# Quality Considerations for Next Generation Sequencing



**2018 APHL**
**ANNUAL MEETING**
and twelfth government environmental laboratory conference

Preconference Workshop
APHL Annual Meeting
June 2, 2018 • 8:00–11:30 am PT
Pasadena Convention Center
Pasadena, CA

## DESCRIPTION

Attendees will participate in a combination of lectures and exercises that will describe approaches for validating next generation sequencing (NGS) assays and the considerations for implementing quality assurance (QA) measures appropriate for NGS protocols from wet laboratory through data analysis.

## OBJECTIVES

At the end of the workshop, the participant will be able to:

- Develop approaches for validation of NGS assays
- Describe the QA indicators that should be established
- Interpret various types of data output and how to verify proper analysis parameters
- Discuss a bioinformatician's approach to designing a novel pipeline

## AUDIENCE

Staff responsible for performing NGS and/or analyzing and interpreting NGS data including laboratory directors .

## REGISTRATION

Registration fee: $95 per person
Register at www.aphl.org/AM

**SPEAKERS AND AGENDA ▶**

## MODERATOR

**Duncan MacCannell, PhD** • Chief Scientific Officer, Office of Advanced Molecular Detection, CDC

## SPEAKERS

**Duncan MacCannell, PhD** • Chief Scientific Officer, Office of Advanced Molecular Detection, CDC

**Kimberlee Musser, PhD** • Chief of Bacteriology, Wadsworth Center, New York State Department of Health

**Sean Wang, DVM, PhD** • APHL-CDC Bioinformatics fellow placed at the Minnesota PHL

## PROPOSED AGENDA TOPICS

### Validating NGS Protocols of NGS

An overview of NGS and the current uses of this technology will be given. The various steps of NGS and where quality metrics should be employed will be discussed. A sample inspection exercise will be utilized to show lab directors the various places QA/QC protocols should be employed.

### Sequence Quality Metrics

Metrics will be discussed to assess sequence quality and assemble final reads into contigs for further analysis. The session will include a table top exercise to assess mock data for quality.

### Sequence Analysis by Commercial Software

Types of commercial software will be described along with benefits and limitations. The session will include exercises for the audience to interpret results, including sample outputs done both correctly and with errors. The audience will learn what common mistakes are possible on "push button" type analysis and how to spot them.

### Sequence Analysis by Command Line Programming

The type of expertise required will be discussed for command line programming and "home-grown" bioinformatics built pipelines. The audience will learn how to talk to the bioinformatician in describing both the types of input and desired outputs. An exercise of putting a request for a simple analysis pipeline and interpreting the output will be done.

## CONTINUING EDUCATION CREDIT

The Association of Public Health Laboratories (APHL) is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. Participants who successfully complete each program will be awarded 3.0 contact hours. P.A.C.E.® is accepted by all licensure states except Florida. APHL is a Florida approved CE provider; each course has been approved for 3.0 contact hours for Florida Laboratory Licensees.

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