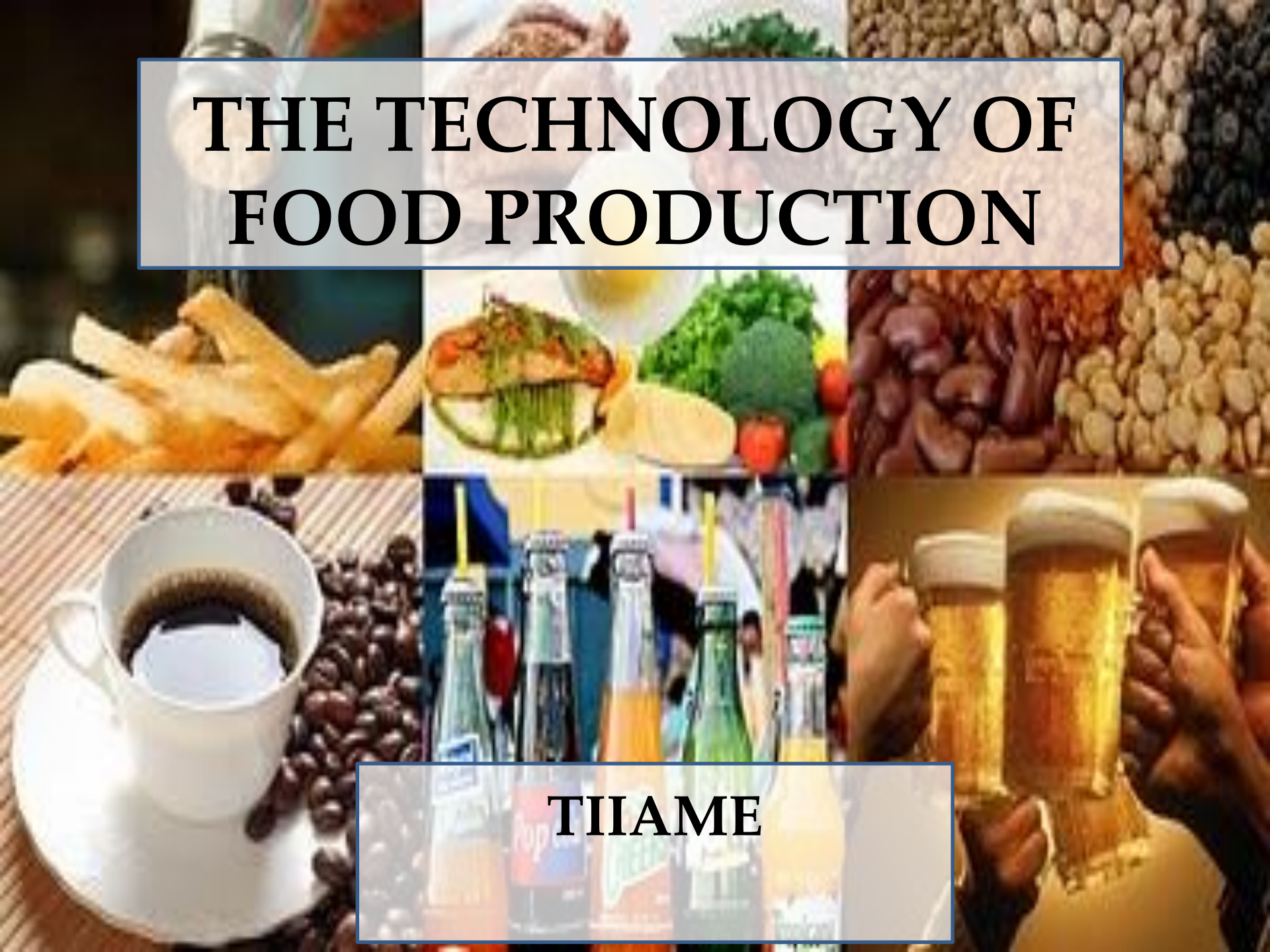

# THE TECHNOLOGY OF FOOD PRODUCTION

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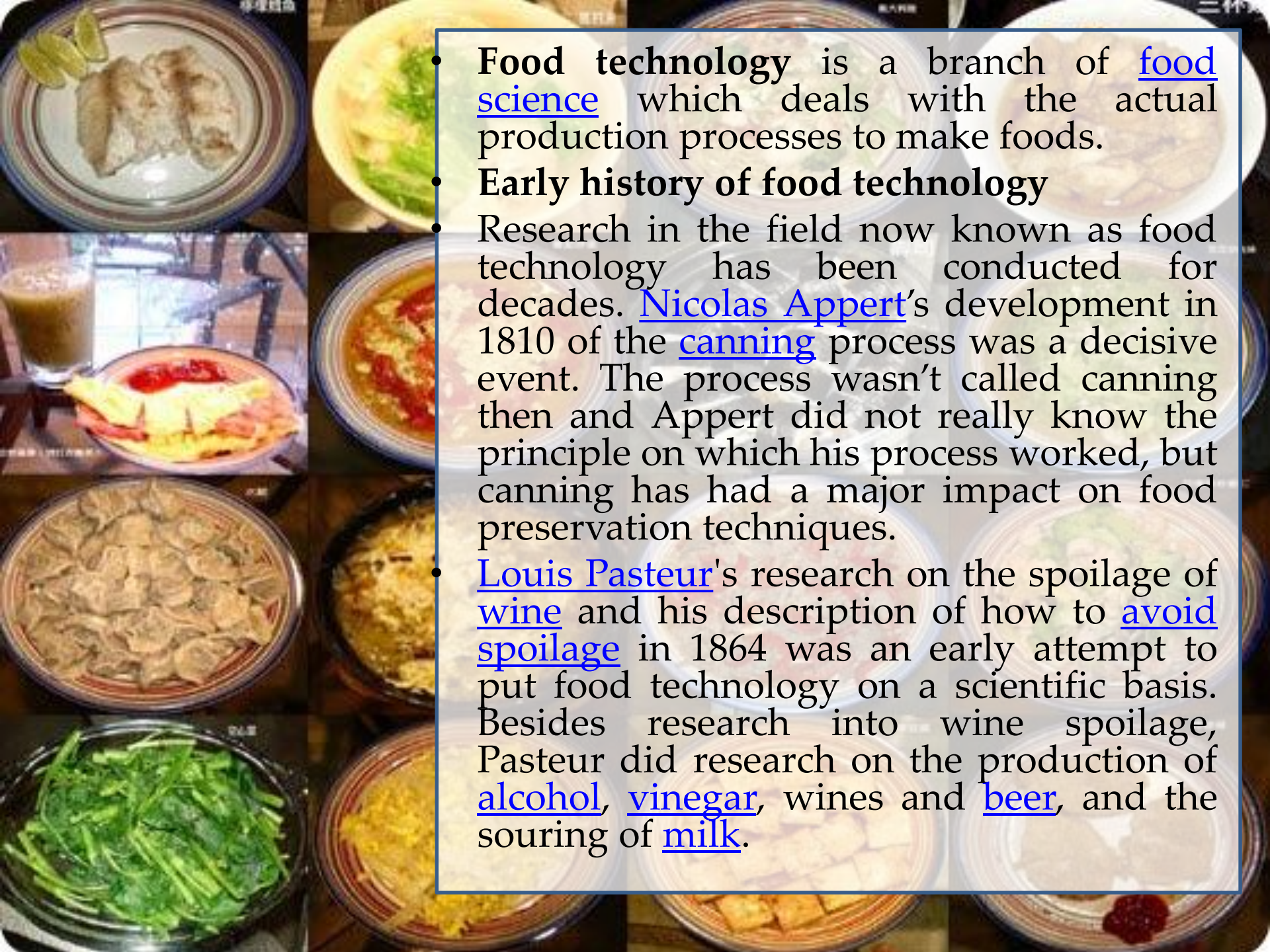
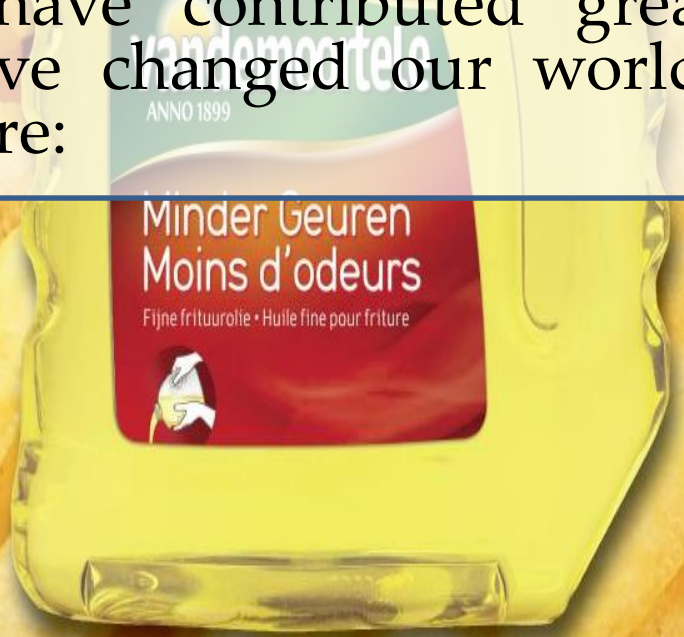


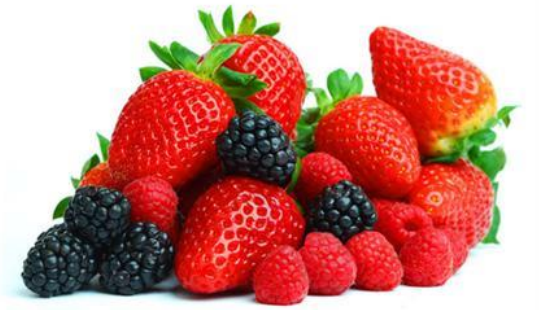
- **Food technology** is a branch of food science which deals with the actual production processes to make foods.
- **Early history of food technology**
- Research in the field now known as food technology has been conducted for decades. Nicolas Appert's development in 1810 of the canning process was a decisive event. The process wasn't called canning then and Appert did not really know the principle on which his process worked, but canning has had a major impact on food preservation techniques.
- Louis Pasteur's research on the spoilage of wine and his description of how to avoid spoilage in 1864 was an early attempt to put food technology on a scientific basis. Besides research into wine spoilage, Pasteur did research on the production of alcohol, vinegar, wines and beer, and the souring of milk.

- He developed pasteurization—the process of heating milk and milk products to destroy food spoilage and disease-producing organisms. In his research into food technology, Pasteur became the pioneer into bacteriology and of modern preventive medicine.
- **Developments in food technology**
- Freeze-dried coffee, a form of instant coffee
- Several companies in the food industry have played a role in the development of food technology. These developments have contributed greatly to the food supply and have changed our world. Some of these developments are:



- Instantized Milk Powder - D.D. Peebles (U.S. patent 2,835,586) developed the first instant milk powder, which has become the basis for a variety of new products that are rehydratable in cold water or milk. This process increases the surface area of the powdered product by partially rehydrating spray-dried milk powder.
- Freeze-drying - The first application of freeze drying was most likely in the pharmaceutical industry; however, a successful large-scale industrial application of the process was the development of continuous freeze drying of coffee.
- High-Temperature Short Time Processing - These processes for the most part are characterized by rapid heating and cooling, holding for a short time at a relatively high temperature and filling aseptically into sterile containers.

- Decaffeination of Coffee and Tea - Decaffeinated coffee and tea was first developed on a commercial basis in Europe around 1900. The process is described in U.S. patent 897,763. Green coffee beans are treated with steam or water to around 20% moisture. The added water and heat separate the caffeine from the bean to its surface. Solvents are then used to remove the caffeine from the beans. New non-organic solvent techniques have been developed for the decaffeination of coffee and tea. Carbon dioxide under supercritical conditions is one of these new techniques. U.S. patent 4,820,537 was issued to [General Foods]] Corp. for a decaffeination process.



**Applied Food Technologies**, Inc. (**AFT**) is a privately held corporation in Alachua, Florida that develops diagnostics needed in the seafood industry and runs fee-for-service species identification and verification programs. The DNA-based species identification diagnostics developed by AFT are used in-house and are also packaged in a kit format and sold to federal, state and private laboratories in the US, Europe and Asia. AFT has established an extensive library of taxonomically verified fish species and has developed DNA standards for these fish.

Applied Food Technologies is primarily a research and development company focusing on fish species identification using DNA and environmental contaminant detection using gene expression in sentinel organisms. AFT also offers a fee-for-service business for seafood species identification.

- Applied Food Technologies was showcased on a national broadcast of *The Early Show* on CBS on June 8, 2011 to discuss seafood mislabeling after release of a national publication on the issue by consumer advocate group Oceana and a subsequent *New York Times* publication on the subject. Although in business for several years, Applied Food Technologies came to the national attention after becoming the first company with DNA-based fish species identification methods recognized by the FDA to test all catfish imported from China in the late 2000s. Applied Food Technologies was subsequently interviewed in May, 2010, by ABC affiliate WCJB-TV. Applied Food Technologies was showcased in University of Florida's *Explore* magazine Fall 2011, issue.

AFT has been criticized as being "in industry's pocket" because AFT has been a loud voice in support of industry against media reports of mislabeling. AFT claims their internal testing has shown a much lower mislabeling rate than media reports. Although Applied Food Technologies has been included in numerous media reports concerning seafood species mislabeling and has been contacted to conduct testing for the media many times, AFT does not perform species identification testing for the media, which may be the cause of some criticism. AFT's mission statement includes offering a testing service to the seafood industry utilizing the "best available science" for the purpose of improving the industry to better serve the consumer. Typically the media outlets are unable to meet the chain of custody requirements within the "best available science" component, which is one of the principal reasons AFT does not offer testing to the media.

Applied Food Technologies offers fee-for-service business in several areas including fish species identification (also known as Fish ID), seafood net weight, and antibiotic residue testing, which are described in detail below.