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Predator-prey relationships among isolates of *Salmonella enterica* serovar typhimurium Michelle Erickson and Abraham Eisenstark

When two genetically related (but not identical) strains of *Salmonella enterica* serovar Typhimurium are grown together in the same culture, there is a tendency for competition to occur as nutrients deplete, possibly causing one strain to outgrow another. The Cancer Research Center has access to thousands of strains of *Salmonella* that have been sealed and stored under harsh environmental conditions for almost forty years. Our goal is to explore mutations that have arisen among these archived strains, and to test whether these mutations would provide a selective advantage over non-archived *S. Typhimurium*. We tested for selective advantages by competing different combinations of archived and non-archived strains in liquid media. This was done by selecting two different strains, preparing them in 1:100 ratios, and recording changes in population over a two to four week period. In every competition, the archival strain outgrew the non-archival when initially in minority. From our data, we can conclude that these archived strains must have gained some phenotypic qualities that provide additional fitness under environmental pressure. Further research might reveal information on specific phenotypic characteristics that our *Salmonella* strains may have utilized to survive under such nutrient-poor conditions.