<u>Cite this as</u>: Zi-yue LI, Qing-ting BU, Jue WANG, Yu LIU, Xin-ai CHEN, Xu-ming MAO, Yong-quan LI, 2019. Activation of anthrachamycin biosynthesis in *Streptomyces chattanoogensis* L10 by site-directed mutagenesis of *rpoB*. *Journal of Zhejiang University-Science B (Biomedicine & Biotechnology)*, 20(12):983-994. https://doi.org/10.1631/jzus.B1900344

Activation of anthrachamycin biosynthesis in *Streptomyces* chattanoogensis L10 by site-directed mutagenesis of rpoB

Key words: Streptomyces, Cryptic gene cluster, Site-directed mutagenesis, Secondary metabolism

Research Summary

This study indicated that the *rpoB*-specific missense H437Y mutation had activated anthrachamycin biosynthesis in *S. chattanoogensis* L10. This may be helpful in the investigation of the pleiotropic regulation system in *Streptomyces*.

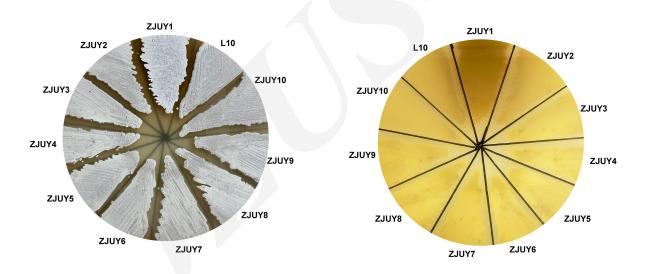


Fig. 1 The morphological development of L10 and ZJUY1-ZJUY10

Spores of all strains were patched on the YMG medium for 7 d. (a) The above side of plate is shown.

(b) The reverse side of plate is show

Innovation points

A series of comprehensive studies were conducted to show the results.

- 1.We used site-directed mutagenesis to generate 10 mutants with point mutations in the highly conserved region of rpsL (encoding the ribosomal protein S12) or rpoB (encoding the RNA polymerase β -subunit).
- 2.L10/RpoB(H437Y) accumulated a dark pigment on a YMG plate. After further investigation, a novel angucycline antibiotic named anthrachamycin was isolated and determined.
- 3. Quantitative RT-PCR analysis (qRT-PCR) and electrophoretic mobility shifts assays (EMSA) were performed to investigate the mechanism underlying the activation effect on the anthrachamycin biosynthetic gene cluster.