



Fundació Hospital Universitari Vall Hebron - Institut de Recerca (VHIR)

NÚM. EXPEDIENT: NEG 2026-002 ANALYTICAL SERVICES TO MEASURE EPIGENETIC CLOCKS (PI24/01574)

**DOCUMENT OF TECHNICAL SPECIFICATIONS
NOT HARMONIZED TRADE – UNPUBLISHED NEGOTIATED PROCEDURE**

ANALYTICAL SERVICES TO MEASURE EPIGENETIC CLOCKS OF THE GROUP OF THE SPINE RESEARCH UNIT OF THE FUNDACIÓ HOSPITAL UNIVERSITARI VALL HEBRON - INSTITUT DE RECERCA (VHIR).



Project PI24/01574, funded by Instituto de Salud Carlos III (ISCIII) and co-funded by the European Union.

Clause 1. Aim.

The aim of this trade document is to contract the analytical services to evaluate a comprehensive panel of over 15 epigenetic clocks - including PC Horvath, PC Hannum, PC PhenoAge, PC GrimAge, DunedinPACE, DNAmTL telomere length, andOMICm Age – using preoperative blood samples from patients with adult spinal deformity (ASD). This work is part of the Project PI24/01574 titled “*Biomarcadores para el Tratamiento Personalizado de la Deformidad Vertebral del Adulto: Enfoque del Envejecimiento y la Fragilidad*” awarded to the Fundació Hospital Universitari Vall Hebron – Institut de Recerca (VHIR), funded by Instituto de Salud Carlos III (ISCIII) and co-funded by the European Union.

This project seeks to assess the utility of epigenetic biomarkers of aging and frailty to predict major complications in ASD surgery – one of the highest risk procedures in spine surgery. ASD affects up to 68% of individuals over the age of 60 and is associated with perioperative complication rates exceeding 70%. There is therefore a pressing need to enhance preoperative risk stratification through personalized, biologically informed assessment.

Preliminary studies by our collaborators suggest that epigenetic clocks are powerful indicators of biological age and physiological reserve, outperforming traditional chronological metrics. Crucially, using a panel of clocks offers a multidimensional and comprehensive patient risk profile, which could significantly improve the performance of existing surgical risk calculators.

To guarantee diagnostic consistency, reproducibility, and scientific rigor, it is essential that all analyses be performed by a single provider with demonstrated expertise and validated technology. The available blood sample per patient is limited, and all data must be derived from a single, integrated assay to prevent sample loss and maintain analytical integrity. Splitting the contract among multiple providers would undermine standardization and compromise data quality and comparability while also increasing costs related to sample transport and shipping. Furthermore, consolidating all analyses with a single academically oriented, non-profit research provider will reduce overall project expenses by leveraging reduced-cost services aimed at covering only running costs, thereby maximizing scientific value and cost-efficiency.

TruDiagnostic is currently **the only laboratory with exclusive rights or patents** (Internacional Application Number: PCT/IB20 19/05 1689) **to several of the most advanced and clinically validated epigenetic clocks, including DunedinPACE,OMICm Age, SystemsAge, and HypoClock**. The company is a recognized global leader in epigenetic analysis and collaborates with premier academic institutions such as Harvard, Yale, and Duke. Its proprietary algorithms and validated R scripts are essential for the accurate estimation of biological age and aging pace in our patient cohort.

Their robust methodology ensures minimal sample use while enabling simultaneous analysis of multiple clocks through a single array run—an approach that is crucial to

replicate and expand on the findings of our pilot study. Their unmatched experience and technical capacity make TruDiagnostic the only viable partner for this project.

This tender is not divided into lots because it is related to only one service. The required services constitute an integrated workflow that must be performed by a single specialized provider. Any fragmentation would risk loss or depletion of sample material, inconsistent methodology, and reduced scientific validity. Consolidation with TruDiagnostic optimizes resources, reduces sampling needs, ensures data harmonization, enforces methodological standardization, and guarantees the scientific reproducibility essential to meeting the project's goals.

Throughout this document, the tasks included within the scope of this contract are specifically described, as well as the extent of the proposed service.

*** The service must comply with all legal requirements at the time of contracting and throughout the duration of the contract.

Clause 2. Maximum budget.

The estimated value and maximum budget for this tender are the same.

The total maximum budget for this tender is “**SIXTY THOUSAND THREE HUNDRED TWENTY EUROS**” (€ 60.320,00) VAT no included to which, if we add the amount of “**TWELVE THOUSAND, SIX HUNDRED SIXTY-SEVEN AND TWO TENTHS EUROS**” (€ 12.667,20), the total value amounts to “**SEVENTY-TWO THOUSAND, NINE HUNDRED EIGHTY-SEVEN AND TWO TENTHS EUROS**” (€ 72.987,20).

The maximum total budget for each unit of service to be carried out will be:

- **Unit price** for sample: 232 euros (VAT excluded) (*)
- Approximate total units: 260

The number of samples is approximate and not exhaustive.

(*) Prices that the tenderer, will be able to improve in the ECONOMIC OFFER.

The estimated value for this tender is “**SIXTY THOUSAND THREE HUNDRED TWENTY EUROS**” (€ 60.320,00) VAT no included to which, if we add the amount of “**TWELVE THOUSAND, SIX HUNDRED SIXTY-SEVEN AND TWO TENTHS EUROS**” (€ 12.667,20), the total value amounts to “**SEVENTY-TWO THOUSAND, NINE HUNDRED EIGHTY-SEVEN AND TWO TENTHS EUROS**” (€ 72.987,20).

Concept	Price (VAT not included)
Maximum budget	60.320,00 Euros
Possible modifications	0,00 Euros
Possible extensions	0,00 Euros
Total	60.320,00 Euros

The tender budget has been reached taking into account that it is the budgeted amount in the project.

In no case shall the VHIR be obliged to exhaust the total amount of the base tender budget or the estimated value of the contract, since these amounts are considered estimative and not limiting. Therefore, the maximum tender budget will be binding, but the VHIR will only pay the contractor for the services actually provided based on the unit price, without the VHIR being obliged to exhaust the estimated value of the contract/tender budget in any case.

*** The service must comply with all legal requirements at the time of contracting, and throughout the term of the contract.

Clause 3. Duration of the contract.

The duration of the service object of this tender will coincide with the validity of the aforementioned project which is until **31st December of 2027**.

The service will start on the day following the formalization of the contract. The contract shall be deemed formalized on the date of the last digital signature.

However, if this project were to be found, for any unforeseen reasons, subject to the request of a possible extension, the end date will be susceptible to being extended, at most to the one that is finally authorized.

Clause 4. Description of the service and scope of the object of the contract.

Sample processing and storage:

Samples will have to be sent to the tender every 6 weeks approximately to ensure sample stability. The DNA from the blood samples will have to be extracted by qualified personnel (minimum Bachelor of Science degree). A maximum of 72 hours should pass between sample reception (blood spot cards) and DNA extraction. Since samples will be sent every 6 weeks for 2 years approximately, DNA will have to be stored in -80 °C freezers until ready for analysis (once all samples have been received). Once all samples were received, DNA

will have to be converted with bisulfite, loaded on an Infinium Human-Methylation EPIC BeadChip and analysed with Illumina iScan SQ by the same qualified personnel. A complete clock analysis will have to be performed: RetroClock, causal aging clocks, symphony/systems age, OMICm Age, DNAmTL, Horvath, Hannum, Phenoage, PCHorvath, PCHannum, PCDNAmTL, PCGrimAge, PCPhenoAge, DunedinPACE, PCPACKYRS, PCADM, PCB2M, PCCystatinC, PCGDF15, PCLeptin, PCPAI1, PCTIMP1.

Turn-around time:

Results including full report of epigenetic clocks landscape and biological age of the patient should be ready 6 weeks after reception of the last samples by the provider.

Data delivery:

Data will have to be delivered via a secure cloud platform with no additional cost (for example, amazon S3 bucket). This data will include raw .idat files as well as an algorithm analysis (Immune deconvolution, Biological Clocks, Epigenetic Biomarker proxies, Methylation Risk Scores, Methylation Diagnostic Scores) in the form of an Excel datasheet to allow for comparison between study groups. Data shall be available until download was confirmed.

Remaining material:

Remaining material (DNA) must be maintained for 6 months and made available upon request. Otherwise, it shall be discarded.

Exclusions:

Sample shipment costs are not included. Shipment costs for recovery of remaining materials are not included.

Sample replacement policy:

In the event of technical failure on the part of the sequencing service, the test will be repeated at no additional cost. This will not include technical failures due to inadequate sample quality.

The contracted services will include blood sample processing, epigenetic data analysis, and the generation of individualized biological age and pace of aging profiles. These outputs will directly inform predictive modeling for surgical risk stratification and support personalized clinical decision-making in ASD. Additionally, the company invited to participate in this procedure will provide academic consultation at no extra cost, including expert guidance on data analysis, result visualization, interpretation, and scientific dissemination.

Clause 5. Location and work time.

Location: At the facilities of the successful bidder

Work time: 9:00-17:50 local time. Follow-up meetings should be scheduled upon availability of both parties, taking into account time differences.

Clause 6. Billing and payment.

According to Law 25/2013, of December 27, 2013, on the promotion of electronic invoicing and the creation of the accounting registry of invoices in the Public Sector, in its Article 4, "All suppliers who have delivered goods or provided services to the public administration may issue and send electronic invoices. In any case, they will be obliged to use the electronic invoice and to submit it through the corresponding general entry point...".

The awarded company will invoice electronically the services actually performed. The DIR3 codes to be able to issue the invoice are the following:

DIR3	ACCOUNTING OFFICE	DIR3	MANAGING BODY	DIR3	PROCESSING UNIT
A09006467	Fundació Hospital Universitari Vall d'Hebron-Institut de Recerca (HUVH IR)	A09006467	Fundació Hospital Universitari Vall d'Hebron-Institut de Recerca (HUVH IR)	A09006467	Fundació Hospital Universitari Vall d'Hebron-Institut de Recerca (HUVH IR)

The invoice will be issued at the end of every month, based on the number of processed samples. In no case will the maximum amount be binding on the VHIR, but only the supply and service actually provided will be paid based on the prices finally awarded.

Each invoice issued must detail the period to which it corresponds, the breakdown/description of expenses by concept and the internal account that should be charged, as well as indicate the references "N 2026-002".

In the event that the issuance of the electronic invoice is not feasible for exceptional reasons, the contractor will invoice each service rendered through its corresponding invoice, which must be sent to the following e-mail address: factures@vhir.org

The effective payment of the executed services will be performed by bank transfer, due 30 days / invoice date.

The contracting institution will make the payment of the supplies once they have been fully performed and once the invoice has been entered into its registry. In accordance with this paragraph, advance payment of part or all of the contract price is not contemplated.

In no case, the contractor will have the right to the revision of prices pertaining to any concept.

Therefore, the contracting entity will make the payment of the invoices using the currency conversion according to the common practices that the entity carries out in this type of case, so said payment will be made at the time of payment of the invoice.

The VHIR's fiscal data that must be included in the invoice are the following:

FUNDACIÓ HOSPITAL UNIVERSITARI VALL D'HEBRON - INSTITUT DE RECERCA
VAT: G-60594009
Passeig Vall d'Hebron, 119-129
08035 Barcelona

In the event that the invoice is not issued in accordance with the criteria established and referenced at the beginning of this clause, payment will not be made and the invoice will be withheld until the requested data is correctly indicated.

In the case of electronic invoicing, this will be rejected until the requested data is correctly indicated.

Once the contract ends, including any extensions that may be executed, VHIR will only accept invoices issued after the end of the contract as long as the period of execution of the same is within the term of the tender.

In the event that the invoice is issued after the end of the contract and in accordance with the above paragraph, VHIR will only pay invoices issued within two (2) months after the end of the contract.

The VHIR will only pay the successful bidder for the services actually provided, without, in any case, the VHIR being obliged to exhaust the estimated value of the contract/bid budget.

Clause 7. Responsible for the contract.

The person in charge of the contract will be Dr. Sleiman Haddad, Specialist Physician in Orthopedic Surgery and Traumatology and Researcher of the Spine Research Unit of the Fundació Hospital Universitari Vall d'Hebron - Institut de Recerca, IP of the Project PI24/01574, who will basically have the functions of management and supervision of the contracts and the billing; follow-up, control and provide instructions for the good execution of the agreements; determine whether the performance conforms to the prescriptions established for its execution, reception of the order after its completion and comply with the obligations assumed by VHIR.

Clause 8. Confidentiality, Protection of personal data and Intellectual and Industrial Property

Notwithstanding the provisions of the current legislation on intellectual property, protection of personal data and confidentiality, the companies awarded in this call for tenders will expressly commit to not giving the information and / or data provided by VHIR, or any use not provided in this bidding document, and / or expressly authorized by the Head of the Research Grants Office.

The company that awards the contract derived from this bidding will have to extend to their employees the obligations assumed by the awarded company, regarding confidentiality, intellectual property and protection of data.

All rights worldwide will be exclusively granted to VHIR for the maximum time established in applicable laws and / or international treaties for their exploitation through any format and / or exploitation modality, including the exploitation of any discovery, invention, creation, work, procedure, idea, technique, drawing, design, image or any other intellectual or industrial property right generated, raised or acquired as a consequence of the work carried out by the contracting company (hereinafter "Intellectual Property and / or Industrial"), which derives directly or indirectly from the relationship between VHIR and the company awarded in this tender procedure.

The awarded company must inform VHIR of any discovery, creation, invention, idea or any other element that constitutes or is likely to constitute a right of Industrial and / or Intellectual Property partially or totally developed during the contract period.

In the event that the awarded company discovers or develops any creation of intellectual or industrial property, it will be understood that the discovery or development constitutes confidential information of VHIR.

The awarded company must sign all those public and / or private documents that are necessary, in VHIR's discretion, to allow the accreditation of the ownership of VHIR or the proper protection of the aforementioned Intellectual Property and / or Industrial rights in favor of VHIR or of any designated third party.

The awarded company authorizes VHIR to transform, modify, publish, communicate and exploit the work resulting from the execution of the contract derived from this tender procedure.

Clause 9. Allocation criteria.

The following criteria and percentage points will be used to evaluate the tender proposals and determine the most economically advantageous one:

1. Criteria evaluable through automatic formulas	Maximum 100 points
Economic offer	Maximum 100 points

9.1 Criteria that can be assessed through automatic formula.....(up to 100 points)

9.1.1 ECONOMIC OFFER.....(up to 100 points)

It will be valued automatically, in accordance with the following formula:

$$P_v = \left[1 - \left(\frac{O_v - O_m}{IL} \right) \times \left(\frac{1}{VP} \right) \right] \times P$$

- P_v = Bid Score to Rate
- P = Economic criteria points
- O_m = Best Offer
- O_v = Offer to be Valued
- IL= Bid Amount
- VP= Weighting Value = 1

The amount awarded will be € 60,320.00 (VAT no included), which will function as a pool of money that will be deducted based on the unit price offered by the bidder in Annex No. 2 of the PCAP.

** If after applying the automatic formula to a submitted bid, the resulting value is negative, you will be directly assigned zero (0) points of the economic part.*

Clause 10. Negotiate items.

The negotiate items will be the following ones:

- Potential reduction of price per sample.
- Technical counselling for analysis and publication of the results. Participation in manuscript writing and revision.

Barcelona, February 04 of 2026

CONTRACTING ORGANISM

Mrs. Montserrat Gimenez Prous

Manager

Fundació Hospital Universitari Vall Hebron – Institut de Recerca (VHIR).