

M2 Internship position

Formulation and Process Development department – Vitry, France

Title of the project: Coformulation of Biologics

Duration: 6 months between February and August 2025

Description of the project:

The combined use of monoclonal antibodies (mAbs) has proven highly beneficial for patients with cancer or infectious diseases. Consequently, there is an increasing trend towards creating single product forms that contain two or more premixed mAbs, delivered as fixed-dose coformulations. However, this approach can be challenging because mAbs may interact and affect each other's stability and degradation profiles when combined (ZHANG, Hongyu et al. Stability Convergence in Antibody Coformulations. Molecular Pharmaceutics, 2022).

In this internship, you will investigate the coformulation of various mAbs and mAbs derivatives, examining their stability and the effects on each individual mAb-based product.

The project will consist in (i) generating different formulations made of different combinations of mAbs and derivatives; (ii) evaluating the impact of coformulation on the rheological properties of these biologics and (iii) assessing the stability of coformulations overtime and in stressed conditions (Shaking, Freeze/Thaw, ...). Quality attributes of the coformulated biologics will be compared to those of their individually formulated counterparts. This involves using various protein characterization techniques such as SEC, DLS, MFI ion-exchange chromatography or capillary isoelectric focusing. This internship will also require to develop and optimize a technique to separate the two coformulated biologics in order to analyze them individually using for e.g. HPSEC. Additionally, the interaction between the biologics may also be studied through DSC, ITC in collaboration with other departments.

This study aims to evaluate the feasibility of developing coformulations within our department, anticipating the growing demand for this innovative formulation approach.

Main tasks:

- Design and execute formulation development studies
- Write and review electronic lab notebooks, experimental protocols, scientific reports and other technical assessments
- Communicate results and experimental data to internal staff
- Participate in scientific investigational work and eventually write scientific articles and patents
- Contribute to several department-related transversal tasks (organizational, HSE, QA, etc.) and working groups

Candidate Profile:

- M2 student in in Biology/Chemistry/Engineering/Pharmacy
- Experience in formulation development and/or protein characterization is a plus
- Strong scientific background and curiosity
- Excellent communication, technical writing skills (development reports, experimental protocols, technology transfer reports) and oral presentation skills
- Ability to work effectively in an interdisciplinary team-based environment
- A good English level is required