Development and validation of CE-IVD kit for monitoring monoclonal antibodies using mass spectrometry

Pauline Bros[1], Jérôme Chenau[1], Mathieu Trauchessec[1] & Dorothée Lebert[1] [1]
Promise Proteomics, 7 Parvis Louis Néel, F-38040 Grenoble, France

Summary

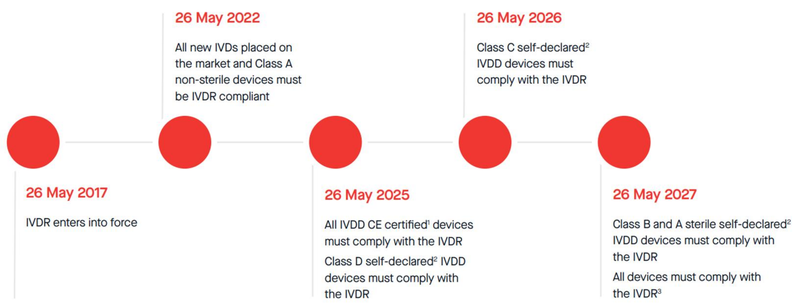
Context:
Mass spectrometry is a technology widely used in the clinical lab, for monitoring a wide range of compounds, such as antibiotics, immunosuppressants, etc. More recently, this technology has been used successfully to develop methods for quantifying large molecules, such as therapeutics antibody, which are now widely used as treatments for various diseases. However, the implementation of biologics monitoring assays is not so easy, even for staff skilled with mass spectrometry. One major difficulty is the sample preparation step, which is really complex compared to what is done for small molecules.

Objective:
In order to facilitate the implementation of such approaches and the possibility for clinicians to have access to therapeutic monitoring of monoclonal antibodies, we have developed ready-to-use kits, based on mass spectrometry. On a technical point of view, the solution was evaluated in several clinical labs and gives satisfaction.
To accompany the diffusion of such an approach, it was really important also to consider the regulatory environment. Indeed, over the last ten years, there has been an evolution in regulations, standards and protocols on this instrumentation (EMA, ISO, CLSI, etc.), up to the implementation of the recent European Regulation 2017/746 (IVDR).

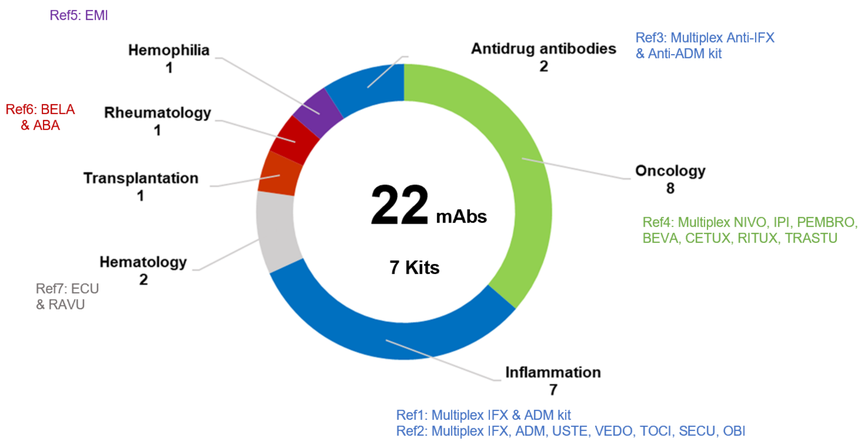
In this poster, we describe how we have managed and how we managed the development of our innovative commercial solutions for TDM of mAbs in this IVDR context, from the early-stage phase until the submission of the technical dossier to the notified body for obtaining the CE label.

Deliverables:
The mAbXmise kits are robust and easy bioanalytical solutions, meeting regulatory requirements for European market (CE-mark), developed for being implemented in clinical lab by pharmacologists who are willing to propose TDM for mAbs.

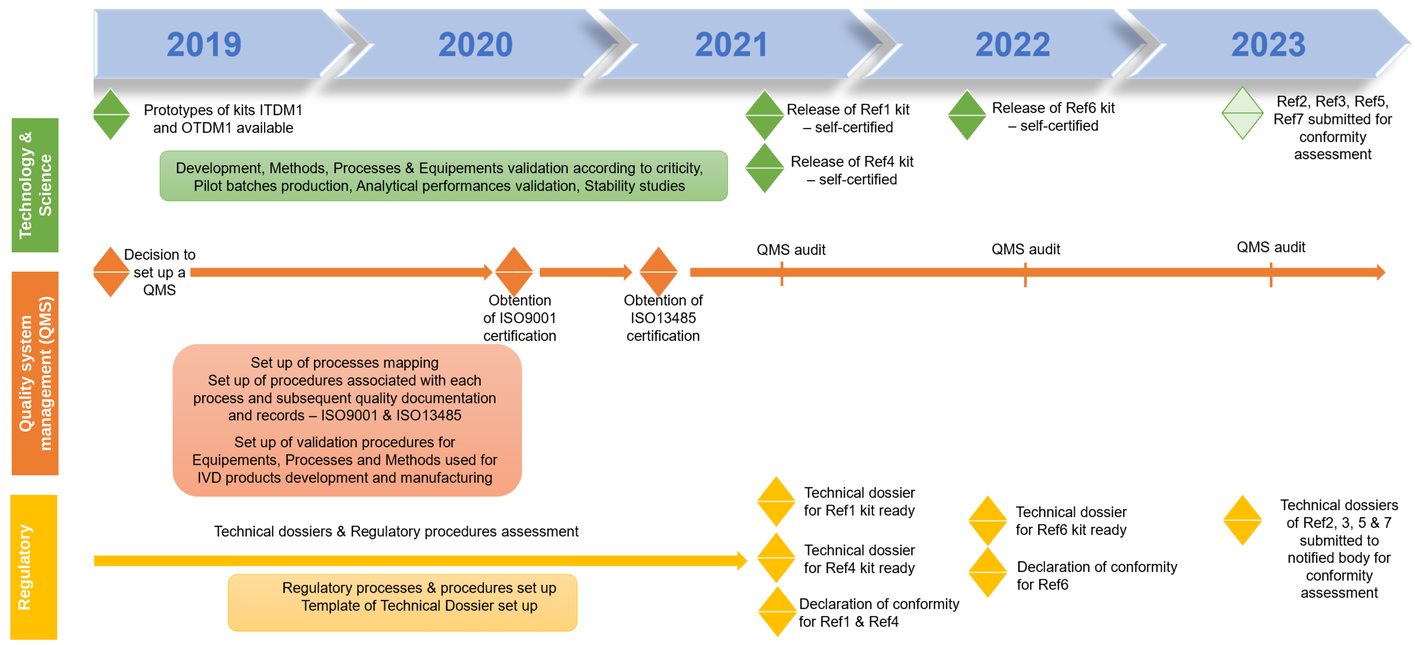
According to IVDR timeline, all the new IVDs launched after 26 May 2022 should be compliant with the New Regulation 2017/746, which replaces the Directive 98/79/CE. Under the Directive, most of the IVD products were self-certified by the manufacturer. Under the Regulation, only Class A devices (lowest risk) can be self-certified (<15% of IVD devices). We have determined that the mAbXmise kits, developed by Promise Proteomics, belong **to Class B.** Consequently, the conformity assessment of a Notified Body was required.



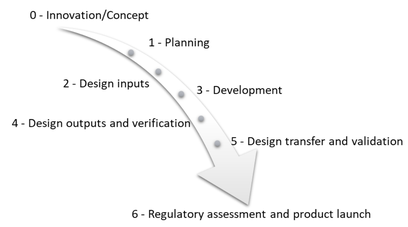
Portfolio of products and associated regulatory status in May 2023



Management of the different steps and milestones at Promise Proteomics, since 2019 until May 2023



Regulatory activities are divided in 6 phases



Phase	Associated deliverables for Technical Dossier
0	Prototype of device
1	Project Management Plan & Risks Management Plan
2	State of the Art, Device description, Design inputs, General Safety & Performance Requirements (GSPR), Risk analysis
3	Development plan & report, Verification plan
4	Device specification, Suppliers specifications, Verification protocol & report, Update of risk analysis
5	Performances report (SVR, Analytical & Clinical performances), Stability studies, Usability study, Labelling, Qualification of resources, Validation reports
6	Final Risk analysis, Post-Market Surveillance Plan (PMS), Post-Market Performance Follow-up (PMPF) ➔ **Technical Dossier**

21-25 May
WORLDLAB · EUROMEDLAB
ROMA 2023
ifcc International Federation of Clinical Chemistry and Laboratory Medicine
EFLM EUROPEAN FEDERATION OF CLINICAL CHEMISTRY AND LABORATORY MEDICINE
SIBioC Medicina di Laboratorio ETS