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Mechanisms and consequences of horizontal gene transfer in cell wall-deficient cells of *Kitasatospora viridifaciens*

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Stellingen

Behorende bij het proefschrift

Mechanisms and consequences of horizontal gene transfer in cell wall-deficient cells of *Kitasatospora viridifaciens*

1. Hyperosmotic stress contributes to genome plasticity in the actinobacterium *Kitasatospora viridifaciens* by inducing large-scale genomic rearrangements (Chapter 2).
2. Although the shift to a wall-deficient state results in vulnerable cells, this morphological transition enables bacteria to acquire potentially beneficial genes via horizontal gene transfer (Chapter 3).
3. Eukaryotes should no longer be recognized as the only group of organisms that can perform endocytosis (Chapter 4).
4. There is no apparent correlation between the ability of filamentous actinobacteria to shed their cell wall and the habitat from which they have been isolated (Chapter 5).
5. The discovery that commonly used sterilization techniques, such as autoclaving, results in the release of DNA fragments into the sewage system, raises questions on what scientists should flush down the drain (Calderón-Franco D. *et al.*, 2020, *Front. Bioeng. Biotechnol.* **8**:171).
6. To acknowledge the wide range of bacterial genetic diversity, microbiology should shift from a 'one species – one reference genome' perspective to a 'pangenome' point of view.
7. The development of anti-L-form antibiotics is an important strategy towards elucidating the role of L-forms in recurrent diseases, while providing a countermeasure to bacterial pathogens shifting to a wall-deficient state (Emami *et al.*, 2023, *Front. Microbiol.* **14**:1097413).
8. The biogenesis and relevance of extracellular vesicles in Gram-positive bacteria, such as *Streptomyces*, is only starting to be revealed (Meyer, K.J. and Nodwell, J.R., 2023, *Preprint at bioRxiv*, 560488).
9. Although social media are invaluable for science communication and collaboration, early career researchers should be aware of its one-sided view on what it means to be a successful scientist.
10. The talent that scientists have for recycling their presentation slides should be utilized for recycling their laboratory waste.

Renée Kapteijn
Leiden, 31 januari 2024