Open Source Antibiotics

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The Open Source Antibiotics (OSA) consortium intends to develop small molecule compounds with potent antimicrobial activity that target proliferation of ESKAPE pathogens. For these organisms, peptidoglycan synthesis is essential for viability and pathogenicity. The synthesis of the peptidoglycan layer is initiated in the cytoplasm with the construction of a UDP sugar (UDP MurNAc) linked to five amino acids (UDP MurNAc pentapeptide). The appendage of amino acids to UDP MurNAc is catalysed by four ATP-dependent ligases, MurC, D, E and F which respectively add L-Ala, D-Glu, meso-DAP and D-Alanyl-D-Alanine to the growing peptide chain. MurC, D, E and F are ubiquitous amongst prokaryotes, are individually essential for viability and show significant conservation of overall structure to each other within and between species. We are utilising these characteristics towards the development of multi-targeting antibiotics, and we have identified seven inhibitors with MICs against ESKAPE pathogens and multitargeting properties. The talk will introduce the consortium and the open source results obtained so far.