Request for Proposal: Proteomics Data Analyst

Sponsor	Accelerating Medicines Partnership for Parkinson's Disease (AMP PD)
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Submitted by	Lead Name: Lead Title: Organization: Lead Phone #: Lead Email:
Submit Questions	EOD on January 29th, 2021
Proposal Return Date	EOD on February 26th, 2021

1. Introduction

The Accelerating Medicines Partnership (AMP) is a public-private partnership between the National Institutes of Health (NIH), the U.S. Food and Drug Administration (FDA), multiple biopharmaceutical and life science companies and non-profit organizations to transform the current model for developing new diagnostics and treatments by jointly identifying and validating promising biomarkers and targets for therapeutics. The ultimate goal is to increase the number of new diagnostics and therapies for patients and reduce the time and cost of developing them.

Within AMP PD, biomarkers are discovered by parallel approaches of mechanistic studies and phenotyping and analyte profiling studies. AMP PD takes advantage of already existing PD cohorts including the Michael J. Fox Foundation (MJFF) and National Institutes of Neurological Disorders and Stroke (NINDS) BioFIND study, Harvard Biomarkers Study (HBS), the NINDS Parkinson's disease Biomarkers Program (PDBP), and MJFF Parkinson's Progression Marker Initiative (PPMI). Additional releases include; National Institute on Aging (NIA) International Lewy Body Dementia Genetics Consortium Genome Sequencing in Lewy body dementia case-control cohort (LBD), the MJFF LRRK2 Cohort Consortium (LCC), and the NINDS Study of Isradipine as a Disease Modifying Agent in Subjects With Early Parkinson Disease, Phase 3 (STEADY-PD3). Combined, these cohorts provide intensive biological and clinical data on over 10,000 individuals.

Plasma and Cerebrospinal fluid (CSF) was collected longitudinally from PD patients and healthy control volunteers using a similar protocol as the NINDS Parkinson's Disease Biomarkers Program (PDBP) and MJFF's Parkinson's Progression Markers Initiative (PPMI). Additionally, some CSF samples were collected under the PDBP protocol by Brigham and Women's Hospital and Massachusetts General Hospital. These longitudinal samples were utilized in the generation of untargeted and targeted proteomics analyses.

2. Description of the Initiative

A consultant is needed to support the AMP Parkinson's disease program (AMP PD) that was launched in January 2018. A critical component of the AMP PD partnership is that all partners have agreed to make the AMP PD data and analyses accessible to the broad biomedical community.

We are seeking an independent contractor (individual or organization) with experience in both untargeted and targeted Proteomics Analyses, working in the cloud as a consultant and implementor to support (see table below): (i) the best possible selection and presentation (curation) of data to be included on the AMP

PD Knowledge Platform; (ii) AMP PD proteomics data quality control; (iii) working with AMP PD Proteomics working group to create a Statistical Analyses Plan; (iv) statistical analysis comparing various cohorts or associated bioinformatics for pathways; (v) publication of R and/or python code of analyses available to public through Jupyter notebooks. The consultant would work with the FNIH and in collaboration with the AMP PD Data Coordinator and Solutions Architect.

	Untargeted	**Targeted**
Definition	Data-independent acquisition mass spectrometry, generating raw and processed data with relative quantification at the level of MRM peptide fragment, tryptic peptide, and protein for quantitative and qualitative study of proteins present in samples	Multiplexed antibody-based screen of 1462 analytes for determination of the presence and quantity of a particular protein of peptide in complex mixture of proteins
Sensitivity	Less sensitive	More sensitive
Purpose	Does not preselect proteomics	Done in a targeted set of proteomics
Analytes	Approx. 300 unique proteins	1463 unique proteins
Samples	Longitudinal 1936 cerebrospinal fluid (CSF) and 1500 plasma samples from PDBP/HBS and PPMI	Longitudinal 750 cerebrospinal fluid (CSF) and 750 matched plasma samples from PDBP/HBS and PPMI
Data Files Types	• wiff • mzml • Intensities • Differentiated proteins with information extracted from UniProt	Reported as raw and relative quantification data • A summary report which will include project results, QC methods, and a list of samples that failed QC • Data from the analyzed protein biomarkers presented in Normalized Protein expression (NPX) units • An Excel file with NPX/LOD data • Raw data in the form of sequencing counts will be shared with Customer

3. RFP Procedure

We invite you to provide a strategy and competitive cost proposal to provide proteomic data curation and analyses consulting support for AMP PD, with corresponding documentation that will enable the strategy to be applied to future datasets. This project will require close communication with AMP PD stakeholders – particularly, the AMP PD Proteomics Working Group, as well as Data Coordinator and Solutions Architect throughout the development and testing phases.

The databases for AMP PD (sans proteomics data) are accessible upon registration at amp-pd.org. As you may find it helpful to review the structure of these data as you're preparing your proposal, please find instructions for registering for access here.

Please include the following details in your proposal:

- Project execution plan, including:
    - General rubrics of data curation approach for both unbiased and targeted raw and processed data
    - Unbiased and targeted proteomics data quality control and validation
    - Statistical analyses plan components for AMP PD Proteomics Working Group Consideration
    - R-Python code, Jupyter Notebooks, and/or processing pipelines plans for Terra and GCP
- Project team structure, including the profiles (CVs) of key proposed team members expected to be assigned to the project. Include a description of each member's role with respect to budget allocation (i.e. their expected scope of contribution to the overall project). Please include a description of the proposed team's experience and capabilities in this area to demonstrate prior success.
- Project management strategy
    - Risk assessment and mitigation plan
    - Tools used for internal task management and milestone tracking
    - Tools used for internal and external communication
- Description of relevant expertise

  Qualifications:
    - BA / BS degree in related field or Computer Science/Information Technology
    - Minimum 5 years' experience

  Preferred Experience:
    - PhD in statistics, mathematics, computational biology, bioinformatics, computer science, computer engineering, or similar degree program
    - 0-6 years of post-doctoral experience in a relevant research area analyzing high-dimensional data, ideally proteomics, genomics, and transcriptomics
    - Solid experience with biological concepts, data and information types
    - Experience in some of the following core competency areas: experimental design, batch correction/normalization, missing-values imputation, data visualizations
    - Expert in cloud environment(s)
    - Experience running analysis pipelines on Google Cloud platform
    - Familiarity with workflow management tools
    - Comfortable with R or Python and ability to write code in either language

Desired Skills:

- Ability to work collaboratively cross-functionally.
- Attention to detail; discipline with data handling
- Demonstrated ability to work independently and as part of a team
- Self-motivation with good organizational, troubleshooting and problem-solving skills
- Excellent oral and written communication skills
- Able to prioritize tasks

- Budget (see Section 5)

Scientists or firms interested in supporting the FNIH's activities as an outside consultant in this area should submit a proposal to eappelmans@fnih.org with the following information by February 15th:

- Proposal including how you will accomplish the work
- Personnel assigned (if more than one)
- Resume of personnel
- Your cost proposal (including hourly, daily, monthly or project rate)
- Your W-9 (Taxpayer Identification Number)

4. **Timeline Table** – Consultant's engagement is expected to begin following execution of a consulting services agreement with the FNIH and last for one year.

Project Milestones	Target Date
Targeted Proteomics Final Data Receipt	12/31/2020
Vendor contract finalization	3/31/2021
Data selection/curation discussion with AMP PD Proteomics Working Groups	4/1/2021
Targeted Proteomics Data Quality Control	4/15/2021
Unbiased Proteomics Data Receipt	4/20/2021
Unbiased Proteomics Data Quality Control	5/20/2021
AMP PD Proteomics Data Release	6/1/2021
AMP PD Proteomics Data Analyses	6/1/2021
AMP PD Proteomics Data Publication of Manuscript and Code	11/1/2021

5. **Budget**

As part of your proposal, please submit a budget in U.S. dollars. Please provide your costs and any unique assumptions, including hourly rates by position type, that you applied during budget preparation. Budget will be reviewed by AMP PD Steering Committee in light of application received. Currently AMP PD has $60,000.00 set aside to cover all fees and costs incurred by the consultant for this effort. Proposals submitted that reflect costs over this amount will need to be well justified.

6. **Confidentiality**

Through the acceptance of this invitation you agree to keep your involvement in this RFP process confidential at all times unless the AMP PD Steering Committee co-Chairs agree in writing to allow such a disclosure. The FNIH will keep all of the information provided by you confidential, unless we are required by law to disclose it or it becomes part of any legal process.