

**Internship Proposition**  
**(one page max)**

**Master 2 GP Immunology & ImmunIntervention (I<sup>3</sup>)**  
**2025-2026**

**Lab: CR2TI INSERM U1064**

**Team: 1**

**Name and position of the supervisor: Dorian McILROY, MCU Nantes Université**

**Email of the supervisor: dorian.mcilroy@univ-nantes.fr**

**Candidate (if internship filled): -**

**Title of the internship: Identification of neutralizing antibodies against EnterovirusD68 using LibraSeq**

**Summary of the internship proposal:**

By labeling antigens with both a fluorophore and a barcode oligonucleotide, LibraSeq (Setliff et al. Cell 2019) makes it possible to sort B-cells specific for the antigen, and then identify the paired heavy and light chains of the antibody recognizing that antigen by scRNAseq. We have succeeded in using this technique to analyze the B-cell repertoire against BK polyomavirus in kidney transplant recipients, and we are now aiming to apply it to study the B-cell response against other non-enveloped viruses. Enterovirus D68 (EVD68) is a picornavirus that causes respiratory infections, and in a small number of cases, it can provoke a paralytic polio-like disease. There is a need for new therapeutics to treat severe infections.

The aim of this project is to prepare EVD68 virus-like particles, then use them to prepare probes for LibraSeq identification of human monoclonal antibodies capable of neutralizing all circulating variants of EVD68.

Techniques involved: cell culture; purification of VLPs by density-gradient centrifugation, analysis of VLP purity by SDS-PAGE. Identification of EVD68-specific B-cells in patient PBMC by flow-cytometry. Depending on progress, a scRNAseq may be carried out, in which case, secondary bioinformatic analysis will be carried out in R.

**Keywords : Neutralizing antibody; virus; EVD68**

**Option(s) linked to the project:**

~~Clinical Research Profile (Recherche Clinique)~~

~~Data Analyst Profile (Recherche et Analyse de Données Omiques)~~

**Experimental Biology Profile (Recherche Expérimentale)**