

Symbiommunity: Understanding how host-microbe associations shape cnidarian immunity in a rapidly changing world

Scleractinian corals, which form the structural foundation of vital coral reef ecosystems, are highly symbiotic organisms, reliant on associations with diverse microbiota (collectively termed the “holobiont”). These symbiotic associations play an important role in organismal response and resilience to a variety of stressors including thermal stress and disease. Still many gaps exist in our understanding of coral-microbiota associations and their roles in host fitness. Research in my group aims to understand how associations between corals and both their algal photosymbionts and commensal microbiota shape organismal immunity and response to disease. We address these questions in a range of study systems, each selected for their unique experimental advantages. In this talk I will recap the past five years of our research, focusing on three main themes: 1) the immunological consequences of natural host-photosymbiont variability, 2) the impacts of environmental conditions on host immunity, and 3) the roles of host-symbiont associations in disease resilience and rapid adaptation to disease. Combined, our work is advancing understanding of the basic biology of symbiosis-immune interplay, and is contributing knowledge which will improve our ability to manage and protect vulnerable coral reef ecosystems.