

## Using biotechnology responsibly



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**Evonik. Power to create.**

## Introduction

Evonik is one of the world's leading specialty chemicals companies. The central elements of our strategy for sustained value creation are profitable growth, efficiency and values. We concentrate on high-growth megatrends, especially health, nutrition, resource efficiency and globalization, with research and development playing an important role.

According to the OECD definition, biotechnology is *"the application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services."*

A color scheme has evolved for distinguishing among the various applications, with distinctions now drawn between red (medical), green (agricultural), and white (industrial) biotechnology. Evonik makes use of white biotechnology by applying gentle, efficient bioprocessing technologies in sustainable production methods for our products.

These manufacturing processes encompass both biocatalysis and fermentation:

- Fermentation processes harness the full synthesis power of microorganisms as a way of producing large quantities of the desired product.
- Biocatalytic processes utilize microorganisms that selectively produce specific enzymes. These enzymes are then either used as a whole-cell biocatalyst or are isolated for use as a biocatalyst in manufacturing processes.

There are many common products, such as essential amino acids, nutritional supplements, pharmaceuticals, and cosmetic ingredients, for which chemical synthesis is either impossible or highly impractical as a means of production. Efficient, sustainable biosynthesis often means having to selectively modify a microorganism, so that it will either produce large quantities of highly pure product or generate the target product from raw materials that are otherwise difficult to use. Evonik does this by applying various methods, some of which are subject to EU Directive 2001/18/EC or other regional regulations and require the resulting organism to be defined as a genetically modified organism (GMO).

Responsible and safe use of this technology is self-evident for Evonik.

**Evonik has established the following guidelines for using biotechnology safely:**

1. Both because of its tremendous significance for developing the society sustainably and because of its wide range of chemistry applications, we consider biotechnology to be a key innovation that will have a major economic impact on our future.
2. At Evonik, biotechnology represents a vital opportunity to make scientific and technological use of established biotech methods for the purpose of developing new products and efficient solutions to problems.
3. We use modern, powerful biotech methods for optimizing our production processes and microorganisms.
4. Evonik only markets products and processes based on biotechnology if we can ensure that they meet the latest scientific and technological standards for safety and environmental stewardship. We respect our customers' and the public's wishes for transparent practices, transparent communications, and consistent risk management.
5. Our product labeling is in compliance with legal requirements regarding biotechnological modifications.
6. We impose strict limitations on our use of genetically modified organisms in biotech applications, and these limits reflect our ethical values-especially in terms of respect for life and human dignity.
7. As part of product approval processes, we describe our products, the manufacturing processes used, and the microorganisms involved, so that the authorities can review them for any potential risks.
8. We operate our biotech production facilities in a way that keeps impurities out of the reaction solution and prevents exposure outside of the plant. Once the microorganisms have been used, we deactivate so that no viable organisms will be released.
9. Before beginning any biotech work in research or production, we conduct a conscientious, comprehensive risk assessment and document the results.
10. We encourage an open dialog on the opportunities and risks of applied biotechnology and are dedicated to making the technology transparent to the public and explaining its benefits.