

# Clean Bio-Technologies for a Sustainable Future

*Every year, failure in environmental protection costs the industry and local authorities huge amounts of money.*

*Protéus develops environmental bio-based protection measures that reduce costs and increase the industry competitiveness.*

Protéus provides bio-based resources and support to the life cycle management teams in the industry that need to reduce the environmental footprint of their business. The aim of Protéus is to promote the optimal use of biotechnology to manufacture products and renewable energy in a synergistic integrated cycle of profit making processes where the waste of each process becomes the feedstock for another process.

Protéus bio-based solutions for green chemistry and renewable energy enable the industry to design processes right from the beginning in a way that pollution and waste is not generated in the first place (See Protéus “Enzymes and Bioprocesses for Bio-based Chemicals” document). However, preventive environmental protection does not eliminate the need for waste management, bioremediation, detoxification, waste-water treatment or decontamination of operating or abandoned industrial sites, or biofilm removal. Because they have virtually no environmental impact, bio-based solutions represent an attractive alternative.

Our aim is to turn the most state-of-the-art results and discoveries of biotechnology into useful products and processes for the industry. Therefore the Company has built a comprehensive protein engineering platform including gene shuffling, high throughput protein expression and screening, and has created probably the broadest collection of extremophilic micro-organisms worldwide.

This unique combination of expertise, technologies and biodiversity enables Protéus to provide customized solutions to all environmental stakeholders for the treatment of wastes and abatement of pollution. It includes specially designed bio-based cleaning and decontaminating products for a large range of applications. Proteus teams up with industry global players to accelerate the development of competitive and sustainable cleantech solutions.

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

CUSTOMIZED  
BIO-BASED SOLUTIONS  
TO ALL ENVIRONMENTAL  
STAKEHOLDERS FOR THE  
TREATMENT OF WASTES  
AND ABATEMENT  
OF POLLUTION

# Clean Bio-Technologies for a Sustainable Future

Protéus has gained a unique expertise in developing bio-based solutions for remediation of contaminated environments, whether water, air or land. The company develops enzymes and bio-based systems to accelerate degradation of a variety of toxic substances. As an example, specific solutions were developed by Protéus to detoxify and decontaminate environments where chemical and biological warfare (CBW) agents were disseminated. Certain CBW agents that are extremely persistent in the environment and recalcitrant to biodegradation or decontamination were efficiently eliminated.

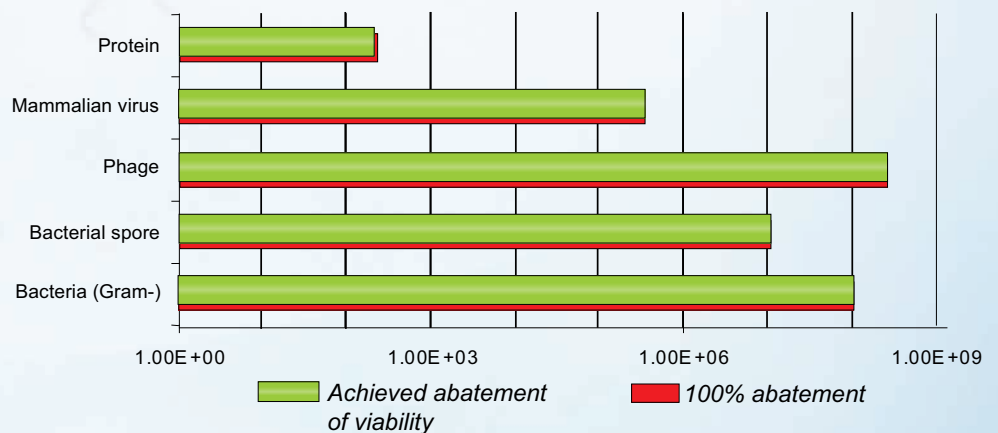
The industry faces with a wide variety of toxic compounds such as PAH (polycyclic aromatic hydrocarbons), PCB (polychlorobiphenyl), chlorinated compounds, Pesticides, herbicides, BTEX (benzene, toluene, ethylbenzene, xylene), EDC (endocrine disrupting compounds), VOC (volatile organic compounds) or many other compounds. Protéus has unique expertise and technologies to develop customized bio-based solutions to help the industry to face with specific environmental challenges.

## CASE STUDY

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information  
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### CASE STUDIES : BIOLOGICAL AND CHEMICAL DECONTAMINATION AT PROTEUS

- Enzymatic biocides efficiency in one hour (Log)



- Enzymatic abatement of chlorinated compounds using dehalogenases achieved at the following rates :

1-chloropentane: 50 mg/L within 5 minutes  
1,5-dichloropentane: 100 mg/L within 1 hour

proteus

