MBG FOCUS TALK

hosted by Ditlev E. Brodersen

Monday 8 April 2019 at 10:15-11:00
Science Park, Meeting Room 5

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Substrate preference of Staphylococcus aureus siderophore biosynthesis

Staphylococcus aureus is a common opportunistic pathogen and a commensal resident of a large proportion of the adult population. Continued emergence of drug-resistant and hypervirulent strains has reduced the efficacy of existing treatment options. Iron acquisition from the host is an essential requirement for the establishment of a successful infection. S. aureus utilizes several strategies for iron acquisition, including the ferric-iron binding siderophores staphyloferrin A (SA) and staphyloferrin B (SB). To explore the substrate preference of enzymes in the SA and SB biosynthesis pathways, structures of the synthetases SfaD and SbnF were solved by X-ray crystallography and compared to homologs in other species. Analogues of SA and SB pathway intermediates, as well as an analogue of SA were produced in vitro and characterized using liquid chromatography and mass spectrometry. Furthermore, S. aureus was shown to be able to use this analogue for iron acquisition. The biosynthesis of a functional S. aureus siderophore analogue provides insights into the substrate preference of siderophore synthetases and may be of use in developing antimicrobials for targeted drug delivery or diagnostic tools for S. aureus infection.

All welcome

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