Title:

Characterization of the *Ruditapes philippinarum* larval transcriptome at ambient and projected levels of ocean surface pCO2 conditions.

Abstract:

Characterizing biological process of organisms by evaluating their underlying molecular mechanisms is a powerful tool for environmental risk assessment.

Acidifying ocean conditions as a result of anthropogenic carbon dioxide emissions is an immediate concern for the health of shellfish populations around the world. Evaluating the molecular process altered by changes in dissolved carbon dioxide levels can provide insight in to the mechanisms affected by ocean acidification and potentially reveal processes vital for the survival in these rapidly changing conditions. A major hurdle in evaluating these processes is the limited amount of molecular information in shellfish compared to other model organisms. Recent development of next generation sequencing technologies and RNAseq analysis has made this hurdle easier to overcome. In this study, the entire transcriptome of the commercially important bivalve species *Ruditapes philippinarum*, is characterized in two different pCO2 environments. Data from this study provides valuable information about the molecular processes in shellfish larvae that are affected by ocean acidification, as well as providing a foundation for future transcriptomic analysis of shellfish larvae.