

## The role of natural products in inter-kingdom marine communication and chemical ecology

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The range of unique chemical structures that are found within sedentary marine organisms, and their potential uses as leads for new marine-derived pharmaceuticals, prompted interest during the latter half of the last century that has now led to a limited number of approved drugs with many more potential candidates at the clinical trial stage. The roles that these molecules play in nature and how these biologically active molecules are produced by symbiotic associations has been a discussion point since early isolations in the 1960's, but with the advances in molecular techniques, some clues that may provide answers to these difficult questions are starting to appear.

Intra-species communication within bacteria has traditionally been referred to as Quorum sensing. Emerging research, however, implicates this inter-kingdom signaling in symbiotic and pathogenic relationships between bacteria, eukaryotes, mammalian and plant hosts. In light of the rising prevalence of antibiotic resistant bacteria, unraveling the chemical cues used by host marine macroorganisms to regulate growth of their microorganism communities may afford strategies to regulate microorganism populations that are resistant to other chemical strategies.

This paper will present results from a range of areas including the structures of new marine-derived metabolites, speculation on their biogenetic origins, and results from some quorum-sensing assays that have been applied to the chemistry of certain soft coral holobiont systems.

### Biography

Bruce Bowden completed his Ph.D. from Sydney University and undertook postdoctoral studies at Southampton University, Auckland University and Melbourne University, before moving to James Cook University in Townsville, Australia, where he has focused on areas of natural products and marine chemical ecology. He has published more than 130 papers in reputed journals over a 40 year career, serves as a referee for journals that include *J. Nat. Prod.*, *Aust. J. Chem.*, *Eur. J. Org. Chem.*, *Phytochem.*, and *Org. Letters*. He also serves as an editorial board member of *Marine Drugs*.

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