

OUR PROPOSAL

Evolutionary Enzyme Engineering



bde
biodiscovery enzymes



UNIÓN EUROPEA

Una manera de hacer Europa

FEDER

Fondo Europeo de
Desarrollo Regional

Combining skills & expertise



+



Combining skills & expertise



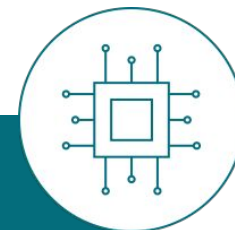
ACADEMIC EXPERIENCE
+20 years

COMPANY HISTORY
+2 years

EXPERTS IN
Directed Evolution

PROPRIETARY TECHNOLOGY
**Library of Evolved Enzymes (Patented
peroxygenases) and Own Technology in
Directed Evolution**

MORE INFO
www.evoenzyme.com



ACADEMIC EXPERIENCE
+15 years

COMPANY HISTORY
+5 years

EXPERTS IN
Computational Biodiscovery

PROPRIETARY TECHNOLOGY
PELE and ED/MD simulation platforms

MORE INFO
www.nostrumbiodiscovery.com

Potential use in different fields



HEALTH

Pharma

input some text here

Biomedical devices

input some text here



ENVIRONMENT

Biofuels

input some text here

Bioremediation

input some text here



MATERIALS

Fabrics

input some text here

Pulp bleaching

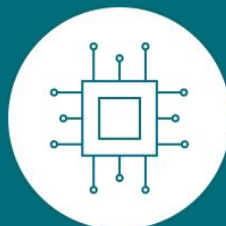
input some text here

New materials

input some text here

Summing up efforts

COMPUTATIONAL LAB



TECHNOLOGY

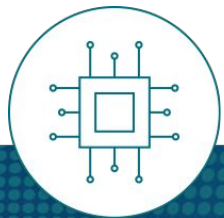
**PELE and ED/MD simulation
platforms**



WET LAB

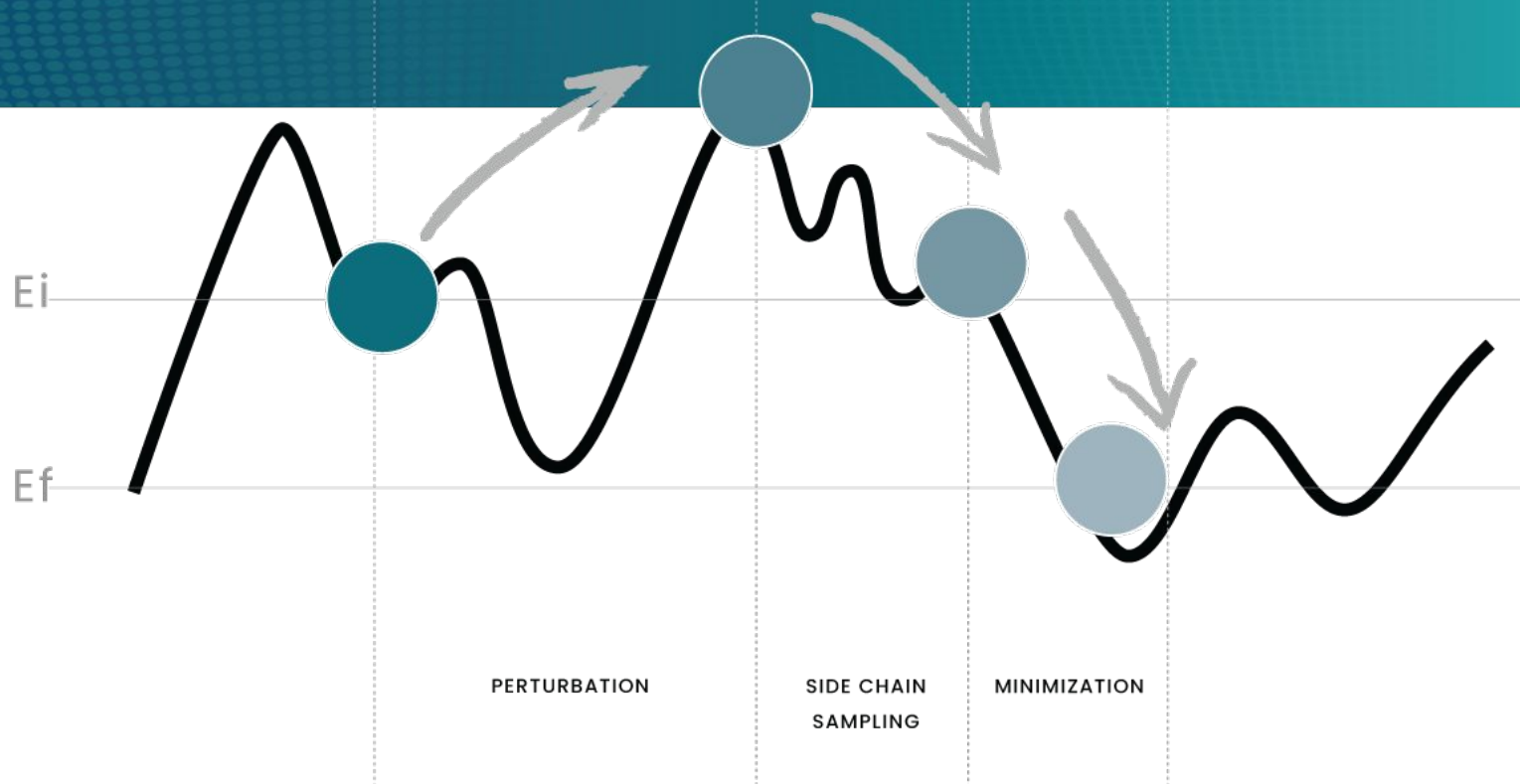
TECHNOLOGY

**Own Technology & Library Creation
Methods (Patented peroxygenases)**

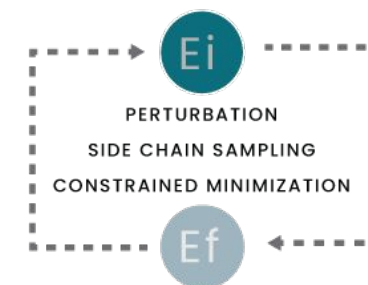


PELE software

revolutionary
algorithm to map
molecular
interactions

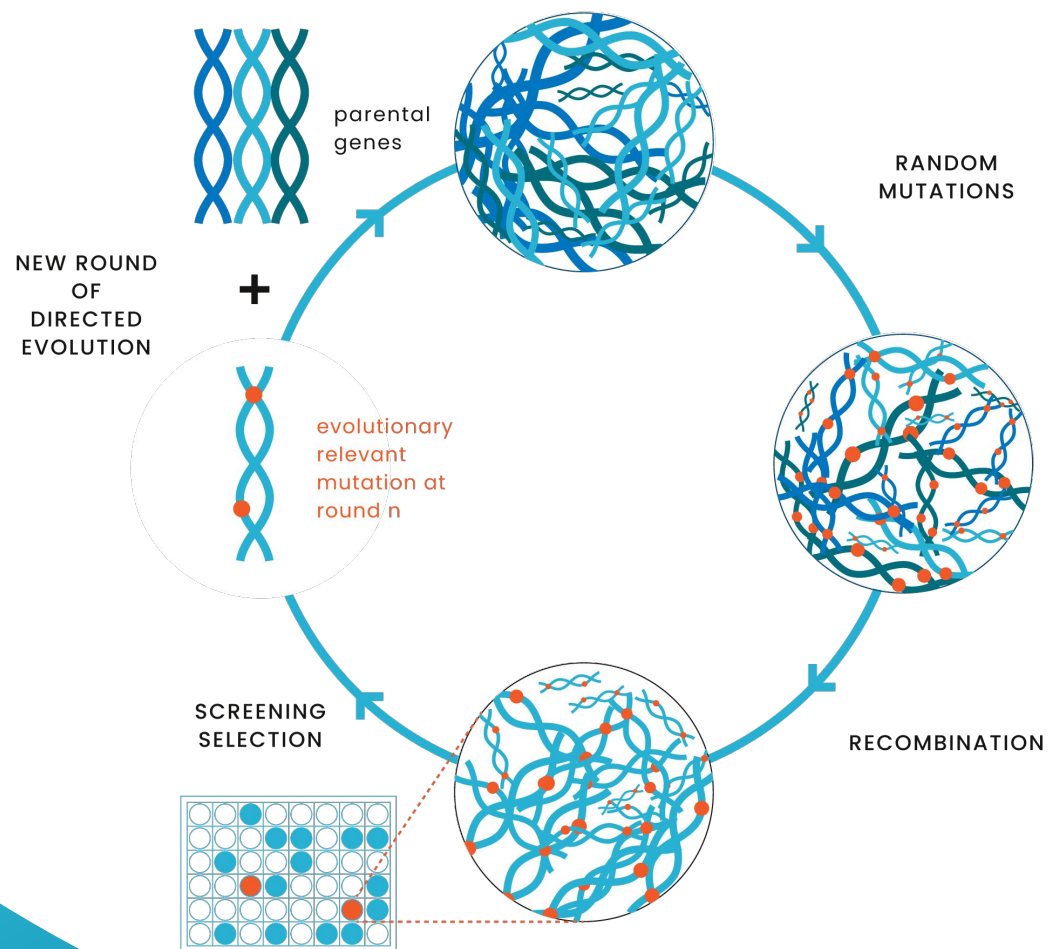


Monte Carlo Algorithm

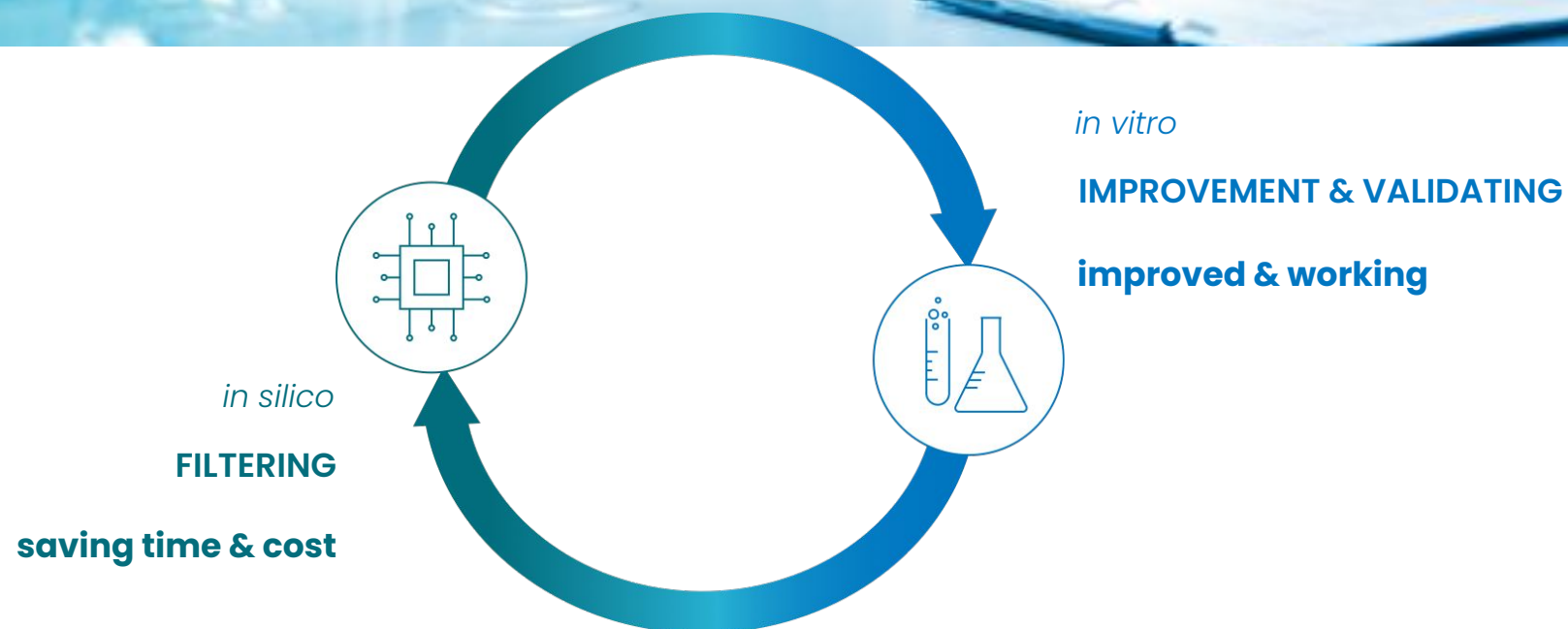




Directed Evolution



Computational and proven enzyme design



New Usable Enzyme

better solubility,
increased activity

to different ligand
to changes in selectivity
(chemo-, regio- and
stereo-), pH

For more information



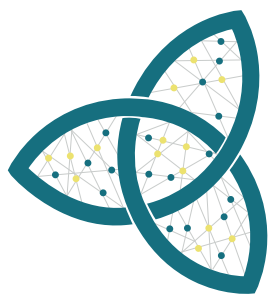
www.evoenzyme.com

www.nostrumbiodiscovery.com

email person to contact

tel.: + 34 123456789

Thank you for your time !



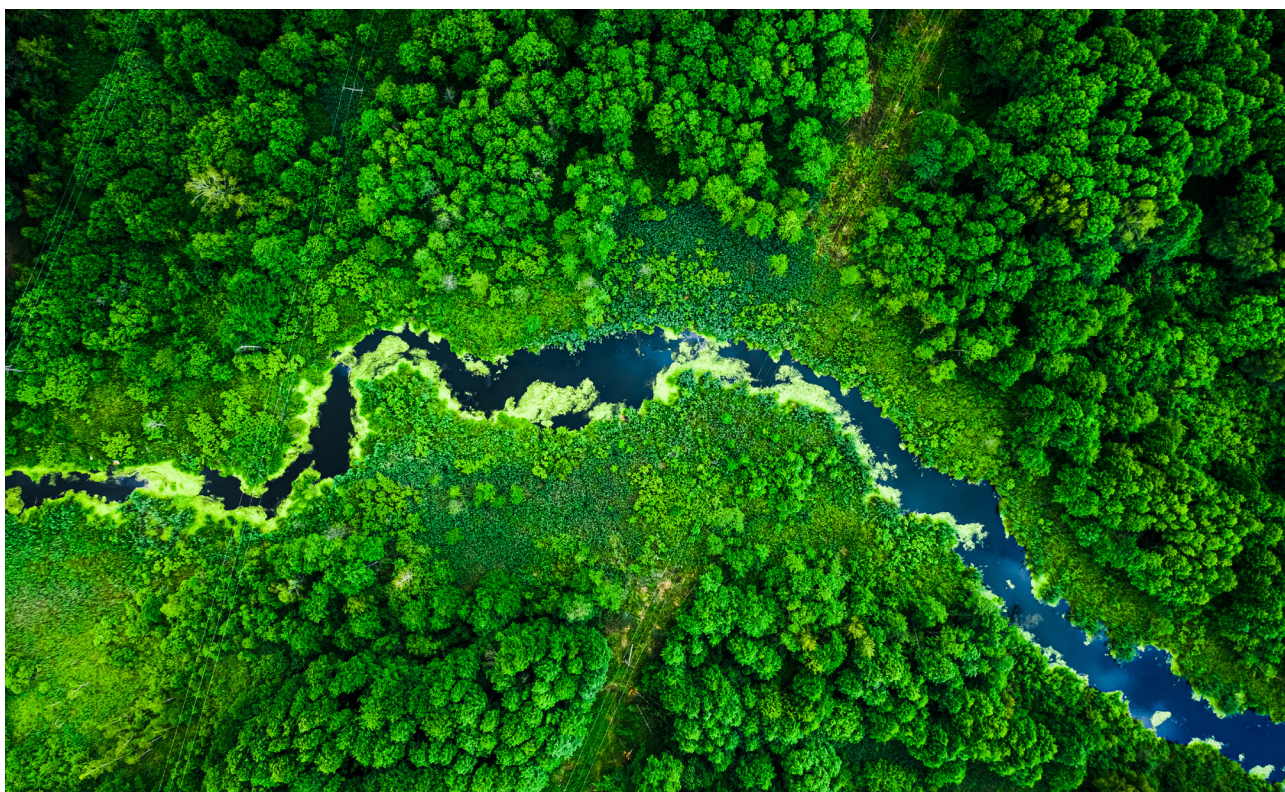
NBD

Rethink &
Accelerate

NOSTRUM BIODISCOVERY

ENZYME ENGINEERING:

Building a green and more efficient industry through computing



ENZYME ENGINEERING



Consumer Goods

Consumer Goods companies are using enzymes in their production processes and as part of the final products (detergents, foods & beverages, cosmetics & hygiene products). Moreover, enzymes are widely used as part of the production chain since they are more environmentally friendly and efficient. Finding and evolving enzymes with enhanced properties is key to improve products and productivity in industry.



Waste Management

Unfortunately, most of the industrial waste is dumped into the residual water that must be treated in wastewater plants. Furthermore, pig slurry treatment limits the meat industry growth. Finally, accumulation of non-degradable plastics, low paper reutilization efficiency and lignocellulosic biomass deposition represents a huge headache for governments. Enzymes can be designed to degrade these widespread contaminants into non-toxic waste, or even to valuable components. This will contribute to the circular economy representing the only sustainable long-term solution.



Biomass

Biomass for Biofuels, Fertilizers, Livestock or Paper is undergoing a revolution. Enzyme Engineering is improving production systems and making some of them already profitable without government grants. The Lignocellulosic market is experiencing a huge demand increase due to the developments in terms of machinery and enzymes' performance. Nevertheless, there is still room for increasing the percentage of profits in regards to costs.

Apart of these sectors, our Enzyme Engineering services are adaptable to all industrial sectors demanding it. Biotechnology companies and the textile industry are other sectors where NBD's expertise has been proved.



WHAT WE DO / WHAT WE SOLVE

Nostrum Biodiscovery
can create an enhanced
enzyme tailored to your
particular needs through its
proprietary *in silico* enzyme
evolution methodology
and through molecular
modeling on mutated
enzymes candidates.
PELE efficiently maps the
interactions between an
enzyme and its substrate
highlighting key residues.

In silico Enzyme Directed Evolution allows us to quickly test tens of thousands of mutant variants in short time, reproducing (and expanding) months of work in an experimental lab for just a few hours of computational time. The combination of PELE with powerful computational resources leads to a massive space screening.



PluriZyme

One enzyme, one active site. NBD breaks the dogma. Through our computational approach, we can introduce artificial fully functional active sites, crafting PluriZymes, a breakthrough in Biotechnology.



Computational Bioprospecting

Using our methodology, we can select the best enzymes from large databases. Computational Bioprospecting will save weeks of experiments using a combination of different computational tools.



EXAMPLES OF SUCCESS WITH CUSTOMERS & PUBLICATIONS

Enzyme Engineering

Computer-aided laccase engineering: toward biological oxidation of arylamines

<https://pubs.acs.org/doi/abs/10.1021/acscatal.6b01460>

Rational enzyme engineering through biophysical and biochemical modeling

<https://pubs.acs.org/doi/abs/10.1021/acscatal.6b00028>

Increasing redox potential, redox mediator activity, and stability in a fungal laccase by computer-guided mutagenesis and directed evolution

<https://pubs.acs.org/doi/abs/10.1021/acscatal.9b00531>

PluriZymes

Rational engineering of multiple active sites in an ester hydrolase

<https://pubs.acs.org/doi/abs/10.1021/acs.biochem.8b00274>

Genetically engineered proteins with two active sites for enhanced biocatalysis and synergistic chemo-and biocatalysis

<https://www.nature.com/articles/s41929-019-0394-4>



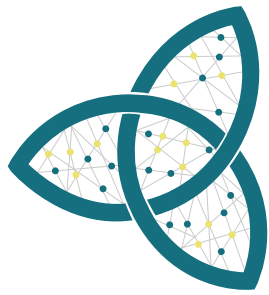
CO-DEVELOPMENTS

NBC-01

NBC-02

NBC-03

USE	<i>IN SILICO</i> EVOLUTION	Experimental validation	Industrial set up	LICENSING
BIOETHANOL PRODUCTION	<div></div>			
LIGNIN DEGRADATION	<div></div>			
UNDISCLOSED	<div></div>			



NBD

NOSTRUM BIODISCOVERY

Rethink &
Accelerate



Find us here :

hello@nostrumbiodiscovery.com



NBD | Nostrum Biodiscovery



@HelloNostrum



www.nostrumbiodiscovery.com