IEH Undergraduate Intern Mentoring Opportunity

Deadline: **March 17th, 2015**

Name/Title/Institution(s) of senior mentor(s):

Tawnya Peterson/Assistant Professor/OHSU

Joseph Needoba/Assistant Professor/OHSU

Name/Title/Institution(s) of frontline mentor(s):

Rachel Golda/PhD Candidate/OHSU

Project Title:

Investigating the influence of pH on toxin production in marine phytoplankton

Context for Project:

Ocean acidification (OA) is an increase in sea surface acidity caused by the increased level of carbon dioxide gas in the atmosphere due to human activity. Although OA is likely to influence nearly all regions of the surface ocean in the coming decades, there are already measurable effects in some coastal ecosystems due to the influence of coastal upwelling. Although substantial progress has been made in determining the influence of OA on the growth and vitality of many phytoplankton, little is known about the effect it has on internal cellular dynamics and toxin production of these organisms.

Proposed Outcomes/Broader Impact:

This work will illuminate relationships between OA and phytoplankton dynamics, reducing health risks and minimizing monitoring costs by using existing infrastructure (i.e., *in situ* pH sensors) to better constrain toxicity of future harmful phytoplankton blooms. The student will have a strong grasp of the importance and impacts of ocean acidification, harmful algal blooms, and basic phytoplankton ecology. They will also obtain a working knowledge of specialized phytoplankton culturing techniques, experimental design, and data organization and presentation. The student will have the opportunity to be a co-author on conference presentations that present this work, as well as the opportunity for authorship on the resulting manuscript.

Proposed timeline (within a 10 week span):

Week 1: Orientation, literature review and background reading. Begin maintaining cultures. Re-introduction to pHstat system, media preparation, pHstat maintenance. Lab meeting (Fri. 9am).

Week 2-7: pHstat maintenance (cleaning, maintaining sterile media reservoirs, checking reagent reservoirs, etc.), monitoring/sampling (fluorometry, microscopy), sample processing (cell counts,

chlorophyll measurements, stress assays, organizing internal pH data, fluorometry data). Lab meeting (Fri. 9am).

Week 8: Organize/interpret data. Lab meeting (Fri. 9am).

Week 9: Project report write up and presentation preparation. Lab meeting (Fri. 9am).

Week 10: Final wrap-up, final presentation and paper.

Intern academic experience and skill set should include:

Basic courses in biology, chemistry required. Microbiology, sterile experience required.
Excellent written and oral communication skills.