

Description of Additional Supplementary Files:

Supplementary Data 1: The drugs tested in combination with nitroxoline in *E. coli* BW25113, their chemical class and highest concentration tested.

Supplementary Data 2: All the strains used in this study, their genotype, antibiotic resistance and nitroxoline MIC, except for those shown in Fig. 1b-c and Supplementary Fig. 1a-b (see Source Data).

Supplementary Data 3: 2D-TPP data from *E. coli* BW25113 wholecell samples exposed to nitroxoline (Methods).

Supplementary Data 4: Mutant fitness as log(fold change) and FDR from the chemical genetic screen performed on the *E. coli* Keio collection with nitroxoline (Methods).

Supplementary Data 5: Frequency of nitroxoline resistance in *A. baumannii*, *E. coli*, *K. pneumoniae*.

Supplementary Data 6: Proteomics data from nitroxoline-sensitive and resistant strains listed in Supplementary Data 1 and annotated with their orthologous groups (Methods).

Supplementary Movie 1: Time-lapse of *A. baumannii* growing on cation-adjusted Mueller-Hinton-agarose 1% pad, supplemented with 8 µg/ml nitroxoline.

Supplementary Movie 2: Time-lapse of *A. baumannii* growing on cation-adjusted Mueller-Hinton-agarose 1% pad, not supplemented with 8 µg/ml nitroxoline.

Supplementary Movie 3: Time-lapse of *E. coli* growing on cationadjusted Mueller-Hinton-agarose 1% pad, supplemented with 2 µg/ml nitroxoline.