



SHAWN DOYLE, PH.D.

Microbial Ecologist

Shawn Doyle, Microbial Ecologist with The Water Institute, has 16 years of research experience examining microorganisms in a variety of environments and determining how the activity and interactions of these microbial communities regulate ecosystem biogeochemistry. His work has included study of microbes in Antarctic and Arctic glaciers, corals reefs, Texas estuaries, and coastal environments across the Gulf of Mexico.

COMPANY ROLE

Microbial Ecologist

PROJECT ROLE / FOCUS AREAS

Microbial ecology and
biogeochemistry

Bioinformatics and
multi-omics analyses

Numerical ecology

Microbial responses to
environmental
disturbances

Oil spill microbiology

EDUCATION

Ph.D. Microbiology,
Louisiana State
University, 2015

B.S. Microbiology,
Louisiana State
University, 2008

PROFESSIONAL MEMBERSHIP

American Society for
Microbiology

Prior to joining The Water Institute, Dr. Doyle was an assistant research scientist in the Department of Oceanography at Texas A&M University where he worked on research examining how microbes in the Gulf of Mexico's coastal waters and offshore coral reef environments are impacted by hurricanes and/or coastal flooding. In addition, his post-doctoral research at Texas A&M University investigated how marine microbial communities in the Gulf of Mexico respond to oil spills and pollution and examined how clean-up efforts such as dispersant usage impact microbial bioremediation processes.

Dr. Doyle received his bachelor's degree in microbiology and his Ph.D. in microbiology from Louisiana State University.

PROFESSIONAL EXPERIENCE

2022-Present: Microbial Ecologist, The Water Institute

2019-2022: Assistant Research Scientist, Texas A&M University

2015-2019: Postdoctoral Research Associate, Texas A&M University

2009-2015: Graduate Research Assistant, Louisiana State University, Department of Biological Sciences

2007-2008: Undergraduate Research Assistant, Louisiana State University, Department of Biological Sciences



SELECTED PROJECTS

Flower Garden Banks National Marine Sanctuary (2016-2022). Led a multi-year survey and analysis of water column microbial communities at FGBNMS coral reefs. Investigated how massive freshwater run-off events can create hypoxia conditions within reef depressions.

ADDOMEx Research Consortium (2015-2021). Used multi-omics to investigate microbial responses to oil and dispersants in the Gulf of Mexico and increase understanding of how these responses controlled the fate and transport of marine-oil snow after the Deepwater Horizon oil spill.

SELECTED PUBLICATIONS

- Doyle, S.M., M.J. Self, J.Hayes, K.E.F. Shamberger, A.M.S. Correa, and J.B. Sylvan. (2022). Microbial Community Dynamics Provides Evidence for Hypoxia During a Massive Coral Reef Invertebrate Mortality Event. *Applied and Environmental Microbiology* 88(9) e00347-22.
- Aljandal, S., S.M. Doyle, G. Bera, T.L. Wade, A.H. Knap, and J.B. Sylvan. (2022). Mesopelagic microbial community dynamics in response to increasing oil and Corexit 9500 concentrations. *PLoS ONE* 17(2): e0263420.
- Achberger, A.M., S.M. Doyle, M. Mills, C.P. Holmes II, A. Quigg, and J.B. Sylvan. (2021). Bacteria-Oil Microaggregates Are an Important Mechanism for Hydrocarbon Degradation in the Marine Water Column. *mSystems* 6(5) e01105-21.
- Shore, A.N., J.A. Sims, M. Grimes, L.I. Howe-Kerr, C.G.B. Grupstra, S.M. Doyle, L. Stadler, J.B. Sylvan, K.E. Shamberger, S.W. Davies, L.Z. Santiago-Vázquez, A.M.S. Correa. (2021). On a Reef Far, Far Away: Anthropogenic Impacts Following Extreme Storms Affect Sponge Health and Bacterial Communities. *Frontiers in Marine Science* 8:608036.
- Doyle, S.M., G. Lin, M. Morales-McDevitt, T.L. Wade, A. Quigg, and J.B. Sylvan. (2020). Niche Partitioning Between Coastal and Offshore Shelf Waters Results in Differential Expression of Alkane and PAH Catabolic Pathways. *mSystems* 5(4) e00668-20.
- Kamalanathan, M., S.M. Doyle, C. Xu, A. Achberger, T. Wade, K. Schwehr, P. Santschi, J. Sylvan, and A. Quigg. (2020). Exoenzymes as a signature of microbial response to marine environmental conditions. *mSystems* 5(2) e00290-20.
- Bera, G*, S.M. Doyle*, U. Passow, M. Kamalanathan, T.L. Wade, J.B. Sylvan, J.L. Sericano, G. Gold, A. Quigg, and A.H. Knap. (2020). Biological Response to Dissolved versus Dispersed Oil. *Marine Pollution Bulletin* 150:110713. **co-first authorship*
- Kealoha, A.K., S.M. Doyle, R.D. Hetland, S.F. DiMarco, J.B. Sylvan, and K.E. Shamberger. (2020). Localized hypoxia may have caused coral reef mortality at the Flower Garden Banks. *Coral Reefs* 39:119-132.
- Kamalanathan, M., M. Chiu, H. Bacosa, K. Schwehr, S. Tsai, S.M. Doyle, A. Yard, S. Mapes, C. Vasequez, L. Bretherton, J.B. Sylvan, P. Santschi, W. Chin, and A. Quigg. (2019). Role of polysaccharide synthesis in diatom (*Thalassiosira pseudonana*) and the associated bacteria in response to hydrocarbon exposure. *Plant Physiology* 108:1898-1911.
- Xu, C., S. Zhang, M. Beaver, P. Lin, L. Sun, S.M. Doyle, J.B. Sylvan, A. Wozniak, P.G. Hatcher, K. Kaiser, G. Yan, K.A. Schwehr, Y. Lin, T.L. Wade, W.C. Chin, M.H. Chiu, A. Quigg, and P.H. Santschi. (2018). The Role of Microbially-Mediated Expolymeric Substances (EPS) in Regulating Macondo Oil Transport in a Mesocosm Experiment. *Marine Chemistry* 206:52-61.
- Kamalanathan, M., C. Xu, K. Schwehr, L. Bretherton, M. Beaver, S.M. Doyle, J. Genzer, J. Hillhouse, J.B. Sylvan, P. Santschi, and A. Quigg. (2018). Extracellular Enzyme Activity Profile in a Chemically Enhanced Water Accommodated Fraction of Surrogate Oil: Toward Understanding Microbial Activities After the Deepwater Horizon Oil Spill. *Frontiers in Microbiology* 9:798.
- Doyle, S.M., E.A. Whitaker, V. De Pascuale, T.L. Wade, A.H. Knap, P.H. Santschi, A. Quigg, and J.B. Sylvan. (2018). Rapid Formation of Microbe-Oil Aggregates and Changes in Community Composition in Coastal Surface Water Following Exposure to Oil and the Dispersant Corexit. *Frontiers in Microbiology* 9:689.
- Quigg, A., U. Passow, W.C. Chin, C. Xu, S.M. Doyle, L. Bretherton, M. Kamalanathan, A.K. Williams, J.B. Sylvan, Z.V. Finkel, A.H. Knap, K.A. Schwehr, S. Zhang, L. Sun, T.L. Wade, W. Obeid, P.G. Hatcher, and P.H. Santschi. (2016). The Role of Microbial Expolymers in Determining the Fate of Oil and Dispersants in the Ocean. *L&O Letters* 1:3-26.