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BEAM Alliance 8th AMR Conference (March 6-7, 2024) – Poster Presentation Abstract

Title: Chemistry Center for Combating Antibiotic Resistant Bacteria (CC4CARB)

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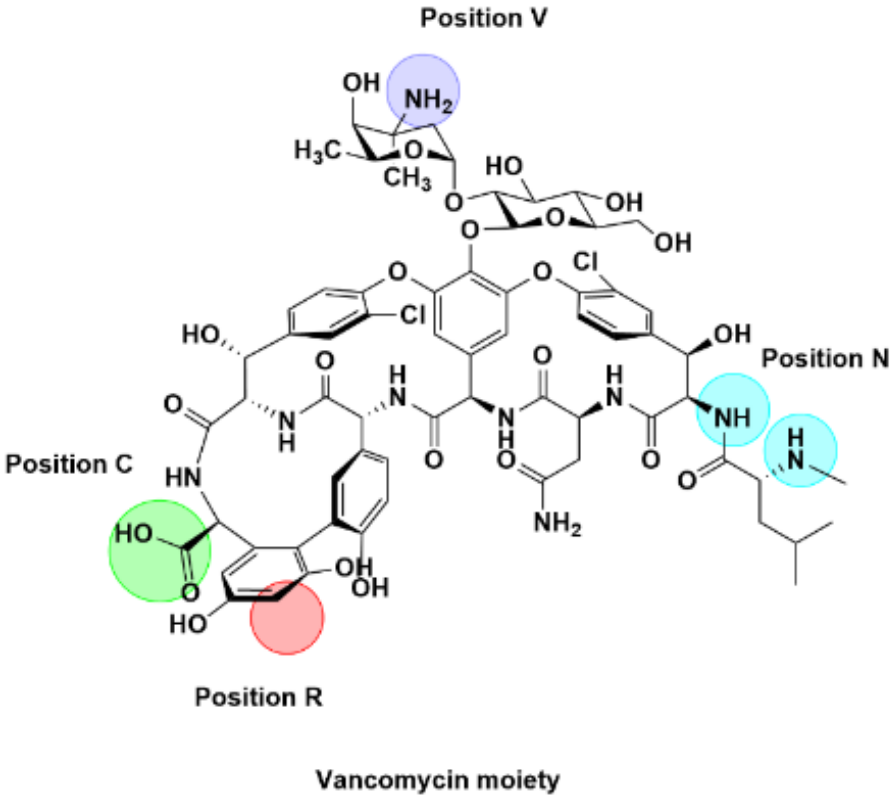
Several global entities have classified drug-resistant bacteria as serious public health threats of which place substantial clinical and financial burden on healthcare systems and patients. The pharmaceutical industry has been divesting from antibiotic research leading researchers and developers to fund programs through Public Private Partnerships, governments, and health philanthropies. Obtaining funding is difficult, particularly for novel antimicrobials. As a solution, NIAID launched the "Chemistry Center for Combating Antibiotic-Resistant Bacteria" (CC4CARB) at RTI International. CC4CARB is an international collaboration aimed at seeding the production and distribution of novel antimicrobial scaffolds to facilitate discovery of future antibiotics.

Scaffold proposals/ideas are solicited from the global scientific community. CC4CARB facilitates external investigators by modifying natural products, synthesizing small molecules, peptides (up to ~30 amino acids), or organometallics, and in testing Gram-negative penetration theories. Acceptable proposals can be scaffolds in early discovery, hit-to-lead, advancement of existing leads, or AI-generated. Upon approval by the Scientific Advisory Board and NIAID, CC4CARB will then collaborate to design analogs of which are synthesized free-of-charge. After NIAID approval of a library production plan (ILPP), synthesis begins and an 18-month embargo period is instituted to allow the contributor time to patent findings.

All compounds in the CC4CARB collection will be made available for request by AMR researchers for further research. The current CC4CARB collection (>2250 compounds) consists of broad spectrum, narrow spectrum, and selective antimicrobials. Thus far, 42 novel scaffold ideas have been received with now 28 ILPPs that have either been completed or are in the que for production. As an example, one scaffold library consists of broadened activity of vancomycin analogs by modifying the positions noted in Figure 1 with new moieties. By applying the eNTRY rules and other more recent techniques, the activity spectrum of the vancomycin scaffold yielded significant antimicrobial activity (MIC_{90} 1 µg/mL) against select Gram negative organisms like Acineobacter baumannii. CC4CARB is committed to the global AMR community to support research in discovering novel antibiotics and who want to optimize or synergize in the evolution of novel chemical scaffolds.

Figure 1. Position Modifications to Vancomycin Moiety



This abstract was submitted by Elliott Pauli (epauli@rti.org and epauli@e2lstage.com) and the CC4CARB team (CC4CARB@rti.org). A response of acceptance or rejection of this abstract can be sent to the CC4CARB email inbox. We look forward to attending the BEAM Alliance 8th AMR Conference.