

# Oceanography Seminar

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### "Color Holobiont Responses to Stable Nutrient Enrichment"

The coral holobiont is a complex network of interactions among the cnidarian animal, dinoflagellate mutualist and a diverse consortia of bacterial and archaeal symbionts. Anthropogenic nutrient loading from land-based sources alters the physiology and ecology of corals and coral reefs, but we know little about how the microbial component of the coral holobiont responds. We will present the results of a monthlong nutrient chemostat press experiment enriching two widespread coral genera (Pocillopora and Porites) with nitrate and phosphate at 5 levels approximating the range of observed nutrient concentrations ( $<10 \mu\text{M}$ ) and ratios (constant 3:1) in reefs of various anthropogenic impact across the Pacific.

Corals showed clear changes in core physiological metrics, including buoyant weight, photosynthetic quantum yield, chlorophyll, zooxanthellae and protein content. The coral transcriptome responded clearly to the nutrients, with hundreds of strongly upregulated genes, particularly in complete carbohydrate processing pathways. The majority of the talk will focus on the microbiome response, including dominant stable symbionts and dynamic opportunistic taxa that increase or decrease consistently with nutrient enrichment. I will discuss how these changes in the holobiont may be translated to management tools for tracking nutrient enrichment in dilute reef ecosystems.

Thursday April 13<sup>th</sup>, 2017 3:00 p.m. MSB 100