



Articles of Significant Interest in This Issue

Simulation of Microorganisms on Fresh Produce in the Postharvest Supply Chain

Microbial behavior on fresh produce following a contamination event during production or postharvest handling impacts product quality and safety. Zoellner et al. (e00813-18) have developed a customizable simulation tool to evaluate the consequences of microbial contamination in postharvest supply chains of fresh produce and have demonstrated its application to a fresh tomato supply chain. Visualization of dynamic contamination levels from harvest to the supermarket highlighted where interventions may inhibit microbial levels sufficient to cause spoilage or foodborne illness. This framework and its simulation results support ongoing postharvest research to control and prevent fresh produce contamination.

Soluble Fiber Diet during Pregnancy Persistently Promotes Offspring Growth and Gut Development

Dietary soluble fiber has been shown to directly regulate intestinal microbiota and intestinal health. The indirect effects of maternal nutrition during pregnancy on the development of the intestine are, however, largely unknown. Cheng et al. (e01047-18) have shed light on this topic. A maternal soluble fiber diet during pregnancy is independently associated with changes in the intestinal microbiota composition and metabolism in offspring piglets. Moreover, a soluble fiber diet during pregnancy beneficially improves growth performance, reduces intestinal permeability, and prevents excessive intestinal inflammation in offspring piglets. These findings have direct implications for refining dietary recommendations in pregnancy.

Ethylphenol Formation by *Lactobacillus plantarum*: Identification of the Enzyme Involved in Vinylphenol Reduction

The presence of volatile phenols is considered a major organoleptic defect of several fermented alcoholic beverages. Santamaría and colleagues (e01064-18) provide new insights into the role of lactic acid bacteria in the production of these “off-flavors,” identifying the involvement of a bacterial vinylphenol reductase. The identification of this enzyme completes the determination of the route of degradation of hydroxycinnamates in a lactic acid bacterium. The molecular method developed for the detection of ethylphenol-producing bacteria will be helpful in the design of strategies to reduce the production of vinylphenols in fermented foods.

Genome Rearrangement Shapes *Prochlorococcus* Ecological Adaptation

Prochlorococcus spp., the most abundant and smallest known free-living photosynthetic microbes, play a key role in marine ecosystems and biogeochemical cycles. *Prochlorococcus* genome evolution is fundamentally related to how clades of this genus have adapted to different ecological niches. Yan et al. (e01178-18) interpreted *Prochlorococcus* genome evolution from the perspective of genome architecture and associated genome rearrangement with *Prochlorococcus* clade differentiation. This work showed that different clades share a relatively conserved backbone but exhibit clade-specific regions, and the genes in these regions are associated with ecological adaptation.

Widely Used Disinfectants Can Promote Bacterial Antibiotic Resistance

Benzalkonium chlorides (BAC) are widely used disinfectants in food processing lines, domestic households, and pharmaceuticals products. Whether or not exposure to BAC makes bacteria more resistant to antibiotics, however, remains an unresolved issue of obvious practical consequences for public health. Using an integrated approach that combined metagenomics of natural microbial communities with gene cloning experiments and experimental evolution assays with isolated *Pseudomonas aeruginosa* strains, Kim et al. (e01201-18) showed that BAC can promote clinically relevant antibiotic resistance. Therefore, more attention should be given to the usage of BAC disinfectants, and their fate in nontarget environments should be more tightly monitored.