Exploring the potential of marine actinomycetes to inhibit the growth of *Pseudomonas aeruginosa*.

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Gram-negative pathogenic bacteria are an imminent threat of infection among humans. Their deadly persistence has highlighted the need for structurally and mechanistically new antibiotics on the market. Actinomycete bacteria have been an enduring source of antibiotics since the discovery of actinomycin in 1940. Since then, terrestrial actinomycetes have supplied greater than half of the antibiotics in clinical use. However, novel antibiotic discovery is currently stalled by the continuous re-isolation of known antibacterial agents. To address the problem of Gram-negative infections, we are exploring the potential of marine actinomycete secondary metabolites to inhibit the growth of the pathogen *Pseudomonas aeruginosa*. We paired each actinomycete from our strain library with *P. aeruginosa* in agar competition assays. Upon observation of a distinct zone of inhibition between the two microorganisms, we selected the actinomycete for large-scale liquid culture studies. Using standard chromatographic and spectroscopic techniques we are extracting, isolating, and identifying the antibacterial metabolites that were responsible for the observed bioactivity. Using nuclear magnetic resonance spectroscopy (NMR) and mass spectrometry (MS), we are elucidating the structure(s) of antibacterial metabolites and further exploring their potential as drug leads to treat Gram-negative bacterial infections.