

Aaron Oliver, PhD Candidate

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EDUCATION

- PhD Candidate, Marine Biology at Scripps Institution of Oceanography** 2026
Dissertation: *The genomics of microbial degradation and detoxification of macroalgal biomass medleys*
Advisor: Dr. Eric E. Allen (Department Chair and Deputy Director for Education)
- BS, Bioinformatics *summa cum laude* at University of California San Diego** 2021

PUBLICATIONS

* denotes co-first authorship

1. Gupta A, **Oliver A** *et al.* Identification and overexpression of endogenous transcription factors to enhance lipid accumulation in the commercially relevant species *Chlamydomonas pacifica*. *Algal Research* 2025.
2. Molino JVD, **Oliver A** *et al.* Description of a novel extremophile green algae, *Chlamydomonas pacifica*, and its potential as a biotechnology host. *Algal Research* 2025.
3. Kang K, Espirito Santo E, Diaz CJ, **Oliver A** *et al.* Engineering the green algae *Chlamydomonas incerta* for recombinant protein production. *PLoS One* 2025.
4. Delherbe NA, Gomez O, Plominsky AM, **Oliver A** *et al.* Atmospheric methane consumption in arid ecosystems acts as a reverse chimney and is accelerated by plant-methanotroph biomes. *ISME* 2025.
5. Kelliher J, [36 authors] *et al.* Report of the Microbiome Data Management in Action Workshop: Atlanta, GA, USA, June 12-13, 2024. *Environmental Microbiome* 2025.
6. **Oliver A** *et al.* Enrichable consortia of microbial symbionts degrade macroalgal polysaccharides in *Kyphosus* fish. *mBio* 2024.
7. Podell S, **Oliver A** *et al.* Herbivorous fish microbiome adaptations to sulfated dietary polysaccharides. *Applied and Environmental Microbiology* 2023.
8. **Oliver A***, Cavalheri HB* *et al.* Phenotypic and transcriptional response of *Daphnia pulicaria* to the combined effects of temperature and predation. *PLoS One* 2022.
9. **Oliver A***, Podell S* *et al.* Diploid genomic architecture of *Nitzschia inconspicua*, an elite biomass production diatom. *Scientific Reports* 2021.
10. Podell S, Blanton JM, **Oliver A** *et al.* A genomic view of trophic and metabolic diversity in clade-specific *Lamellodysidea* sponge microbiomes. *Microbiome* 2020.

MANUSCRIPTS UNDER REVIEW

11. Rabines AJ, Levesque AV, Steinhauer C, Alrubaijan E, **Oliver A** *et al.* Distinct microbial and viral communities associated with various elite algae strains used in outdoor commercial cultivation. *Under review at Journal of Phycology*.
12. Kelliher J, Mirzayi C, Bordenstein SR, **Oliver A** *et al.* Standards for Technical Reporting in Environmental and host-Associated Microbiome Studies (STREAMS) Guidelines. *Under review at Nature Microbiology*.

13. Levesque AV, Rabines AJ, Alrubaiian E, **Oliver A et al.** Complete genome sequences of two bacteriophages, “Merry” and “Sunny”, infecting *Microbacterium sp.* isolated from an outdoor commercial algal pond. *Under review at Microbial Resource Announcements.*
14. Booshehri L, Rabines AJ, Levesque AV, **Oliver A et al.** *Halomonas* spp. isolated from a highly alkaline aquatic system. *Under review at Microbial Resource Announcements.*

MANUSCRIPTS IN PREPARATION

15. **Oliver A et al.** Pan-oceanic genome organization of polysaccharide degradation gene clusters. *In prep for Proceedings of the National Academy of Sciences.*
16. **Oliver A et al.** Similarity-colocalization networks visualize genomic organization trends in semi-syntenic and poorly characterized gene clusters. *In prep for Bioinformatics.*
17. Levesque AV, **Oliver A et al.** Symbiosis between *Nannochloris* and *Microbacterium* drives microalgal growth dynamics. *In prep for ISME.*
18. Plominsky AM*, **Oliver A* et al.** The enzymatic cascades of gut microbiota from generalist macro-algivoracious marine fish transform complex polyphenols and sulfated polysaccharides in a stepwise manner. *In prep for mBio.*
19. Kebabonye K, Skoog EJ, **Oliver A et al.** Waterpan microbiomes in the Okavango Delta panhandle, freshwater oases for savannah megafauna. *In prep for Scientific Data.*

RESEARCH FUNDING & PENDING

* contributed to proposal design and writing, but unable to serve as key personnel due to student status

PENDING: USDA National Institute of Food Agriculture Predoctoral Fellowship (\$179,120) Applied 2024
Oliver, A (UCSD, PI)

Metabolic foundations of macroalgal tannins as barriers against pathogens

*** DOE Mixed Algae Conversion Research Opportunity (\$1,500,000)** 2024

Allen, EE (UCSD, PI); Laurens LML (NREL, Co-PI); Davenport AH (BASF Enzymes, Co-PI)

Microbiome-informed prioritization of functionalized sugar building block release from seaweed polysaccharides

Selma and Robert Silagi Award for Undergraduate Excellence (\$5,000) 2021

Best overall graduate from UC San Diego School of Biology on basis of coursework, teaching, and research

Milton H. Saier, Sr. Memorial Award (\$1,000) 2021

Best undergraduate research record in the field of computational biology

Kaplan Trust Endowed Graduate Fellowship (\$2,195) 2021

TEACHING

Instructional Assistant at Jacobs School of Engineering, UC San Diego

CSE 20: Discrete Mathematics

Summer 2020

CSE 21: Mathematics for Algorithms and Systems (x4)

2020 - 21

CSE 101: Design and Analysis of Algorithms

Fall 2020

MENTORSHIP

High Tech High Cooperative Education Internship at UC San Diego

Spring 2024

Katelyn Buse (culturing seaweed-associated microbes)

Current Position: Environmental Sciences Student at UC Santa Barbara

Isabella Cruz (microbiome of seawater filtration system)

Current Position: General Biology Student at UC Santa Barbara

San Diego Mesa Community College Impactship at UC San Diego

2023

Sofia Lopez-Orraca (polysaccharide degradation gene clusters)

Current Position: Molecular Biology Student at UC San Diego

PUBLIC-PRIVATE RESEARCH PARTNERSHIPS IN SUSTAINABILITY

BASF Enzymes (surfactants from seaweed polysaccharides): 1 major grant

2025 - 28

Algenesis Materials (algal bioblastics): 3 co-authored manuscripts

2023 - 25

Ocean Era (macroalgae for aquaculture feed): 3 co-authored manuscripts

2021 - 26

Global Algae Innovations (microalgal biofuels): 4 co-authored manuscripts

2018 - 26