Objectives Deliver course lectures and lab instruction to medical school students at the Hang Tuah Military Academy on Maritime Health and Coastal Medicine and make other presentations related to lethal box jellyfish envenomation pathophysiology, provide technological training in venom and tentacle based bioassays, develop collaborations and partnerships with affected fisher folk, build research capacity, mentor students, present recent progress in envenomation research and clinical care options.

Specific Roles Provide lectures, lab- and field- instruction as well as public health outreach training to Military Academy medical students as a newly appointed Adjunct Visiting Professor, Faculty of Medicine Hang Tuah University, Surabaya, Indonesia. Convey field ecology and bioassay expertise, conduct field surveys and collect chirodropids, conduct on site

	experimental assays to explore efficacy of potential venom inhibitors. Mentor students. Transfer technology.
Results	Isolated sting cnidae from specimens previously collected and stored. Conducted microscopic analysis with photo documentation. Utilized blood bioassays to quantitate venom inhibition.
Results Sharing	<p>Yanagihara AA, Hemolytic solution based assays and agar plate based experimental assays to assess the efficacy of topical first-aid approaches on cubozoan chirodroid tentacle firing and venom toxicity, Lab Course Lecturer, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, May 20–22, 2019.</p> <p>Yanagihara AA, Animal models of cubozoan envenomation pathophysiology and evidence based preclinical and clinical management, Universitas Airlangga, School of Veterinary Science Surabaya, Java, Indonesia May 21, 2019.</p> <p>Yanagihara AA, Introduction to cubozoan envenomation pathophysiology and evidence based preclinical and clinical management, Marine Medicine Course Lecturer, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, May 15–17, 2019.</p> <p>Yanagihara AA, What Happens When You Are Stung by Box Jellyfish? Pathophysiology and First Aid for Stings, Poster, Marine Medicine Course Lecturer, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, May 15–17, 2019</p> <p>Yanagihara AA, (Bilingual Indonesian/English) Penanganan Pertama Pada Korban Sengatan Ubur Ubur Kotak (First Aid for Box Jellyfish Stings), Invited Speaker, Clinical Care Meeting, Camplong Hospital (site of 2 recent deaths of children after box jelly stings) Puskesmas Camplong, Kabupaten Sampang, Jawa Timur, Indonesia, May 18, 2019.</p> <p>Yanagihara AA, (Bilingual Indonesian/English) Penanganan Pertama Pada Korban Sengatan Ubur Ubur Kotak (First Aid for Box Jellyfish Stings), Invited Speaker, Fisherman Collective Meeting, Sampang-Tambayan, Madura Island, Java Indonesia, May 18, 2019.</p> <p>Yanagihara AA, Experimental assays to assess the efficacy of topical first-aid approaches on Cubozoan (<i>Alatina alata</i>) tentacle firing and venom toxicity, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, May 15–17, 2019.</p>
2018 Philippines:	Davao City, Mindanao; Quezon Province, Barangay Talao-Talao; and Manila and Eastern Visayas, Tacloban, Leyte and Samar
Dates	October 18-28, July 13-27
Objectives	Deliver research and public health presentations related to cubozoan sting associated morbidity and mortality. Develop collaborations and partnerships; build research capacity, mentor students. STEM training in purification of venom from live specimens, as well as in how to perform live tentacle bioassays and inhibitor tests.
Specific Roles	Communicate evidence-based best practices to Rural Health Unit workers. Train Provincial Health Officer Staff in experimental assays to explore efficacy of potential envenomation treatment protocols as well as newly developed venom inhibitors demonstration of in country capacity building and outreach.
Results	Sting narratives and sting site locations were recorded. Presentations were delivered to over 300 health unit workers.
Results Sharing	<p>Yanagihara AA, Invited Speaker, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside. The Marine Science Institute, University of Philippines, Diliman Campus, Quezon City, Manila, Philippines, October 26, 2018.</p> <p>Yanagihara AA, Poster Presentation, First-Aid Responses to Life Threatening Cubozoan Stings: A Critical Review of the Literature and Novel Treatment Technologies, Philippine American Academy of Science and Engineering (PAASE), University of Philippines, Diliman Campus, Quezon City, Manila, Philippines, October 23–24, 2018.</p> <p>Yanagihara AA, Plenary Invited Speaker, Mechanisms of Pathogenesis of Marine Envenomation: Cubozoan Envenomation Epidemiology, Venom Biochemistry and Pathophysiology, Davao Philippines, Philippine Society of Clinical and Occupational Toxicology (PSCOT), October 18, 2018.</p>

2018 Thailand: Bangkok and Koh Phangan (Funded by US State Department Fulbright Specialist Program)

Dates	August 27–October 6, 2018
Objectives	Train local students and Thai faculty researchers in cubozoan-specific field ecology, specimen collection and ex vivo venom and live tentacle bioassay methodologies. Perform follow up meetings to investigate local care practices and present progress in cubozoan envenomation related pre- clinical and clinical care to Mahidol Faculty and Poison Control Faculty.
Specific Roles	Site survey ecologist, diver, underwater photographer; invited expert presenting pre-clinical and clinical care protocol progress in management of severe cubozoan envenomation sequelae. Provide onsite field training in animal collection, basic venom preparation and bioassay experimental techniques.
Results	Collected 27 living Chirodropid species box jellyfish. Conducted live tentacle bioassays. Performed quantitative and statistically powered experimental assays to compare heat, cold, vinegar, StingNoMore® technology effects on Thai cubozoan cytolytic activities. Initiated partnership for collaborative grant submissions.
Results Sharing	Yanagihara AA , Koh Samui and Koh Tao: Pathophysiology and Clinical Management Implications of Bioassays Results in Medically Relevant Cubozoans from Gulf of Thailand, Faculty of Medicine Ramathibodi Hospital Mahidol University, October 2, 2018. Yanagihara AA , The Science of the Sting: Cubozoan Envenomation Epidemiology, Venom Biochemistry and Pathophysiology, Mahidol University, Division of Translational Medicine, Bangkok, Thailand, September 25, 2018. Yanagihara AA , The Science of the Sting Cubozoan Envenomation Epidemiology, Venom Biochemistry and Pathophysiology, Armed Forces Research Institute of Medical Sciences (AFRIMS), Bangkok, Thailand, September 26, 2018. Yanagihara AA , Invited Speaker, Box Jellies: An Overview of Cubozoan Ecology and Envenomation Pathophysiology, Center for Oceanic Research and Education, South East Asia (CORE sea), Chaloklum, Koh Phangan Thailand, September 15, 2018.

2018 Indonesia: Surabaya and Situbundo

Dates	July 2018
Objectives	Deliver plenary lecture at International Conference on Maritime Health and Coastal Medicine (ICOME) and make other presentations related to lethal box jellyfish envenomation pathophysiology, provide technological training in venom and tentacle based bioassays, develop collaborations and partnerships with affected fisher folk, build research capacity, mentor students, purify venom from extant frozen specimens, perform bioassays and inhibitor tests, present recent progress in envenomation research and clinical care options.
Sites	Surabaya and Situbundo, Java, Indonesia
Specific Roles	Convey field ecology and bioassay expertise, conduct field surveys and collect chirodropids, conduct on site experimental assays to explore efficacy of potential venom inhibitors. Mentor students. Transfer technology.
Results	Captured live chirodropid. Photographed specimen with professional camera and techniques. Fixed specimen in buffered formaldehyde for further study. Isolated sting cnidae. Conducted microscopic analysis with photodocumentation. Utilized blood bioassays to quantitate venom inhibition. Conducted SCUBA surveys and photographed indigenous cnidaria both with visible light and fluorescent methods.
Results Sharing	Yanagihara AA , Plenary Invited Speaker, Experimental assays to assess the efficacy of topical first-aid approaches on Cubozoan (<i>Alatina alata</i>) tentacle firing and venom toxicity, International Conference on Maritime Health and Coastal Medicine (ICOME), Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, July 27, 2018.

2017 Thailand: Bangkok and Koh Samui (Funded by Minority Health International Research Training, MHIRT, NIMHD, NIH)

Dates	July 3–25, 2017
Objectives	Train local students and Thai faculty researchers in cubozoan- field ecology, -collection and -bioassay methodologies. Perform follow up meetings to investigate local care practices and present progress in cubozoan envenomation related pre- clinical and clinical care to Mahidol Faculty and Thai Ministry of Health epidemiologists.
Specific Roles	Site survey ecologist, diver, underwater photographer; invited expert presenting pre-clinical and clinical care protocol progress in management of severe cubozoan envenomation sequelae. Provide onsite field training in basic venom preparation and Bioassay experimental techniques.
Results	Collected live <i>Morbakka</i> species and Chironex species box jellyfish. Conducted live tentacle bioassays. Performed quantitative and statistically powered experimental assays to compare heat, cold, vinegar, StingNoMore® technology effects on Thai cubozoan cytolytic activities. Initiated partnership for collaborative grant submissions.
Results Sharing	Yanagihara AA , Koh Samui and Koh Tao: Pathophysiology and Clinical Management Implications of Bioassays Results in Medically Relevant Cubozoans from Gulf of Thailand, Faculty of Medicine Ramathibodi Hospital Mahidol University, July 24, 2017.

2017 Spain: Barcelona

Dates	June 20–29, 2017
Objectives	Conduct field surveys, collections and bioassays of <i>Pelagia noctulua</i>
Sites	Institute of Marine Sciences (Instituto de Ciencias del Mar), Barcelona
Specific Roles	Demonstrate live tentacle bioassay techniques. Isolate cnidae and conduct basic biochemical assays. Data from this pilot field effort will also be used in a planned collaborative grant submission (December 2017)
Results	Microscopic image data as well as blood agarose data will be analyzed and prepared for a manuscript submission.

2017 Philippines: Pangasinan, Luzon and Samar, Visayas

Dates	March 23–April 10, May 20–28, 2017, November 6–18, 2017
Objectives	Deliver research and public health presentations related to cubozoan sting associated morbidity and mortality. Develop collaborations and partnerships, build research capacity, mentor students. STEM training in purification of venom from live specimens, as well as in how to perform live tentacle bioassays and inhibitor tests.
Sites	Sual and Bolinao Pangasinan, Luzon as well as Tagalag, Legazpi, Rono, Marabut, and other rural villages in Samar, Visayas. lecture and lab presentations to Leyte Normal University and Holy Cross College of Carigara.
Specific Roles	Communicate evidence-based best practices to rural health unit workers. Train University of the Philippines Diliman at Bolinao Marine Laboratory students in experimental assays to explore efficacy of potential envenomation treatment protocols as well as newly developed venom inhibitors. The pilot field effort was also a response to my scored NIH R21 Fogarty Global Health Summary Statement. The study section urged a demonstration of in country capacity building and outreach prior to resubmission (December 2017) a proposal (Yanagihara, PI). Conduct field ecology, cubozoan collections, bioassays, specimen preparation. Present lectures and conduct live cubozoan bioassay training participatory lab demonstration to Leyte Normal University Marine Biology students.
Results	Sting narratives and sting site locations were recorded. Presentations were delivered to over 300 health unit workers. Over 400 students attended lectures or received laboratory training.
Results Sharing	A manuscript is in preparation. The talks were recorded and broadcast locally. Multiple social media posts have also been made based upon the research presentations delivered. https://www.facebook.com/groups/163544240763086/

2016 Indonesia: Jember University College of Medicine

Dates	October 31–November 19, 2016
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Objectives Deliver lectures and presentations related to lethal box jellyfish envenomation pathophysiology, provide technological training in venom and tentacle based bioassays, develop collaborations and partnerships with affected fisher folk, build research capacity, mentor students, purify venom from extant frozen specimens, perform bioassays and inhibitor tests, present recent progress in envenomation research and clinical care options.

Sites Jember and Situbundo, Java, Indonesia

Specific Roles Convey field ecology and bioassay expertise, conduct on site experimental assays to explore efficacy of potential venom inhibitors. Mentor students. Transfer technology.

Results Identified a potent inhibitor of *Physalia* venom hemolysin. Utilized blood bioassays to quantitate venom inhibition. Conducted SCUBA surveys and photographed indigenous cnidaria both with visible light and fluorescent methods.

Results Sharing **Yanagihara AA**, Plenary Presentation, Clinically relevant cnidarian envenomations: Pathophysiology and evidence-based management, International Conference on Agromedicine and Tropical Diseases 2016, Jember, Java, Indonesia, November 5, 2016.
Yanagihara AA, Invited Annual Expert Lecture, Why it's fun to be a scientist, Universitas Jember, Jember, Java, Indonesia, November 16, 2016.
Yanagihara AA, Evidence-Based Pre-clinical Management of Cubozoan Envenomations, Situbundo Regional Clinic, Java, Indonesia, November 17, 2016.

2016 Philippines: Cebu and Manila

Dates October 13-20

Objectives Deliver research and public health presentations related to cubozoan sting associated morbidity and mortality. Develop collaborations and partnerships.

Specific Roles Communicate evidence-based best practices in experimental assays to explore efficacy of potential envenomation treatment protocols as well as newly developed venom inhibitors.

Results Sharing **Yanagihara AA** Clinically Relevant Indo-Pacific Box Jellyfish Envenomations: Pathophysiology and Evidence-Based Management, Biodiversity & Chemical Biology of Marine and Terrestrial Life in the Philippine Region The Bellevue Resort Panglao Island, Bohol, Philippines, October 16-20, 2016.

2016 Ireland: National University of Ireland Galway, Cork, Dublin Bay (Fulbright-funded Project)

Dates July 5–August 10, 2016

Objectives Develop collaborations and partnerships, build research capacity, mentor students, collect *Cyanea* (Lion's Mane Jellyfish), purify venom, perform bioassays and inhibitor tests, present recent progress in envenomation research and clinical care options.

Sites Dublin Bay, Connemara, Kinsale

Specific Roles Convey field ecology and bioassay expertise, conduct on site experimental assays to explore efficacy of potential venom inhibitors. Mentor students. Transfer technology.

Results Identified a potent inhibitor of *Cyanea* venom hemolysin for potential use in fish. Utilized blood bioassays to quantitate venom inhibition. Conducted SCUBA surveys and photographed indigenous cnidaria both with visible light and fluorescent methods.

Results Sharing **Yanagihara AA**, Pathophysiology and Mitigation of *Cyanea* and *Pelagia* Envenomations in Fish and Humans, National University of Ireland, Galway, Ireland, August 5, 2016.
Yanagihara AA, Novel Technology for the Mitigation of *Cyanea* and *Pelagia* Envenomations in Finfish Aquaculture, Technology Transfer Office, National University of Ireland Galway, Ireland, July 20, 2016.
Yanagihara AA, Cnidarian Envenomation Related Pathophysiology in Fish, Vet-Aqua International, Galway, Ireland, July 18, 2016.
Yanagihara AA, Evidence-Based Pre-clinical Management of *Cyanea* Envenomations, National Poisons Information Centre, Beaumont Hospital, Dublin, Ireland, July 28, 2016.

2016 Australia: Northern Territories and Queensland, Weipa, Cape York

Dates December 13–December 21, Weipa, Cape York
 March 15–April 10, Northern Territories and Queensland, Darwin, Tiwi Islands, Weipa, Lizard Island, Townsville, Cairns, Port Douglas, Mackay

Objectives	Collect live <i>Chironex fleckeri</i> box jellies, conduct bioassays on-site using blood agar and blood agarose approaches. Isolate and purify venom. Present recent progress in cubozoan venom pathophysiology and envenomation clinical care best practices. Develop collaborations and partnerships, build research capacity, mentor students, purify venom from live specimens, and perform bioassays and inhibitor tests.
Sites	Weipa and Mapoon, Cape York, Australia
Specific Roles	Field collector, diver, invited expert on cubozoan envenomation pathophysiology. Convey bioassay expertise, conduct on site experimental assays to explore efficacy of potential envenomation treatment protocols as well as newly developed venom inhibitors.
Results	Transect and beach surveys performed at all research sites. Chirodropids collected and tested in Port Douglas. Collaborations and research partnerships initiated. Technologies and bioassay expertise transferred, on site experimental assays performed to explore efficacy of potential venom inhibitors. Over 900 images were recorded of 11, 2- to 18-hour long time course experimental assays. The results have been submitted in two manuscripts and comprise a new grant proposal. Established potency of novel formulations to inhibit pathophysiological sequelae subsequent to live <i>Chironex fleckeri</i> tentacle envenomation. Utilized blood bioassays to quantitate kinetics of envenomation induced pathophysiological sequelae.
Results Sharing	<p>Yanagihara AA, Wilcox CL, Cubozoan Sting-Site Seawater Rinse, Scraping, and Ice Can Increase Venom Load: Upending Current First Aid Recommendations Toxins 2017, 9(3), 105; doi: 10.3390/toxins9030105</p> <p>Yanagihara AA The Science of the Sting: Box Jellyfish Ecology, Venom Biochemistry, Pathophysiology and Clinical Management, Australia James Cook University Townsville (with satellite transmission to Cairns), April 7, 2016.</p> <p>Yanagihara AA The Science of the Sting, Australia Port Douglas, Venture Deeper Quicksilver, April 8, 2016.</p> <p>Yanagihara AA The Science of the Sting, Great Barrier Reef, Australia, Mike Ball Expeditions March 30, 2016.</p> <p>Yanagihara AA The Science of the Sting: Box Jellyfish Ecology, Venom Biochemistry, Pathophysiology and Clinical Management, Paspaley, Darwin, Northern Territories, Australia, March 25, 2016.</p> <p>Yanagihara AA The Science of the Sting: Box Jellyfish Ecology, Venom Biochemistry, Pathophysiology and Clinical Management, Darwin Aquaculture Centre, Channel Island Northern Territories, Australia, March 24, 2016.</p> <p>Yanagihara AA The Science of the Sting: Box Jellyfish Ecology, Venom Biochemistry, Pathophysiology and Clinical Management, Berrimah Veterinary Laboratories, Northern Territory Government, Darwin, Australia, March 22, 2016</p>

2015 Australia: Melbourne

Dates	December 15–18, 2015
Objectives	Present recent progress in cubozoan venom pathophysiology and envenomation clinical care best practices, develop collaborations and partnerships, technology transfer, grant application planning.
Specific Roles	Invited expert to present recent progress on cubozoan envenomation pathophysiology and envenomation related clinical sequelae.
Results	Future collaborations with clinical investigators at Royal Children's Hospital of Melbourne discussed and translational research progress presented to DAN-Asia Pacific leadership.
Results Sharing	<p>Yanagihara AA, Piglet Models of Irukandji Syndrome, Royal Children's Hospital, Melbourne, Victoria, Australia, December 15, 2015.</p> <p>Yanagihara AA, Evidence Based First Aid for Cubozoan Envenomations, Divers Alert Network Asia-Pacific Headquarters, Melbourne, Victoria, Australia, December 16, 2015.</p>

2015 Philippines: Visayas: Cebu, Bohol, Pamilican; and Manila (Dr. Baldomero Olivera, University of Utah Expedition)

Dates December 1–14, 2015

Objectives	Develop collaborations and partnerships for future field work and grant submissions, perform SCUBA surveys for cone snails and cubozoa, investigate current care and present progress in cubozoa envenomation related pre-clinical and clinical care.
Specific Roles	Invited expert presenting progress in elucidation of cubozoa related envenomation morbidity and mortality; a lead diver; underwater photographer and videographer.
Results	Initiated partnership for a collaborative R21 NIH submission (submitted February 16, scored).
Results Sharing	Yanagihara AA , The Science of the Sting: Box Jellyfish Venom Biochemistry, Pathophysiology and Clinical Management Implications. The Marine Science Institute, University of Philippines, Diliman Campus, Quezon City, Manila, Philippines, December 9, 2015. Yanagihara AA , The Science of the Sting: Box Jellyfish Venom Biochemistry, Pathophysiology and Clinical Management Implications, Cebu, University of Philippines, Mactan, Philippines, December 4, 2015.

2015 Thailand: Bangkok and Koh Samui (Funded by Malin Koh Samui and French Resort Association)

Dates	November 1–18, 2015
Objectives	Develop collaborations and partnerships for future field work and grant submissions; perform shore line seine net surveys and SCUBA surveys of Koh Samui and boat accessible sites including Koh Tao, to identify cubozoans; investigate local care practices and present progress in cubozoa envenomation related pre-clinical and clinical care to Thai Ministry of Health epidemiologists and present findings to Marine Management and Fisheries officials; present public information talks.
Specific Roles	Site survey ecologist, diver, underwater photographer; invited expert presenting pre-clinical and clinical care protocol progress in management of severe cubozoa envenomation sequelae.
Results	Confirmed presence of multiple species of highly toxic box jellyfish; discussed questionable pre-clinical care practices with public health decision makers. Initiated partnership for collaborative grant submissions.
Results Sharing	Yanagihara AA , Lethal Cubozoa Envenomations: Pathophysiology and Clinical Management Implications, Mahidol University Department of Toxinology, November 17, 2015. Yanagihara AA , Field Ecology and Pathophysiology of Lethal Cubozoa Species, Division of Marine and Coastal Resources Research and Development Institute, Bangkok Thailand, November 13, 2015. Yanagihara AA , Evidence Based First-Aid for Cubozoa Envenomations, Koh Samui Resort and Hotel Association, Koh Samui, Thailand, November 12, 2015. Yanagihara AA , Evidence Based First-Aid for Cubozoa Envenomations, French Association of Dive Resort and Hotels, Koh Samui, Thailand, November 12, 2015. Yanagihara AA , Cubozoa Biodiversity in the Gulf of Thailand: Field Ecology Surveys and Implications. Institute of Marine Science and Marine Technology, Burapha University, Chantaburi Campus, Chon Buri, Thailand, November 3, 2015.

USA: Key West Fleming Bay, Florida (funded by NIH/NIMHD, RMATRIX, USSOCOM)

Dates	September 3–21, 2014; October 5–20, 2015; August 3–21, 2015
Objectives	Perform night SCUBA surveys of Fleming Bay and Key West approaches to identify marine hazardous stingers including cubozoans; translate venom inhibitor technologies to applicable regulatory compliant field format for the mitigation of cubozoa stings; determine best practices to reduce combat diver and box jellyfish encounters.
Specific Roles	Principal Investigator and lead diver
Results	Identified, collected and characterized multiple hazardous stinging jellies; conducted field trials of sting relief spray and cream; characterized field ecology of most serious marine hazard- box jellyfish <i>Tamayo</i> sp.; advised unit commanders of field ecology based avoidance protocols.

Results Sharing Poster presentation,

https://www.academia.edu/6361376/Identification_and_Characterization_of_Cryptic_Fleming_Bay_Marine_Stingers_Special_Forces_Underwater_Operations_SFUWO_at_Fleming_Bay_FL

Yanagihara AA, Pathophysiology of Cubozoan Envenomations, Final Briefing, MacDill Air Force Base, USSOCOM, FL, October 20, 2015.

Yanagihara AA, Pathophysiology of Cubozoan Envenomations, Invited Speaker CME Presentation to Combat Medics, Special Forces Underwater Operations (SFUWO), Fleming Bay, FL, October 29, 2014.

Yanagihara AA, Pathophysiology of Cubozoan Envenomations, Invited Speaker, Mini-Symposium, Special Forces Underwater Operations (SFUWO), Fleming Bay, FL, September 4, 2013.

Yanagihara AA, Irukandji Syndrome, Invited Speaker, Mini-Symposium, Special Forces Underwater Operations (SFUWO), Fleming Bay, FL, September 4, 2013.

Yanagihara AA, Prevention, Treatment and Management of Cubozoan Envenomation Sequelae, Invited Speaker, Mini-Symposium, Special Forces Underwater Operations (SFUWO), Fleming Bay, FL, September 4, 2013.

Yanagihara AA, Identification and Characterization of Marine Stingers in the Florida Straits, Key West and Approaches, Invited Speaker, Mini-Symposium, Special Forces Underwater Operations (SFUWO), Fleming Bay, FL, September 4, 2013.

Puerto Rico and Caja de Muertos, Caribbean (Sea Grant Hawaii, Sea Grant Puerto Rico (Mayaguez)

Dates December 26, 2014–January 15, 2015 (Washington, DC, December 16–21, 2014)

Objectives Develop collaborations and partnerships for future field work and grant submissions; conduct day and night coastal and pelagic surveys to identify cubozoans; investigate current local care protocols; present progress in cubozoan envenomation related pre-clinical and clinical care.

Specific Roles Principal Investigator, invited expert, lead diver

Results Initiated partnership for a collaborative NIH submission (submitted July 16, scored in fundable range); identified, collected and photographed multiple species of highly toxic box jellies

Results Sharing Specimen collection hand delivered to Smithsonian colleagues for further research.

Yanagihara AA, Smithsonian Natural History Museum Zoology Department Seminar, The Science of Box Jellyfish Stings, January 20, 2015.

Yanagihara AA, Meet the Expert, Public Presentation with Questions and Answers, Smithsonian National Natural History Museum January 19, 2015.

Yanagihara AA, Expert Is In: Jellyfish Stings, January 19, 2015

<https://twitter.com/nmnh/status/556873717171494913>

<https://qrius.si.edu/visit/event/expert-jellyfish-stings#.VqVoU4Xysgs>

Yanagihara AA, The Science of the Sting: Box Jellyfish Venom Biochemistry and Tropical Medicine Translational Outcomes, Ponce School of Health Science, January 9, 2015.

Yanagihara AA, La ciencia detrás de la picadura de las medusas Cubozoa, Ponce Yacht and Fishing Club, Ponce Puerto Rico, January 8, 2015.

Commonwealth of the Northern Mariana Islands: Saipan (Sponsored by BYUH, UH, NIH)

Dates June 12–30, 2013; November 14–30, 2013

Objectives Conduct day and night coastal and pelagic SCUBA transect surveys to catalog corals, invertebrates, reef fish biodiversity and identify cubozoans; capture, collect and photograph box jellyfish; provide voucher samples to Smithsonian Institution. Mentor STEP-UP CNMI students.

Specific Roles Lead coastal survey diver, and lead night pelagic drift diver, cubozoan jellyfish voucher collector; instructor of cnidome characterization methods, underwater photographer and videographer.

- Results** Discovered and documented novel carybdeid species; photographed and collected multiple voucher specimens of box jellies; performed videography of *Alatina alata* and other carybdeids at night during pelagic drift dives.
- Results Sharing** **Yanagihara AA**, Field Ecology, Venom Biochemistry and Sting Pathobiology of Cubozoans in Hawaii, Bonaire and Saipan, Saipan Department of Fish and Wildlife, Saipan, Commonwealth of the Northern Mariana Islands (CNMI), November 25, 2013.
Yanagihara AA, Hurwitz K, Blalock H, Furey J, Goodwill R, Box Jellyfish: Field Ecology in Hawaii and Saipan, Envenomation and Treatment of Stings, Asia Pacific Academy of Sciences, Science Education, and Environmental Management, or APASEEM, Saipan, CNMI, November 21, 2013.
Yanagihara AA, Field Ecology, Venom Biochemistry and Sting Pathobiology of Cubozoans in Hawaii and Saipan, Asia Pacific Academy of Sciences, Science Education, and Environmental Management, or APASEEM, June 19, 2013.

Netherlands Antilles: Bonaire (Sponsored by Pew Foundation and NIH)

- Dates** June 12–30, 2011; May 2–22, 2013
- Objectives** Conduct day and night snorkel and SCUBA surveys of leeward coastal waters of Bonaire to identify, capture, collect and photograph box jellyfish species; provide voucher samples to Smithsonian Institution.
- Specific Roles** Lead scientific diver (SCUBA), underwater photographer, invited lecturer
- Results** Collected, photographed and documented *Alatina alata* spawning, fertilization and planula behavior; wrote, directed and produced Science of the Sting, a Pew Foundation sponsored STEM video
- Results Sharing** **Yanagihara AA**, Box Jellyfish Global Biodiversity Study: Bonaire, Australia and Hawaii, CIEE Research Station Bonaire, NL, April 29, 2013.
Yanagihara AA, Pew Foundation Project (2013) The Science of the Sting HD
<http://vimeo.com/79364811>

Invited Lectures and Recent Presentations

1. **Yanagihara AA**, (Special 2 hour lecture) Box Jellyfish Envenomation and First-Aid, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, July 10, 2021, online 491 participants.
2. **Yanagihara AA**, Plenary Speaker Zoom Conference, Cubozoan Envenomations: Mechanisms, Models And Management, Fourth International Multidisciplinary Research Conference, Leyte Normal University, Republic of The Philippines Tacloban City 2021 June 23-25, 2021.
3. **Yanagihara AA**, Invited Speaker, 20th World Congress of the International Society of Toxinology, Buenos Aires, Argentina, September 8-11, 2019.
4. Saguil N, **Yanagihara AA**, Coronado A, Kadler R, Saguil NS, “Antidote” Efficacy of cyclodextrin (Hydroxypropylbetacyclodextrin), copper gluconate, and temperature treatment with recent clinical case correlates from the Philippines, Invited Speaker, 20th World Congress of the International Society of Toxinology, Buenos Aires, Argentina, September 8-11, 2019.
5. **Yanagihara AA**, Barnhill JC, Del Rio S, Uyehara, C, Poster presentation, Lethal Box Jellyfish Envenomation Syndromes: Murine- And Porcine- In Vitro And Human Blood Based Model Approaches Military Health System Research Symposium (Abstract number: MHSRS-19-02560) at the Gaylord Palms Resort and Convention Center, Kissimmee, FL, 18-21 August 2019.
6. **Yanagihara AA**, The Science of the Sting and Translational Research, The Exchange Club of Honolulu, Oahu Country Club, Honolulu, HI, Aug 15, 2019.
7. **Yanagihara AA**, The Science of the Sting and Translational Research, Honolulu Metro Rotary Club, Honolulu, HI, June 13, 2019.
8. **Yanagihara AA**, The Science of the Sting and Translational Research, Plenary Speaker, 2019 Polytechnic University of the Philippines International Science, Technology and Engineering Conference (ISTEC), Panglao, Bohol, Philippines, May 28, 2019.
9. **Yanagihara AA**, (Bilingual Tagalog English presentation) The Science of the Sting: Box Jelly Sting Prevention, Management and Mitigation, Tigil Pinsala at Sagip Buhay Mula Sa Salabay

- Panglao, University of the San Carlos Marine Biological Station, Maribago, Lapu-lapu City, Cebu, Philippines, May 23, 2019.
10. **Yanagihara AA**, Hemolytic solution based assays and agar plate based experimental assays to assess the efficacy of topical first-aid approaches on cubozoan chirodroid tentacle firing and venom toxicity, Lab Course Lecturer, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, May 20–22, 2019.
 11. **Yanagihara AA**, Animal models of cubozoan envenomation pathophysiology and evidence based preclinical and clinical management, Universitas Airlangga, School of Veterinary Science Surabaya, Java, Indonesia May 21, 2019.
 12. **Yanagihara AA**, Introduction to cubozoan envenomation pathophysiology and evidence based preclinical and clinical management, Marine Medicine Course Lecturer, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, May 15–17, 2019.
 13. **Yanagihara AA**, What Happens When You Are Stung by Box Jellyfish? Pathophysiology and First Aid for Stings, Poster, Marine Medicine Course Lecturer, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, May 15–17, 2019
 14. **Yanagihara AA**, (Bilingual Indonesian/English) Penanganan Pertama Pada Korban Sengatan Ubur Ubur Kotak (First Aid for Box Jellyfish Stings), Invited Speaker, Clinical Care Meeting, Camplong Hospital (site of 2 recent deaths of children after box jelly stings) Puskesmas Camplong, Kabupaten Sampang, Jawa Timur, Indonesia, May 18, 2019.
 15. **Yanagihara AA**, (Bilingual Indonesian/English) Penanganan Pertama Pada Korban Sengatan Ubur Ubur Kotak (First Aid for Box Jellyfish Stings), Invited Speaker, Fisherman Collective Meeting, Sampang-Tambayan, Madura Island, Java Indonesia, May 18, 2019.
 16. **Yanagihara AA**, Experimental assays to assess the efficacy of topical first-aid approaches on Cubozoan (*Alatina alata*) tentacle firing and venom toxicity, Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, May 15–17, 2019.
 17. **Yanagihara AA**, (Bilingual Tagalog English presentation), Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Caluwayan resort staff first aid and CPR training (three sessions), Marabut, Samar, Philippines, May 9–10, 2019.
 18. **Yanagihara AA**, Invited Presentation (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Invited presentation, Hollywood Barangay and Rural Health Unit, Guiuan, Samar, Philippines, May 7, 2019.
 19. Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives Pagsagop sa Kinabuhi ug Paglikay sa Piligrong Dala sa Salabay (Cebuano Translated by Jamaica Mae MSU from Tagalog version originally prepared by Carla Esquivel, University of Hawaii)
 20. **Yanagihara AA**, Box Jellyfish Envenomation Pathophysiology, Field Ecology and Experimental assays, Adjunct Faculty Instructional activity, Crash Course Lecturer, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 22–May 2, 2019.
 21. **Yanagihara AA**, Field Ecology of Cubozoan in the Philippines, Adjunct Faculty Instructional activity, Crash Course Lecturer, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 22–25, 2019.
 22. **Yanagihara AA**, Cubozoan biodiversity, Adjunct Faculty Instructional activity, Crash Course Lecturer, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 26–27, 2019.
 23. **Yanagihara AA**, Envenomation Pathophysiology, Adjunct Faculty Instructional activity, Crash Course Lecturer, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 28–29, 2019.
 24. **Yanagihara AA**, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside, Adjunct Faculty Instructional activity, Crash Course Lecturer, Symposium, Mindanao State University, Institute of Technology, Iligan, Mindanao, Philippines, April 30, 2019
 25. **Yanagihara AA**, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach,

- Invited Presentation, Baumbayan Rural Health Unit, Poblacion, Malalag, Davao del Sur, Mindanao, Philippines, April 25, 2019
26. **Yanagihara AA**, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Invited Presentation, Bulacan Rural Health Unit, Malalag, Davao del Sur, Mindanao, Philippines, April 25, 2019.
 27. **Yanagihara AA**, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Invited Hospital presentation Jose J. Golingay General Hospital, Malalag, Davao del Sur, Mindanao, Philippines, April 25, 2019
 28. **Yanagihara AA**, The Science of the Sting: An overview of Cubozoan Ecology and Envenomation Pathophysiology, Honolulu Science Café, HASR Bistro Honolulu, HI, April 10, 2019
 29. **Yanagihara AA**, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside, Invited Speaker, Azores, Tubтатаha Reserve, Sulu Sea, Philippines, March 27, 2019
 30. **Yanagihara AA**, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Invited Speaker, Azores, Tubтатаha Reserve, Sulu Sea, Philippines, March 23, 2019.
 31. **Yanagihara AA**, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside, Outreach Event sponsored by Polytechnic University of the Philippines, (300 attendees) Cavite, Luzon, Philippines, March 22, 2019.
 32. **Yanagihara AA**, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside”, Guest Speaker for the 2019 A Sea of Opportunities: Recent Developments in Marine Biology and its Advantages Seminar on Marine Biology Southern Luzon State University, Lucban, Quezon, March 21, 2019.
 33. **Yanagihara AA**, Improving Outcomes in Box Jellyfish Stings in the Philippines, Featured Speaker Leyte Normal University MOU signing ceremony, Tacloban, Leyte, Philippines, March 18, 2019.
 34. **Yanagihara AA**, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Binokyanan Barangay (means box jellyfish!) Rural Health Unit, Basey Marabut, Samar, Philippines, March 17, 2019.
 35. **Yanagihara AA**, (Bilingual Tagalog English presentation) Stop Lethal Box Jelly Stings that can occur in on foot deep water and Save Lives, Tigil Pinsala at Sagip Buhay mula sa Salabay (Tagalog version prepared by Carla Esquivel, University of Hawaii), Public Health Outreach, Marabut Rural Health Unit, Marabut, Samar, Philippines, March 17, 2019.
 36. **Yanagihara AA**, Invited Speaker, Hanauma Bay Swimmers, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside, University of Hawaii, Honolulu, Hawaii, November 16, 2018.
 37. **Yanagihara AA**, Invited Speaker, Box Jellyfish Sting Management: Translational Research from Beach to Bench to Bedside. The Marine Science Institute, University of Philippines, Diliman Campus, Quezon City, Manila, Philippines, October 26, 2018.
 38. **Yanagihara AA**, Poster Presentation, First-Aid Responses to Life Threatening Cubozoan Stings: A Critical Review of the Literature and Novel Treatment Technologies , Philippine American Academy of Science and Engineering (PAASE), University of Philippines, Diliman Campus, Quezon City, Manila, Philippines, October 23–24, 2018.
 39. **Yanagihara AA**, Plenary Invited Speaker, Mechanisms of Pathogenesis of Marine Envenomation: Cubozoan Envenomation Epidemiology, Venom Biochemistry and Pathophysiology, Philippine Society of Clinical and Occupational Toxicology (PSCOT), Davao, Mindanao, Philippines, October 18, 2018.

40. **Yanagihara AA**, Koh Samui and Koh Tao: Pathophysiology and Clinical Management Implications of Bioassays Results in Medically Relevant Cubozoans from Gulf of Thailand, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, October 2, 2018
41. **Yanagihara AA**, The Science of the Sting: Cubozoan Envenomation Epidemiology, Venom Biochemistry and Pathophysiology, Mahidol University, Division of Translational Medicine, Bangkok, Thailand, September 25, 2018.
42. **Yanagihara AA**, The Science of the Sting Cubozoan Envenomation Epidemiology, Venom Biochemistry and Pathophysiology, Armed Forces Research Institute of Medical Sciences (AFRIMS) Bangkok, Thailand, September 26, 2018.
43. **Yanagihara AA**, Invited Speaker, Box Jellies: An Overview of Cubozoan Ecology and Envenomation Pathophysiology, CORE sea Chaloklum, Koh Phangan Thailand, September 15, 2018.
44. **Yanagihara AA**, Special Speaker Series, Box Jellies: An Overview of Cubozoan Ecology and Envenomation Pathophysiology, Genentech August 17, 2018.
45. **Yanagihara AA**, Invited Speaker, Dendritic Cell Maturation Factor from *Alatina alata* venom, Gordon Research Conference Mount Snow in West Dover, VT August 5–8, 2018.
46. **Yanagihara AA**, Plenary Invited Speaker, Experimental assays to assess the efficacy of topical first-aid approaches on Cubozoan (*Alatina alata*) tentacle firing and venom toxicity, International Conference on Maritime Health and Coastal Medicine (ICOME), Faculty of Medicine, Hang Tuah University, Surabaya Indonesia, July 27, 2018.
47. **Yanagihara AA**, Invited Speaker, Improving Outcomes of Box Jellyfish Sting Injuries in the Philippines, Department of Disaster Risk Reduction and Management, Tacloban, Philippines, July 17, 2018.
48. **Yanagihara AA**, Invited Speaker, Improving Outcomes of Box Jellyfish Sting Injuries in the Philippines, Eastern Visayas Medical Center, Tacloban, Philippines, July 16, 2018.
49. **Yanagihara AA**, Invited Speaker, Improving Outcomes of Box Jellyfish Sting Injuries in the Philippines, Region 8 Department of Health, Tacloban, Philippines, July 16, 2018.
50. **Yanagihara AA**, Invited Speaker, Improving Outcomes of Box Jellyfish Sting Injuries in the Philippines, Talao-Talao, Barangay, Quezon, Philippines, July 13, 2018.
51. **Yanagihara AA**, Invited Speaker, Improving Outcomes of Box Jellyfish Sting Injuries in the Philippines, Integrated Provincial Health Office, Lucena City, Quezon Philippines, July 13, 2018.
52. **Yanagihara AA**, The Science of the Sting, Waikiki Aquarium Speaker Series, April 11, 2018.
53. **Yanagihara AA**, Special Invited Speaker, Medically Relevant Cubozoans: Pathophysiology and Clinical Management Implications of *In Vivo* and *In Vitro* Envenomation Model Data, Tripler Army Medical Center, Clinical Investigations, February 5, 2018.
54. **Yanagihara AA**, Follow up Visit and Data collection regarding: Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care, Alaminos City Pangasinan, Philippines. November 15, 2017.
55. **Yanagihara AA**, Seminar/Workshop on Improving Outcomes of Life Threatening Box Jellyfish Sting Injuries in the Philippines, Capitol Resort Hotel, Lingayen, Pangasinan, Philippines, November 14, 2017.
56. **Yanagihara AA** Plenary Speaker for 18th Philippine Organization of Science and Technology Educators (POSTE) Region 08, Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care, Carigara National High School and Holy Cross College of Carigara, Carigara, Leyte, Philippines. (attended by ~ 150- Rural Health Unit representatives as well as Carigara Region 08 students and faculty). November 10, 2017.
57. **Yanagihara AA** Plenary Speaker, Conference: Improving Outcomes of Life Threatening Box Jellyfish Sting Injuries in the Philippine, Leyte Normal University LNU, Tacloban, Leyte, Philippines. (attended by ~ 200- Rural Health Unit representatives as well as LNU students and faculty) November 9, 2017.
58. **Yanagihara AA**, Follow up Visit and Data collection regarding: Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care, Marabut Clinic, Samar, Philippines November 9, 2017.
59. **Yanagihara AA**, Follow up Visit and Data collection regarding: Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care, Caluwayan Barangay, Marabut, Samar, Philippines, November 9, 2017.

60. **Yanagihara AA**, Barnhill JC, Uyehara, C, Poster presentation, Tropical Lethal Box Jellyfish Venom Dose-Dependent Outcome in a Piglet Model, 2017 Military Health System Research Symposium (Abstract number: MHSRS-17-1887) at the Gaylord Palms Resort and Convention Center, Kissimmee, FL, 27-30 August 2017.
61. **Yanagihara AA**, Koh Samui and Koh Tao: Pathophysiology and Clinical Management Implications of Bioassays Results in Medically Relevant Cubozoans from Gulf of Thailand, Faculty of Medicine Ramathibodi Hospital Mahidol University, July 24, 2017.
62. **Yanagihara AA**, Experimental Models of Medusozoan Envenomation. Institute of Marine Sciences (Instituto de Ciencias del Mar), Barcelona, Spain, June 27, 2017.
63. **Yanagihara AA**, Laboratory Demonstration of Bioassays used to Evaluate the Efficacy Vinegar, Temperature Packs and Novel First-Aid Formulations in Cubozoan Stings, Leyte Normal University LNU, Tacloban, Leyte, Philippines, May 27, 2017.
64. **Yanagihara AA** Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care LNU, Tacloban, Leyte, Philippines, May 26, 2017.
65. **Yanagihara AA**, Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care, Barangay Legaspi, Marabut, Samar, Philippines, April 8, 2017.
66. **Yanagihara AA**, Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care, Tag-alag Health Station, Marabut, Samar, Philippines, April 7, 2017.
67. **Yanagihara AA**, Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care, Barangay Rono, Marabut, Samar, Philippines, April 5, 2017.
68. **Yanagihara AA**, Lethal Box Jellyfish, Bolinao Marine Lab, Bolinao, Pangasinan Province, Luzon Philippines, March 31, 2017.
69. **Yanagihara AA**, Lethal Box Jellyfish Stings: Evidence-Based Pre-clinical and Clinical Care, Sual Rural Health Unit, Sual, Pangasinan Province, Luzon Philippines, March 28, 2017.
70. **Yanagihara AA**, From Beach to Bench and Back: Taking the Sting out of Box Jellyfish, SeaGrant Hanauma Bay Education Program, HI, March 16, 2017.
71. **Yanagihara AA**, Featured Speaker, Outside the Box, Naval Supply Corps Ball, Honolulu, Hawaii, February 25, 2017.
72. **Yanagihara AA**, Plenary Presentation, Clinically relevant cnidarian envenomations: Pathophysiology and evidence-based management, International Conference on Agromedicine and Tropical Diseases 2016, Jember, Indonesia, November 5, 2016.
73. **Yanagihara AA**, Invited Annual Expert Lecture, Why it's fun to be a scientist, Universitas Jember, Jember, Indonesia, November 16, 2016.
74. **Yanagihara AA**, Evidence-Based Pre-clinical Management of Cubozoan Envenomations, Situbundo Regional Clinic, Java, Indonesia, November 17, 2016.
75. **Yanagihara AA** Clinically Relevant Indo-Pacific Box Jellyfish Envenomations: Pathophysiology and Evidence-Based Management, Biodiversity & Chemical Biology of Marine and Terrestrial Life in the Philippine Region The Bellevue Resort Panglao Island, Bohol, Philippines, October 16-20, 2016.
76. **Yanagihara AA**, From Beach to Bench and Back: The Science of the Box Jellyfish Sting, Friends of Hanauma Bay, Honolulu, HI, September 28, 2016.
77. **Yanagihara AA**, Clinically Relevant Indo-Pacific Box Jellyfish Envenomations: Pathophysiology and Evidence-Based Management, Pan-American Congress of International Society of Toxinology, Miami, FL, September 22, 2016.
78. **Yanagihara AA**, First-Aid Responses to Life Threatening Cubozoan Stings: A Critical Review of the Literature and Novel Treatment Approach Technologies (poster), Military Health Science Research Symposium, Kissimmee, FL, August 17, 2016.
79. **Yanagihara AA**, Pathophysiology and Mitigation of Cyanea and Pelagia Envenomations in Fish and Humans, National University of Ireland, Galway, Ireland, August 5, 2016.
80. **Yanagihara AA**, Novel Technology for the Mitigation of Cyanea and Pelagia Envenomations in Finfish Aquaculture, Technology Transfer Office, National University of Ireland, Galway, Ireland, July 20, 2016.
81. **Yanagihara AA**, Cnidarian Envenomation Related Pathophysiology in Fish, Vet-Aqua International, Galway, Ireland, July 18, 2016.

82. **Yanagihara AA**, Evidence-Based Pre-clinical Management of Cyanea Envenomations, National Poisons Information Centre, Beaumont Hospital, Dublin, Ireland, July 28, 2016.
83. **Yanagihara AA**, Evaluating Efficacy Vinegar, Temperature Packs and Novel First-Aid Formulations in Cubozoan and *Physalia* Stings, International Jellyfish Bloom Symposium, Barcelona, Spain, June 3, 2016.
84. **Yanagihara AA**, Venom Proteome of *Alatina alata* (Cnidaria: Cubozoa), (Poster) International Jellyfish Bloom Symposium, Barcelona, Spain, June 3, 2016.
85. **Yanagihara AA**, *Alatina alata* Venom: Composition, Biochemistry and Pathophysiology, Eastern Virginia Medical College, Norfolk, VA, May 26, 2016.
86. Wilcox, CL, **Yanagihara AA**, Evaluating First-Aid Responses to *Physalia* Stings: Comparing Atlantic and Pacific Species Using a Novel Assay Array, Biomedical Sciences and Health Disparities Symposium, John A. Burns School of Medicine, University of Hawaii Cancer Center, Sullivan Conference Center, April 21–22, 2016.
87. **Yanagihara AA**, The Science of the Sting: Box Jellyfish Ecology, Venom Biochemistry, Pathophysiology and Clinical Management, James Cook University, Townsville (with satellite transmission to Cairns), Australia, April 7, 2016.
88. **Yanagihara AA**, The Science of the Sting, Venture Deeper and Quicksilver, Port Douglas, Australia, April 8, 2016.
89. **Yanagihara AA**, The Science of the Sting, Mike Ball Expeditions, Great Barrier Reef, Australia, March 30, 2016.
90. **Yanagihara AA**, The Science of the Sting: Box Jellyfish Ecology, Venom Biochemistry, Pathophysiology and Clinical Management, Paspaley, Darwin, Northern Territories, Australia, March 25, 2016.
91. **Yanagihara AA**, The Science of the Sting: Box Jellyfish Ecology, Venom Biochemistry, Pathophysiology and Clinical Management, Darwin Aquaculture Centre, Channel Island Northern Territories, Australia, March 24, 2016.
92. **Yanagihara AA**, The Science of the Sting: Box Jellyfish Ecology, Venom Biochemistry, Pathophysiology and Clinical Management, Berrimah Veterinary Laboratories, Northern Territory Government, Darwin, Australia, March 22, 2016.
93. **Yanagihara AA**, Pathophysiology and Clinical Management of Life-Threatening Cubozoan Envenomations, Pacific Biosciences Research Center, SOEST, University of Hawaii, Honolulu, Hawaii, January 14, 2016.
94. **Yanagihara AA**, Piglet Models of Irukandji Syndrome, Royal Children’s Hospital, Melbourne, Victoria, Australia, December 15, 2015.
95. **Yanagihara AA**, Evidence-Based First Aid for Cubozoan Envenomations, Divers Alert Network Asia-Pacific Headquarters, Melbourne, Victoria, Australia, December 16, 2015.
96. **Yanagihara AA**, The Science of the Sting: Box Jellyfish Venom Biochemistry, Pathophysiology and Clinical Management Implications. The Marine Science Institute, University of Philippines, Diliman Campus, Quezon City, Manila, Philippines, December 9, 2015.
97. **Yanagihara AA**, The Science of the Sting: Box Jellyfish Venom Biochemistry, Pathophysiology and Clinical Management Implications, Cebu, University of Philippines, Mactan, Philippines, December 4, 2015. 1
98. **Yanagihara AA**, Lethal Cubozoan Envenomations: Pathophysiology and Clinical Management Implications, Mahidol University, Department of Toxinology, November 17, 2015.
99. **Yanagihara AA**, Field Ecology and Pathophysiology of Lethal Cubozoan Species, Division of Marine and Coastal Resources Research and Development Institute, Bangkok Thailand, November 13, 2015.
100. **Yanagihara AA**, Evidence-Based First-Aid for Cubozoan Envenomations, Koh Samui Resort and Hotel Association. Koh Samui, Thailand, November 12, 2015.
101. **Yanagihara AA**, Evidence-Based First-Aid for Cubozoan Envenomations, French Association of Dive Resort and Hotels, Koh Samui, Thailand, November 12, 2015.
102. **Yanagihara AA**, Cubozoan Biodiversity in the Gulf of Thailand: Field Ecology Surveys and Implications. Institute of Marine Science and Marine Technology, Burapha University, Chantaburi Campus, Chon Buri, Thailand, November 3, 2015.
103. **Yanagihara AA**, Field Ecology, Biochemistry and Pathophysiology of Cubozoans, Whitney Lab for Marine Bioscience University of Florida, St. Augustine, FL, October 21, 2015.

104. **Yanagihara AA**, Pathophysiology of Cubozoan Envenomations, Final Briefing, MacDill Air Force Base, USSOCOM, FL, October 20, 2015.
105. **Yanagihara AA**, Cubozoan Envenomations: Pathogenic Mechanisms and Clinical Management Implications, Invited Speaker, World Congress of the International Society of Toxinology, Oxford, England, September 29, 2015.
106. Wilcox, CL, King, R, **Yanagihara AA**, Development of Realistic, Quantitative and Repeatable Cnidarian Envenomation Models to Standardize Treatment Poster World Congress of the International Society of Toxinology, Oxford, England Testing September 28, 2015.
107. **Yanagihara AA**, Smithsonian Natural History Museum Zoology Department Seminar, The Science of Box Jellyfish Stings, Smithsonian National Natural History Museum, Washington, DC, January 20, 2015.
108. **Yanagihara AA**, Meet the Expert, Public Presentation with Questions and Answers, Smithsonian National Natural History Museum, Washington, DC, January 19, 2015.
109. **Yanagihara AA**, Expert Is In: Jellyfish Stings
<https://twitter.com/nmnh/status/556873717171494913> <https://qrius.si.edu/visit/event/expert-jellyfish-stings#.VqVoU4Xysgs> Smithsonian National Natural History Museum, Washington, DC, January 19, 2015.
110. **Yanagihara AA**, The Science of the Sting: Box Jellyfish Venom Biochemistry and Tropical Medicine Translational Outcomes, Ponce School of Health Science, Ponce, Puerto Rico, January 9, 2015.
111. **Yanagihara AA**, La ciencia detrás de la picadura de las medusas Cubozoa, Ponce Yacht and Fishing Club, Ponce, Puerto Rico, January 8, 2015.
112. **Yanagihara AA**, Pathophysiology of Cubozoan Envenomations, Invited Speaker CME Presentation to Combat Medics, Special Forces Underwater Operations (SFUWO), Fleming Bay, FL, October 29, 2014.
113. **Yanagihara AA**, The Science of the Sting: Box Jellyfish in Hawaii, University of Ryukyus Japan Visiting Delegation, Honolulu, HI, October 10, 2014.
114. **Yanagihara AA**, Outside the Box, TED^xED Honolulu, Iolani School, Honolulu, HI, April 12, 2014.
115. **Yanagihara AA**, The Science of the Sting: Box Jellyfish in Hawaii, ARCS Scientist of the Year Award, Chaminade University, Honolulu, HI, March 3, 2014
116. **Yanagihara AA**, The Science of the Sting: Box Jellyfish in Hawaii, Waikiki Swim Club, January 25, 2014.
117. **Yanagihara AA**, Field Ecology, Venom Biochemistry and Sting Pathobiology of Cubozoans in Hawaii, Bonaire and Saipan, Saipan Department of Fish and Wildlife, Saipan, Commonwealth of the Northern Mariana Islands (CNMI), November 25, 2013.
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Heather Montgomery, “Discoveries: Weird and Wacky New Animals” Scholastic Publishers.

A.A.Yanagihara contributor, figures, images text and editorial assistance. Released February 2013.

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“Jellyfish Invasion”, National Geographic, February 2007; released August 8, 2007.

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“Predators” History Channel November 2010; released March, 2011.

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The Science of the Sting, Honolulu Advertiser, February 1, 2001.

Teaching and Mentoring

Problem Based Learning (PBL) Preceptor, John A Burns School of Medicine

2019-Present MD2, MD3

Research Mentor

2017-present United States Military Academy at West Point

2017-2018 Cadet Jacqueline Hamrick and Cadet James Albright

2019-Present Cadet Suzanna Del Rio

2020-Present Raechel Kadler, University of Hawaii

2021-Present Hyacinth Almeria, University of San Carlos, Cebu Philippines

Research Experience for Undergraduates (REU): Environmental Biology for Pacific Islanders, UH

2018-present Carla Esquivel, Skye Haraga

Dissertation Committee Member

2018-Present Carmen Campbell, Complementary and Integrative Medicine, University of Hawaii,
 2018-Present Brian James Matillano, Department of Biology, San Carlos University, Cebu Philippines
 2018-Present Jasmine Headlam, Dept of Zoology, Ryan Institute, National University of Ireland,
 Galway, Ireland
 Spring 2019- 15 credit hours directed reading and research Fulbright Scholar Jasmine Headlam
 Fall 2020-Present Raechel Kadler Tropical Medicine, University of Hawaii

Undergraduate Research Opportunities Program (UROP) Mentor

2017-present Carla Esquivel, Oceanography & Global Environmental Science Thesis candidate
 Spring 2019- 3 credit hours 499 Carla Esquivel,
 Guest Affiliate Faculty Tacloban Normal University Philippines, 2017-present

MHRT Mentor Summer 2017, Thailand

Courses

Graduate Topics in Research (CMB 699, MBBE 699, PHS 699), University of Hawaii, 1999–present
 Undergraduate Topics in Research (CMB 499), University of Hawaii, 1999–present
 Undergraduate Honors Biology (Biol 495) Mentor, University of Hawaii, 1999–present
 Invertebrate Biology Guest Lecturer, Department of Biology, University of Hawaii, 2011–present
 Pharmacology course for medical students, John A. Burns School of Medicine, University of Hawaii
 Spring 2014
 CME Course Instruction, 2008–present
 MARC Lecturer and Mentor, 2003–present
 Step-Up Lecturer and Mentor, 2007–present
 PEARLs Lecturer and Mentor, 2008–present
 JABSOM MD2 and MD3 2019 Fall, 2020 Spring, 2020 Fall
 Polytechnic University of the Philippines, Thesis Mentor 32 students Summer 2021
 Polytechnic University of the Philippines, Education Deliverable Projects 37 students Fall 2021
 Zoom Lectures and student discussions:

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07-26-2021	4:50 PM	6:00 PM
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09-16-2021	3:00 PM	5:36 PM
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 External reviewer PUP Journal of Science and Technology (PUPJST)
 USSOCOM advisor to Special Forces Under Water Operations (SFUWO) Combat School
 Bass Symposium Judge, Tripler Army Medical Center May 14, 2021