

# CLIB FuturEnzyme Forum

## FANTASTIC ENZYMES: WHERE AND HOW TO FIND THEM

06 September 10.00 to 13.00 h (CET) online



**HiPerIn2.0**  
Shaping the Next Generation of Bio-based  
High Performance Ingredients

Project funded by the  
European Union's Horizon  
2020 Research and  
Innovation Programme under  
grant agreement  
No[101000327]

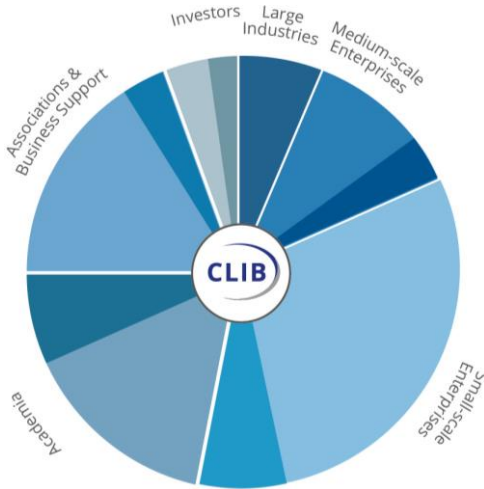




# CLuster Industrial Biotechnology



## Cluster



Open innovation cluster in industrial biotechnology & circular biobased economy

International network with cluster core in Germany

Approx. 100 members

## Key elements



## Projects & Funding



## Markets

<b>Personal &amp; home care</b> <ul style="list-style-type: none"><li>• Biodegradability</li><li>• Cosmetics</li><li>• Cosmeceuticals</li><li>• Flavours and fragrances</li><li>• Surfactants</li></ul>		<b>Bio-aromatics</b> <ul style="list-style-type: none"><li>• Lignin depolymerisation</li><li>• DSP</li><li>• Fractionation</li><li>• Upgrading</li><li>• Aromatic comopunds</li></ul>	
<b>Food, feed &amp; nutrition</b> <ul style="list-style-type: none"><li>• Alternative protein sources</li><li>• Crop protection</li><li>• Flavours and fragrances</li><li>• Nutraceuticals</li><li>• Supplements</li></ul>		<b>C1-gas streams</b> <ul style="list-style-type: none"><li>• CO<sub>2</sub>, CO, syngas</li><li>• Gas treatment</li><li>• Fermentation processes</li><li>• Electro-biotechnology</li><li>• DSP</li></ul>	
<b>High performance materials</b> <ul style="list-style-type: none"><li>• Adhesives</li><li>• Coatings</li><li>• Functionalised surfaces</li><li>• Packaging</li><li>• Textiles (fibres)</li></ul>		<b>Bioeconomy education</b> <ul style="list-style-type: none"><li>• Interdisciplinary education</li><li>• Entrepreneurship</li><li>• Business plan competition</li><li>• Vocational training</li><li>• Life-long learning</li></ul>	







# Shaping the Next Generation of Bio-based High-Performance Ingredients

Personal & Home Care

Food & Feed

Textiles & Fibres

Coatings & Adhesives

Flavours & Fragrances



Circular economy

End-of-Life

Regulatory Affairs

Digitalisation

Public perception

# Enzymes to make the world green again



Paris Climate Conference

“Reduce greenhouse emissions by 55 gigatons of CO<sub>2</sub> equivalent (GtCO<sub>2</sub>eq) in 2030”



European Green Deal

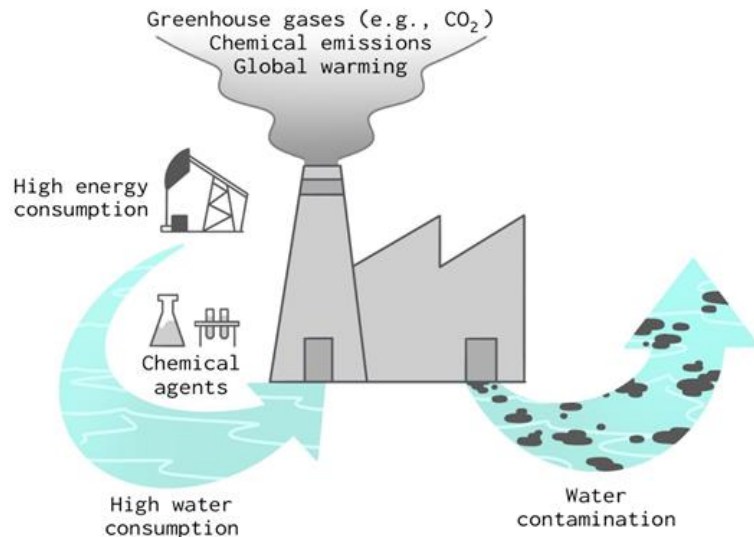
“Become the world's first climate-neutral continent by 2050 while improving economic competitiveness”



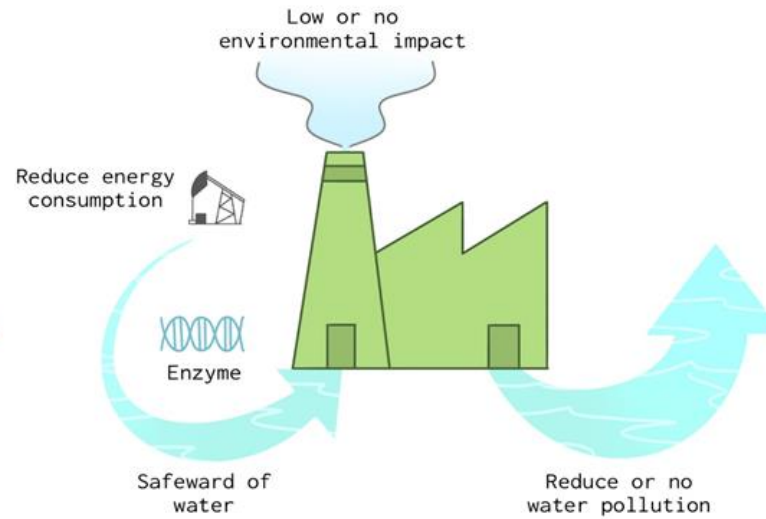
Recovery Resilience Plan

“To rebuild a post-COVID-19 Europe”

## WITH CHEMICAL AGENTS



## WITH ENZYMES



**If enzymes replaced all chemical agents in industrial processes and consumer products...**

...the emission of greenhouse gases would be reduced by up to one ton of CO<sub>2</sub> per kilo of product. Water consumption would be reduced by 6,000 billion litres, and energy consumption equivalent to 850 billion tons of oil would be avoided.

**Enzymes can help in a very significant way to ...**

...alleviate global-warming problems and to create products that are more respectful to the environment.



# Consumer daily use products for which Fantastic Enzymes will be developed

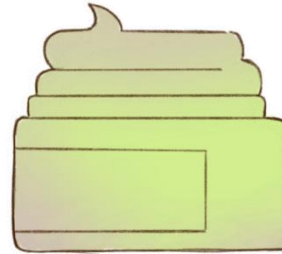


## LAUNDRY DETERGENTS



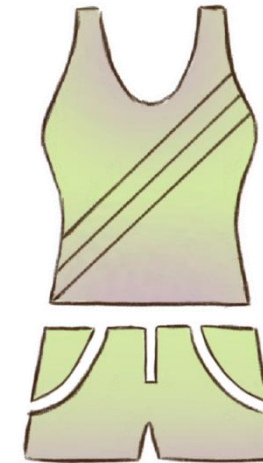
- Increased stain removal capacity
- Lower washing temperature
- Lower chemical content

## COSMETICS



- Lower temperature for production processes.
- More efficient active ingredients

## TEXTILES



- Lower chemical usage
- Lower water consumption
- New and improved clothes properties
- Recycling



# AGENDA



10:00 h	Welcome & Introduction to HiPerIn2.0 and FuturEnzyme Markus Müller, CLIB – Cluster Industrial Biotechnology & Patricia Molina, CSIC - Consejo Superior de Investigaciones Científicas	 
10:10 h	Enzymes wanted, reason: the bioeconomy, the climate change and the consumer demands  Manuel Ferrer, CSIC - Consejo Superior de Investigaciones Científicas	
11:00 h	Short break	
11:20 h	In silico toolkit for enzyme bioprospecting and engineering: a current view  Sergi Rodà Llordés, BSC – Barcelona Supercomputing Center	
12:10 h	Mining the microbial diversity for esterases, lipases and plastic degrading enzymes  Jennifer Chow, University of Hamburg	
13:00 h	Final discussion	