



# Request for Proposals: Development & Evaluation of Next Generation Sequencing for *Legionella*

Application Due date: November 16, 2018

Submit to: Anna Tate, Senior Specialist, Respiratory Diseases Program  
([Anna.Tate@aphl.org](mailto:Anna.Tate@aphl.org))

## Summary

The Association of Public Health Laboratories, Inc. (APHL), in cooperation with the US Centers for Disease Control and Prevention's (CDC) Division of Bacterial Diseases (DBD), is seeking to identify approximately six state or local public health laboratories that will (a) perform next generation sequencing for various *Legionella* spp., including *L. pneumophila* ("**Option 1**") and/or (b) conduct shotgun metagenomic sequencing of DNA extracted from lower respiratory tract specimens ("**Option 2**"). As part of **Option 1**, the selected applicants will analyze sequences with whole genome multi locus sequence typing (wgMLST) and other analysis tools available from CDC. The wgMLST database can be used for rapid comparison of isolates from clinical and environmental sources during legionellosis outbreak investigations. The focus of this project is to better understand the geographical distribution of *L. pneumophila* strains and to enhance the diversity of non-*pneumophila* genome sequences available for analysis method development. As part of **Option 2**, selected applicants will subject DNA from lower respiratory tract specimens to metagenomic shotgun sequencing. Selected applicants will perform real-time polymerase chain reaction (PCR) to select high-quality specimens containing *Legionella* DNA. This work will provide critical information for the development of culture-independent typing methods for *Legionella*. Applicants may apply for Option 1, Option 2, or both.

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## Background

Legionnaires' disease is a severe pneumonia caused by *Legionella* bacteria and is fatal for approximately 10% of those infected. Legionellosis was reported in nearly 6,000 people in 2015, and cases reported to CDC have increased more than four fold since 2000. Despite the increase in reported cases, it is possible that *Legionella* infection is actually underreported.

*Legionella* bacteria occur naturally in fresh water and can propagate in man-made sources, such as hot water tanks and cooling towers. Infection occurs when contaminated droplets are inhaled. Potentially pathogenic *Legionella* spp. are widely distributed in water systems, and clinical isolates are often challenging to obtain. However, associating isolates from clinical specimens with potential environmental sources is paramount to effective disease investigation and to the disruption of transmission.

As part of the *Advanced Molecular Detection & Response to Infectious Disease Outbreaks* program, CDC is currently using genomic sequencing approaches to rapidly compare isolates from clinical specimens and potential environmental sources of *Legionella* spp. There are two overarching tracks of work tied to this initiative; as such, this request for proposals (RFP) has two components. Laboratories are invited to apply to either option separately or jointly. The first provides an opportunity to develop and evaluate robust and reproducible methods, including whole genome multi locus sequence typing (wgMLST). The second option provides an opportunity for the development and evaluation of culture-independent subtyping methods. Please note this is a one-time funding opportunity.

**Option 1** involves developing and evaluating robust and reproducible sequencing analysis methods, including wgMLST. The quality of wgMLST results is dependent on the existence of widely representative, curated datasets. APHL and CDC will partner with up to six state or local public health laboratories (PHLs) to add additional *L. pneumophila* wgMLST profiles to the existing wgMLST databases. CDC is also interested in developing typing schemes and *ad hoc* analysis methods for non-*pneumophila* *Legionella* spp. To be considered, PHLs must currently perform *Legionella* culture and next generation sequencing (NGS) of bacterial pathogens. Laboratories must have a repository of at least 50 archived *Legionella* spp isolates (with associated metadata), which may include clinical *L. pneumophila* isolates and/or non-*pneumophila* *Legionella* isolates from any source (clinical or environmental). Isolates should not have already been sequenced as part of a collaboration with CDC or APHL or have already been submitted to public genome sequence databases.

**Option 2** involves developing and evaluating culture-independent subtyping methods. APHL and CDC will partner with up to six state or local PHLs to obtain, select, process, and conduct shotgun metagenomic sequencing of DNA extracted from lower respiratory tract specimens. Ideally, selected applicants will collect specimens prospectively; however, frozen culture-positive specimens with associated metadata will be acceptable. Participating laboratories will use a real-time PCR assay to select up to 5 high-quality specimens containing *Legionella* DNA. DNA extracted from these specimens will be subjected to metagenomic sequencing. To be considered, applicants must demonstrate the following: a possession of properly stored *Legionella* positive lower respiratory tract specimens and/or the ability to acquire or access *Legionella* positive lower respiratory tract clinical specimens, ability to currently perform *Legionella* culture, next generation sequencing (NGS) capacity of bacterial pathogens, and validated *Legionella*-real-time PCR assay performed directly on clinical specimens or be willing to implement a CDC-designed assay.

Please send the Letter of Intent (Due 10/23/18) and completed application (Due 11/16/18) to Anna Tate, [anna.tate@aphl.org](mailto:anna.tate@aphl.org)

## Eligibility

APHL is looking for eligible PHLs with the following capabilities and facilities in place. Specific expectations regarding methodologies to be used by the awardees are outlined in [Appendix A: Expectations for Legionella AMD Partner Sites](#). APHL and/or CDC will provide technical assistance and troubleshooting by regular teleconference. Each applicant must certify in their application that they meet the minimum requirements set forth below for the option(s) they are applying for (and further outlined in [Appendix B – Legionella AMD Partner Site Minimum Requirements](#)). **Applicants may apply for Option 1, Option 2, or both.**

### 1. Option 1: Development and Evaluation of wgMLST

- a. Applicant must have a repository of at least 50 archived *Legionella* spp isolates with associated metadata. Eligible repositories may include clinical *L. pneumophila* isolates and/or non-*pneumophila* *Legionella* isolates from any source;
- b. Applicant must have an established capability to perform culture of *Legionella* spp;
- c. Applicant must have established and demonstrated capability to perform Next Generation Sequencing (NGS) using Illumina MiSeq (previous *Legionella* NGS experience not a requirement);
- d. Applicant must have sufficient equipment, laboratory space, and workforce capacity for the proposed workload;
- e. Applicant must have local instance of Bionumerics (version 7.5 or 7.6); and
- f. Applicant must have the ability to upload genome sequence data to the Office of Advanced Molecular Detection (OAMD) portal data transfer tool using SAMS authentication (current access not required)

### 2. Option 2: Development and Evaluation of Culture-Independent Subtyping Methods

- a. Applicant must have established capability to perform culture of *Legionella* spp.;
- b. Applicant must have established and demonstrated capability to perform NGS using Illumina MiSeq (previous *Legionella* NGS experience not a requirement);
- c. Applicant must have sufficient equipment, laboratory space and workforce capacity for the proposed workload;
- d. Applicant must have the ability to upload metagenomic sequence data to OAMD Portal data transfer tool using SAMS authentication (current access not required) – note that specimens must be sequenced at the participating laboratory, but recovered isolates can be either sequenced by the participating laboratory or sent to CDC;
- e. Applicant must have ability to perform or implement a *Legionella* real time PCR assay directly on clinical specimens; and
- f. Applicant must have access *Legionella* positive clinical specimens such as sputa,

bronchoalveolar lavage, or any lower respiratory tract aspirates

### Anticipated RFP Schedule

October 15, 2018	–	RFP Issued
October 19, 2018	–	Informational Teleconference (Q&A)
<b>October 23, 2018</b>	–	<b>Letter of Intent Due to APHL (see below)</b>
<b>November 16, 2018</b>	–	<b>RFP Responses Due</b>
December 4, 2018	–	Proposal review completed
December 13-18, 2018	–	If needed, follow-up interviews and updated proposals due
December 18, 2018	–	Final review completed and awardees selected
January 14, 2019	–	Anticipated project start date

APHL will communicate any modification to this anticipated schedule on APHL's procurement website ([www.aphl.org/rfp](http://www.aphl.org/rfp)) and via an email blast to the public health laboratories (PHLs).

## Response Submittal

### Confirmation of Intent to Respond

APHL requests that prospective applicants submit a brief email statement indicating an intent to submit a proposal. APHL must receive this email by no later than **5:00pm EST on October 23, 2018**. APHL may, in its sole and absolute discretion, decline to consider, review or evaluate any proposal received from a PHL that failed to submit a letter of intent by this deadline.

### Final Response

APHL must receive complete responses by **5:00 pm EST on November 16, 2018**. Please see the [Proposal-Required Submissions](#) section of this RFP for items that must be included in the completed proposal. Applicants may send proposals by the following methods:

- Via email to [Anna.Tate@aphl.org](mailto:Anna.Tate@aphl.org) or
- Via Mail (USPS, FedEx, UPS) addressed to:  
Association of Public Health Laboratories  
Attn: ANNA TATE  
8515 Georgia Avenue. Suite 700  
Silver Spring, MD 20910

Please send the Letter of Intent (Due 10/23/18) and completed application (Due 11/16/18) to Anna Tate, [anna.tate@aphl.org](mailto:anna.tate@aphl.org)

+1 240 485 2702

APHL will send an email acknowledging the receipt of your application. If you do not receive an acknowledgement within 48 hours of sending your email, or by close of business two business days after the expected delivery date of your mailed proposal, please email the RFP point of contact above to confirm receipt. *PHLs should note that the file containing the PHL's complete proposal must not exceed 10MB if the PHL submits its proposal via email.*

### **Award**

Depending on the strength of applications received and on the funding allocation for the two RFP options, the number of awardees will vary but is estimated to be up to 6 (six) PHLs per option. APHL will distribute awards in accordance with the terms of a contract administered by APHL. The final award amount will be based on total funding received by APHL, the number of specimens to be tested, and the number of PHLs selected for the project. Estimated award structure is as follows for each RFP option:

**Option 1:** \$250/specimen for up to 50 specimens; total approximate award of \$12,500

**Option 2:** \$1500/specimen for up to 5 PCR positive specimens; total approximate award of \$7,500

**Option 1 + Option 2:** total approximate award is \$20,000

### **Term of Project**

The project term will be from the date of notification through June 30, 2019. The expected contract term will cover the period from January 14, 2019 through June 30, 2019. APHL anticipates that from the date of notification to the start date of the contract, the selected site will work with APHL and CDC to define the sample set, review the proposal, and ensure mechanisms are in place for data transfer between the participating laboratory and CDC. APHL may consider the potential for annual renewal (with an additional funding year running from July 1, 2019 to June 30, 2020) based on availability of funds and the performance of the awardee(s). Potential renewal may involve some adjustment to the scope of work in order to address any change in the funding received by APHL and to accommodate CDC programmatic needs in that funding year. APHL will notify the selected applicant(s) in advance of any modification to the anticipated scope of work in a future funding year.

### **Evaluation Team**

APHL staff, led by the Sr. Specialist, Respiratory Diseases Program, will conduct an initial review of all proposals for completeness. Any incomplete application on the proposal due date specified in the [Anticipated RFP Schedule](#) section above will not be considered and will not receive a formal evaluation.

Complete proposals will be reviewed by a team of three subject matter experts (SMEs) from CDC DBD and a panel of three APHL members selected from non-applicant PHLs. SMEs from CDC will be identified and selected by the Chief of the Pneumonia Response and Surveillance Laboratory based on their familiarity with laboratory techniques and project requirements. APHL member experts will be identified

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from among the non-applicant PHLs by the APHL Sr. Specialist, Respiratory Diseases Program and will have expertise in the laboratory testing methods described in this RFP.

Once potential reviewers have been identified, APHL's Director of Infectious Disease Programs will have final approval over the review team's composition.

### Conflict of Interest

APHL will ask potential reviewers to complete and sign APHL's **Conflict of Interest Disclosure Statement** in order to disclose any real or perceived conflict of interest prior to the start of the evaluation process. Reviewers will have to affirm that they have no conflict of interest that would preclude an unbiased and objective review of the proposals received. A copy of the disclosure statement and the related Fiduciary Responsibility and Conflict of Interest Policy is attached as [Appendix D: Conflict of Interest Disclosure Statement and Policy](#). APHL will not select reviewers with a perceived or potential conflict of interest.

### Evaluation Criteria

The evaluation team will evaluate proposals based on the responses to the requirements outlined in the Evaluation Criteria section below and will receive a numeric score of up to 100 maximum points based on the scorecard templates in [Appendix C: Evaluation of the Legionella AMD Site RFP Score Card](#).

The evaluation team may consider any prior experience sequencing *Legionella* as an enhancing factor for an applicant laboratory. The evaluation team will also give preference based on one or more of the following criteria (criteria unique to each option are bolded):

#### **For Option 1:**

- More extensive experience with NGS;
- Existing laboratory capacity to perform *Legionella* culture;
- **\*Robust, well-characterized repositories of *Legionella* isolates\***;
- Ability to comply with expectations laid out in [Appendix A: Expectations for Legionella AMD Partner Sites](#); and
- Ability to meet the minimum expectations outlined in [Appendix B: Minimum Requirements for Legionella AMD Partner Sites](#)

#### **For Option 2:**

- More extensive experience with NGS;
- Existing laboratory capacity to perform *Legionella* culture;
- **Existing laboratory capacity to perform Legionella real time PCR assay or the willingness to implement a CDC designed protocol;**

- **\*Access to Legionella positive lower respiratory tract specimens through existing repository or relationships with large volume clinical laboratories or hospital systems\*;**
- Ability to comply with expectations laid out in [Appendix A: Expectations for Legionella AMD Partner Sites](#); and
- Ability to meet the minimum expectations outlined in [Appendix B: Minimum Requirements for Legionella AMD Partner Sites](#).

### Evaluation Process

The evaluation team will conduct the review via a combination of email communication between APHL's Sr. Specialist, Respiratory Diseases and the members of the evaluation team, or among the evaluation team members and teleconference and/or webinar evaluation sessions. APHL's Sr. Specialist, Respiratory Diseases will coordinate the review process and the evaluation sessions.

The reviewers may request follow-up interviews with all or some of the applicant laboratories and, following these interviews, may request supplemental information on an applicant's proposal. The evaluation team will use these interviews and any supplemental information to clarify a laboratory's capacity or experience in one or more of the evaluation criteria, or to explain other information contained in an applicant's proposal.

There will be no formal evaluation performed by a member of APHL staff. In cases where all other evaluation criteria are substantially similar, APHL will have the ability to advise the evaluation team on selections that would provide geographical spread or otherwise diversify APHL's funding allocations. In addition, the evaluation team may receive documentation from APHL staff on an applicant's past performance in other capacities as part of the evaluation criteria.

### Post-Evaluation Procedures

APHL staff will notify the selected laboratories within ten business days of the completion of the evaluation and will post the names of the recipient(s) to APHL's procurement website, [www.aphl.org/rfp](http://www.aphl.org/rfp) on the same day. Unsuccessful applicants will receive notification of these results by e-mail or by U.S. mail within 30 days of the date the name of the selected applicant is posted.

All applicant laboratories are entitled to utilize APHL's RFP Appeals Process to formulate a protest regarding alleged irregularities or improprieties during the procurement process. Specific details of this policy are located on the procurement website.

### Conditions of Award Acceptance

The eligible laboratory 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 laboratory. Laboratories must agree to comply with expectations outlined in [Appendix A: Expectations for Legionella AMD Partner Sites](#).

Prior to making the official award, a group of individuals from CDC and APHL will be entitled to tour the facilities to assess compliance with requirements for testing and/or have a teleconference with applicant laboratories. Post award, APHL may conduct site visits to include an assessment of continued compliance.

### **Proposal – Required Submissions**

Interested PHLs must respond to the following questions in the proposal that they submit to APHL for consideration. APHL's response should be limited to no more than four double-spaced pages (font size  $\geq$  11pt and page margins of  $\geq$  1 inch) and must comply with submission requirements set out in the [Required Submissions](#) section below. Please note that this page limit is not inclusive of any attachment or appendix, which may include more detailed descriptions of specimen repositories. If applying to both options, please submit only 1 combined proposal. Applicants that are submitting a joint proposal for options 1 AND 2 only need to answer redundant/repetitive questions once. Questions/items unique to either option are highlighted in **red text**.

### **Option 1 Requirements:**

- 1. Please describe the laboratory's current *Legionella* spp. culture capability and capacity.**
  - a. Describe the methods utilized, level of isolate characterization conducted (serogroup and/or species determination, molecular typing, etc.), how long the methods have been in use, how often culture is performed, the approximate annual volume of *Legionella* spp. isolated, and number of years current laboratory staff have in using these methods.
- 2. Please describe the laboratory's experience with extraction of high quality nucleic acid, including methods and platforms currently in use.**
  - a. Describe the platforms and methods currently being utilized for extraction of nucleic acids in the laboratory's NGS workflow. Include information on how long the methods have been in use, how often extraction is performed, pathogens tested, and the amount of experience laboratory staff have in using the methods.
- 3. Please describe the laboratory's current NGS capabilities, including methods.**
  - a. Describe which pathogens are being sequenced, how long NGS has been performed, how often it is performed, the average monthly volume of specimens/isolates being sequenced, the amount of experience your laboratory staff has in performing NGS, any training your staff has received, and whether sequencing is conducted by a core facility.
  - b. If your laboratory performs *Legionella* NGS, please describe the current methods in place, specimen volume, and staff experience with *Legionella* sequencing.
  - c. Please provide a description of the library preparation kits that are used in your laboratory.**

4. **Please describe any existing infrastructure that could be utilized for this project, including equipment.**
  - a. Please list the number of Illumina MiSeqs currently in your laboratory, nucleic acid extraction platforms that could be utilized, and your current version of BioNumerics.
5. **Please describe your laboratory's *Legionella* spp. isolate repository and a description of the level of epidemiological data available and associated with the isolates.**
  - a. Include the number of isolates originating from clinical specimens and the number of isolates originating from environmental specimens.
  - b. Include the number of years that the collection spans.
  - c. Include a description of the robustness of accompanying epidemiologic data (for clinical isolates). At a minimum, please include whether isolates can be associated with specific outbreaks or clusters, the type of clinical specimen (sputum, BAL, etc.), year of isolate, and the level of geographical specificity that can be provided for each isolate.
  - d. Include a description of the diversity of the repository, including an approximate number of isolates associated with outbreaks and an estimate of the proportion of the collection representing sporadic legionellosis cases.
6. **Provide a description of approximately how many clinical isolates you have received (or obtained) in each of the last three years and/or any relationships you have with clinical laboratories that perform *Legionella* culture. Include a completed and signed copy of [Appendix B: Minimum Requirements for Legionella AMD Partner Sites](#) as an attachment.**

**Option 2 Requirements:**

1. **Please describe the laboratory's current *Legionella* spp. culture capability and capacity.**
  - a. Describe the methods utilized, level of isolate characterization conducted (serogroup and/or species determination, molecular typing, etc.), how long the methods have been in use, how often culture is performed, the approximate annual volume of *Legionella* spp. isolated, and number of years current laboratory staff have in using these methods. **Indicate the number of *Legionella* isolates and/or the number of clinical specimens tested for *Legionella*.**
2. **Please describe the laboratory's experience with extraction of high quality nucleic acid from clinical specimens including methods and platforms currently in use.**
  - a. Describe the platforms and methods currently being utilized for extraction of nucleic acids in the laboratory's NGS workflow. Include information on how long the methods have been in use, how often extraction is performed, specimens tested, and the amount of experience laboratory staff have in using the methods. **Describe how this DNA is used (e.g., for PCR, sequencing, etc.).**

3. **Please describe the laboratory's current NGS capabilities including methods.**
  - a. Describe which pathogens are being sequenced, how long NGS has been performed, how often it is performed, the average monthly volume of specimens/isolates being sequenced, the amount of experience your laboratory staff has in performing NGS, any training your staff has received, and whether sequencing is conducted by a core facility.
  - b. If your laboratory performs *Legionella* NGS, please describe the current methods in place, specimen volume, and staff experience with *Legionella* sequencing.
  - c. **Indicate if your laboratory has conducted any metagenomic or amplicon-based sequencing using NGS technology with respect to any bacterial pathogen.**
4. **Please describe any existing infrastructure that could be utilized for this project, including equipment.**
  - a. **Please list the number of Illumina MiSeqs currently in your laboratory, automated nucleic acid extraction platforms that could be utilized, and your current workflow for testing lower respiratory tract specimens.**
  - b. **Indicate if the laboratory will use an in house developed PCR assay for detection of *Legionella* in clinical specimens and provide a summary of its performance capabilities. Otherwise, indicate if the laboratory is willing and able to implement a CDC-developed real-time PCR assay for detection of *Legionella*. At a minimum, access to an automated nucleic acid extraction instrument and ABI 7500 Fast real-time PCR system is required.**
5. **Please describe your laboratory's ability to obtain lower respiratory tract specimens that would have a reasonable likelihood of including those from individuals with Legionnaires' disease.**
  - a. Describe any existing repository of primary lower respiratory track specimens that are PCR positive for *Legionella*. Include information on storage conditions, time specimens have been in storage and freeze thaw cycles.
  - b. Describe any existing relationships with high volume clinical laboratories or hospitals that conduct *Legionella* testing using either conventional, culture-based or urine antigen testing.
  - c. Describe the likelihood of obtaining lower respiratory tract specimens from those facilities.
  - d. What kind of additional clinical details could be provided for these specimens (e.g. urinary antigen test result)?
6. **Include a completed and signed copy of [Appendix B: Minimum Requirements for Legionella AMD Partner Sites](#) as an attachment.**

### **Additional Information and Deadlines for Application Submission**

Applicants must direct all questions to Anna Tate at [anna.tate@aphl.org](mailto:anna.tate@aphl.org). APHL will post questions received from interested PHLs, together with the answers provided by APHL or CDC staff to APHL's procurement website ([www.aphl.org/rfp](http://www.aphl.org/rfp)).

Applicants must submit applications to Anna Tate at APHL ([anna.tate@aphl.org](mailto:anna.tate@aphl.org); 8515 Georgia Ave Suite 700, Silver Spring, MD, 20910; telephone: 240-485-2702; fax: 240-485-2700).

**APHL will hold an optional teleconference on Friday, October 19 at 3:00pm ET.** The purpose of this call will be to provide a brief overview of the project and to allow potential applicants to ask CDC and APHL questions. Please come with questions prepared.

**For the teleconference there are a limited number of lines; please use only one (1) line per Laboratory.**

**Phone:**

877-915-4937

1911175#

**APHL must receive applications, attention: Anna Tate, by close of business (5:00pm ET) November 16, 2018.** Either electronic or physical submission is acceptable. APHL will send an email acknowledging the receipt of each application. If you do not receive an acknowledgement within 48 hours, call 240-485-2702 to confirm receipt.

## **Appendix A: Expectations for *Legionella* AMD Partner Sites**

### **Methods**

#### **a) For Option 1:**

- i) Each site will provide a list of isolates in their repository and accompanying epidemiological data and then work with CDC to select a panel of up to 50 isolates for sequencing at the beginning of the project period. Sites may sequence prospective isolates during the course of the project. Note: APHL/CDC reserves the right to increase or decrease the volume of isolates per site (and associated funds) as needed.
- ii) DNA extraction may be manual or automated; selected applicants must perform library preparation using the Nextera DNA Library Preparation Kit.
- iii) The Illumina MiSeq is the selected sequencing platform for *Legionella* spp. sequencing.
- iv) Sites will upload genome sequences via the OAMD Portal within 1 (one) week after completion of the sequencing run. CDC will perform data analysis and return wgMLST results to the submitting laboratory.
- v) A functional copy of BioNumerics (version 7.5 or 7.6) is required to analyze data and establish a local wgMLST profile database.

#### **AND/OR;**

#### **b) For Option 2:**

- i) Sites will provide a forecast of specimen submissions or details of outreach to clinical laboratories and hospitals for collection of specimens at the beginning of the project period. Additionally, sites may provide a prioritized list of existing *Legionella* positive lower respiratory tract specimens from an existing repository.
- ii) Sites will either provide validation data supporting use of in house developed *Legionella* PCR or agree to implement a CDC-designed real-time PCR assay to detect *Legionella*. SOPs, remote training via webinar, and PCR oligonucleotides for the CDC assay will be provided for approximately 50 (fity) reactions. Note: APHL/CDC reserves the right to increase or decrease the volume of isolates per site (and associated funds) as needed.
- iii) Sites must attempt to culture *Legionella* from PCR-positive specimens. Recovered isolates should either be sequenced by the participating laboratory or sent to CDC.
- iv) The Illumina MiSeq is the selected sequencing platform for metagenomic sequencing. Additional processing steps (e.g. human DNA depletion) is not required. Libraries may be prepared with the Nextera XT kit. Sites should anticipate sequencing up to 5 PCR-positive specimens. An entire MiSeq reagent kit should be dedicating to a single specimen.

Sites will upload metagenomic sequences via OAMD Portal within 1 week after completion of the sequencing run. Sites must provide PCR and culture results along with sequencing data.

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## Procurement

Staff support, supplies, reagents and equipment are all acceptable uses of the funding for this project. Each site will only be funded \$250/specimen for Option 1 and \$1500/specimen for Option 2 for the number of specimens, approved based on the number of awardees and funding availability; allocation of those funds is at the discretion of the awarded sites.

Funds will be allocated to sites as follows:

**Option 1:** \$250.00/specimen x ~ 50 specimens ≈ **\$12,500 total**

**Option 2:** \$1,500/specimen x ~ 5 specimens ≈ **\$7,500 total**

Note: APHL/CDC reserves the right to increase or decrease the volume of isolates per site (and associated funds) as needed.

## Data Management

**Option 1:** Sites will receive authentication information to upload raw sequencing data to CDC. Sequencing data should be uploaded as runs are completed and CDC will return results within one week as a wgMLST bundle file (for *L. pneumophila* isolates) or as a FASTA assembly (non-*pneumophila Legionella* spp.) via email. Bundle files will be viewed using BioNumerics (version 7.5 or 7.6). CDC may request re-sequencing when quality metrics require. Sites must agree to submit (or work with CDC to submit) raw sequencing data directly to the NCBI Sequence Read Archive (SRA) within 120 days.

**Option 2:** Sites will receive authentication information to upload raw sequencing data to CDC. Selected applicant(s) should upload sequencing data as runs are completed. CDC may request re-sequencing when quality metrics require. Sites must agree to submit (or work with CDC to submit) processed sequencing data (e.g., metagenomic assemblies) to publicly-accessible databases within 120 days.

## Performance Management and Evaluation

Performance will be monitored by timeliness of responses to CDC and APHL requests, as well as successful completion of sequencing runs. The *Legionella* AMD Partner site must submit electronic notices of data transfer to APHL and CDC and participate in monthly teleconferences.

## Site Visits and Teleconferences

APHL, CDC, and the *Legionella* AMD Partner Sites will participate in monthly teleconferences to review monthly activity, assess successes and challenges, and discuss potential resolutions.

**Appendix B: Minimum Requirements for *Legionella* and AMD Partner Sites**

Please complete the section for the option(s) you are applying for. If you are applying for both, please complete both sections.

**Option 1**

YES	NO	MINIMUM REQUIREMENT
		Does your laboratory currently culture <i>Legionella</i> spp.?
		Does your laboratory have a repository of at least 50 <i>Legionella</i> isolates?
		Does your laboratory currently perform next generation sequencing (NGS) of bacterial pathogens using an Illumina MiSeq?
		Does your laboratory have a functional copy of BioNumerics version 7.5 or 7.6?

**Option 2**

YES	NO	MINIMUM REQUIREMENT
		Does your laboratory currently culture <i>Legionella</i> spp.?
		Does your laboratory have a validated real-time PCR assay for the detection of <i>Legionella</i> or agree to implement the CDC assay?
		Does your laboratory currently perform next generation sequencing (NGS) of bacterial pathogens using an Illumina MiSeq?

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Printed Name:

**Appendix C: Evaluation of the *Legionella* AMD Site RFP Score Card**

The following table is a copy of the score cards (one for each option) that will be used to evaluate RFP responses.

**Option 1 Score Card:**

Category	Maximum Value	Score	Comments (REQUIRED)
<p>Does the applicant currently perform culture, serogrouping, and species identification of <i>Legionella</i> spp.?  <i>Evaluate frequency of testing and culturing. Consider the training and experience of existing staff.</i>  <b>High:</b> (21-25 points): Culture has been in place &gt; 5 years, staff have &gt; 5 years of experience, and/or culture is performed frequently. Robust serogrouping capacity or mip/16S gene sequencing should elevate score.  <b>Moderate:</b> (11-20 points): Culture has been in place 1-5 years, staff have 1-5 years of experience and culture is performed somewhat infrequently. Species identification conducted via MALDI-TOF.  <b>Limited:</b> (0-10 points): Culture in place &lt; 1 year, staff have &lt; 1 year of experience and culture is performed rarely.</p>	25		Type comments here. (REQUIRED)
<p>Please rate the robustness of the clinical isolate repository and availability of associated epidemiological data?  <i>Evaluate the total number of samples available. Consider the number of clinical specimens vs environmental isolates and the distinct number of cases, timeframe represented and the robustness of the epidemiologic data available.</i>  <b>Exceptional:</b> Robust repository, high quality epi data. A robust repository would include more than 50 isolates with broad temporal representation and include high geographic specificity at the city/county level. (31-35 points). Both clinical <i>L. pneumophila</i> and non-pneumophila from any source are available.  <b>High:</b> Adequate repository, high quality epi data. An adequate repository would include 50 isolates with some temporal or geographical representation. Both clinical <i>L. pneumophila</i> and non-pneumophila from any source are available. (21-30)  <b>Moderate:</b> A combination of high/limited repository robustness and epi data for at least 50 isolates but few or no non-pneumophila are available. 1-25 Reasonably characterized panel of &lt; 50 isolates but containing few or no non-pneumophila isolates (11-20 points).  <b>Limited:</b> Limited repository and limited epi data available containing significantly &lt; 50 isolates of any kind available and with little to no geographic specificity (1-10 points).                      No samples = 0</p>	35		Type comments here. (REQUIRED)

Category	Maximum Value	Score	Comments (REQUIRED)
<p>Does the applicant have sufficient capacity and experience performing NGS of <i>Legionella</i> spp. or other bacterial pathogens to comply with the requirements described in Appendix A of the RFP?</p> <p><i>Evaluate their experience with sequencing Legionella spp. or other bacterial pathogens. Consider the annual sequencing volume, experience and training of existing staff.</i></p> <p><b>High:</b> Has specific experience in nucleic acid extraction and sequencing of <i>Legionella</i> spp., staff has demonstrated proficiency with Nextera DNA Library Preparation Kits, staff has high level experience with NGS and lab has adequate capacity (21 -25 points).</p> <p><b>Moderate:</b> Has experience sequencing bacterial pathogens and extracting nucleic acid as part of an NGS workflow, staff has been performing NGS for at least 1 year, and lab has adequate capacity (11 – 20 points).</p> <p><b>Limited:</b> lab has less than one year of experience in sequencing bacterial pathogens (1-10 points).</p> <p><b>No experience:</b> (0 points).</p>	25		Type comments here. (REQUIRED)
<p>Will the lab be able to implement <i>Legionella</i> wgMLST or associated bioinformatics workflows?</p> <p><b>Yes:</b> Laboratory can or will be able to access the OAMD portal. (≤10 points)</p> <p><b>No:</b> 0</p>	10		Type comments here. (REQUIRED)
<p>Please rate the overall quality of the application.</p>	5		Type comments here. (REQUIRED)
<b>TOTAL SCORE</b>	<b>100</b>		

**Option 2 Score Card:**

Category	Maximum Value	Score	Comments (REQUIRED)
<p>Does the applicant currently conduct testing for <i>Legionella</i> spp. from clinical specimens?  <i>Evaluate frequency of testing. Consider the training and experience of existing staff.</i>  <b>High:</b> (21-25 points): Testing has been in place &gt; 5 years, staff have &gt; 5 years of experience, and/or culture is performed frequently. Robust characterization should elevate score.  <b>Moderate:</b> (11-20 points): Testing has been in place 1-5 years, staff have 1-5 years of experience and testing is performed somewhat infrequently. <b>Limited:</b> (0-10 points): Testing in place &lt; 1 year, staff have &lt; 1 year of experience and culture is performed rarely.</p>	25		Type comments here. (REQUIRED)
<p>Please rate the ability of the laboratory to conduct real-time PCR on clinical specimens. Ability of the laboratory to obtain clinical specimens?  <i>Evaluate the total number of specimens previously tested.</i>  <b>Exceptional:</b> Laboratory conducts real-time PCR for <i>Legionella</i> on clinical or environmental specimens routinely (31-35 points).  <b>High:</b> Laboratory maintains capability to conduct real-time PCR for <i>Legionella</i> but conducts testing rarely (21-30).  <b>Moderate:</b> Laboratory conducts real-time PCR on clinical specimens for other respiratory pathogens routinely and agrees to implement a <i>Legionella</i>-specific assay (11-20 points).  <b>Limited:</b> Laboratory conducts real-time PCR on clinical specimens for other respiratory pathogens rarely and agrees to implement a <i>Legionella</i>-specific assay (1-10 points).                      No samples = 0</p>	25		Type comments here. (REQUIRED)
<p>Does the applicant have sufficient capacity and experience performing NGS to comply with the requirements described in Appendix A of the RFP?  <i>Evaluate their experience with next generation sequencing. Consider the annual sequencing volume, experience and training of existing staff.</i>  <b>High:</b> Has specific experience in nucleic acid extraction and sequencing from clinical specimens, staff has demonstrated proficiency with Nextera DNA Library Preparation Kits, staff has high level experience with NGS and lab has adequate capacity (31 -35 points).  <b>Moderate:</b> Has experience sequencing bacterial pathogens and extracting nucleic acid as part of an NGS workflow, staff has been performing NGS for at least 1 year, and lab has adequate capacity (21 – 30 points).  <b>Limited:</b> Lab has less than one year of experience in next generation sequencing (1-10 points).</p>	35		Type comments here. (REQUIRED)

Please send the Letter of Intent (Due 10/23/18) and completed application (Due 11/16/18) to Anna Tate, [anna.tate@aphl.org](mailto:anna.tate@aphl.org)

Category	Maximum Value	Score	Comments (REQUIRED)
No experience: (0 points).			
Does the laboratory have access to primary respiratory specimens that are likely to contain <i>Legionella</i> spp.? Will the lab be able to provide any additional information on the clinical specimens tested (e.g., urinary antigen test result, clinical severity such as inpatient hospitalization, or outcomes)?  <b>High:</b> The answer to both of the above questions is yes. The scores may be elevated by strength of access to specimens or quality of available information. (6-10). <b>Moderate:</b> The answer to only one of the above questions is yes. The scores may be elevated by strength of access to specimens or quality of available information. (1-5). <b>No:</b> 0	10		Type comments here. (REQUIRED)
Please rate the overall quality of the application.	5		Type comments here. (REQUIRED)
<b>TOTAL SCORE</b>	<b>100</b>		

**Appendix D: Conflict of Interest Disclosure Statement and Policy**

Association of Public Health Laboratories  
Conflict of Interest Disclosure Statement

**Applicability:** Disclosure of the following information is required of all Officers, Directors, committee members, staff members and other volunteers who have been designated and who have accepted responsibility to act on behalf of APHL ("APHL Personnel"). Please answer the following questions and, where indicated, include the same information for your immediate family members (your parents, your spouse or partner, your children and your spouse/partner's parents).

APHL will keep your completed disclosure statement in the corporate records of the association.

1. Please list the name, address, phone number, email address and type of business of your current employer. If you are self-employed, please note that below and provide us with the address, phone number, email address and type of business you operate.

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2. Do you, or does any family member, currently serve as an officer, director, committee member, or other volunteer (or work as an employee of or a paid consultant to) any organization serving the interest of laboratory science or public health laboratories other than APHL or your state or local laboratory?

Yes       No

If yes, please list the organization(s) and provide detail on your or your family member's interest or position in the organization(s).

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3. Do you, or any family member, have an existing or potential interest in, or compensation arrangement with, any third party providing goods or services to APHL, or with which APHL is currently negotiating?

Yes       No

If the answer is yes, please provide the name of the organization below and describe in detail the nature of the position held.

APHL Conflict of Interest Disclosure Statement

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4. Please note any other financial or business interest you may have with any organization serving the interests of public health laboratories.

**If you have none, please check this box:**

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5. Do you, or does any family member, have any other interest or affiliation that is likely to compromise your ability to provide unbiased and undivided loyalty to APHL, or that could come in conflict with your official duties as an Officer, Director, committee member, staff member or other volunteer who has been designated and who has accepted responsibility to act on behalf of APHL?

**Yes**       **No**

If you answered yes, please describe in detail below the nature of each such interest or affiliation.

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APHL Conflict of Interest Disclosure Statement

6. If you are currently aware of any actual or possible conflict of interest that might otherwise hamper your ability to serve APHL to your best ability and with the highest degree of care, loyalty and obedience – **including any potential conflict you or a family member may have with one or more of the RFP applicants** – please describe them in detail below.

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7. Do you agree that so long as you are an Officer, Director, committee member, staff member or other volunteer who has been designated and who has accepted responsibility to act on behalf of APHL you will immediately disclose to the other Directors and/or Officers or, for staff members, the Executive Director and/or General Counsel the nature of any interest or affiliation which you may hereafter acquire, which is in or is likely to become in conflict with your official duties with APHL?

Yes       No

**YOU MUST READ THIS SECTION AND THEN SIGN BELOW**

I acknowledge that I have received and read APHL’s Fiduciary Responsibility and Conflict of Interest Policy (the Policy). I have listed all my relevant fiduciary responsibilities and affiliations, and I have identified any actual or potential conflict of interest on this Disclosure Statement and I agree to abide by the Policy. I understand that it is my responsibility to inform APHL in writing of any change in circumstances relating to the Policy and this Disclosure Statement.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

## APHL Fiduciary Responsibility and Conflict of Interest Policy

### 1. Policy Statement and Purpose

The members of the APHL Board of Directors understand the importance of serving APHL to the best of their ability and with the highest degree of obedience, loyalty and care. Accordingly, the Board adopts the following policy for APHL Officers and Directors, all staff, committee members, and other volunteers who have been designated and who have accepted responsibility to act on behalf of APHL ("APHL Personnel").

### 2. Individual Duty and Annual Disclosure

APHL Personnel will avoid any conflict of interest with APHL. APHL Personnel will not profit personally from their affiliation with APHL, or favor the interests of themselves, relatives, friends or other affiliated organizations over the interests of APHL. As used in this Policy, "Conflict of interest" includes any actual, apparent, and potential conflict of interest.

Upon commencing service with APHL, each APHL Personnel will file with the Board an annual statement disclosing all material business, financial, and organizational interests and affiliations they or persons close to them have which could be construed as related to the interests of APHL or the profession of public health laboratory science. Each APHL Personnel has an obligation to make an additional disclosure if a conflict of interest arises in the course of the individual's service to APHL, whether arising out of his/her employment, consulting, investments, or any other activity. These disclosures will be documented promptly in writing and recorded in the Board minutes and corporate records.

### 3. Procedure

Whenever APHL considers a matter, which presents an actual, apparent, or potential conflict of interest for APHL Personnel, the interested individual will fully disclose his/her interest in the matter, including the nature, type, and extent of the transaction or situation and the interest of the individual or that individual's relatives, friends or other affiliated organizations. The Board, after consultation with counsel as appropriate, will determine whether an actual and material conflict exists and, if so, what is the appropriate course of action under this policy and the Board vote will be recorded in the minutes.

Any Board member having a conflict of interest must either (i) voluntarily abstain from and be disqualified from participation in all deliberation and voting on all Board actions relating to the situation or matter that gives rise to the conflict of interest, or (ii) ask the Board to determine whether an apparent or potential conflict of interest is considered by the Board to be an actual and material conflict. In the event that the Board member in question requests that the Board evaluate the apparent or potential conflict, that Board member will abstain and be disqualified from participating in (and voting on) the determination of whether the issue presents an actual and material conflict. If the Board determines that an actual and material conflict exists, the Board member in question will abstain from all voting on, and will be disqualified from participation in all deliberation concerning all Board actions relating to the conflict of interest. The vote will be recorded in the minutes.

These procedures will neither prevent the interested individual from briefly stating his/her position on the matter, nor preclude him/her from answering pertinent questions of Board members, since his/her knowledge may be of assistance to the Board's deliberations.

APHL Personnel must be cautious and protective of the assets of APHL and insure that they are used in the pursuit of the mission of APHL. The association's policy requires APHL Personnel to avoid transactions in which APHL personnel may have a significant financial interest in any property which APHL purchases, or a direct or indirect interest in a supplier, contractor, consultant, or other entity with

which APHL does business. The Board, after consultation with counsel as appropriate, will determine whether an actual and material conflict exists and, if so, determine whether the transaction is nonetheless favorable to APHL before considering whether to approve it.

#### **4. Other Duties and Obligations**

Whenever any APHL Personnel discovers an opportunity for business advantage which is relevant to the activities of APHL, the opportunity belongs to APHL and the individual must present this opportunity to the Board. Only once the Board determines not to pursue the matter and relinquishes the opportunity may the individual consider it a matter of possible personal benefit.

APHL Personnel may not accept favors or gifts exceeding \$75.00 from anyone who does business with APHL.

All APHL Personnel will keep confidential those APHL matters designated confidential. APHL Personnel are prohibited from disclosing information about APHL to those who do not have a need to know or whose interest may be adverse to APHL, either inside or outside APHL, and are prohibited from using in any way such information for personal advantage to the detriment of APHL.

All APHL Personnel who participate in APHL activities, including committee activities and international consultation activities, must be adequately prepared to fully participate as their position descriptions require and will do so in accordance with the applicable laws and regulations of their respective state or territory and APHL's Articles of Incorporation, Bylaws, and corporate policies. The APHL Board will read and understand the association's Articles of Incorporation, Bylaws, corporate policies and financial statements, and routinely verify that all state, federal, and local tax payments, registrations and reports have been filed in a timely and accurate manner.

Board members will never exercise authority on behalf of APHL except when acting in meetings with the full Board or the Executive Committee or as authorized by the Board. If any member of the Board has significant doubts about a course of action of the Board, he or she must clearly raise the concern with the Executive Director and the Board and, when appropriate, seek independent expert advice.