

# Characterization of Dispersion Vehicles Associated to Pathogens in Foodborne Illness Outbreaks

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## A B S T R A C T

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The consumption of fruits and vegetables have rapidly increased in recent years, but so have food-borne illness outbreaks. Among the most responsible pathogenic microorganisms for which raw products must be treated against are virus and bacteria. These microorganisms are ubiquitous and the Center for Disease Control (CDC) estimate that 1 in 6 Americans may suffer a foodborne illness out of which 128,999 are hospitalized and 3,000 die yearly. Their transmission may be effective due to factors ranging from contaminated water irrigation systems, to grazing animals near crops. Although these vectors of infection have been proven to be responsible for a number of outbreaks, we are exploring novel vehicles of dispersal for these recurring epidemics. The most lethal strain of *E.coli* O157:H7 has been found to persist up to three weeks in the environment. For this reason, we hypothesize that alternate forms of dispersal allow bacteria and virus to resist environmental factors and therefore prove to be important vectors of transmission to vegetables. To prove this we have implemented *E.coli* purification and isolation techniques to inoculate samples and obtain growth curves, Most Probable Number (MPN) and Colony Forming Units (CFU). These test will elucidate the presence of nutrients necessary for bacterial growth, followed by differential staining, Polymerase Chain Reaction (PCR) and Gene Sequencing. These studies interrogate survival and transmission dynamics of microorganisms that may lead to foodborne illness outbreaks. This information will aid future studies as to whether or not prolonged survival of very pathogenic bacterial strains or viruses is viable in raw vegetables under specific environmental conditions.