

Enzymes and Bioprocesses for Bio-based Products

White biotechnology improves environmentally friendly value creation from renewable resources. At Protéus, we focus on bio-based processes to facilitate and expand the use of renewable raw material and promote sustainability.

In today's global context of fierce price competition on chemicals markets, the industry faces uncertainty on raw material availability and costs, increasing regulatory pressure (e.g. European REACH), and growing environmental concerns. Climate change, green chemistry and Life Cycle practices have been put high on the agenda and white biotechnology has therefore become a hot topic. Alongside with lower costs, lower risks and higher margins, white biotechnology provides environmental benefits of lower emissions, less energy use and less use of fossil natural resources.

Bioprocesses developed by Protéus benefit from the unsurpassed selectivity of the protein catalysts which make life possible. These catalysts are rapidly biodegraded when released in the environment and contain neither heavy metal nor any other toxic compound. In the hands of industrial chemists, such bio-catalysts enable to form enantiopure compounds, skip protection/deprotection steps and operate under mild conditions, hence forming lower amounts of undesired by-products.

Protéus is a prominent player in white biotechnology for chemistry. Our flexible business model fits with the specific market constraints of our clients, whether in the fine, specialty or commodity chemicals sector.

Our extensive track record includes prominent world-class players in fine and specialty chemical such as leaders in pharmaceuticals, cosmetics or flavors & fragrances industry. Proteus is actively exploring strategic opportunities with partners who share our vision for the role that industrial biotechnology can play in building a sustainable future.

**WE HELP MEETING
TODAY'S INDUSTRIAL,
ENERGETIC
AND ENVIRONMENTAL
CHALLENGES**

QUANTUM
IMPROVEMENTS OF
CONVERSION YIELDS,
RESIDENCE TIME,
EDUCTS AND PRODUCTS
CONCENTRATION,
AND ENERGY
CONSUMPTION

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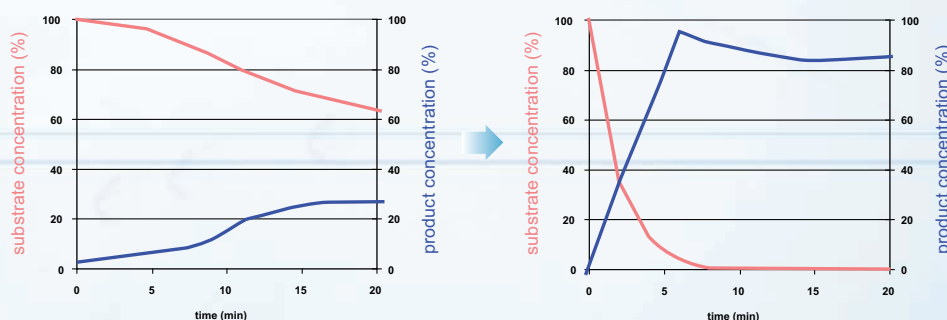
Our high throughput biology platform enables us to develop green bio-routes to high-quality, competitively-priced specialty and commodity chemicals. Whether by means of fermentation-, biocatalyst- or cell-factory-based processes, Protéus helps the industry to access to a new generation of cost-effective bioprocesses.

Our outstanding resources in biodiversity and proprietary technologies for protein engineering provide quantum improvements in the economy of eco-designed, bio-based processes. Our focus is on the achievement of dramatic improvements of key parameters such as conversion yields, residence time, educts and products concentration, atom economy or energy consumption.

CASE STUDY

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CASE STUDY : GREEN ROUTE TO GREEN NOTES



Process performance before
enzyme engineering

Process performance after
enzyme engineering *

Protéus engineered a hydroperoxide lyase enzyme to dramatically increase the conversion yield and productivity of a biocatalytic process to convert renewable feedstock (fatty acids) into a green note compounds for use in the flavour and fragrance industry. Using wild type enzyme, conversion into product was limited to 30% after 20 min incubation time. The enzyme engineered by Protéus enables to achieve a 100% conversion within only 5 min using 10 times less enzyme. (red lines: educt consumption, blue lines: product formation)

* Decrease is due to the poor stability of the product formed.

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