Ecology and genomics of Actinobacteria and their specialised metabolism

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Stellingen

Propositions accompanying the thesis

Ecology and genomics of Actinobacteria and their specialised metabolism

1. Increasing the success of natural product-based drug discovery requires a better understanding of the ecological conditions that activate specialised metabolite production by Actinobacteria (Chapter 2).

2. Plant- and animal-associated metabolites that stimulate siderophore production in *Streptomyces* may do so through their iron-chelating properties (Chapter 4).

3. The use of chemical elicitors in combination with 'omics' techniques provides a powerful approach for the identification of bioactive metabolites and their cognate biosynthetic gene clusters (BGCs) (Chapter 5).

4. Isolation and sequencing of Actinobacteria from microbiomes and underexplored environments remains an important strategy to map microbial biosynthetic potential (Chapter 3 & 6).

5. The fact that the majority of the predicted BGCs within genomes of Actinobacteria remain uncharacterised, emphasizes that more focus should be directed towards decrypting those BGCs.

6. The recent discovery that volatile compounds produced by sporulating *Streptomyces* attract soil arthropods that facilitate spore dispersal, illustrates that much remains to be discovered about the ecological roles of specialised metabolites (Becher *et al.* 2020, Nature Microbiology).

7. Deciphering the different languages between hosts and microbes will provide new perspectives on the functional roles of bacteria within microbiomes.

8. Similar to plants and insects, humans should pursue the use of antibiotic-producing bacteria to suppress infectious diseases rather than the antibiotics themselves.

9. Fundamental science generates many pieces of a jigsaw puzzle, yet finishing this puzzle to translate these findings to societal application may be the biggest challenge in current scientific research.

10. Publications are to scientists what art is to a painter: their legacy.

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