Discovery of novel antibiotics from actinomycetes by integrated metabolomics & genomics approaches

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Propositions accompanying the thesis

Discovery of novel Antibiotics from Actinomycetes by Integrated Metabolomics & Genomics Approaches

1. Lugdunomycin is an angucycline-derived molecule with unprecedented chemical scaffold, and its underlying biosynthetic logic could be explored to generate a range of novel compounds (this thesis).

2. Despite the extensive high-throughput screening by the pharmaceutical industry, it is still possible to discover molecules with a new chemical skeleton, even using low-throughput methods (this thesis).

3. The study of natural products is entering a renaissance, and genome-mining is one of the major trends for future antibiotic discovery (this thesis).

4. The new concept “Genometabolomics” explores the complementarity between “Genomics” and “Metabolomics” approaches for natural products discovery (this thesis).

5. In the post-genomics era, a natural product chemist committed to discover new antibiotics from microbes, should comprehend both the appropriate chemical knowledge and the practical genetic tools (this thesis).

6. For antibiotics there is no such thing as "no resistance" (Ling et al., Nature 517, 455-459).

7. Antibiotics have helped us to conquer many life-threatening infectious diseases, but their adverse effects on the gut microbiome should be a major concern (Faber et al., Nature 534, 697–699).

8. Nature always knows best and it might be wise to follow “ecology-inspired” approaches for antibiotic discovery, in view of the tremendous biodiversity on the earth.

9. The fact is the most delicate forever.

10. It’s important to learn how to find advantage in disadvantage, never to lose confidence when “negative results” happen, and find a way out.

11. A good reviewer should be the mentor of a manuscript, not a criticaster.