

Support Advanced Molecular Detection at the Centers for Disease Control and Prevention:

## Invest in Precision Public Health



The Advanced Molecular Detection (AMD) program brings cutting edge technology to the front lines of public health by harnessing the power of next-generation sequencing and high performance computing with bioinformatics and epidemiology expertise to study pathogens.

**To build on and sustain the program post-COVID-19, the AMD program at the Centers for Disease Control and Prevention needs at least \$60 million in FY 2022 in base funding. The program's ability to support its expanded mission is threatened by increasing demands and costs.**

The CDC's AMD program has transformed many areas of public health by enabling the agency to rapidly incorporate a novel and versatile technology into CDC operations—next-generation sequencing (NGS). Established in FY 2014 and funded at \$30 million/year, AMD helped close a widening technological gap in pathogen genomics through which the public health system was falling behind. Its success has demonstrated the critical importance to the nation's health security of staying abreast of technologies that are both cutting edge and relevant.

The CDC AMD program is rapidly growing as a result of its own success. NGS-related technologies continue to advance at an astounding pace, giving us new and expanded tools to detect disease faster, identify outbreaks sooner, and protect people from emerging and evolving disease threats. Current funding has become insufficient to meet the demand for equipment, training and expertise required to support state and local health departments with precision public health and expanded collaborations.

### With additional funds, the AMD program can:



#### Promote greater innovation

through improved metagenomics, data integration, and cross-cutting genomics infrastructure. Doing so will directly benefit states and localities.\*



#### Expand workforce development

to meet the demands from state and local health departments and streamline laboratory operations.



#### Establish and sustain Public-Private partnerships

with academic institutions and private sector entities to advance knowledge.

\* There is an increased need to sequence pathogens directly from specimens. Secure, user-friendly methods for sharing pathogen genomic data are needed.

## How do we use AMD?



### COVID-19

AMD technology has played a pivotal role in identifying, understanding, tracking and tracing SARS-CoV-2. The AMD program also helped establish the SPHERES Consortium to bring public and private sectors together to enable viral sequencing, tracking and tracing.

- Track and trace the spread of SARS-CoV-2 infections more quickly, including genetic variants, so resources can be targeted to where they will have the greatest impact and appropriate mitigation efforts can be made.
- Inform development of diagnostics and countermeasures such as vaccines and therapeutics.
- Advance public health research in the areas of transmission dynamics, host response, and evolution of the virus.



### Improving Vaccines

Applying AMD to vaccine-preventable diseases, such as the flu, helps CDC monitor genetic changes and understand why vaccine effectiveness may decrease. Next-generation sequencing has allowed CDC to:

- More effectively monitor and support vaccine development by targeting evolving pathogens;
- Utilize next-generation sequencing data to forecast relative importance of emerging strains and assess risk, characterize viruses used in vaccine effectiveness studies, and inform treatment for patients infected with viruses that have high-pandemic risk, such as COVID-19.



### Improve Food Safety

State-of-the-art AMD methods help solve bacterial foodborne outbreaks faster by linking food sources to clusters of illness. This has led to the transformation of a national network, PulseNet, which includes more than 80 public health laboratories. PulseNet has allowed for improvements including:

- Sequence pathogens directly from specimens without a need for culture, which is acutely needed when addressing bacterial foodborne illness; and
- Remove contaminated food products from store shelves and get them out of people's homes more quickly to save more lives
- Early experience with surveillance for *listeria*, which switched to whole-genome sequencing in 2014, is encouraging. In the first three years of whole-genome sequencing, 18 outbreaks of listeriosis were solved, with a median of 4 cases per outbreak

## ASM Calls on Congress to:

**Increase the base investment in Advanced Molecular Detection (AMD) technologies to both support its current successes and to expand its scope of innovation as technology continues to advance.** This will facilitate expansion of state and local public health laboratories, provide critical coordination with academic institutions to strengthen the public health workforce pipeline, and ensure the U.S. stays ahead of the next potential deadly disease.