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Chemical probing of antibiotic biosynthetic pathways

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Natural products constitute an abundant and highly diverse source of antibiotic compounds (Fig. 1). These often display a range of other beneficial bioactivities, such as anticancer, antiviral and anti-inflammatory properties. The detailed elucidation of biosynthetic pathways leading to natural antibiotics is therefore of the utmost importance as it paves the way towards novel bioactive product generation and diversification *via* organic synthesis as well as synthetic biology.

In our lab we have been developing a range of chemical probes for the 'capture' and the elucidation of biosynthetic intermediates leading to antibiotic assembly *in vitro* and in live microorganisms. The probes mimic the building blocks utilised by natural product enzymatic assembly lines (e.g. polyketide synthases and nonribosomal peptide synthetases) and intercept biosynthetic intermediates throughout whole natural product formation, thereby unveiling unprecedented mechanistic details and novel opportunities for chemoenzymatic product diversification [1-5].

Herein I will present and discuss our latest developments in the use of small molecule probes for antibiotic biosynthesis investigations and their implications for compound development.

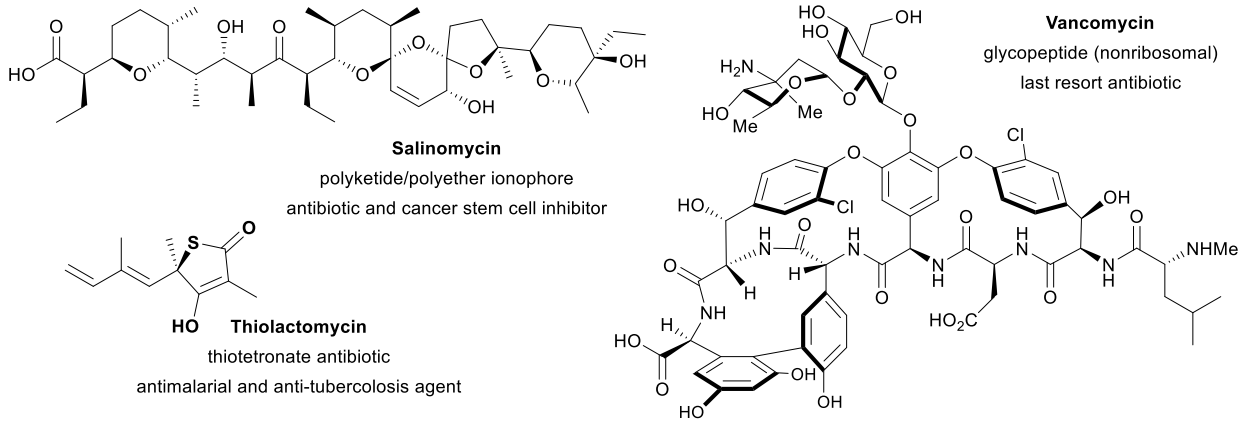

Fig. 1 Representative examples of natural antibiotics

Keywords: natural antibiotics- biosynthesis- chemical probes

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