Determining How Echinoderms Eespond to a High CO_2 World

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Increased human activity has caused climate change to threaten the existence of a variety of species worldwide. For the ocean, future climate change conditions predict an increase in seawater temperature and acidity. The survival of organisms that rely on calcium carbonate ($CaCO_3$) is most at risk since this acidity will make it difficult for them to produce their calcareous body structures. *Psammechinus miliaris* (*P. miliaris*) is an Eastern Atlantic sea urchin which forms its test from $CaCO_3$. Although other studies have observed the effects of future climate change conditions on marine organisms, most have used short time frames (e.g. weeks) and focused on a single generation. Climate change is a process occurring across years and decades, and during this time animals will be developing and reproducing, therefore there is a need to look at how multiple generations respond. This internship examines this information gap by looking at how multi-generations of *P. miliaris* respond to present-day and year 2100 seawater CO_2 conditions. More specifically, this internship looks at gonad development across three generations of urchins derived from a 7 year study. It is crucial to understand how *P. miliaris* develops under climate change conditions as it is ecologically and commercially important.

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