Thomas St Julien Lankiewicz

Ph.D. student in EEMB and ChemE

University of California Santa Barbara

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# Education

Ph.D. student Sept 2016 – Present

*University of California Santa Barbara*

**M.S.**, Marine Studies, with a focus in Marine Biosciences Sept 2012 – Dec 2014

*University of Delaware*

**B.A.**, Biology and Pre-Med Sept 2008 – May 2012

*Grinnell College*

# Publications

**Lankiewicz TS**, Cottrell MT, Kirchman DL. (2016). Growth rates and rRNA content of four marine bacteria in pure cultures and in the Delaware estuary. The *ISME Journal* 10: 823–832.

# Research Experience

**Graduate researcher**,with Dr. Alyson Santoro Sept 2016 – June 2017

*Marine Microbiology and Biogeochemistry Lab*

*University of California Santa Barbara*

Isolated 85 new bacterial and archaeal cultures from the mesopelagic North Pacific using high throughput cultivation methods, early experiments indicated different preferences for various carbon based medias

**Cultivation technician**, with Dr. Alyson Santoro Jan 2015 – Aug 2016

*Microbial Ecology and Biogeochemistry Lab*

*University of Maryland Center for Environmental Studies, Horn Point Lab*

Cultivated and designed experiments with serval strains of ammonia oxidizing archaea and a strain of nitrite oxidizing bacteria

**Graduate researcher**,with Dr. David Kirchman Sept 2012 – Dec 2014

*Microbial Ecology Lab*

*University of Delaware*

Evaluated the relationship between growth rate and cellular rRNA content for four naturally abundant marine bacteria using QPCR and RT-QPCR, allowing for more accurate measurements of growth rate in the environment

**Undergraduate research assistant**,with Dr. Vincent Eckhart Jan 2012 – May 2012

*Evolutionary Plant Ecology Lab*

*Grinnell College*

Quantified tannin synthesis pathway enzyme transcripts using RT-QPCR

# Teaching Experience

**Teaching Assistant for MCDB 1A: Introduction to Biochemistry,** Present

**Cell Biology, Developmental Biology, and Genetics**

*University of California Santa Barbara, MCDB*

As lecture assistant, I help with making exam and quiz questions, I also grade exams, and hold daily office hours so students may find extra help with the material.

**Teaching assistant for BIO 252:** **Organisms, Evolution, and Ecology** Spring2013

*Grinnell College, Biology Department*

As the lab and course teaching assistant I helped with lab preparation and with mentoring students during activities. I also gave two nighttime review lectures followed by open question sessions per week.

**Swim coach and private swim instructor**

*Lane Swim Club, Wilmington, Delaware* Spring 2013

As head coach of 110 swimmer summer team for 2 years I supervised two assistant coaches, managed and ran practices, prepared competition entries, and organized team logistics.

# Academic Awards

**The Center for Microbial Oceanography Research and Education Course Participant** Summer 2013

*NSF, Agouron Institute, Gordon and Betty Moore Foundation, University of Hawai’i Manoa*

**Marine Biosciences Departmental Fellow** 2012 – 2013

*University of Delaware*

**Academic All-Conference** 2012

*The Midwest Conference*

**Trustee Honor Scholarship Recipient** 2008 – 2012

*Grinnell College*

# Other Awards

**11 x Midwest Conference Gold Medalist** 2009 – 2012

*Midwest Conference*

**Varsity Letter Winner** 2009 – 2012

*Grinnell College*

**Most Valuable Swimmer** 2009, 2010

*Grinnell College Swim Team*

**Freshman Athlete of the Year** 2009

*Grinnell College*

Technical Skills

Molecular Biology

**Quantitative PCR and reverse transcriptase quantitative PCR**

TaqMan chemistry

SYBR Green I chemistry

High specificity primer and probe design

**Extraction of nucleic acids**

Kit based (Qiagen and Zymo)

Chloroform-isoamyl alcohol protocols (various)

**Quantification of nucleic acids**

Qubit fluorescence

PicoGreen and RiboGreen assays

**Molecular cloning** during clone library preparation for Sanger sequencing

**Plasmid preparation** and manipulation

Next Generation Sequencing

**Tag sequencing** (16S) library preparationfor Illumina MiSeq sequencing

***In silico* sequence analysis** (QIIME, MOTHUR)

Fluorescence Microscopy

**FISH** (fluorescence *in situ* hybridization)

For visual identification of specific bacterial and archaeal groups

**CARD-FISH** (catalyzed reporter deposition FISH)

Probe design

Probe application

Image analysis

**MAR-CARD-FISH** (micro auto radiographic CARD-FISH)

For visualization of radioisotope uptake by cells

See Radioisotope Methods section for radiation experience details

**Enumeration of total prokaryotes**

DAPI stain

SYBR Green I stain

**Enumeration of bacteriophage**

SYBR Green I stain

Flow Cytometry

**Enumeration of total cells and subpopulations**

Guava EasyCyte HT by Millipore

Facs Calibur by BD Biosciences

**Sorting subpopulations of cells**

Facs Calibur by BD Biosciences

Radioisotope Methods

**Radioisotope license holder** (14C, 3H, 63Ni)Jun 2015 – Jun 2016

*University of Maryland Center for Environmental Studies*

**Radioisotope user** (>500 hours, 14C, 3H) Sept 2012 – Jun 2016

*University of Delaware*

*University of Maryland Center for Environmental Studies*

*University of Hawai’i Manoa*

**Bacterial biomass production estimates** in natural communities,3H-leucine

**Bacterial uptake of methane** in natural communities,14C-methane

**Archaeal uptake of urea carbon** in culture, 14C-urea

**Primary production** in natural communities, 14C-bicarbonate

Analytical Chemistry Measurements

**Ammonia** concentration using ortho-phthalaldehyde based method fluorescence

**Urea** concentrationusing diacetylmonoxime and thiolsemicarbazide method of colorimetric absorbance

**Nitrite** concentration using

- Sulfanilamide (SAN) and N-(l-naphthyl)-ethylenediamine dihydrochloride (NED) based method

- Teledyne T200 NOx chemiluminescence analyzer with acetic acid chemistry

**Nitrate** concentrationusing Teledyne T200 NOx chemiluminescence analyzer

**Oxygen** concentration using

-FiBox4 by PreSens

-Membrane Inlet Mass Spectroscopy

Microbial strains cultivated

***Candidatus* Pelagibacter ubique HTCC1062**: heterotroph, class; *Alphaproteobacteria*, representative of most abundant bacterium in the oligotrophic ocean (SAR11)

***Rugeria* *pomeroyi* DSS-3:** heterotroph**,** class; *Alphaproteobacteria*, common marine bacterium in coastal and estuarine water

**SAR92 HTCC2207:** heterotroph, oligotrophic near coastal isolate, class; *Gammaproteobacteria*, common in transitions zones between coastal and open ocean environments

***Polaribacter* sp. MED152:** heterotroph, copiotroph, phylum; *Bacteriodetes*, common in coastal and estuarine waters

***Candidatus* Nitrosopelagicus brevis (CN25 and CN25 urea):** chemoautotrophs, ammonia oxidizer and urea degrader respectively, phylum; *Thaumarachaea*, open ocean surface isolates

***Nitrospira* *marina* sp. Nb-295:** chemoautotroph, nitrite oxidizer, phylum; *Nitrospirae*, coastal isolate

Microbial isolation

**High throughput dilution to extinction cultivation** for isolation of abundant and metabolically diverse community members

**Enrichment cultivation** for isolation of organisms with specific metabolic functions