10 Ways Biotechnology Creates a More Sustainable World
1. Renewable fuel

Ethanol fuel produced from starch (first-generation) or biomass (second-generation) burns cleaner. Using this biofuel to replace fossil fuels is one way to potentially reduce greenhouse gas emissions.

Genencor’s innovative first-generation enzyme technology enables the production of more than 68 billion liters of first-generation bioethanol each year – the equivalent of 475 million barrels of oil. This is estimated to save around 31 million metric tons of CO2 from being released into the atmosphere.

Our Accellerase® platform is an enzyme solution that assists in the production of cellulosic ethanol. These enzymes break down starch into sugars, which are then fermented by yeast to create ethanol. Accellerase allows for faster fermentations, which can increase ethanol yield at a lower price.
2. Textile processing

Textile processing today requires high temperatures and uses a lot of energy and water. Enzymes allow the same process to be done in lower temperatures.

Genencor’s PrimaGreen® EcoScour enzymes are used in the pretreatment of cotton fabrics to enable reductions of water by more than 30 percent and energy usage by more than 60 percent compared to regular processing.
3. Eco-friendly detergents

Enzyme innovation enables consumers to wash laundry and dishes at lower temperatures, reducing the use of energy and water but still retaining the same wash performance and results.

This is especially important as water is becoming a scarce commodity in some geographies. These detergent enzymes also reduce the need for phosphates that can upset aquatic ecosystems.
4. Fresher foods

Households generate over one-third of all food waste in the world – with vegetables, dairy and bread being the top-wasted products.

Stale bread is often discarded when it is technically still edible. Enzymes like Danisco’s POWERfresh can modify the amylopectin in flour starch during baking, making soft, resilient and cohesive bread with a longer shelf life.
5. Paper production

Genencor’s enzymes can help improve efficiency and decrease waste products.

Enzymes can help reduce processing times, environmental impact and the amount of chemicals used in a variety of industrial manufacturing processes, such as the production of pulp and paper.
6. Biochemicals

Genencor has created an alternative to petrochemically derived isoprene, a key intermediate for synthetic rubber production.

Genencor and Goodyear are collaborating to create the **Biolsoprene™** platform - which can be used to produce tires from renewable resources.

Aside from synthetic rubber for tire production, traditional isoprene is used for the production of a wide range of products, such as surgical gloves, golf balls and adhesives, so the potential for the Biolsoprene™ platform is substantial.
7. Animal feed

Adding enzymes to animal feed helps break down complex food molecules into smaller components in the gut.

Products such as Danisco’s Phyzyme, Avizyme and Porzyme create lower feed costs for the producer, and reduced outputs of phosphorus and nitrogen (which can destroy aquatic life and have negative effects on human health). This allows for more effective on-farm nutrient management, resulting in a cleaner environment.
8. Recovering valuable coproducts

Traditional solvent extraction is very efficient for recovery of oil from soybeans. However, solvent extraction generates a low-value by-product.

Genencor’s line of Multifect® and Protex™ enzymes can be used effectively to significantly upgrade the value of the protein, carbohydrate and fiber components of this soymeal by-product.
9. Bioremediation

Traditional decontamination agents used today against chemical and biological attacks can potentially harm the user – the soldiers themselves.

Additionally, traditional methods require substantial amounts of water for rinsing. Genencor’s Defenz enzymes are non-toxic and non-corrosive, reducing the risk to soldiers and require little or no rinsing in their application, thus reducing water usage.
10. Efficient brewing & distilling

Brewers can use enzymes to help improve filtration when brewing and distilling beer, which helps optimize the use of raw materials.

Danisco’s Diazyme, which is used in the production of light beers in North America, increases the amount of fermentable sugars, thereby requiring less raw materials such as barley.

... we’ll toast to that!
For more information on Genencor’s range of solutions to help make industry more sustainable, please visit genencor.com