

# Sandra Erdmann, M.Sc.

## Marine Environmental Scientist Molecular Biologist International Research and Teaching

### Personal Data:

M.Sc. Sandra Erdmann  
34 Hatchett Street, Cranbrook  
Townsville, QLD, 4814

sandra.erdmann@jcu.edu.au  
www.linkedin.com/in/sandra-erdmann

**Professional Languages:**  
English, German, Italian

### Competencies and Skills:

- Monitoring and assessing water quality (e.g. physical parameters, nutrient analysis)
- Sampling of aquatic systems and marine survey (e.g. via scuba diving)
- Statistical and bioinformatical analysis of ecological and genomic datasets
- Scientific writing and presentation
- Project management
- Design and realization of complex research experiments (e.g. microbial (sterile) assays and molecular diagnostics, especially RT-qPCR)
- Application of analytical chemistry: mass spectrometry (e.g. HPLC, GC), gel electrophoresis, electron microscopy
- Handling hazardous compounds (e.g. HCl, ethidium bromide, liquid nitrogen)

### Computing and IT Skills:

- Statistical and Modelling Software Programs (R, MATLAB, ArcGIS)
- Coding and programming in command line and pipeline management
- Picture Analysis Programs (ImageJ, Inkscape)
- Software Programs (Microsoft Word, Microsoft Excel, Microsoft Power Point, LaTeX)
- Citation program (Endnote)

### Professional Experience:

Since June 2019

**Research Collaborator** affiliated with the AITHM (Australian Institute of Tropical Health and Medicine) in Townsville, Australia

- Analysis of nanopore sequencing data of a coral mock metagenome of three bacterial endosymbionts from *Heliofungia sp.* in the coral host *Acropora millepora*

Jun 2018 – Nov 2018

**Scientific Project Assistant** at the AIMS (Australian Institute of Marine Science) in Cape Ferguson, Australia

*International world-class research institute of tropical marine science with advanced facilities like the National Sea Simulator to investigate impacts on coral reefs, including the Great Barrier Reef*

- Picture analysis with ImageJ to investigate sedimentation effects on coral recruits of the scleractinia *Acropora millepora*

- Settlement assays on coral larvae, such as *Acropora millepora* and *Acropora tenuis* as well as assistance during coral spawning period

Jul 2018 – Aug 2018

**Scientific Project Assistant** at the JCU (James Cook University) in Townsville, Australia

*According to the Academic Ranking of World Universities (ARWU) JCU is ranked in the top 2% of universities worldwide*

- Analysis of tissue samples and the surrounding water column exposed to fluorescent microplastic beads of the soft coral *Lobophytum spec.* as well as the sponge species *Carteriospongia spec.*

Since Feb 2015	<p><b>Adjunct Researcher</b> of UDP Ciencias Neotropicales and Fundacion Naturaleza, El Salvador  <i>Salvadorian Consulting Company and Non-Governmental Organisation on biodiversity and conservation, such as deforestation</i>  - Administration and organization</p>
Jan 2015 – Apr 2015	<p><b>Scientific Assistant</b> at the ZMT (Leibniz Centre for Tropical Marine Research) in Bremen (Germany)  <i>Germany's biggest research centre on marine tropical ecosystems, 200 employees working in 16 different working groups ranging from climate change and microbiology to social economy, strong and developed cooperation with Indonesian and Chinese institutions</i>  - Analysis of nutrients and TEP samples, contribution to publications on marine microbiont species (see scientific research)</p>
Sep 2013 – Nov 2013	<p><b>Student Trainee</b> at the KDM (German Marine Research Consortium) in Brussels, Belgium  <i>Association of Germany's leading marine research institutions, political representation in the European Union and national policy makers of 16 members in the area of ocean, polar and seashore research</i>  - Research Project on “Ocean Observation Systems” and Marine Micro plastics</p>
May 2013 – May 2013	<p><b>Student Supervisor</b> at the IfMB (Institute for Marine Biology) on the Island of Giglio, Italy  <i>International, marine private teaching and research institution in Europe, strong cooperation with the Campese Diving Center (CDC)</i>  - Supervision of 20 students establishing research projects in behalf of the University of Oldenburg, scientific diving</p>
Mar 2010 – May 2010	<p><b>Teaching Assistant and Scientific Diver</b> at the IfMB (Institute for Marine Biology) on the Island of Giglio, Italy  - Assisting German, English and Italian marine biology courses, scientific diving, responsibility for aquariums, snorkeling and laboratory equipment</p>

## Employment History:

Since Aug 2018	<p><b>Research Assistant Positions</b> (casual) at the JCU (James Cook University) in Townsville, Australia  - eDNA extractions using routine protocols and perform qPCR diagnostic assays for the Global Sawfish Search project  - Scientific assistance for field operations around Magnetic Island assessing coral restoration in inshore coral reefs by macro-algal removal  - RNA extractions from the tentacles of the abalone species <i>Haliotis asinina</i> in a PC2 Laboratory  - DNA extractions from tissue samples of the coral <i>Acropora tenuis</i> in a PC2 Laboratory, preparations of DNA for whole genome sequencing as well as assistance with associated logistics</p>
Nov 2018 – Dec 2018	<p>Receptionist (casual) at the NQNS (North Queensland Neuropsychology Service) in Townsville, Australia  - Administration and management, customer service</p>
Apr 2018 – May 2018 Sep 2017 – Oct 2017 May 2012 – Jul 2012 Apr 2011 – Oct 2011	<p><b>Marine Scientist</b> at the IfMB (Institute for Marine Biology) on the Island of Giglio, Italy  - Organization and institute management assistance, personal management and introductory training of course assistants, teacher and</p>

leader of German, English and Italian marine biology courses for schools and student groups, assistance to universities, organising and guiding scientific diving activities including boat trips, responsibility for marine organisms in over 20 aquariums, maintenance of laboratory, diving and technical equipment

Nov 2016 – Apr 2018

**Supervisor and Team Leader** in the DSSC (Sports and Swimming Club of Duisburg) in Duisburg, Germany

*Private swimming facility operator with four facilities offering more than five sport and rehabilitation activities, over 1000 members and a team of 20 employees*

- Monitoring, control and adjustment of technical machinery and water quality, decision making, self-responsibility of staff and over 150 members each day, rescue and providing first aid, leading professional sports training, service
- Redemption of study loans

June 2016 – Oct 2016

**Supervisor** in the Grugabad Essen in Essen, Germany

*One of Germany's biggest public outdoor swimming facilities with six outdoor pools including a wave pool, several slides and diving towers on an area of 58.000 sq m, around 30 employees plus security*

- Supervision and responsibility of up to 124.000 guests per year and 8.000 per day, rescue, providing first aid and service
- Redemption of study loans

Dec 2012 – Oct 2015

**Supervisor** in the OLantis in Oldenburg, Germany

*One of the most popular swimming facilities in Germany with four indoor, three outdoor and one natural river swimming facilities including ten pools with over 120 employees in the area of sports, sauna, wellness and massage*

- Supervision and responsibility of up to 55.000 guests per year, rescue, providing first aid, monitoring of water quality and service
- Financial support for study fees and expenses

## **Education:**

Oct 2012 – Nov 2015

**Master of Science (Marine Environmental Science)** at the Carl-von Ossietzky University of Oldenburg, Germany (High Distinction)

*Took place at the interdisciplinary and research-oriented ICBM (Institute for Chemistry and Biology of the Marine Environment)*

- Thesis on “Carbonic anhydrase expression in *Acropora millepora* at variable pCO<sub>2</sub> and nutrient levels using RT-qPCR“

Feb 2014 – Sep 2014

**Abroad Semester** (Marine Biology and Ecology) at the JCU (James Cook University) in Townsville, Australia

- Further education in coral reef ecology, fish ecology and evolution and biological conservation

Oct 2011 – Sep 2012

**Academic Master Year** (Marine Biology) at the University of Pisa, Italy  
*Ranked the best university of Italy in 2010 by the Academic Ranking of World Universities and in 2011 by the European Research Ranking*

- Profound knowledge on marine biology, biological, chemical and physical oceanography and statistics

Oct 2007 – Mar 2011

**Bachelor of Science (Biology)** at the HHU (Heinrich-Heine University) in Düsseldorf, Germany

*Received the grant for the Cluster of Excellence CEPLAS in the Excellence Initiative of the German Federal and State Governments*

- Thesis on "Control and treatment of fish parasites in freshwater aquaculture"

Aug 1997 – June 2007

**Higher School Certificate** at the Gesamtschule Schermbeck, Germany

Apr 2006 – May 2006

**Internship** at the University Hospital of Münster in the Department of Neurobiology in Münster, Germany

- Report on "Experimental research on apoplectic strokes using the example of PCR"

### Scientific Research and Publications:

- **Scientific contribution** in Kegler et al. (2017) "*Bacterial Community Composition and Potential Driving Factors in Different Reef Habitats of the Spermonde Archipelago, Indonesia*", DOI: 10.3389/fmicb.2017.00662
- **Scientific contribution** in Gonzalez Murcia and Álvarez Calderón (2017) "*Abundance and distribution of Aganostomus monticola and Sycidium multipunctatum in Acahuapa river*"
- **Master Thesis** titled "Carbonic anhydrase expression in *Acropora millepora* at variable pCO<sub>2</sub> and nutrient levels using RT-qPCR" (publication in process)
- **Bachelor Thesis** titled "Control and treatment of fish parasites in freshwater aquaculture"

### International Experience:

Nov 2015 – Mar 2016

**English Teacher** at the ABC Bilingual School in San Salvador, El Salvador and at the European Academy (part-time) in San Salvador, El Salvador

- Teaching and preparation of English and Science classes and developing final exams to groups of up to 20 students, responsibility of six grades and about 100 students, conduction of final exams to groups of around 20 students

### Further Skills, Memberships and Qualifications:

- **Language skills:** German (native), English and Italian (fluent), French and Spanish (basic)
- Experienced **Rescue Diver Certification** (acquired in Nov 2018) with about 150 dives (including night, beach, boat dives and low visibility)
- **Australian Boat License (RMDL – Recreational Marine Driver's License)** achieved in Jan 2019
- **Australian Radio License (LROCP - Long Range Operator Certificate of Proficiency)** received in Feb 2019
- German **Paramedic and Lifeguarding Certification** gained as a volunteer in the German Red Cross in Düsseldorf, Germany (2010 – 2011) and in Oldenburg, Germany (2013 – Nov 2015), first aid response at one of German's biggest rock festival "Rock im Park" in Nürnberg, Germany in 2015
- **Certification as a Swimming Teacher** (Level C) obtained during active membership in the swimming team SV Schermbeck (Nov 1993 – Oct 2007)
- **Queenslander Driver License** (Class C, valid until 2024) issued in Apr 2019

### Personal Interests:

- Sports (professional swimming, diving, salsa, volleyball)
- Instruments (guitar, piano, keyboard)
- Handcraft (gardening, construction, DIY crafting)

Sandra Erdmann

Townsville, 19<sup>th</sup> December 2019

*S. Erdmann*

**References:**

**Saul Gonzalez-Murcia**

*Founder and Researcher at UDP Ciencias Neotropicales and Fundacion Naturaleza in San Salvador, El Salvador*

Current Collaborator

Email: saul.gonzalezmurcia@my.jcu.edu.au

**Eike Steinig**

*Researcher at the Australian Institute of Tropical Health and Medicine in Townsville, Australia*

Current Collaborator

Email: eikejoachim.steinig@my.jcu.edu.au