Ichiro was one of the first American athletes to make a significant impact in his international competition. His ability to bridge the gap between American and Japanese culture made him a role model for many athletes.

The impact of Ichiro's success on the sport is evident in the growth of baseball in Japan and the increased interest in the sport worldwide. His achievements have inspired a generation of athletes to pursue their dreams and strive for excellence in their respective sports.
manufacturing process. The look and the taste of what we eat now are frequently deceiving—by design.

The New Jersey Turnpike runs through the heart of the flavor industry, an industrial corridor dotted with refineries and chemical plants. International Flavors & Fragrances (IFF), the world's largest flavor company, has a manufacturing facility off Exit 8A in Dayton, New Jersey. Givaudan, the world's second-largest flavor company, has a plant in East Hanover. Haarmann & Reimer, the largest German flavor company, has a plant in Teterboro, as does Takasago, the largest Japanese flavor company. Flavor Dynamics has a plant in South Plainfield; Frutarom is in North Bergen; Elan Chemical is in Newark. Dozens of companies manufacture flavors in the corridor between Teaneck and South Brunswick. Altogether the area produces about two-thirds of the flavor additives sold in the United States.

The IFF plant in Dayton is a huge pale-blue building with a modern office complex attached to the front. It sits in an industrial park, not far from a BASF plastics factory, a Jolly French Toast factory, and a plant that manufactures Liz Claiborne cosmetics. Dozens of tractor-trailers were parked at the IFF loading dock the afternoon I visited, and a thin cloud of steam floated from a roof vent. Before entering the plant, I signed a nondisclosure form, promising not to reveal the brand names of foods that contain IFF flavors. The place reminded me of Willy Wonka's chocolate factory. Wonderful smells drifted through the hallways, men and women in neat white lab coats cheerfully about their work, and hundreds of little glass bottles sat on laboratory tables and shelves. The bottles contained powerful but fragile flavor chemicals, shielded from light by brown glass and round white caps shut tight. The long chemical names on the little white labels were as mystifying to me as medieval Latin. These odd-sounding things would be mixed and poured and turned into new substances, like magic potions.

I was not invited into the manufacturing areas of the IFF plant, where, it was thought, I might discover trade secrets. Instead I toured various laboratories and pilot kitchens, where the flavors of well-established brands are tested or adjusted, and where whole new flavors are created. IFF's snack-and-savory lab is responsible for the flavors of potato chips, corn chips, breads, crackers, breakfast cereals, and pet food. The confectionery lab devises flavors for ice cream, cookies, candies, toothpaste, mouthwashes, and antacids. Everywhere I looked, I saw famous, widely advertised products sitting on laboratory desks and tables. The beverage lab was full of brightly colored liquids in clear bottles. It comes up with flavors for popular soft drinks, sports drinks, bottled teas, and wine coolers, for all-natural juice drinks, organic soy drinks, beers, and malt liquors. In one pilot kitchen I saw a dapper food technologist, a middle-aged man with an elegant tie beneath his crisp lab coat, carefully preparing a batch of cookies with white frosting and pink-and-white sprinkles. In another pilot kitchen I saw a pizza oven, a grill, a milk-shake machine, and a french fryer identical to those I'd seen at innumerable fast-food restaurants.

In addition to being the world's largest flavor company, IFF manufactures the smells of six of the ten best-selling fine perfumes in the United States, including Estée Lauder's Beautiful, Clinique's Happy, Lancôme's Trésor, and Calvin Klein's Eternity. It also makes the smells of household products such as deodorant, dishwashing detergent, bath soap, shampoo, furniture polish, and floor wax. All these aromas are made through essentially the same process: the manipulation of volatile chemicals. The basic science behind the scent of your shaving cream is the same as that governing the flavor of your TV dinner.

Scientists now believe that human beings acquired the sense of taste as a way to avoid being poisoned. Edible plants generally taste sweet, harmful ones bitter. The taste buds on our tongues can detect the presence of half a dozen or so basic tastes, including sweet, sour, bitter, salty, astringent, and umami, a taste discovered by Japanese researchers—a rich and full sense of deliciousness triggered by amino acids in foods such as meat, shellfish, mushrooms, potatoes, and seaweed. Taste buds offer a limited means of detection: however, compared with the human olfactory system, which can perceive thousands of different chemical aromas. Indeed, "flavor" is primarily the smell of gases being released by the chemicals you've just put in your mouth. The aroma of a food can be responsible for as much as 90 percent of its taste.

The act of drinking, sucking, or chewing a substance releases its volatile gases. They flow out of your mouth and up your nostrils, or up the passageway in the back of your mouth, to a thin layer of nerve cells called the olfactory epithelium, located at the base of your nose, right between your eyes. Your brain combines the complex smell signals from your olfactory epithelium with the simple taste signals from your tongue, assigns a flavor to what's in your mouth, and decides if it's something you want to eat.

A person's food preferences, like his or her personality, are formed during the first few years of life, through a process of socialization. Babies innately prefer sweet tastes and reject bitter ones; toddlers can learn to enjoy hot and spicy food, bland health food, or fast food, depending on what the people around them eat. The human sense of smell is still not fully understood. It is greatly affected by psychological factors and expectations. The mind focuses intently on some of the aromas that surround us and filters out the overwhelming majority. People can grow accustomed to bad smells or good smells; they stop noticing what once seemed overpowering. Aroma and memory are somehow inextricably linked. A smell can suddenly evoke a long-forgotten moment. The flavors of childhood foods seem to leave an indelible mark, and adults often return to them, without always knowing why. These "comfort foods" become a source of pleasure and reassurance—a fact that fast-food chains use to their advantage. Childhood memories of Happy Meals, which come with French fries, can translate into frequent adult visits to McDonald's. On average, Americans now eat about four servings of French fries every week.

The science behind the scent of your shaving cream is the same as that governing the flavor of your TV dinner.
The human craving for flavor has been a largely underestimated emotion. A 1996 ad promoting a highly processed version of a "good old-fashioned feast."
drop is sufficient to add flavor to five average-size swimming pools. The flavor additive usually comes next to last in a processed food's list of ingredients and often costs less than its packaging. Soft drinks contain a larger proportion of flavor additives than most products. The flavor in a 12-ounce can of Coke costs about half a cent.

The color additives in processed foods are usually present in even smaller amounts than the flavor compounds. Many of New Jersey's flavor companies also manufacture these color additives, which are used to make processed foods look fresh and appealing. Food coloring serves many of the same decorative purposes as lipstick, eye shadow, mascara — and is often made from the same pigments. Titanium dioxide, for example, has proved to be an especially versatile mineral. It gives many processed candies, frostings, and icings their bright white color; it is a common ingredient in women's cosmetics; and it is the pigment used in many white oil paints and house paints. At Burger King, Wendy's, and McDonald's coloring agents have been added to many of the soft drinks, salad dressings, cookies, condiments, chicken dishes, and sandwich buns.

Studies have found that the color of a food can greatly affect how its taste is perceived. Brightly colored foods frequently seem to taste better than bland-looking foods, even when the flavor compounds are identical. Foods that somehow look off-color often seem to have off tastes. For thousands of years human beings have relied on visual cues to help determine what is edible. The color of fruit suggests whether it is ripe, the color of meat whether it is tainted. Flavor researchers sometimes use colored lights to modify the influence of visual cues during taste tests. During one experiment in the early 1970s people were served an oddly tinted meal of steak and french fries that appeared normal beneath colored lights. Everyone thought the meal tasted fine until the lighting was changed. Once it became apparent that the steak was actually blue and the fries were green, some people became ill.

The federal Food and Drug Administration does not require companies to disclose the ingredients of their color or flavor additives so long as all the chemicals in them are considered by the agency to be GRAS ("generally recognized as safe"). This enables companies to maintain the secrecy of their formulas. It also hides the fact that flavor compounds often contain more ingredients than the foods to which they give taste. The phrase "artificial strawberry flavor" gives little hint of the chemical wizardry and manufacturing skill that can make a highly processed food taste like strawberries.

A typical artificial strawberry flavor, like the kind found in a Burger King strawberry milkshake, contains the following ingredients: amyl acetate, amyl butyrate, amyl valerate, anethol, anisyl acetate, benzyl acetate, benzyl isobutylate, butyric acid, cinnamyl isobutylate, cinnamyl valerate, cognac essential oil, diacetyl, dipropyl ketone, ethyl acetate, ethyl amyl ketone, ethyl butyrate, ethyl cinnamate, ethyl heptanoate, ethyl heptylate, ethyl lactate, ethyl ethoxymethylglycidate, ethyl nitrate, ethyl propionate, ethyl valerate, heliotropin, hydroxyphenyl-2-butanone (10 percent solution in alcohol), α-ionone, isobutyl anthranilate, isobutyl butyrate, lemon essential oil, maltol, 4-methylecetophenone, methyl anthranilate, methyl benzoate, methyl cinnamate, methyl heptine carbonate, methyl naphthyl ketone, methyl salicylate,
Natural Livers

Some of the most important discoveries in the field of cancer research have come from the study of natural livers. These livers, found in certain types of plants and animals, have a unique ability to regrow after being injured or removed.

Cancer cells can be thought of as叛逆分子, and they often grow and spread uncontrollably. Natural livers, on the other hand, have a built-in mechanism that allows them to repair and regenerate themselves. This property has led researchers to explore the possibility of using natural livers as a treatment for cancer.

Scientists have found that certain chemicals in natural livers can stop the growth of cancer cells. These chemicals, known as natural anticancer agents, have shown promising results in laboratory experiments and clinical trials. Some of these compounds are currently being tested for their potential to treat cancer in humans.

One of the most promising natural anticancer agents is a compound found in the liver of the Indian elephant, called chechnin. Research has shown that chechnin can inhibit the growth of cancer cells in a variety of types of cancer.

Despite these promising findings, further research is needed to fully understand the potential of natural livers as a treatment for cancer. However, the discovery of these compounds highlights the importance of continued exploration of the natural world in the search for effective cancer treatments.

In conclusion, natural livers have a unique ability to regenerate after injury. This property has led researchers to explore the potential of using natural livers as a treatment for cancer. While further research is needed, the discovery of natural anticancer agents has shown promise in laboratory experiments and clinical trials.
Journal, however, McDonald's did acknowledge that its fries derive some of their characteristic flavor from "an animal source." Beef is the probable source, although other meats cannot be ruled out. In France, for example, fries are sometimes cooked in duck fat or horse tallow.

Other popular fast foods derive their flavor from unexpected ingredients. McDonald's Chicken McNuggets contain beef extracts, as does Wendy's Grilled Chicken Sandwich. Burger King's BK Broiler Chicken Breast Patty contains "natural smoke flavor." A firm called Red Arrow Products specializes in smoke flavor, which is added to barbecue sauces, snack foods, and processed meats. Red Arrow manufactures natural smoke flavor by charring sawdust and capturing the aroma chemicals released into the air. The smoke is captured in water and then bottled, so that other companies can sell food that seems to have been cooked over a fire.

The Vegetarian Legal Action Network recently petitioned the FDA to issue new labeling requirements for foods that contain natural flavors. The group wants food processors to list the basic origins of their flavors on their labels. At the moment vegetarians often have no way of knowing whether a flavor additive contains beef, pork, poultry, or shellfish. One of the most widely used color additives—whose presence is often hidden by the phrase "color added"—violates a number of religious dietary restrictions, may cause allergic reactions in susceptible people, and comes from an unusual source. Cochineal extract (also known as carmine or carminic acid) is made from the desiccated bodies of female Dactylotus coccus Costa, a small insect harvested mainly in Peru and the Canary Islands. The bug feeds on red cactus berries, and color from the berries accumulates in the females and their unhatched larvae. The insects are collected, dried, and ground into a pigment. It takes about seventy thousand of them to produce a pound of carmine, which is used to make processed foods look pink, red, or purple. Dannon strawberry yogurt gets its color from carmine, and so do many frozen fruit bars, candies, and fruit fillings, and Ocean Spray pink-grapefruit juice drink.

In a meeting room at IFF, Brian Grainger let me sample some of the company's flavors. It was an unusual taste test—there was no food to taste. Grainger is a senior flavorist at IFF, a soft-spoken chemist with graying hair, an English accent, and a fondness for understatement. He could easily be mistaken for a British diplomat or the owner of a West End brasserie with two Michelin stars. Like many in the flavor industry, he has an Old World, old-fashioned sensibility. When I suggested that IFF's policy of secrecy and discretion was out of step with our mass-marketing, brand-conscious, self-promoting age, and that the company should put its own logo on the countess products that bear its flavors, instead of allowing other companies to enjoy the consumer loyalty and affection inspired by those flavors, Grainger politely disagreed, assuring me that such a thing would never be done. In the absence of public credit or acclaim, the small and secretive fraternity of flavor chemists praise one another's work. By analyzing the flavor formula of a product, Grainger can often tell which of his counterparts at a rival firm devised it. Whenever he walks down a supermarket aisle, he takes a quiet pleasure in seeing the well-known foods that contain his flavors.

Grainger had brought a dozen small glass bottles from the lab. After he opened each bottle, I dipped a fragrance-testing filter into it—a long white strip of paper designed to absorb aroma chemicals without producing off notes. Before placing each strip of paper in front of my nose, I closed my eyes. Then I inhaled deeply, and one food after another was conjured from the glass bottles. I smelled fresh cherries, black olives, sautéed onions, and shrimp. Grainger's most remarkable creation took me by surprise. After closing my eyes, I suddenly smelled a grilled hamburger. The aroma was uncanny, almost miraculous—as if someone in the room were flipping burgers on a hot grill. But when I opened my eyes, I saw just a narrow strip of white paper and a flavorist with a grin.