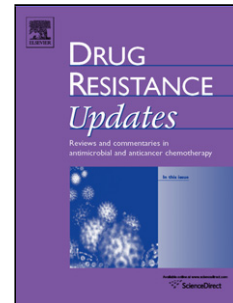


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1 Reprogrammable microbial cell-based therapeutics against antibiotic-resistant bacteria

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12

13 Abstract

14 The discovery of antimicrobial drugs and their subsequent use has offered an effective treatment

15 option for bacterial infections, reducing morbidity and mortality over the past 60 years. However, the

16 indiscriminate use of antimicrobials in the clinical, community and agricultural settings has resulted

17 in selection for multidrug-resistant bacteria, which has led to the prediction of possible re-entrance to

18 the pre-antibiotic era. The situation is further exacerbated by significantly reduced antimicrobial drug

19 discovery efforts by large pharmaceutical companies, resulting in a steady decline in the number of

20 new antimicrobial agents brought to the market in the past several decades. Consequently, there is a

21 pressing need for new antimicrobial therapies that can be readily designed and implemented.

22 Recently, it has become clear that the administration of broad-spectrum antibiotics can lead to

23 collateral damage to the human commensal microbiota, which plays several key roles in host health.

24 Advances in genetic engineering have opened the possibility of reprogramming commensal bacteria

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