Signalling pathways that control development and antibiotic production in streptomyces

Urem, M.; Urem M.

STELLINGEN
behorende bij het proefschrift
Propositions accompanying the thesis

SIGNALLING PATHWAYS THAT CONTROL DEVELOPMENT AND ANTIBIOTIC PRODUCTION IN *STREPTOMYCES*

1. The discovery of sugar isomerase SCO4393 shows that, even after decades of intensive study, new key enzymes in central metabolism can still be discovered (this thesis, Chapter IV).

2. *Aminosugar sensitivity* describes the inability of mutants lacking certain metabolic enzymes to grow on the substrate; given that the existence of this phenomenon has been known for almost 50 years, it may be unlikely that we will soon discover its cause (this thesis, Chapter VII; Bernheim & Dobrogosz, 1970; Kadner *et al*., 1992).

3. Mutants lacking a functional NagA enzyme, which consequently accumulate high levels of GlcNAc-6P, are sensitive to GlcNAc in *Escherichia coli* and *Bacillus subtilis* but not in *Streptomyces coelicolor*. This suggests major differences in aminosugar metabolism, processing and/or connecting pathways (this thesis; Świątek et al., 2012a; Plumbridge, 2015).

4. The ability of *nagK* disruptions to relieve the toxicity of GlcNAc in *Streptomyces coelicolor nagB* mutants raises new questions about the metabolism of GlcNAc under conditions presumed to involve PTS transport and the status of the intracellular GlcNAc pool (this thesis, Chapter V).

5. Studying the metabolism of 2-deoxy-glucose in *Streptomyces* may provide new clues for the as yet unexplained mode of action of this anticancer drug (this thesis, Chapters VI; Ralser et al., 2008).

6. The dormancy regulator OsdR controls a remarkably brief but major change in the global transcription profile of *Streptomyces coelicolor* during the onset of development on minimal media (this thesis, Chapter III).

7. It is probably not a coincidence that many of the stress-related genes controlled by OsdR lie in close proximity to *osdRK* on the genome (this thesis, Chapter III).

8. The recognition sequences of some ROK-family proteins are highly conserved and, as such, researchers must carefully examine the subtle but important differences between these regulators (this thesis, Chapter VI; Brechemier-Baey *et al.*, 2015).

9. Unpublishable data, including so-called 'negative results', are useful and relevant to the scientific community and, as such, also require a forum for data-sharing.

10. The pen is mightier than the sword, but the pipette is mightier still (adapted from Edward Bulwer-Lytton).