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

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Citation

Kapteijn, R. (2024, January 31). *Mechanisms and consequences of horizontal gene transfer in cell wall-deficient cells of Kitasatospora viridifaciens*.

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Curriculum vitae

Renée Kapteijn was born in Purmerend, The Netherlands, on the 15th of July, 1993. She attended secondary school at the Jan van Egmond Lyceum, following the ‘Science and Health’ and ‘Science and Engineering’ profiles. During this time, she also obtained a certificate in Probability Calculation and Statistics as well as in Cambridge: Advanced English.

Following her passion for nature, Renée started a Bachelor Biology at the Vrije Universiteit Amsterdam in 2011. This included the minor ‘Fundamentals of Molecular Biotechnology’ at Leiden University, which fuelled her interest in microbes and biotechnology. She therefore continued her studies with the Master Biotechnology at Wageningen University in 2014. During her first Master internship, supervised by prof. dr. ir. Stan Brouns at the Bacterial Genetics research group, she focused on the creation and detection of glucosylated DNA in *Escherichia coli*. To gain experience in the biotechnology industry, she performed her second internship in 2016 at the biotech company Photanol, located at the Amsterdam Science Park. Under supervision of dr. Aniek van der Woude and prof. dr. Klaas J. Hellingwerf, Renée used metabolic engineering strategies to improve the sustainable production of chemicals in cyanobacteria. Eager to gain more experience in research, Renée extended her Master studies in 2017 with an internship at the Plant-Microbe Interactions research group at Utrecht University, supervised by prof. dr. Saskia van Wees and Niels Aerts. During this project she studied the crosstalk between the hormonal regulation of plant defence while gaining experience in confocal fluorescence microscopy.

Renée started her PhD programme at the Institute of Biology (IBL) at Leiden University in 2018. Under the joint supervision of prof. dr. Dennis Claessen and prof. dr. Gilles P. van Wezel, she studied soil bacteria that can shift to a cell wall-deficient state, which enables these bacteria to participate in horizontal gene transfer. This research was part of the TARGETBIO project which aimed to study the risk of the spread of free DNA, including antibiotic resistance genes, in the environment. In 2023, she received the Kiem Award from the Royal Dutch Society of Microbiology for her work on DNA uptake in cell wall-deficient bacteria. The results of her PhD project are presented in this thesis.

P

Publications

Kapteijn, R., Shitut, S., Aschmann, D., Zhang, L., de Beer, M., Daviran, D., Rovers, R., Akiva, A., van Wezel, G. P., Kros, A., & Claessen, D. Endocytosis-like DNA uptake by cell wall-deficient bacteria. *Nat Commun* **13**, 5524 (2022).