

Evolution of Antibiotic Resistance under Treatment: from *in-vitro* Insight to the Clinic and back

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The evolution of antibiotic resistance in microorganisms is a major health issue. Understanding the evolutionary trajectories from susceptibility to resistance and the factors that affect it is crucial. Our results show that tolerance, a form of survival under antibiotics that is distinct from resistance, plays a major role in promoting the evolution of resistance *in vitro*. In order to determine the relevance of the *in vitro* experimental evolution results for the clinic, we followed the course of infections in patients. A striking similarity between the *in vitro* and in host evolution is observed. However, further dissection of the response of the clinical strains to combination of antibiotics reveals a new way by which resistance is strongly promoted by the tolerance phenotype.

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- [2] I. Levin-Reisman et al., Antibiotic tolerance facilitates the evolution of resistance. *Science* **355**, 826–830 (2017).
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