On a larger time scale, some studies have found that changes on the water chemistry such as the predicted by ocean acidification, may stress corals and compromise their immune system. There are precedents for this: in both Drosophila and mammals; hypercapnia directly suppresses the innate immune response. Some corals have been found to produce a molecule called dimethylsulphoniopropionate (DMSP) in response to stress. DMSP is involved in the sulphur cycle and may have some implications on the local climate regulation.

Based on earlier investigations of the innate immune response in Acropora, Catalina used Illumina RNAseq technology to investigate the effect of ocean acidification on the coral response to an immune challenge. The project involved exposing different life stages of the coral Acropora millepora to stress conditions (high CO₂ and low salinity). After exposure, coral samples were collected at different time points for RNAseq analysis as well as for DMSP quantification.

A. millepora reads from high-throughput sequencing were mapped on to the A. millepora genome and the results are now under analysis.

Catalina has found that elevated CO₂ may compromise the innate immune response of corals, as in higher organisms. Moreover, she found that both juveniles and adult corals produce high levels of DMSP under low salinity conditions, which have some interesting implications on the coral osmoregulation.
Conferences

3rd Asia Pacific Coral Reef Symposium (APCRS), Kenting, Taiwan, 23-27th June 2014

Australia Marine Science Association (AMSA) conference, Canberra, 6-10th July 2014

Australian Coral Reef Society (ACRS), Sydney, 9-13th July 2013

12th International Coral Reef Symposium (ICRS), Cairns, 9-13th July 2012