

## **Interreg 2 Zeeën - IMODE**

**The Innovative Multicomponent Drug Design (IMODE) project is funded by the INTERREG V 2 Seas Mers Zeeën program, with the financial support of the European Regional Development Fund.**

This program facilitates cross-border cooperation between England, France, the Netherlands and Belgium (Flanders).

IMODE aims to:

- Enhance regional strategic advantages in pharmaceutical and biomedical applications
- Accelerate product development for the production of low cost, sustainable high-quality medicines.
- The project started on July 1st 2016, and will last 4 years.

### **Description of the project**

The IMODE project is motivated by a need to develop solutions for the current challenges related to healthcare, by developing novel improved medicines for various diseases which currently have inadequate or lack of treatment, while maintaining low medical costs.

This will be achieved in the IMODE project via the collaboration of academic research groups and SMEs through a transdisciplinary applied research program in materials science, pharmacy, biology and medicine.

The ability to efficiently deliver a drug to the patient depends on its solid state properties, whereby the specific properties of the molecule (instability and/or poor water solubility) can prevent successful industrial development.

This provides the impetus for developing novel approaches to design new enhanced pharmaceutical formulations. The use of multicomponent pharmaceutical systems such as co-crystals or co-amorphous systems is an emerging area of interest with enormous potential.

As patients with chronic conditions are often prescribed a range of different medications, the use of a single dosage form which is able to deliver multiple drugs would greatly improve patient adherence to treatment as well as quality of life.

The development of novel drug products and medical devices through a new class of multicomponent drug designs has already attracted interest from pharmaceutical/medical companies due to their superior capabilities in terms of solubility and stability.

Our strategy is based on a research program early on in the development process, whilst the involvement of SMEs will reduce barriers to innovation and facilitate the transfer of novel formulations/technologies towards the SME's.

As the challenging objectives of the project are highly multidisciplinary in nature, the IMODE partnership ensures that through cross-border cooperation sufficient critical mass is obtained in terms of expertise, human resources and equipment to achieve an effective approach to the development of innovative pharmaceutical technologies and medical devices.

IMODE integrates the research teams of the following partners:

- French (University Lille, ImaBiotech, Eurasanté, Roquette)
- English (University College London, University of East Anglia, University of Greenwich, Ashford and St. Peter's Hospital, NHS foundation Trust, Cubic Pharmaceuticals Limited)
- Belgian (Ghent University) partners, with University Lille 1 as lead partner.

## **Objectives**

There is currently an urgent need to develop new pharmaceutical products with improved controlled/immediate release, solubility and stability of the drug, in order to improve the quality of life of the patients as well as patient adherence to the treatment.

The main objective of the IMODE project is to carry out research for the development of multicomponent pharmaceutical systems:

- Accelerate the discovery of multicomponents forms (co-crystals and co-amorphous systems) by developing prediction tools, robust screening methods and rapid synthetic technologies, providing solutions for the formulation of drugs with low water solubility
- Develop novel, advanced and ready-to-use formulations manufactured via continuous processing techniques
- Design new medical devices to efficiently deliver multicomponent bioactive molecules to the patient in order to better comply with the patient's needs
- Develop a range of materials and processes, including new bio-based excipients, personalized medicines, continuous manufacturing processes

Overall, the design of novel pharmaceutical products and manufacturing technologies will yield more effective drugs and medical devices. Hence, the IMODE project will significantly contribute to patients' quality of life and wellbeing.

### **Role of Greenwich University**

The research activities of the Centre of Innovation and Process Engineering Research (Faculty of Engineering and Sciences) are mainly linked to:

- Work Package 1: Innovative pharmaceutical formulations and technologies
- Work Package 2: Innovative medical devices with improved therapeutical activity based on codrugs
- Work Package 3: Technology transfer
- Work Package 4: Trainings

### **Contact**

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