



## SPECIAL TECHNICAL SPECIFICATIONS

### HIGH THROUGHPUT SEQUENCING OF TOTAL RNA (RNA-SEQ)

#### Contracting authority:

INRAE – Unité BFP  
Centre de Recherche Nouvelle Aquitaine Bordeaux  
71 avenue Edouard Bourlaux – CS 20032 – 33882 Villenave d'Ornon Cedex  
N° SIRET 180 070 039 01274

Réf: INRAEC222025001



#### Article 1: Purpose of the contract and presentation of the purchase and its context

The Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE) is a public research establishment bringing together a working community of 12,000 people, with 268 research, service and experimental units, located in 18 centers throughout France. INRAE is a world leader in agricultural and food sciences, plant and animal sciences. Its research aims to build solutions for multi-performing agriculture, quality food and sustainable management of resources and ecosystems.

The BFP Unit (Biologie du Fruit et Pathologie) is a Joint Research Unit under the supervision of INRAE and the University of Bordeaux, located in the INRAE research center of Bordeaux Nouvelle Aquitaine

The Plant Virus team within BFP is involved in the CASDAR REDIVIBE project (Reservoirs and dispersal of beet viruses), granted by of FranceAgriMer's "Lutte contre la jaunisse de la betterave 2024" (PNRI-C) call. One aim of this project is to identify the reservoirs of the viruses responsible for the beet yellows disease, as well as the aphid vectors, and to characterize the dispersal of viruses from their reservoirs to crops. In the frame of this project, The Plant Virus team wants to set up genomic sequencing services for RNA samples (RNAseq) extracted from various plant species (in particular sugarbeet and relatives).

#### Article 2: Breakdown into tranches and lots

Not applicable

#### Article 3: Technical specifications of supplies or services

The expected service is the following : Sequencing of eucaryotic transcriptome through RNA-seq

The service comprises several steps :

- Quality control of total RNA preparations received: evaluation of concentration by a fluorimetric method and of size distribution by automatic electrophoresis (RIN)
- If any problem occurs (degraded samples, presence of inhibitors), the service provider undertakes to exchange information with the BFP team to find a solution (resending of samples if necessary).
- DNase treatment of samples and purification post treatment
- Ribosomal RNA depletion (plant samples)
- Libraries preparations for short read Illumina type sequencing (or equivalent)
- Illumina or equivalent Paired-End sequencing with short fragments (e.g.: 2 \* 150 bp) with a production target of at least 30 million reads per sample
- Data delivery in Fastq format
- Data quality control

At each stage of the process (quality control, DNase treatment, depletion, preparation of libraries, sequencing, demultiplexing), the service provider undertakes to communicate informally (e.g. by e-mail) with the research team in order to assess any adjustments required.

- At the end of the service, a technical report detailing the various stages of the process will be provided for each sample. A report template will be provided in the tender.

- The service provider must provide a download link for the sequencing data, and keep this link active for at least 6 months after the end of the project (duration to be specified in the offer).

The maximum numbers of samples to be sequenced is 1000, as follows : 600 at the beginning of 2025 and another 400 at the end of 2025-or the beginning of 2026. Samples will be sent in batches, each batch corresponding to a subset of samples prepared simultaneously by the Plant Virus team.

The Plant Virus team will be in charge of sending under dry ice the samples, either in 0.5 -2 ml microtubes according to the contract holder preference (no 96-sample plate). The contract holder will indicate the the address to which samples are to be sent.



During transport between the laboratory (33140 Villenave d'Ornon, France) and the place where the service will be performed any opening of the package is forbidden in order to prevent any manipulation of the samples which could degrade the RNAs due to their lability or lead to the loss of a sample. Because of these risks, samples may not be rerouted.

Candidates must indicate in their offer by completing the technical answer frame (CRT) the following information :

- ✓ Specific conditions related to RNA extracts required by the service provider (e.g. minimum volume, minimum concentration, minimum quantity) must be communicated in the applicant's offer. In the event of incompatibility between these conditions and those of the Virology laboratory, the applicant will not be selected.
- ✓ The ribodepletion kit used
- ✓ The library preparation kit used
- ✓ The technology and the sequencing machine used for sequencing
- ✓ The unit price of sequencing for the sequencing of one sample (30 millions reads) (all steps included)
- ✓ The criteria used for data quality checking
- ✓ The turnaround time between for reception of the DNA samples and delivery of the data
- ✓ The means by which raw and demultiplexed data is made available (NAS, ftp, hard disk, ...),
- ✓ How long the service provider will keep the data once the service has been completed,
- ✓ How long the biological samples will be kept once the service has been completed,
- ✓ The means used to ensure data confidentiality
- ✓ The address to which test samples should be sent
- ✓ The method it will use to recycle plastic consumables under the present contract
- ✓ Details of its waste management policy in relation to the present contract

In case of insufficient quality of one or more received samples, the contractor will systematically request the agreement of the Plant Virus team's before continuing with the requested service for all samples in the same batch.

#### Article 4:     Acceptance criteria for sequencing results

For each sample :

- ✓ At least 85% bases have a QScore equal to or greater than 30
- ✓ If the reads numbers obtained for a sample is less than 2 x 15 millions, the result will not be accepted and the contract holder will have to repeat the sequencing at his own expense (unless the sample was of poor quality and in insufficient quantity)
- ✓ If the reads number obtained is greater than 2 x 15 millions, no extra cost will be paid by Plant Virus team
- ✓ Payment will be made on completion of data delivery and final validation by the research team.
- ✓ In the event that the process of sequencing a sample is interrupted (see article 3), the service provider will only invoice for successful steps.

#### Article 5:     Additional requirements

If the ribodepletion or library preparation step fails, and the RNA extracts supplied have passed the holder initial quality control criteria, the holder will repeat the step at his own expense (without additional invoicing).

In case of contamination attributable to the holder, observed by the Plant Virus team following analysis of the sequencing results, re-sequencing of the sample will be carried out at the holder's expense.

The Team shall be systematically informed if a sample is re-sequenced at the initiative of the contract holder.

The service provider will keep the remaining extracts for at least three months after the results have been made available, in order to be able to repeat all or part of the analytical process in the event of a problem. If the supplier is able to offer a longer retention timeframe, this must be indicated in the offer.

Established in Villenave d'Ornon on January 10, 2025