Gene expression alkaline phosphatase activity (APA) data from culture experiments of Trichodesmium 2007-2008 (C-MORE project)

Website: https://www.bco-dmo.org/dataset/3274
Version: October 2, 2009
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Project
» Center for Microbial Oceanography: Research and Education (C-MORE)

Contributors	Affiliation	Role
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Dataset Description

C-MORE Gene Expression APA
Alkaline phosphatase activity data from culture experiments of Trichodesmium

Methods & Sampling

Reference:

Orchard et al. (2009)
Elizabeth D. Orchard, Eric A. Webb, Sonya T. Dyhrman. 2009. "Molecular analysis of the phosphorus starvation response in Trichodesmium spp.". Environmental Microbiology 11:2400-2411.
DOI: 10.1111/j.1462-2920.2009.01968.x
US: http://dx.doi.org/10.1111/j.1462-2920.2009.01968.x

This dataset includes some acronyms, defined as follows:

P phosphorus
phoA alkaline phosphatase
sphX sphX gene
pstS pstS gene
nifH nitrogenase iron protein
APA alkaline phosphatase activity

Experiments were conducted to study the expression of genes involved in Phosphorus (P) uptake and (Dissolved Organic Phosphorus) DOP hydrolysis. There were two different types of experimental design: (i)

'transfer experiment' wherein exponentially growing cells were transferred to replete (+P) and no P (-P) media, and (ii) 're-feed experiment' in which cells were starved for P and then P was added back in. Each of these experiments was replicated with similar results.

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Data Files

File
APA.csv (Comma Separated Values (.csv), 613 bytes) MD5:f714c8019959734edf0f34d990d645d4 Primary data file for dataset ID 3274

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Parameters

Parameter	Description	Units
gene_name	gene name	text
experiment_type	experiment type	text
hours_from_start	hours from experiment start	hours
APA_P_replete	alkaline phosphatase activity	phophorus replete
stderr_APA_P_replete	standard error for the APA_P_replete data	nanomoles P / hour chl_a
APA_P_limited	alkaline phosphatase activity	phophorus limited
stderr_APA_P_limited	standard error for the APA_P_limited data	nanomoles P / hour chl_a
statistically_different	indicates statistical differences between the P_limited and P_replete APA data (y or n)	text

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Deployments

lab_WHOI_sd_C-MORE

Website	https://www.bco-dmo.org/deployment/58000
Platform	WHOI
Start Date	2007-11-01
End Date	2008-11-01
Description	C-MORE project laboratory experiments done in Sonya Dyhrman's lab at the Woods Hole Oceanographic Institution's Redfield Building, Woods Hole, MA, USA

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Project Information

Center for Microbial Oceanography: Research and Education (C-MORE)

Website: http://cmore.soest.hawaii.edu/

Coverage: North Pacific Subtropical Gyre (large region around 22 45 N, 158 W)

Project summary

The **Center for Microbial Oceanography: Research and Education** (C-MORE) is a recently established (August 2006; NSF award: EF-0424599) NSF-sponsored Science and Technology Center designed to facilitate a more comprehensive understanding of the diverse assemblages of microorganisms in the sea, ranging from the genetic basis of marine microbial biogeochemistry including the metabolic regulation and environmental controls of gene expression, to the processes that underpin the fluxes of carbon, related bioelements and energy in the marine environment. Stated holistically, C-MORE's primary mission is: *Linking Genomes to Biomes*.

We believe that the time is right to address several major, long-standing questions in microbial oceanography. Recent advances in the application of molecular techniques have provided an unprecedented view of the structure, diversity and possible function of sea microbes. By combining these and other novel approaches with more well-established techniques in microbiology, oceanography and ecology, it may be possible to develop a meaningful predictive understanding of the ocean with respect to energy transduction, carbon sequestration, bioelement cycling and the probable response of marine ecosystems to global environmental variability and climate change. The strength of C-MORE resides in the synergy created by bringing together experts who traditionally have not worked together and this, in turn, will facilitate the creation and dissemination of new knowledge on the role of marine microbes in global habitability.

The new Center will design and conduct novel research, broker partnerships, increase diversity of human resources, implement education and outreach programs, and utilize comprehensive information about microbial life in the sea. The Center will bring together teams of scientists, educators and community members who otherwise do not have an opportunity to communicate, collaborate or design creative solutions to long-term ecosystem scale problems. The Center's research will be organized around four interconnected themes:

- (Theme I) microbial biodiversity,
- (Theme II) metabolism and C-N-P-energy flow,
- (Theme III) remote and continuous sensing and links to climate variability, and
- (Theme IV) ecosystem modeling, simulation and prediction.

Each theme will have a leader to help coordinate the research programs and to facilitate interactions among the other related themes. The education programs will focus on pre-college curriculum enhancements, in service teacher training and formal undergraduate/graduate and post-doctoral programs to prepare the next generation of microbial oceanographers. The Center will establish and maintain creative outreach programs to help diffuse the new knowledge gained into society at large including policymakers. The Center's activities will be dispersed among five partner institutions:

- Massachusetts Institute of Technology,
- Woods Hole Oceanographic Institution,

- Monterey Bay Aquarium Research Institute,
- University of California at Santa Cruz and
- Oregon State University

and will be coordinated at the University of Hawaii at Manoa.

Related Files:

Strategic plan (PDF file)

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