ETERNAL and four other Horizon Europe research projects partner to form new Green Pharma Cluster

The new cluster of R&D projects aims to increase the sustainability of pharmaceutical products and exploit research synergies to boost the impact of its innovations.

Three working groups have been created: active pharmaceutical ingredient synthesis, pharmaceutical life cycle assessment and communication of key messages.

Valencia (20-5-2024). ETERNAL and its sister projects, ENVIROMED, IMPACTIVE, SusPharma and TransPharm, have joined forces to form a Green Pharma Horizon Projects Cluster and capitalize on synergistic development. The aim of this cluster of R&D projects is to increase the sustainability of pharmaceutical products and exploit research synergies to boost the impact of innovations.

"*The Green Pharma Cluster is organized in three working groups. Each one represents an area of common interest across all the projects and an opportunity to achieve synergies*", explained ETERNAL coordinator Pablo Ferrer Pérez from AIMPLAS, the Plastics Technology Centre. "*There's no doubt that our science can be stronger and more efficient when we work together and that we can provide more effective advocacy for the systemic changes required for a sustainable healthcare system in the future*", Ferrer stated.

The first working group aims to research relevant methodological issues that include assumptions made in pharma life cycle assessment (LCA), such as the functional unit, system boundaries and life cycle impact assessment (LCIA) methods. It will also address LCA data quality and data availability.

The second working group, Green-Pharma API Synthesis, explores the synergies the projects can create by focusing on the synthesis of different active pharmaceutical ingredients.

Finally, the third group collaborates on communication and dissemination activities by setting up two-way communication channels with target audiences in the technical community and the general public, and disseminating key messages that can have an impact on interested parties. This group has a plan in place for the next twelve months

that will build collective communication assets and coordinate efforts in areas such as social media and participation in high-profile events.

ETERNAL Project progress

ETERNAL combines industrial case studies, research on the environmental risks of active pharmaceutical ingredients, by-products, residues and metabolites, and stakeholder engagement to promote full life cycle approaches covering pharmaceutical design, manufacture, use and disposal as a contribution towards a sustainably healthy future society.

In its first 18 months, ETERNAL has successfully mobilized multidisciplinary teams in six industrial case studies. These teams have co-designed a range of innovative approaches that address sustainability challenges in a range of current pharmaceutical manufacturing practices and ways to transform them. Examples include better use and recovery of process solvents, using greener solvent alternatives, continuous technologies for synthesis, isolation and downstream processing of different dosage forms, and a greener-by-design approach towards targeted synthetic biology. Several of the case studies also harness the power of advanced digitalization to improve design, analysis, and control of their innovative processes through process analytical technology (PAT) and digital twin approaches.

As the project moves into its next phase, i.e. scaling-up these innovations towards ultimate commercialization, ETERNAL is also contributing to broader scientific knowledge and policy thinking for a sustainable and healthy society and environment. Researchers studying the sustainability benefits of membrane technology in organic solvent separation and purification recently generated ETERNAL's first open access peer-reviewed publication, a review of organic solvent nanofiltration (OSN) in pharmaceutical applications. This comprehensive summary of progress in OSN in the last decade and its applications in the pharmaceutical industry was singled out as an Editors' Choice article by the journal *Organic Process Research & Development*.

Elsewhere, the project has generated four public reports of interest to strategic thinkers in industry and academia, policymakers and regulators, and all those interested in promoting sustainable, healthy living. These reports reflect on aspects of the broader environmental and societal context within which the pharmaceutical and healthcare sectors operate and point the way to how things can change for the better in areas such as standardization in research, digitalization in the EU pharmaceuticals industry, incorporating new scientific knowledge in pharmaceutical environmental risk assessment, and including "compliant-by-design" strategies in the regulatory framework.

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About AIMPLAS

At AIMPLAS, the Plastics Technology Centre, we have a twofold mission: to provide added value to companies so they can create wealth and quality employment, and to meet societal challenges to improve people's quality of life and ensure environmental sustainability.

We are a non-profit research association and member of REDIT (Network of Technological Institutes of the Valencia Region) offering enterprises in the plastics industry comprehensive and customized solutions, including development and innovation projects, training, competitive and strategic intelligence, and technological services such as analysis, testing and technical assistance.

We also support the 17 SDGs of the UN Global Compact when carrying out our work and corporate social responsibility activities.

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