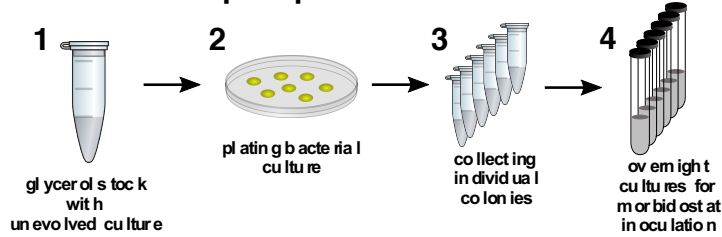**Supplementary Figure S1. Morbidostat-based experimental evolution workflow.** The initial unevolved culture (1) is plated on the agar Petri dish (2) to make individual colonies. The colonies are collected (3) and used to make 6 inoculates (4) – one colony for each reactor for morbidostat cultivation (5). From each reactor samples are taken roughly once in 24 hours (6). To observe population dynamics (8) we perform WGS with high coverage for each sample (7). The population dynamics is used to choose optimal number of colonies from plated evolved samples (9). For each colony we do WGS (10, 11) and MIC tests (12) that reveals genotype-phenotype association.

Inoculum preparation

1 glycerol stock with unevolved culture

2 plating bacterial culture

3 collecting individual colonies

4 overnight cultures for morbidostat inoculation

Mutation profiling

5 morbidostat cultivation

6 time-resolved sampling

7 community sequencing

8 mutation dynamics

9 picking evolved clones

10 clone sequencing

11 individual genotypes — *acrR*, *gyrA*

12 MIC test — [Ciprofloxacin]