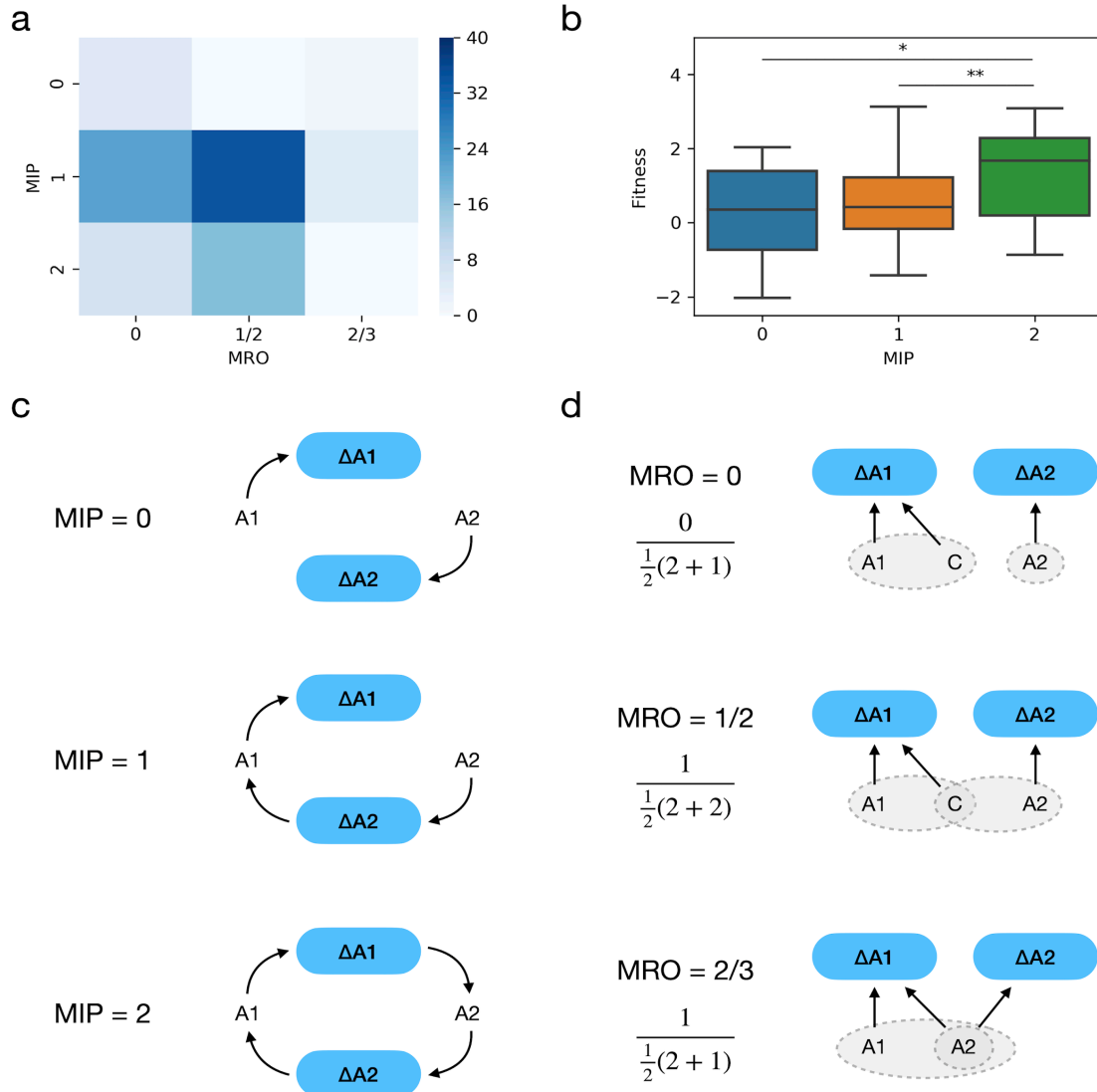
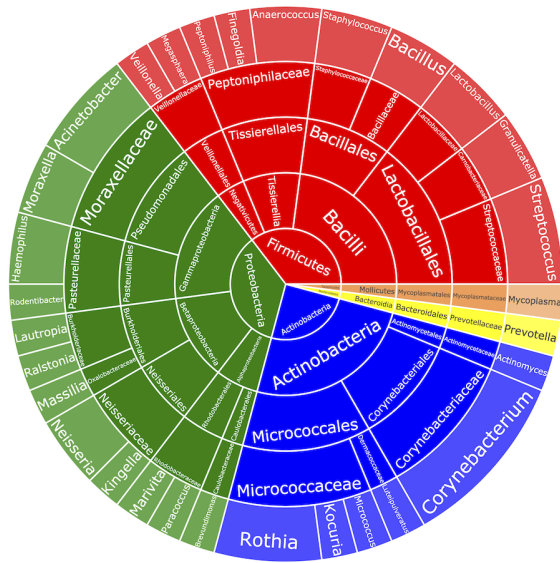


Supplementary Figures

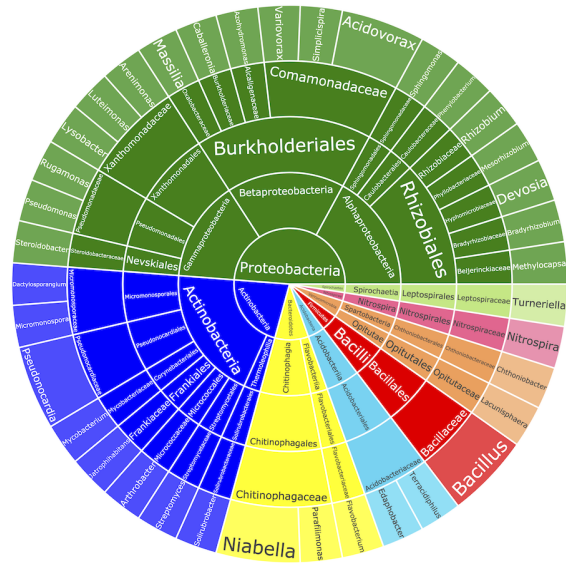


Supplementary Figure 1. MIP and MRO simulations for the pairwise co-culture of *E. coli* mutants engineered with single amino acid auxotrophies²: a) frequency of MIP/MRO values for all (91) simulated pairs; b) co-culture fitness (log₁₀ fold-change in cell density) as a function of MIP; c) illustration of the metabolic exchanges for each of the calculated MIP values; d) illustration of the MRO calculation for all obtained MRO values, where A1 and A2 are amino acids and C is a carbon source. Some amino acids can also be used as carbon source, in these cases, an additional carbon source is not necessary.

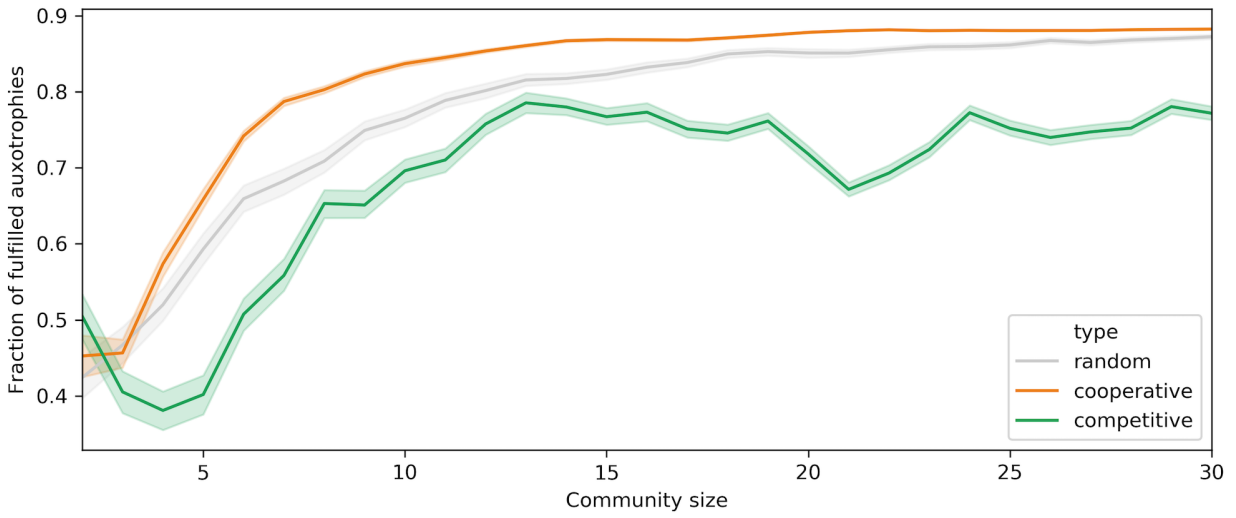
a



b



Supplementary Figure 2: Taxonomic distribution of species present in (a) cooperative communities and (b) competitive communities. Image created with *Plotly* express for Python.



Supplementary Figure 3. Fraction of fulfilled amino acid auxotrophies (number of amino acids for which at least one species is auxotrophic for and at least one species can secrete, divided by the total number of amino acid auxotrophies in the community).