

CHRISTIANA KUMAR, PhD Pmjpkj32@gmail.com,
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EDUCATION

Ph.D. Environmental Toxicology 2015-2020

Texas Tech University, Department of Environmental Toxicology

Doctoral Dissertation: Cytotoxicity of Organic Contaminants in the Gray Whale (*Eschrichtius robustus*) and Sex and Steroid Hormone Analysis in Small Cetacean Blubber Biopsy Samples using LC-MS/MS

Focus: Marine mammal toxicology, in-vitro toxicology, anthropogenic impacts, wildlife conservation, endocrinology, oil spills, and emerging contaminants (e.g. PFAS)

M.S. Coastal Zone Management 2010-2014

Nova Southeastern University (NSU), Oceanographic Center

Thesis: Establishing Behavioral Diagnostic Criteria for Domoic Acid Intoxication in *Z. californianus*

Focus: Marine mammalogy, anthropogenic impacts, conservation, and policy (e.g. marine mammals protection act)

B.S. Psychology 2005-2010

University of Phoenix

PROFESSIONAL EXPERIENCES

CSS 2024-Present

Environmental Toxicologist

- Determine comparable research methodology for restoration and monitoring programs in the Gulf of Mexico. Topics include water chemistry and biological parameters.
- Manage and create information within large databases.
- Sift through data to locate relevant information.
- Coordinate and attend project webinars with stakeholders from multiple agencies.

Indiana East University

Adjunct Faculty

- Teach and create content for undergraduate marine science and biological science courses.
- 2023-Present

University of Southern Mississippi, Hattiesburg, Mississippi

2021-Present Adjunct Faculty

- Teach and create content for undergraduate and graduate marine mammal science summer course lecture and lab.

Unity College, Distance Education, Unity, Maine

2020-Present Adjunct Faculty

- Teach and develop oceanography, conservation biology, biological diversity, ecology, and evolution, sustainable management of marine resources, and animal comparative physiology undergraduate and graduate courses. Highlighted expert faculty for advertising.

Texas Tech University, School of Veterinary Medicine

Research Associate

- Analytical Toxicology (LC-MS/MS)

2021-2021

- Hormone extraction and analysis in biological tissues (cetaceans and sharks)

Texas Tech University, Department of Environmental Toxicology, the Institute of Environmental and Human Health, Lubbock TX 2015-2020

Research Assistant

- Search, analyze, and evaluate relevant published information.
- Primary mammalian cell culture
- MTT and LDH cytotoxicity assay
- Steroid hormone extraction from tissue
- LC-MS/MS analysis
- Marine mammal tissue importation and exportation
- Report, grant, and permit writing
- Supervise and train interns both undergraduate and graduate and supervise two M.S. students
- Data analysis (Minitab, and R studio)
- Create and grade homework and exams and serve as TA.
- Literature review to identify knowledge gaps in toxicological marine mammal research
- Assess impact of organic contaminants, including crude oil, on gray whale and sea turtle cell cultures
- Species: Gray whale, fin whale, beluga, loggerhead sea turtle, hawksbill sea turtle, green sea turtle, and kemp ridley's sea turtle

The Marine Mammal Center, Sausalito CA 2009-2015

Marine Mammal Care Volunteer

- Animal husbandry
- Assistance with medical, surgical, anesthesia, radiological, and necropsy procedures
- Subcutaneous and intramuscular injections, blood collection through heart stick, medication administration
- Species: California sea lion, northern elephant seal, harbor seal, northern fur seal, and Guadalupe fur seal

Moss Landing Marine, Laboratories Moss Landing CA 2010- 2021
(Internship)

- **Harbor seal health**
 - Animal capture and restraint
 - Assistance with blood, fecal, vaginal fluid, fur, blubber, vibrissa, and tear sample collection
 - Developed breath rate monitoring system for animal safety
- **Marine mammal and sea bird decomposition**
 - Identification of carcasses and decomposition state along with tagging
- **Northern Fulmar diet**
 - Squid beak sample organization
- **Miscellaneous duties**
 - Database creation for lecture use and historical upkeep of level A stranding database

Six Flags Discovery Kingdom and University of Southern Mississippi, Vallejo, CA 2009-2009

Research assistant volunteer

- Assisted Ph.D. student with bottlenose dolphin cognition research
- Acoustic and video equipment setup and tear down

MEMBERSHIPS

- Society for Marine Mammalogy 2007-Present
- Society of Environmental Toxicology and Chemistry 2018-Present

PUBLICATIONS

Christiana Wittmaack, Jorge Urbán R., Daniela Bernot Simon, Sergio Martínez-Aguilar, Seenivasan Subbiah, James G. Surles, Mary Looney, Naveen Kumar, Barbie Halaska, Pádraig J. Duignan, Madelyn Knauss, Kristen Burns and Céline A.J. Godard-Codding. (2022). Small Blubber Samples (50mg) Sufficient for Analyses of Ten Stress and Reproductive Steroid Hormones in Gray and Fin Whales via Liquid Chromatography Mass Spectrometry. *Frontiers of Marine Science*. 2080

Céline A.J. Godard-Codding, Jocelyn D. Pierro, James G. Surles, Jeff Jacobsen, Aimée Lang, Seenivasan Subbiah, **Christiana Wittmaack**. In Vitro Toxicity of Several Organic Contaminants in Gray Whale (*Eschrichtius robustus*) Skin. 2021. The International Whaling Commission, The Red House, 135 Station Road, Impington, Cambridge, Cambridgeshire CB24 9NP, United Kingdom.

Céline A.J. Godard-Codding, Jorge Urbán R., Daniela Bernot Simon, Sergio Martínez-Aguilar, Seenivasan Subbiah, James G. Surles, Mary Looney, Naveen Kumar, Barbie Halaska, Pádraig J. Duignan, Madelyn Knauss, Kristen Burns, **Christiana Wittmaack**. Small Blubber Samples (50mg) Sufficient for Analyses of Ten Stress and Sex Steroid Hormones in Gray and Fin Whales via Liquid Chromatography Mass Spectrometry. 2021. The International Whaling Commission, The Red House, 135 Station Road, Impington, Cambridge, Cambridgeshire CB24 9NP, United Kingdom.

Mary Hayden, David Klein, Seenivasan Subbiah, **Christiana Wittmaack**, Véronique Lesage, Yves Morin, Jorge Urbán Ramírez, Carlos Lopez Montalvo, John Bickham and Céline Godard-Codding. Reproductive and Stress Steroid Hormone Analysis in Cetacean Blubber by Liquid Chromatography - Tandem Mass Spectrometry. 2018. The International Whaling Commission, The Red House, 135 Station Road, Impington, Cambridge, Cambridgeshire CB24 9NP, United Kingdom.

Wittmaack, C., Lahvis, G. P., Keith, E. O. and Self-Sullivan, C. (2015), Diagnosing domoic acid toxicosis in the California sea lion (*Zalophus californianus*) using behavioral criteria: A novel approach. *Zoo Biol.*, 34: 314–320. doi: 10.1002/zoo.21217

In Progress

Christiana Wittmaack and Céline A.J. Godard-Codding. A review of cetacean cell culture: methodologies, research applications, and future directions. In progress.

Christiana Wittmaack, Véronique Lesage, Yves Morin, Seenivasan Subbiah, Naveen Kumar, Madelyn Knauss, Kristen Burns, Jonayo Farquharson, Lauren Soliz, Céline A.J. Godard-Codding. Optimal Blubber Depth, Hormone Profile, Sexing, and Pregnancy Status in Beluga Whales (*Delphinapterus leucas*) using Liquid Chromatography Mass Spectrometry. In progress.

Christiana Wittmaack, Jorge Urbán R., Daniela Bernot Simon, Sergio Martínez-Aguilar, Seenivasan Subbiah, Barbie Halaska, Pádraig J. Duignan, and Céline A.J. Godard-Codding. Aldosterone detection and sex and stress hormone profiling in lactating gray whale cows and calves. In progress.

Jocelyn D. Pierro, Angela L. Peace, **Christiana S. Wittmaack**, Benjamin M Higgins, and Céline A.J. Godard-Codding. Modeling the effects of benzo[a]pyrene, polychlorinated biphenyls 77, and perfluorooctanoic acid on the survival of loggerhead (*Caretta caretta*) sea turtle cell populations. In progress.

Jocelyn D. Pierro, **Christiana Wittmaack**, Joseph Flanagan, Benjamin M. Higgins, and Céline A.J. Godard-Codding. Cytotoxicity of organic contaminants in primary and immortalized fibroblast cell cultures derived from laparoscopy-sourced liver and ovary sea turtle biopsies. In progress.

Jocelyn D. Pierro, **Christiana Wittmaack**, James G. Surles, Benjamin M. Higgins, and Céline A.J. Godard-Codding. In vitro toxicity of benzo[a]pyrene, polychlorinated biphenyl 77, and perfluorooctanoic acid in loggerhead (*Caretta caretta*) sea turtle primary skin fibroblasts. In progress.

Daniela Bernot Simon, Jorge Urbán-Ramírez, Lorena Viloria-Gómora, **Christiana Wittmaack**, Naveen Kumar, and Céline Godard-Codding. Reproductive seasonality of the fin whale in the Gulf of California: a physiological and observational approach. In progress.

Amanda A. Csipak, **Christiana Wittmaack**, Caleshia S. Calvin, James G. Surles, Benjamin M. Higgins, Joseph P. Flanagan, Céline A.J. Godard-Codding. Toxicological Effects of Organic Contaminants in Hawksbill Sea Turtle Skin Cell Cultures. In progress.

PRESENTATIONS

Platform

Wittmaack, et al. (2020). Society of Environmental Toxicology and Chemistry, Virtual

Wittmaack, et al. (2020). Society of Environmental Toxicology and Chemistry, Virtual

Wittmaack, et al. (2019). World Marine Mammal Conference, Endocrinology Workshop, Barcelona Spain

Wittmaack and Godard-Codding, (2017). Society for Marine Mammalogy, Halifax Canada

Poster

Wittmaack, et al. (2022). Society for Marine Mammalogy Conference, Palm Beach, Florida

Wittmaack, et al. (2019). World Marine Mammal Conference, Barcelona Spain

Godard Codding, Wittmaack, et al. (2019). World Marine Mammal Conference, Barcelona Spain

Wittmaack, et al. (2018). Society of Environmental Toxicology and Chemistry, Sacramento, California

Godard Codding and Wittmaack, (2017). Society of Environmental Toxicology and Chemistry, Minneapolis, Minnesota

Wittmaack, et al. (2015). Society for Marine Mammalogy, San Francisco, California

Wittmaack, et al. (2015). International Association for Aquatic Animal Medicine, Chicago, Illinois

Wittmaack, et al. (2013). International Association for Aquatic Animal Medicine, Sausalito, California

Wittmaack, et al. (2013). International Congress for Conservation Biology, Baltimore, Maryland