The Importance of Partnerships in Pandemics

March 13, 2023
Chantal B.F. Vogels, PhD

Associate Research Scientist
Department of Epidemiology of Microbial Diseases
Yale School of Public Health

chalant.vogels@yale.edu
@VogelsChantal

Yale SCHOOL OF PUBLIC HEALTH
Partnership between public health and academic labs

Development of an amplicon-based sequencing approach in response to the global emergence of human monkeypox virus

CDC Centers for Disease Control and Prevention
CDC 1902: Saving Lives. Protecting People™

Daily Mmpox Cases and 7 Day Daily Average

Monkeypox virus multiplexed PCR amplicon sequencing (PrimalSeq) V.4

DOI
dx.doi.org/10.17504/protocols.io.5qyob1nb4oi/v4

Nicholas F.G. Chon1, Luc Gagne2, Matthew Doucette2, Sandra Smo1o, Erika Buzby2, Joshua Hall2, Stephanie Ash2, Rachel Harrington2, Seana Cofsky2, Selina Ciancy2, Curtis J Kapsak2, Joel Sevinsky3, Kevin Libut2, Mallory J Breban1, Chrispin Chaguza1, Nathan D. Grubaugh1, Daniel J. Park4, Glen R. Gallagher2, Chantal B.F. Vogels1

1Department of Epidemiology of Microbial Diseases, Yale School of Public Health; 2Massachusetts Department of Public Health; 3Theigen Genomics; 4Broad Institute, Cambridge, Massachusetts

Yale SCHOOL OF PUBLIC HEALTH

BROAD INSTITUTE

CEVS

www.aphl.org
Our success story

More than 10 public health labs across the US and internationally quickly adapted their SARS-CoV-2 amplicon sequencing workflows to sequence human monkeypox virus

Chen et al. (2022) MedRxiv
Lessons Learned

The power of partnerships between public health and academic labs:

- Development of new primer schemes
- “Plugging” primer schemes into existing amplicon sequencing workflows
- Rapid response to newly emerging pathogens by utilizing established genomic infrastructure

<table>
<thead>
<tr>
<th>CLINICAL</th>
<th>WET LAB</th>
<th>DRY LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5. Sequencing</td>
<td>8. Data storage &amp; sharing</td>
</tr>
</tbody>
</table>

Establishing partnerships to get access to remnant clinical samples and metadata

*Plugging in* virus-specific primer sets

"Swapping out" virus-specific reference genomes and BED files

Hill et al. (in press) Cell Host & Microbe
Panel Discussion