The importance of natural products as anticancer and antibiotic compounds is undisputed due to their wide application as potent and effective pharmaceuticals. In contrast to broad-spectrum agents, the development of species-specific, “narrow-spectrum” antibacterials would be of interest to the medical community serving as novel therapeutics and also to microbiologists as chemical probes to deconvolute complex bacterial communities. Over the past nine years our group has looked to Nature for inspiring chemical scaffolds and has leveraged diverted total synthesis (DTS) to study bacteria. The talk will highlight recent efforts from our lab using DTS in antibiotic discovery and development. Three such compounds will be discussed where we have synthesized the natural products, confirmed their structure, biological activity, and either identified the target or unique phenotypes.