# Processing of Samples, Shipment and Data Handling within the CEPI Centralized Laboratory Network

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## Introduction

Once sample testing requests have been approved by CEPI, the Vaccine Developer will arrange to prepare the samples to be sent to the designated Testing Lab within the Central Laboratory (CL) Network for testing. This document describes how sample information and results will be handled by CEPI CL in support of Covid-19 Vaccine Clinical trials. The sample analysis flow is illustrated in Figure 1.

## Processing of Samples

The Vaccine Developer will arrange for the processing of collected blood samples into serum, PBMC or other appropriate fraction per study protocol using standard approved SOPs. Serum samples should be aliquoted and stored at -80ºC. PBMC samples should be isolated, aliquoted, frozen in 5% DMSO under controlled conditions and stored in Liquid Nitrogen following the lab protocol to maintain maximum viability. Specimens for shipping to the CL will be prepared by the Vaccine Developer's laboratory, with serum samples to be sent on dry ice, while PBMC samples sent in dry shippers, whenever possible. Suggested protocols and guidelines for working with human PBMC in ELISPOT assay can be found at this link: http://www.immunospot.com/includes/pdfs/Brochures/CTL-Protocols-Guidelines-Working-with-PBMC.pdf

## Sample Labeling

Samples should be barcoded and labeled at a minimum with:

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| Vaccine Protocol Name or Study ID |
| Patient ID |
| Specimen ID |
| Collection Date |

## Shipping Manifest

Additional information required for each specimen can be included on either the label or be provided in the Sample Manifest which must be prepared for each shipment to the test laboratory. In addition to the information above, the Sample Manifest should include the following.

Time Point (T0, W3, W7 etc.),
Sample Type (serum, PBMC),
Approximate Volume (or Cell Number)
Date Shipped
Tests requested
Name and Contact Information of shipping lab

Specimen Labels and Manifest must not contain any Protected Health Information (PHI) which can be linked to the individual donor and must be blinded as to whether the individual received a vaccine or placebo.

## Shipment of samples

The Vaccine Developer's lab will prepare the samples for shipping and testing and prepare a shipping manifest which is to be sent to the Testing Lab prior to shipment of specimens. The Manifest will be provided as an Excel file listing of all samples sent and contain the above information as well as the test(s) requested for each sample. The Manifest will be sent by email to the Testing Lab and will require acknowledgement from the Testing Lab for readiness to accept the samples. The Testing Lab will monitor the shipping information to be ready to accept and accession the specimens as soon as they arrive. The Testing Lab will follow its SOP for Accessing of samples, and will include the following steps:

a) Check that all the expected samples were present, the sample information is complete, and that all samples were received in acceptable condition.
b) Notify the shipper of receipt of the samples and any discrepancies, or unacceptable sample condition. Any discrepant samples will be stored frozen and will require resolution of the discrepancy, including request for new sample in case of unacceptable quality before testing can be initiated.
c) A signed copy of the Manifest noting any discrepancies will be returned to the shipping lab.
d) CEPI will be copied on the sample request Manifest and confirmation from the Testing Lab, so that samples and results can be tracked accordingly.
e) Store samples at the appropriate temperature (-80$^{o}$C, Liquid Nitrogen) until testing
f) Prepare Test Request Form to include entry of the relevant sample data into the LIMS or appropriate Excel test request file and sent to the Testing Lab.

## Reporting Results

The Testing Lab will test the samples for S-ELISA, N-ELISA, RBD-ELISA, Pseudo virus Neutralization, Wild Type Neutralization, or ELISpot IFN-γ and IL-5 as requested by the Vaccine

Developer and approved by CEPI. The results will be entered into the Test Report Template (see Sample Report Form attached) and will include the sample ID information as transferred during accessioning, test date, test name, raw quantitation values, and calculated titers as interpreted by the software analysis. The QA Department in the corresponding Testing Lab is responsible for certifying that the test results are valid, and all standards and controls meet specified Acceptance Criteria as per SOP. The files will be uploaded and stored by CEPI in the Centralized Laboratory SharePoint. One person for the Testing Lab and one person for the Vaccine Developer will be granted access to the shared folder.

The approved final test results from each batch of runs will be compiled by CEPI into separate Excel Files in the Vaccine Data Files stored in specially designated folders sorted by Clinical Trial, and then by CL Testing Lab. The Vaccine Developers will have access only to the folders for their clinical trials; Testing labs will have access to view only the data they generated. The Vaccine Developer will arrange to import results from the Test Report Form into their master database for their analysis.

The results of the Standard/Controls for each run will be compiled by the respective laboratories' QA department to generate a control chart (Levy-Jennings) for each control to monitor assay performance and track any run-to-run drift. The Performance charts will be submitted to Nexelis/Public Health England and CEPI on a monthly basis to allow evaluation of consistency and trending of QA results.

## Storage of samples and data

The Testing Labs will retain residual serum samples (if sufficient for subsequent testing) at –80$^{o}$C for at least two 2 months following submission of the final data report and the raw data and test result for at least three 3 years.

## Use of Data

The Vaccine Developer is the owner of the results of the Sample Testing Services.

It is the responsibility of the Vaccine Developer to compile all the CEPI CL laboratory data for their study into a Master Data document. The Vaccine Developer will perform its own data analysis and make any interpretations of serological and immunological response following vaccination as well as any evaluation of vaccine efficacy and safety.

CEPI will be allowed to use the CL test results data for comparison and evaluation of assays, including range of ELISA, neutralization, or ELISpot titers achieved in the vaccination studies since these results are supportive of the claim of range for assay performance. CEPI may also examine trends of response at different timepoints of individual patients to note any unexpected spikes or dips that may require additional investigation. CEPI's review of data will be limited to monitoring of assay performance, not interpretation of vaccine efficacy or safety.

CEPI reserves the right to present or publish assay performance data generated at the CEPI CLs, including data generated in the course of the vaccine studies. If Vaccine Developer-specific information is used in any presentation or publication of results, the Vaccine Developer will be given an opportunity to review and comment on the information prior to publication.

The Vaccine Developer should disclose the results of the Sample Testing Services accurately and appropriately in scientific publications and submissions made for regulatory purposes and should commit to share results with the broader research community at the earliest appropriate time in order to inform the public health response to COVID-19 and to help save lives.

## Result Report Form

The Result(s) Report form will include sections for Sample Information obtained at Accessioning, and Calculated Titer Results based on the Test Algorithm. Example of data fields are as follows:

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| Study ID | Specimen ID | Sponsor Specimen ID | Patient ID | Time Point | Specimen Type |
| Collection Date | Analyst | Test Date | Test Result | Result Acceptance | Comments |

Figure 1. Sample analysis flow