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Cooperation or conflict? Impact of intraspecific diversity on *Escherichia coli* biofilms

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Intraspecific diversity in biofilm communities is associated with enhanced survival and growth of the individual biofilm populations. In here, we assess if this apparent cooperative behavior still holds as the number of different strains in a biofilm increases. Using *E. coli* as a model organism, the influence of intraspecific diversity in biofilm populations composed of up to six different *E. coli* strains, was assessed. Biofilm quantification was evaluated by crystal violet (CV) staining and colony forming units (CFU) counts. In general, with the increasing number of strains in a biofilm, an increase in cell counts and a decrease in matrix production was observed. This observation was confirmed by cluster analysis that indicated that after 24h of biofilm formation the best model, according to the Bayesian information criterion (BIC), consisted of three clusters that grouped together biofilms with an equal number of strains. It hence appears that increased genotypic diversity in a biofilm leads *E. coli* to maximize the production of its offspring, in detriment of the production of public goods (i.e. matrix components), that would be beneficial to all strains individually and the consortium as a whole. Apart from the ecological implications, these results can be explored in the area of clinical biofilms, as a decrease in matrix production might render these intraspecies biofilms more sensitive to antimicrobial agents.