

# Multi-omics studies of the control of growth and antibiotic production of streptomyces

Du, C.

### Citation

Du, C. (2020, December 9). *Multi-omics studies of the control of growth and antibiotic production of streptomyces*. Retrieved from https://hdl.handle.net/1887/138641

Version:	Publisher's Version
License:	<u>Licence agreement concerning inclusion of doctoral thesis in the</u> <u>Institutional Repository of the University of Leiden</u>
Downloaded from:	https://hdl.handle.net/1887/138641

Note: To cite this publication please use the final published version (if applicable).

Cover Page



## Universiteit Leiden



The handle <u>http://hdl.handle.net/1887/138641</u> holds various files of this Leiden University dissertation.

Author: Du, C. Title: Multi-omics studies of the control of growth and antibiotic production of streptomyces Issue Date: 2020-12-09

### Propositions

#### Accompanying the PhD thesis

"Multi-omics studies of the control of growth and antibiotic production of *Streptomyces*"

- 1. The combination of advanced proteomics, metabolomics and genome mining is an efficient way to identify and dereplicate bioactive natural products from complex microbial extracts (this thesis, Chapter 3).
- 2. Structurally different, naturally occurring molecules can elicit similar changes in the secondary metabolome of *Streptomyces roseifaciens* (this thesis, Chapter 4).
- 3. Removing native biosynthetic gene clusters in *Streptomyces* can cause significant changes in regulatory networks and should be considered in the design of hosts for heterologous expression (this thesis, Chapter 5).
- SCO1839 is a novel nucleoid-associated protein that binds to more than 2500 GATC sequences in the *Streptomyces coelicolor* genome (this thesis, Chapter 6).
- 5. Cross-kingdom manipulation of behaviour is widespread, as exemplified by changes in antibiotic production in Actinobacteria by signalling molecules released by plants (van der Meij *et al.*, 2018).
- 6. The application of systems biology can aid in developing bacterial strains with improved antibiotic production by bridging "black-box" and rational strain design approaches (Sulheim *et al.*, 2020).
- 7. The regulatory network of antibiotic production involves not only the 'traditional' pathway-specific and global regulators, but also nucleoid associated proteins that control chromosome architecture (Gehrke *et al.*, 2019).
- 8. "Nucleoid associated protein" and "transcription factor" are *ad hoc* operational definitions which constitute the two ends of the spectrum of structural and regulatory features (Dorman *et al.*, 2020).
- 9. Entering the new era of "Complexity Science" is both fortunate, owing to new discoveries, and unfortunate, as complexity doesn't make PhD life easier.
- 10. Newton's three laws are perfect for everyday life, but we still need the theory from Planck and Einstein to understand life and to conquer deep space.
- 11. Everything can be explained by science, including magic, and those things that are still inexplicable in biology.