

# Novozymes in a nutshell

**Novozymes is the global market leader in biological solutions, producing a wide range of industrial enzymes and microorganisms. We provide solutions that help customers produce more from less, adapt to market changes, make their products stand out and reduce costs.**

## Sustainability is in our DNA

The planet's population is growing, and consuming more – putting a strain on natural resources and calling for more sustainable solutions. Novozymes helps the world address some of these challenges. Used in the manufacture of a wide variety of products, our innovative biological solutions improve the efficiency of processes both in industry and in everyday life, by saving energy, water and other raw materials while reducing waste.

The nature of our products makes sustainability an intrinsic part of our business. In 2016 alone, our solutions helped our customers save an estimated 69 million tons of CO<sub>2</sub>. That is equivalent to taking 30 million cars off the road!

## Delivering world-class innovations

The possibilities for further developing enzymes and microorganisms into new business solutions are vast. Every year, around 13% of Novozymes' revenue is reinvested in R&D, and more than 1,400 of our employees work in R&D to create innovation that influences how our customers work and succeed. In 2016, we launched eight new products aimed at the Household Care, Agriculture & Bioenergy and Food & Beverages industries.

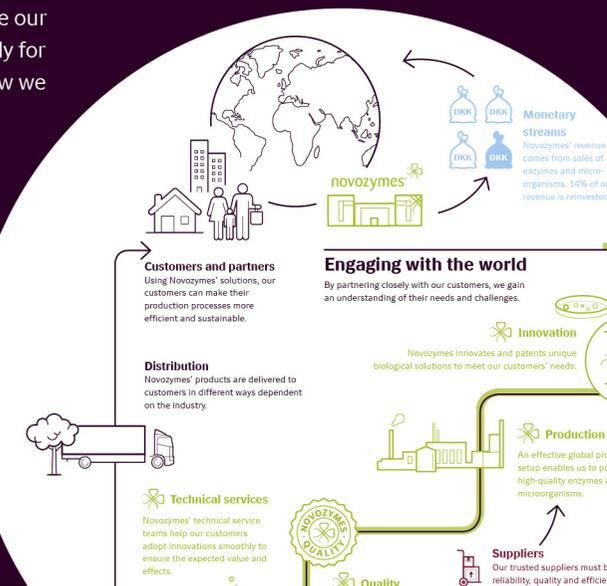
Our purpose

Together, we find **biological answers** for better lives in a growing world – Let's rethink tomorrow.

## Our business model

Our promise to customers is to make our biological solutions work successfully for them. Want to know more about how we innovate, produce and supply our biological solutions to customers across a range of industries worldwide?

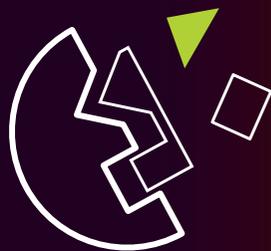
 [Read more about our business model](#)



# Small components that make a big difference

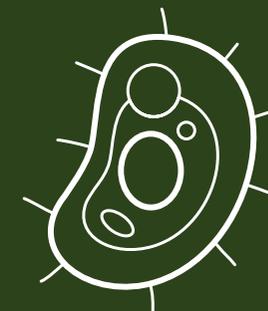
## What are enzymes?

Enzymes are proteins that act as catalysts and thereby help complex reactions occur everywhere in life. This is nature's own way of kick-starting biological processes. When one substance needs to be transformed into another, nature uses the catalyzing enzymes to speed up and control the process. With Novozymes' expertise, enzymes can excel on an industrial scale by optimizing output and accelerating processes, while saving water, energy and raw materials.



## What are microorganisms?

Microorganisms are living, single-celled organisms such as fungi or bacteria. Like enzymes, Novozymes' microorganisms have natural properties that influence processes and reactions. The industrial applications for microorganisms are countless. For example, microbes expand the farmer's toolkit to increase yield and protect crops. Microbes produce enzymes and are found everywhere, some come from volcanoes and Arctic lakes and are particularly robust in hot and cold environments.



## What do our enzymes do?



### Animal feed

Maximize nutrition by enhancing digestive systems



### Baking

Improve softness, freshness and dough strength



### Biofuels

Produce sustainable energy from crops or waste



### Brewing

Improve filtration and flavor of beer and ensure raw material optimization



### Detergents

Remove tough stains and enable low-temperature wash



### Health & nutrition

Make foods safer by removing carcinogenic and allergenic ingredients



### Juice

Increase yields and improve clarity of juice



### Leather

Prepare, degrease and tan leather more efficiently



### Oils & fats

Harden fats without unhealthy trans-fatty acids



### Pulp & paper

Reduce water, energy and chemical consumption



### Pharmaceuticals

Improve yields and reduce costs of drug production



### Starch

Produce sugar syrups more simply and efficiently



### Textile

Save time, water, energy and chemicals in textile production

## What do our microorganisms do?



### Biological solutions for agriculture (BioAg)

Improve crop yield and health



### Poultry health & nutrition

Improve animal health, growth and feed utilization



### Aquaculture

Support improved growth, survival and disease resistance



### Biogas

Work as processing aids



### Wastewater treatment

Make wastewater treatment facilities more efficient

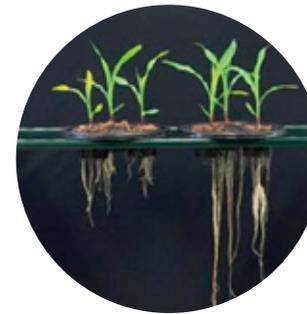
# Product launches in 2016



**Saphera®** – the only lactase to offer manufacturers of lactose-free products better control of lactose elimination, better sweetness stability in sugared dairy products and improved suitability in fermented dairy products such as yoghurt.



**Progress® Uno** – a protease for tough conditions that delivers consistent wash performance – even in water-rich concentrations – and reduces or eliminates the need for stabilizers, as well as increasing formulation flexibility for detergent manufacturers.



**Acceleron® SAT B-300** – a biological upstream seed treatment product containing the fungus *Penicillium bilaii* to boost corn yields.



**Extenda® Go 2 Extra & Extenda® Peak 1.5 Extra** – saccharification enzymes for industrial sweetener production that enable starch-processing customers to further optimize their processes through better performance and greater consistency.

Q1 2016

**Alterion®** – a probiotic solution that helps poultry farmers lower costs by improving feed conversion and gut health. It also provides a natural alternative to antibiotic growth promoters.



Q2 2016

**Amplify® Prime** – best-in-class liquid amylase that allows manufacturers to offer laundry detergents optimized for short wash cycles and in-depth cleaning at low temperatures, enabling consumers to save time and money.



Q4 2016

**Fermax™** – the world's first biological solution to control foam when fermenting sugarcane to produce ethanol.

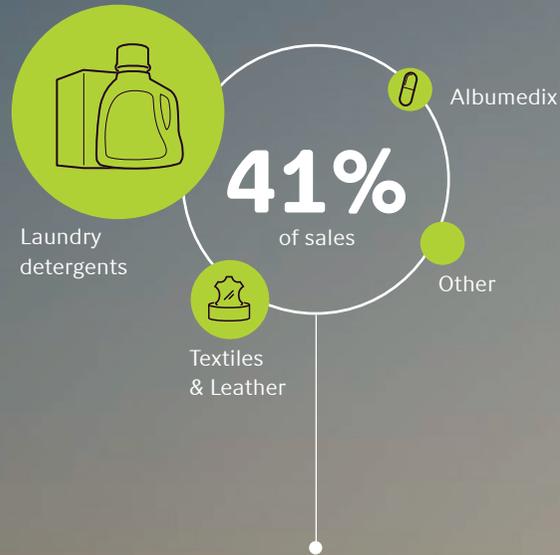


**Quara® LowP** – an enzymatic solution to help remove naturally occurring gums when refining oil. It also helps producers consistently meet specifications for phosphorus levels, improve oil yield and reduce the use of chemicals in the production process.

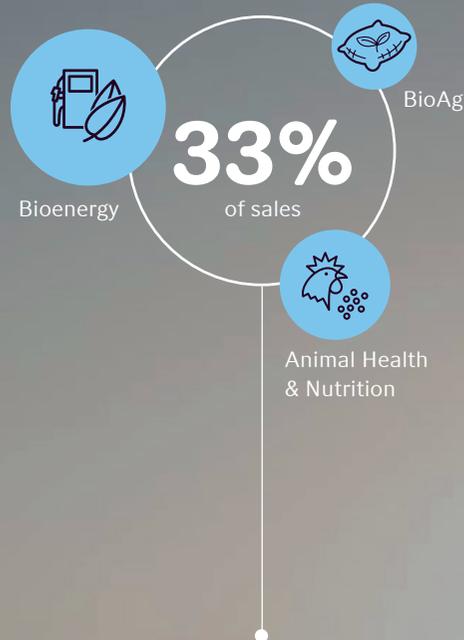


# Novozymes' divisions

## Household Care & Technical



## Agriculture & Bioenergy



## Food & Beverages



For more information about our solutions, please visit [Novozymes.com](http://Novozymes.com)