Request for Proposals (RFP): Pathogen Genomics Initiatives

RFP Issue Date: February 3rd, 2023
All Bids Due Date: March 3rd, 2023

Submissions due to:

The Association of Public Health Laboratories, Global Health
(NGS-GlobalHealth@aphl.org)

The development of, and the projects anticipated in this RFP are supported by funds from the U.S. Centers for Disease Control and Prevention (CDC), the Global Fund and other funders. The contents of this RFP are solely the responsibility of the authors and neither represent the official views of the funding partner nor reflect their endorsement of a product or procedure.

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Summary

The Association of Public Health Laboratories, Inc. (APHL or the Association), in collaboration with the Ministries of Health (MOH), the Global Fund and the United States Centers for Disease Control and Prevention (CDC), anticipates implementing various laboratory capacity and capability strengthening projects including workforce building activities at facilities globally. The total number of training courses that will be delivered will depend on funding allocated by funders to these projects and the needs and capacity of the country. APHL is looking to identify and select consultants to work alongside APHL subject matter experts to provide in-person and virtual trainings and technical assistance in the following areas:

Bioinformatics: Introduction to command line interface, theoretical and didactic training on bioinformatics, use of cloud infrastructure, Docker, Singularity, Nextflow Core, Nextflow Tower, genomic characterization (viral, bacterial, fungal, and metagenomic applications), Terra.bio, CLC Genomics Workbench, Geneious, EDGE Bioinformatics, and Galaxy;

Genomic Epidemiology: Theoretical training on statistical approaches to genomic epidemiology, applied genomic epidemiology, BEAST, and MicrobeTrace;

Laboratory Next-Generation Sequencing Training: wet bench training on Illumina, Oxford Nanopore, and Ion Torrent systems for viral, bacterial, fungal, and metagenomic applications.

Background

APHL is a non-profit organization that works to safeguard the public's health by strengthening public health laboratories (PHLs) in the United States and globally. APHL is organized under the laws of the United States of America's District of Columbia with its headquarters office at 8515 Georgia Avenue, Suite 700, Silver Spring MD 20910. The Association's members include state and local laboratories, state environmental and agricultural laboratories and other government laboratories that conduct testing of public health significance. APHL is recognized as tax exempt in the United States under Section 501(c)(3) of the U.S. Internal Revenue Code and its work on behalf of PHLs spans more than 60 years.

In collaboration with its members, APHL advances laboratory systems and practices and promotes policies that support healthy communities globally. The Association serves as a liaison between the PHLs and federal and international agencies and it ensures that the network of PHLs has current and consistent scientific information in order to be ready for outbreaks and other public health emergencies.

The APHL Global Health Program (GHP) currently implements laboratory improvement projects in several countries throughout Africa and in parts of Asia and Eastern Europe. APHL supports the President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Health Security initiative through several Cooperative Agreement with the CDC. This support has allowed APHL to provide technical assistance to strengthen laboratory services in the area of Quality Management

Systems (QMS), Next Generation Sequencing (NGS) workflow development, and NGS laboratory capacity building. APHL is also implementing wastewater-based surveillance pilot projects in several countries though the Global Fund. These pilots will be enhanced to include NGS testing in the near future. APHL is seeking to identify one or more qualified consultants or contractors to complement the APHL-Headquarters NGS team to assist with our capacity to implement these projects around the world. Successful applicants will be contacted with specific contracts and work orders as project needs arise. The purpose of this RFP is to qualify entities that can assist with these projects.

Anticipated RFP Schedule

Proposals are due to the individual(s) specified in the Final RFP Response section of this RFP by 5:00 pm Eastern Standard Time (EST) on March 3rd, 2023. APHL anticipates the following schedule for the entire competitive bidding process:

Dates	Actions
03 February 2023	APHL issues RFP
03 March 2023	All bids due to APHL by 5:00 PM EST
17 March 2023	Notification of selection

Final RFP Response

APHL must receive a complete proposal by no later than 5:00 PM Eastern Standard Time (EST) on 3rd of March 2023. Applicants may send proposals to NGS-GlobalHealth@aphl.org.
APHL will send an email acknowledging the receipt of your application. If you do not receive an acknowledgement within 48 business hours, please email the points of contact above to confirm receipt.

APHL may terminate or modify the RFP process at any time during the response period. All changes to the RFP will be posted to the APHL's procurement website, www.aphl.org/rfp.

Evaluation of Proposals

Intent

The intent of this RFP is to qualify vendors/applicants for the various training/technical areas. This qualification will cultivate a list of approved vendors that APHL may contract with when a project requires additional technical needs.

Initial Review

APHL staff members will conduct an initial review of all proposals for completeness. APHL will not consider any incomplete applications, and these applications will not receive a formal evaluation.

Evaluation Team

An evaluation team will be assembled to evaluate competitive proposals and then assess their relative qualities based on an Evaluation Criteria that will look at experience, ability to provide services, and quality of submission. The scoring rubric will be as follows:

Evaluation Criteria	Point Value
Workspace Support and Management for Users	25
Plan for Ongoing Technical Support	25
Prior Global Health Experience	20
Training Agenda/Plan for Remote and In-Person Trainings	25
Completeness of Proposal	5
Total Score	**100**

Conflicts of Interest

APHL will ask potential reviewers to disclose any real or perceived conflict of interest prior to the start of the evaluation process or to affirm that they have no conflict of interest that would preclude an unbiased and objective review of the proposals received. APHL will not select a reviewer with a perceived conflict of interest. If a reviewer identifies a conflict of interest after the evaluation team has been assembled, APHL will exclude that reviewer from further participation in the review process and will eliminate the reviewer's completed reviews from the evaluation process. Reviewers will complete a Conflict-of-Interest Form administered before the evaluation process.

Supplemental Proposal Information

The evaluation team may request follow up interviews with applicants and/or supplemental information on an applicant's proposal. Once the evaluation team has additional material from the supplemental information, the team will evaluate whether this material alters the relative ranking of any individual applicant. If the consensus of the evaluation team is that the new material merits adjusting the applicant rankings, the team will do so. In this event, APHL will use the revised ranking to identify the Eligible Vendors.

APHL staff will notify each of the Eligible Vendors by no later than the date noted in the Anticipated RFP Schedule above and will post the names of the successful applicants to its procurement website, www.aphl.org/rfp within one business day after it completes the notifications.

Unsuccessful applicants will receive notification of these results by e-mail within 30 days of the date the names of the Eligible Vendors are posted.

All applicants will be entitled to utilize APHL's Appeals Process to formulate a protest regarding alleged irregularities or improprieties during the procurement process. Specific details of the policy are listed on the procurement website.

The eligible applicants must be able to contract directly with APHL or have an existing

relationship with a third-party organization that can contract directly with APHL on behalf of the applicant.

Disclaimer and Other General Matters

This RFP is neither an agreement nor an offer to enter into an agreement with any applicant. APHL will ensure that the Eligible Vendors are neither suspended nor debarred from receiving United States federal funds and that the Eligible Vendor meet any other funding eligibility requirement imposed by the Funding Agency. APHL's determination of whether an Eligible Vendor is eligible to receive funding will be definitive and may not be appealed. If APHL determines that one or more Eligible Vendor are ineligible to receive funding, APHL will nullify the contract or will cease negotiation of contract terms.

Each applicant will bear its own costs associated with or relating to the preparation and submission of its application and as otherwise noted throughout this RFP. These costs and expenses will remain with the applicant, and APHL will not be liable for these or for any other costs or other expenses incurred by the applicant in preparation or submission of its application, regardless of the conduct or outcome of the response period or the selection process.

TECHNICAL SPECIFICATIONS

Background - Technical Information and Infrastructure

The consultants will provide technical training or assistance in person or virtually on the awarded work per the guidelines specified therein. Within the application, the Vendor should indicate the method of delivery of technical materials. This will include technical assistance for NGS and bioinformatics. This includes wet bench training on Illumina, Oxford Nanopore, and/or Ion Torrent instrumentation, and including auxiliary equipment (e.g., automated liquid handers, bioanalyzers, TapeStation, spectrophotometers, etc.). Additionally, technical assistance for post-sequencing data analysis of data for various pathogenic organisms and applying bioinformatics techniques and genomic epidemiology training to trainees.

The following requirements are considered an integral part of the technical specifications:

GENERAL REQUIREMENTS

(1) Applicants can submit a proposal for one or more of the programs listed below:

Training in the following areas:

- Introduction to command line interface with theoretical and didactic training on bioinformatics;
- Cloud infrastructure for bioinformatics;
- On-premise infrastructure for bioinformatics;
- Graphical-User Interfaces (GUI) for bioinformatics – CLC Genomics Workbench, Geneious, etc.;
- Online GUI for bioinformatics – EDGE Bioinformatics, Galaxy, etc.;
- Docker and/or Singularity;
- Nextflow Core and/or Nextflow Tower;
- Genomic Epidemiology – Theory and statistical approaches;
- Applied Genomic Epidemiology – MicrobeTrace, BEAST, and other software solutions;
- Terra.bio Public Health Workflows;
- Wet bench training for Illumina, Oxford Nanopore, and Ion Torrent systems for viral, bacterial, fungal, targeted, and metagenomic applications from a variety of matrices

(2) Applicants must provide a framework and method of delivery of the program they will be implementing. If the training could be in-person or virtually costing should be clear for each approach.

(3) Applicants must provide the scope of work and any a proposed training agenda.

(4) Applicants must address how they will coordinate training based on participants global time zone(s). If virtual trainings will be offered by non-U.S. based staff, detail location of other staff members and their availability to support projects

internationally.

(5) Applicants must provide a plan to provide ongoing support to participants. Applicants must provide documentation highlighting a track record of providing similar work in a global context, explicitly in low-to-middle-income countries.

(6) Applicants should include a write-up on their company or organizational background that lends itself to proposed trainings.

Command Line Bioinformatics

I. Introduction to NGS data and file types
II. Introduction to working on the command line and virtual machine (Google, AWS, or Azure)
III. Quality control metrics for evaluating raw sequencing data
IV. Short read mapping and calling variants against reference genome
V. *De novo* assemblies
VI. Creation and interpretation of phylogenies
VII. NGS troubleshooting, common mistakes and solutions
VIII. Data dissemination to data repositories

Cloud Infrastructure for Bioinformatics

I. Cloud infrastructure and architecture used for bioinformatics
II. Providing a service for laboratories to gain access to cloud computing
III. Administration of cloud infrastructure

On-Premise Infrastructure for Bioinformatics

I. Design and strategic planning for on-premise high performance computing (HPC)
II. Administration of on-premise HPC
III. Technical consultation for build-out of HPC

Locally Run Graphical-User Interface for Bioinformatics

I. Training in using CLC Genomic Workbench, Geneious, Basestack, or other locally-run programs for analysis of raw sequencing data

Online Graphical-User Interface for Bioinformatics

I. Training in using online available tools, including EDGE Bioinformatics, Galaxy, and similar tools for analysis of raw sequencing data

Training in Docker and/or Singularity

I. Training on how to utilize Docker and Singularity on local, on-premise, and cloud

infrastructure for bioinformatic and genomic epidemiology data analysis

Nextflow Core and Nextflow Tower

I. Introduction to Nextflow data pipelines
II. Workflow deployment options on cloud, cluster, and personal devices
III. Provide ongoing technical support on installation and maintenance on deployment option: Tower Cloud, Tower Community, and Tower Enterprise
IV. Introduction to API integration
V. Integration of Nextflow on execution platforms
VI. Training on:
    a. Tower API
    b. Tower CLI
    c. Nextflow – with tower
VII. Workspace support, organization, and management for all users
VIII. Support setup of compute environments for each of the available platforms.
IX. Support set up of Compute Environment for AWS and Azure Batch with Tower
X. Support participants on integration to Google Cloud via the Cloud Life Sciences API

Genomic Epidemiology / Applied Genomic Epidemiology

I. Training on the role of genome sequencing in public health
II. Genomic sequencing and relation to epidemiologic investigation of pathogen of interest
III. Generating and interpreting phylogenetic trees in the context of transmission
IV. Genomic surveillance and emerging pathogens of interest, concern, or significance
V. Training in how to use sequencing for surveillance and investigations
VI. Modules to investigate outbreaks and cluster transmission
VII. How to identify true infection and reinfections using sequenced data
VIII. Investigating techniques and contact tracing activities
IX. Wastewater based testing/sequencing to understand community transmission
X. Introduction to Nextstrain and other interactive tools for visualizing phylogenetic trees
XI. Using Nextstrain to analyze genomic epidemiological data
XII. Introduction to MicrobeTrace and other interactive tools for transmission network analysis
XIII. Introduction to UShER and other web portals for fast calculation of phylogenetic trees
XIV. Public genome repositories for SARS-CoV-2 and other pathogens of interest

Terra.bio

I. Provision and compute resources for cloud computing
II. Train participants to implement bioinformatics solutions for genomic characterization
III. Train participants on genomic characterization and epidemiology of SARS-CoV-2 and other pathogens of interest (viral, bacterial, fungal, metagenomics)
IV. Provide research and development of custom workflow development

V. Provide sequencing data quality assurance and control metrics
VI. Provide ongoing maintenance, training, and improvements of cloud computing resources to ensure results are current with the pandemic landscape
VII. Provide continued support and analytical troubleshooting for all attendees during and post training
VIII. Provide Training workshop either virtual or in person and support for the duration of the training offered
IX. Genomic analysis should also include but not limited to:
    a. Introduction to the Terra Platform
    b. Data Upload & Job Submission
    c. Review of the Terra Platform and the Protocols for Data Upload and Job Submission
    d. Genomic Characterization of SARS-CoV-2 Genomes and other pathogen of interest
    e. Assessing Outputs generated by workflows
    f. Review of Genomic Characterization of SARS-CoV-2 Genomes for Illumina and ONT generated data
    g. Internationally-Accessible Databases for NGS Data
    h. Preparing Samples for GISAID & GenBank Submission
    i. Review of Internationally-Accessible Databases, Required Metadata for Submission, & the all metadata creation Workflows
    j. Training of the trainers solution for Terra.bio workflows

Wet Bench Remote/In Person

I. Provide theoretical constructs to applied techniques for in-person and remote wet bench training:
    a. Sample collection
    b. Extraction techniques
    c. Testing protocols and strategies
    d. Sequencing techniques and technologies (protocols)
II. Train participants on specific methodologies and testing/sequencing protocols
III. Support protocol optimization for NGS library preparation workflows
IV. Training in sequencing instruments and provide ongoing support as needed
V. Provide in person wet bench training for all sequencing platforms Illumina, ONT, ThermoFisher, etc.

DOCUMENTS TO BE PROVIDED BY THE BIDDER

- A company profile that provides (i) the physical and postal address for the applicant's principal office or, for international firms, its headquarters office and (ii) the name, title, business and/or mobile phone numbers and an email address for one or more primary contact persons.
- A description of the company that includes (i) a summary of organization structure, background and key staff member qualifications and experience, (ii) proof of the applicant's capacity to implement projects of comparable complexity and (iii) any

evidence of experience in project of comparable content and scope (international experience preferred).

- Copies of the applicant's certificate of company registration or incorporation, if applicable, and any certificate of amendment to that registration/incorporation, together with evidence that the company is in good standing.
- Technical proposal with overall project implementation plan and training concept.
- Budget proposal outlining projected costs to implement proposed scope of work based on a per hour charge, number of hours needed to accomplish specific trainings and hours for ad-hoc, post-training support. Additionally, if providing cost for in-person training, the daily costs of travel days, daily cost of training days, and other associated costs with travel (not including flight or hotel).
- Other information such as process description, brochures, etc. should only be added if the information is useful for the technical evaluation of the treatment process.
- Application cannot exceed 20 pages in total.