Consumers today are seeking foods that are convenient, nutritious, easy-to-prepare, fresh, flavorful, visually appealing, portion-controlled, and, above all, that taste great.

Perception drives trial in the food marketplace, in which the objective is to communicate the brand, imagery, freshness, wholesomeness, nutritional content and sensory stimuli, triggering initial purchase of a food product. However, reality affects the repeat purchase, in which the overall experience and value provided by the food product will demonstrate whether this promise has been fulfilled. Surveys have continually shown that taste is the most powerful criterion for repeat purchase.

Food technologies are critical in enabling this repeat purchase. In addition, they play a central role in enhancing product safety and extending product shelf life. A number of food technologies aim to prevent food pathogens from contaminating and/or growing on food products. These technologies are identified as "hurdles" or "barriers" and have varying effects on the safety and shelf life of food products.

The level of effectiveness is dependent on the type of technology and its degree of application, and whether the food developer deploys multiple hurdle and barrier technologies. Just as their name implies, hurdle technologies can in fact be overcome by food pathogens, but they can make foods increasingly impenetrable. While a bacterial pathogen may overcome a single hurdle, or maybe even two hurdles, using multiple hurdles in a food product greatly reduces the probability that a pathogen will overcome them all.

Technologies used in food manufacturing are effectively "tools in the toolbox." They include:

- **Good agricultural practices**, including sanitary on-farm harvesting and post-production processes;
- **Formulation technologies** such as applications of functional ingredients and nutraceuticals; flavor science and starch technology; and application of additives such as acidulants, antimicrobial agents, antioxidants; use of competitive microorganisms; or processes that control water activity;
- **Microwaveable packaging technologies**; convenient, easy-open packages; film materials that affect oxygen transmission rate, light transmission, condensation and product respiration; modified atmosphere packaging, which alters the gas environment within a package; and active and intelligent packaging systems that provide an array of benefits such as the scavenging of oxygen or release of carbon dioxide, or indicators that mimic temperature abuse or the ripening of produce;
- **Thermal-processing hurdles**, which may include heating product before or after packaging and include techniques such as hot-fill processing and sous vide post-packaging pasteurization;
- **Nonthermal processing hurdles**, such as ultra-high-pressure processing, irradiation and pulsed-light and pulsed-electric-fields processing.

Food developers must also consider a quality-assurance and food-safety system, including HACCP (Hazard Analysis and Critical Control Point), for all food products. The HACCP process defines the locations at which potential hazards (microbial, chemical and physical) may occur, and establish a means of monitoring these points to eliminate these hazards.

New product success requires innovation and differentiation, and the application of a broad array of scientific disciplines. The application of food technologies, integrated with culinary expertise, is critical for success in the foodservice marketplace.