Consortium & Partner Search Form
Horizon Europe

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YOUR ORGANISATION DETAILS

Organisation	Université Libre de Bruxelles (ULB)	**Department**	Laboratoire de Microbiologie appliquée, Ecole de Bioingénierie
Contact person	George Songulashvili	**Email**	George.songulashvili@ulb.be
City	Brussels	**Website**	https://labiris.brussels/laboratoire-de-microbiologie-appliquee-ulbebb
Country	Belgium	**PIC/VAT n°**	

Organisation type

Research organisation type	☐ Research Organisation x University ☐ Company ☐ Other (specify): …….	**Is your company a Small and Medium Sized Enterprise (SME[1])?** **Number of employees:**	☐ YES x NO

Short introduction of key areas of research:

- Fermentation; including the usage of post laboratory scale bioreactors
- Purification and characterization of the enzymes
- Formulation (Immobilization and insolubilization) of enzymes and characterization
- Low molecule (endocrine) analytical assay development and toxicity
- Development of a wastewater treatment reactor, quality control, validation and process scale up.

Former participation in a FP7, Horizon 2020 or Horizon Europe?

☐ YES X NO

If you are offering your expertise and wish to join a consortium, fill "CONSORTIUM SEARCH"
OR if you are a coordinator looking for partners, fill the "PARTNER SEARCH"
Delete the irrelevant section.

Bear in mind that the document is meant for dissemination so beware of IPR and make sure the information can be shared publicly.

Date 03/12/24

[1] Your enterprise is an SME if:
- it is engaged in **economic activity**
- it has **less than 250 employees**
- it has either an **annual turnover not exceeding €50M**, **or an balance sheet total not exceeding €43M**
- it is **autonomous**

For the definition of SMEs, look at: http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en

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I agree with the publication of my contact data: x YES ☐ NO

FOR CONSORTIUM SEARCH

Description of your expertise:	Expertise on ligninolytic enzymes application for xenobiotics and recalcitrant pollutants oxidation and elimination form the wastewater
Keywords specifying your expertise:	Ligninolytic enzymes, Immobilization, Bio-cartridge, Wastewater treatment
Commitment offered:	X Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination ☐ Other:

Interested in participation in project types:	X Research & Innovation Action ☐ Innovation Action ☐ Coordination & Support Action	☐ EIC Pathfinder ☐ EIC Transition

Work Programme research areas: indicate your interest

Development a clean-tech, green-tech solution with small, low cast, energy-efficient, biological wastewater treatment device

- **Low-cost enzyme (bio-catalyst) immobilization**
- **Design and fabrication of bio-cartridge**
- **Characterisation of PFAS degradation performances**
- **Fild deployment and benchmarking study**
- **Business plan**

Call topic(s): **e.g.** *HORIZON-CL5-2021-D5-01-16: Assessment of noise and particle emissions of L category vehicles from real driving conditions*

Do you already have other partners for this topic (which partners/country)?	NO

FOR PARTNER SEARCH

Role	X technology development	X research	☐ training
	☐ dissemination	☐ demonstration	☐ other _____
Do you need a coordinator?	X YES ☐ NO		

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Country / region of preference:	EU
Expertise required:	Bio-cartridge designing for wastewater application
Short abstract of the project idea:	The escalating impact of xenobiotic chemicals on the environment has driven the development of advanced processes for treating wastewater generated by industries and municipalities. Recently, the European Commission decided to revisit its drinking water standards, incorporating all types of PFAS into the list of benchmark parameters for drinking water monitoring, aligning with the latest recommendations from the World Health Organization (WHO). This growing concern has sparked significant research interest in the potential of lignin-modifying enzymes for degrading xenobiotics and persistent pollutants in industrial and environmental bioprocess technology. These enzymes are particularly effective due to their ability to break down hazardous substances with chemical structures similar to lignin, reducing their harmful activity. The goal of this innovative project is to integrate the TEAM's expertise in ligninolytic enzymes with a potential partners advancement in bio-cartridge technology. By merging these two cutting-edge approaches, the project aims to develop a highly efficient, compact, and energy-saving system for wastewater treatment. This system will leverage the patented bio-cartridge technology to achieve high-volume, high-efficiency performance. The resulting technology is envisioned to address the pressing challenge of increasing water pollution by providing affordable and sustainable solutions tailored to communities of all sizes, whether large urban centers or small rural areas.

Work Programme research areas: indicate your interest

i. Optimization of a Low-Cost Laccase Immobilization Strategy:
We will employ a straightforward, cost-effective, and efficient method for the covalent immobilization of robust laccase derived from Coriolopsis gallica. This resilient and highly efficient enzyme, developed by our team, will serve as the core biocatalyst.

ii. Design and Fabrication of a Bio-Cartridge:
The bio-cartridge will be constructed using polymer materials, chosen for their affordability, ease of molding, biocompatibility, and transparency. These criteria will ensure the practicality and effectiveness of the design for real-world applications.

iii. PFAS Bio-Degradation Testing:
The bio-cartridge device will be evaluated for its efficiency in degrading PFAS compounds, demonstrating its potential to mitigate persistent environmental pollutants.

iv. Benchmarking Study:
To validate the device's performance, a comprehensive benchmarking study will be conducted using wastewater sourced from pilot plants. This study will assess the system's effectiveness across various real-world conditions.

v. Business Plan Development:
Once the initial prototype is developed, we will engage stakeholders and seek early adopters for feedback. This process will include disseminating the technology, gathering user specifications, and refining the product through extensive testing. By the project's conclusion, the prototype will be aligned with market demands, supported by early adopter feedback, and proven effective in real-life operational scenarios.

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Do you already have other partners for this topic (which partners/country)?	NO