KY Department for Public Health

Sequencing and Surveillance

Kentucky Public Health
Prevent. Promote. Protect.

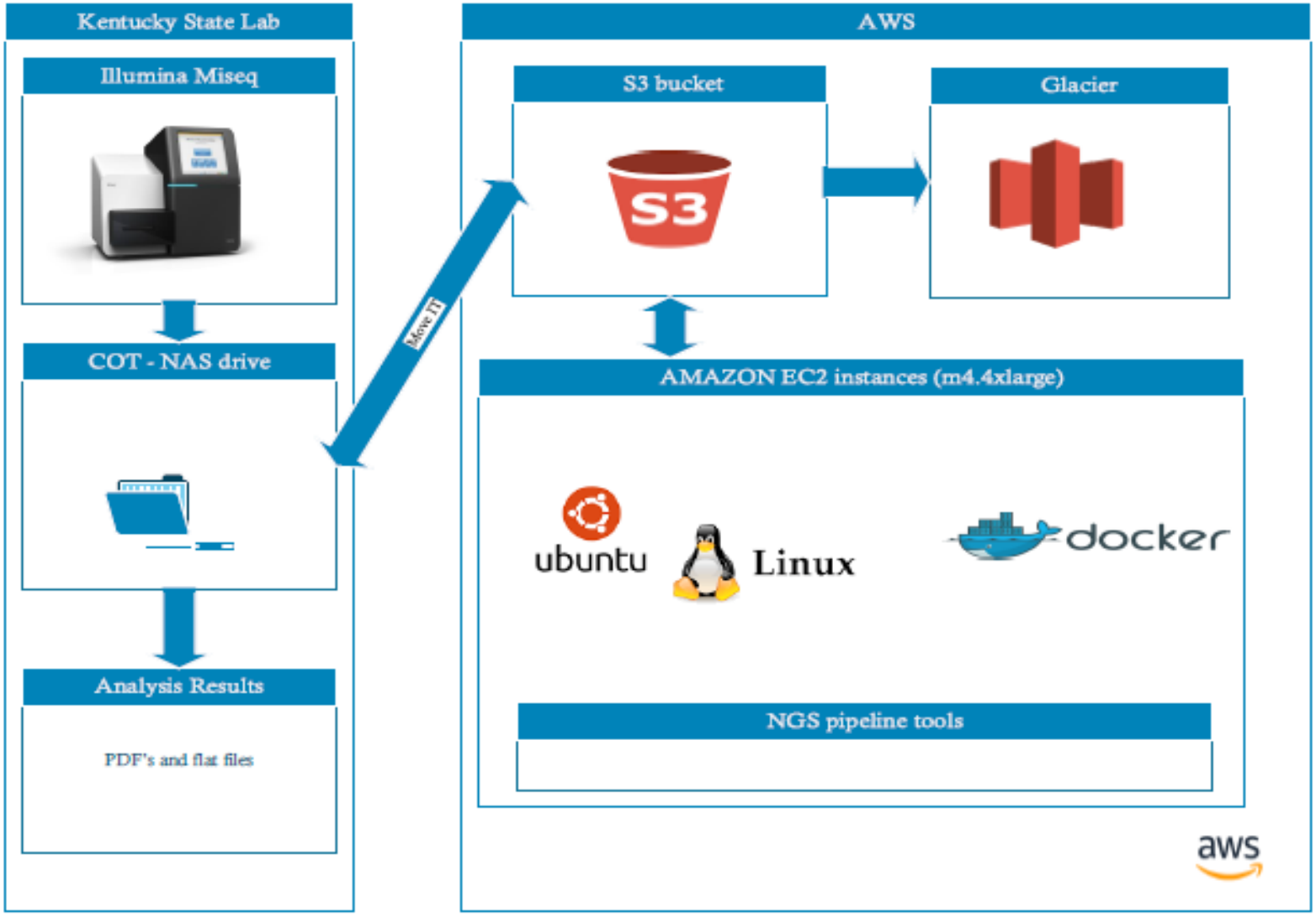
Kentucky Public Health Laboratory

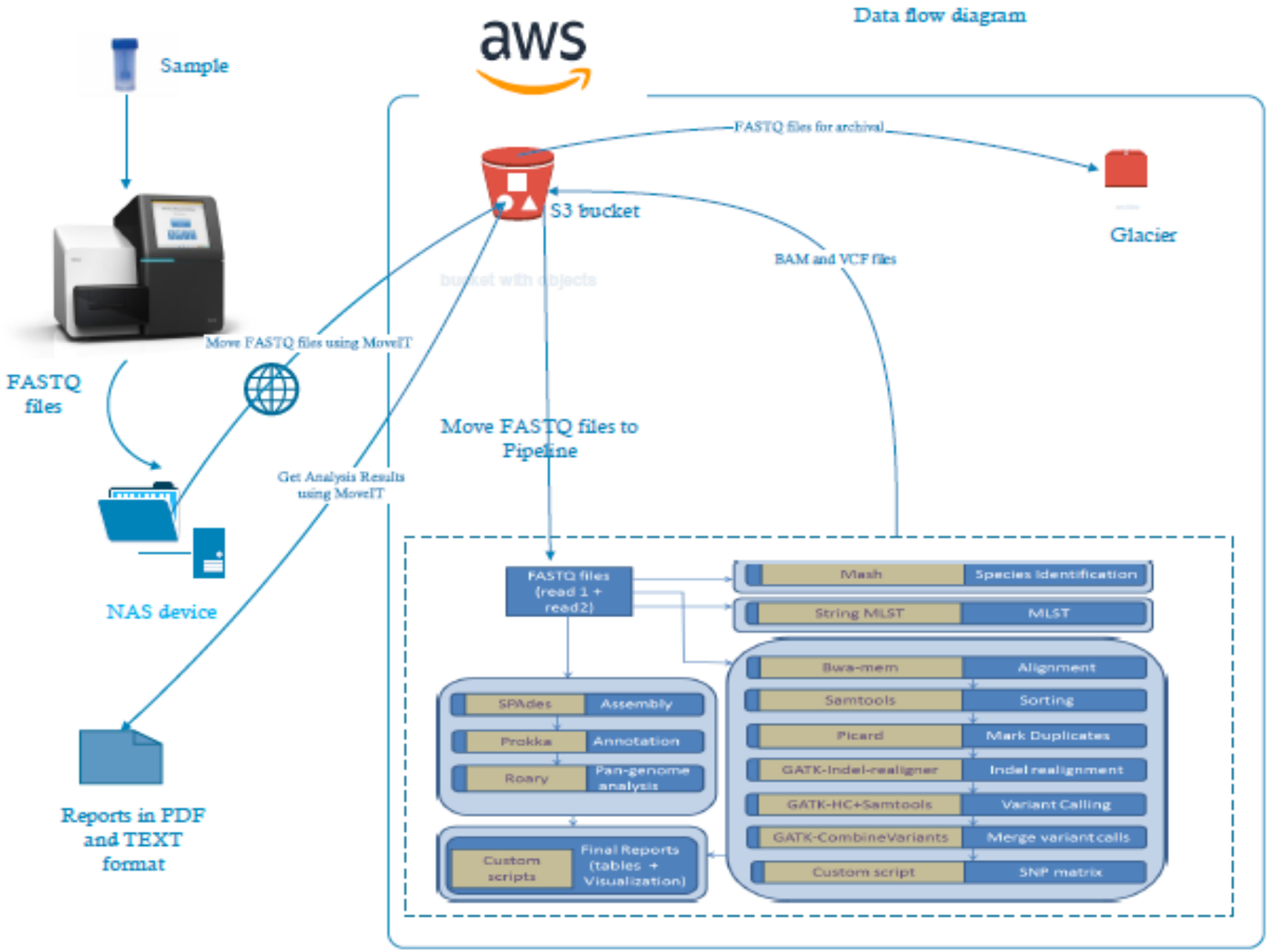
Bioinformatics

- AMD trainings
- Staph B calls
- Galaxy Trainings
- Collaboration with the University of Kentucky

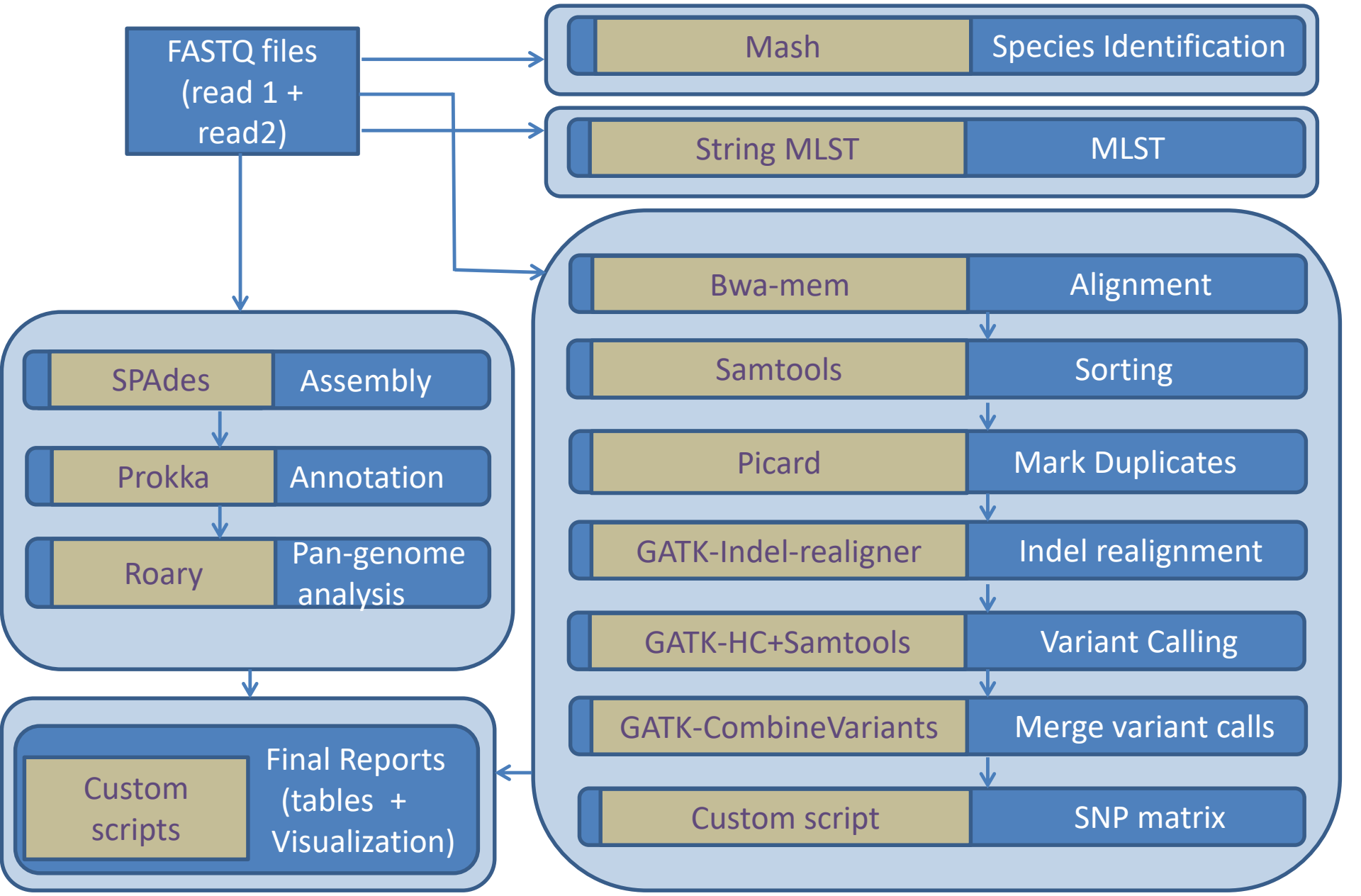
Steep Learning Curve

Kentucky public health laboratory Bioinformatics pipeline infrastructure



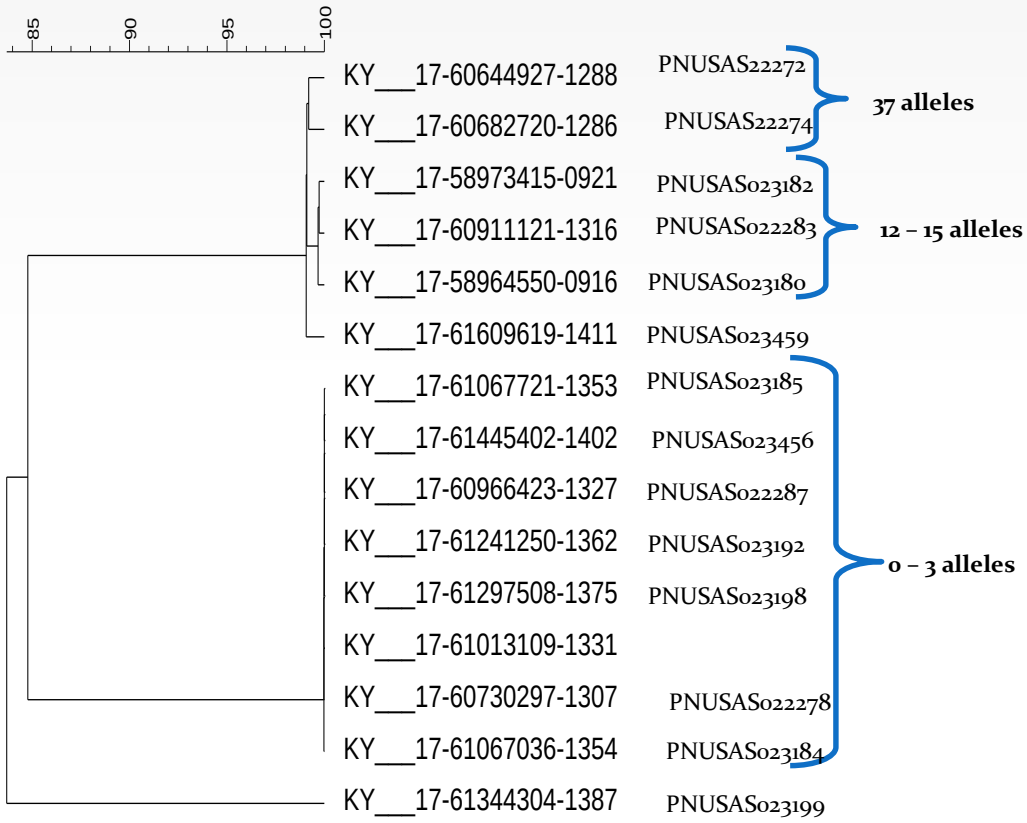

Data flow diagram
aws
Sample
FASTQ files for archival
S3 bucket
Glacier
BAM and VCF files
Move FASTQ files using MoveIT
FASTQ files
Move FASTQ files to Pipeline
Get Analysis Results using MoveIT
NAS device
Reports in PDF and TEXT format
FASTQ files (read 1 + read2)
Mash
Species identification
String MLST
MLST
Bwa-mem
Alignment
Samtools
Sorting
Picard
Mark Duplicates
GATK-Indel-realigner
Indel realignment
GATK-HC+Samtools
Variant Calling
GATK-CombineVariants
Merge variantcalls
Custom script
SNP matrix
SPAdes
Assembly
Prokka
Annotation
Roary
Pan-genome analysis
Custom scripts
Final Reports (tables + Visualization)

Completed Micro pipeline 03/20/2018



Salmonella ser. Javiana— wgMLST Analysis

The methods used in the analysis of this sequence data are preliminary and remain under validation. Please email pulsenet@cdc.gov if you plan to use/distribute this phylogeny further.



2018-02- 06

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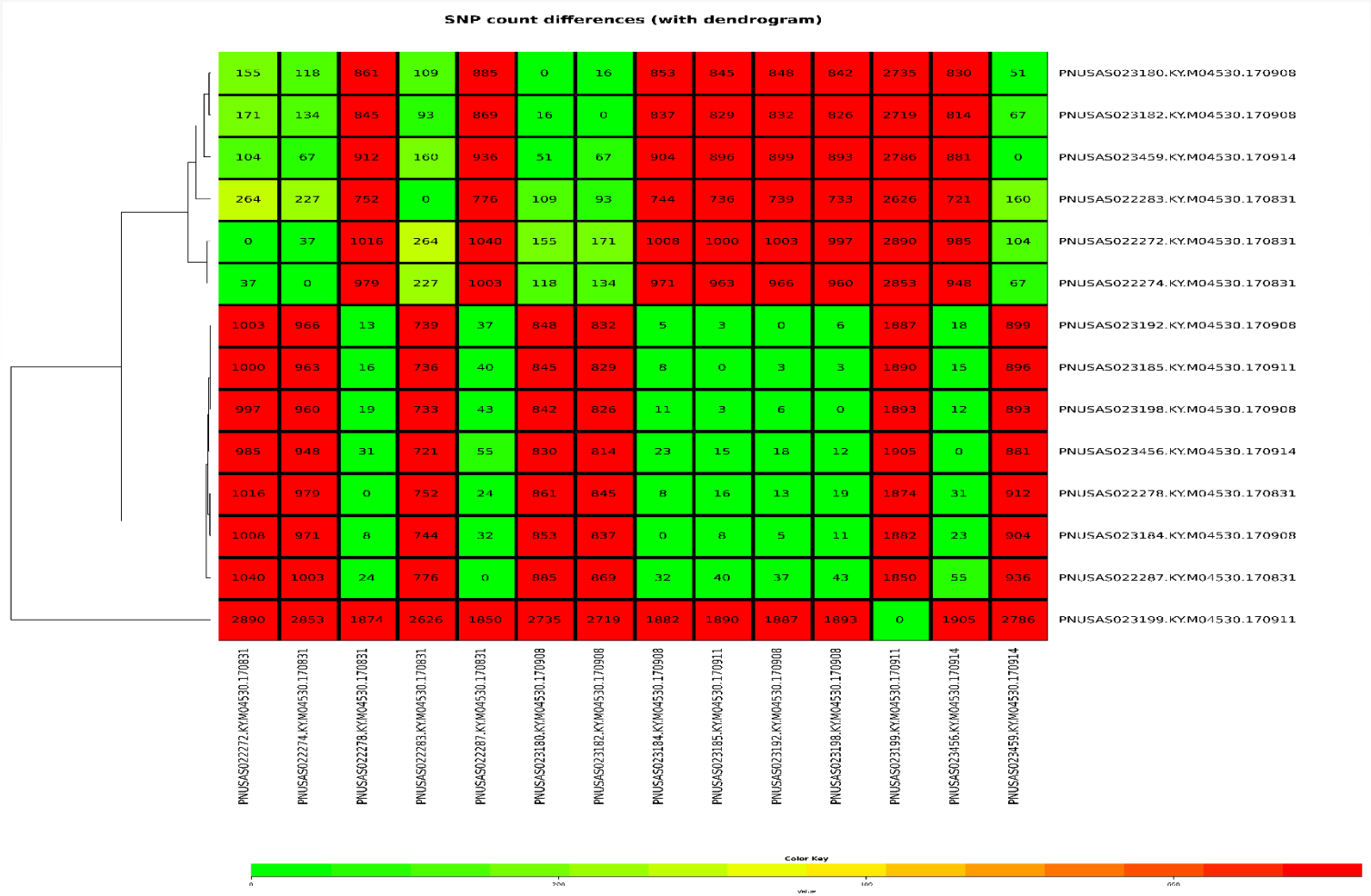
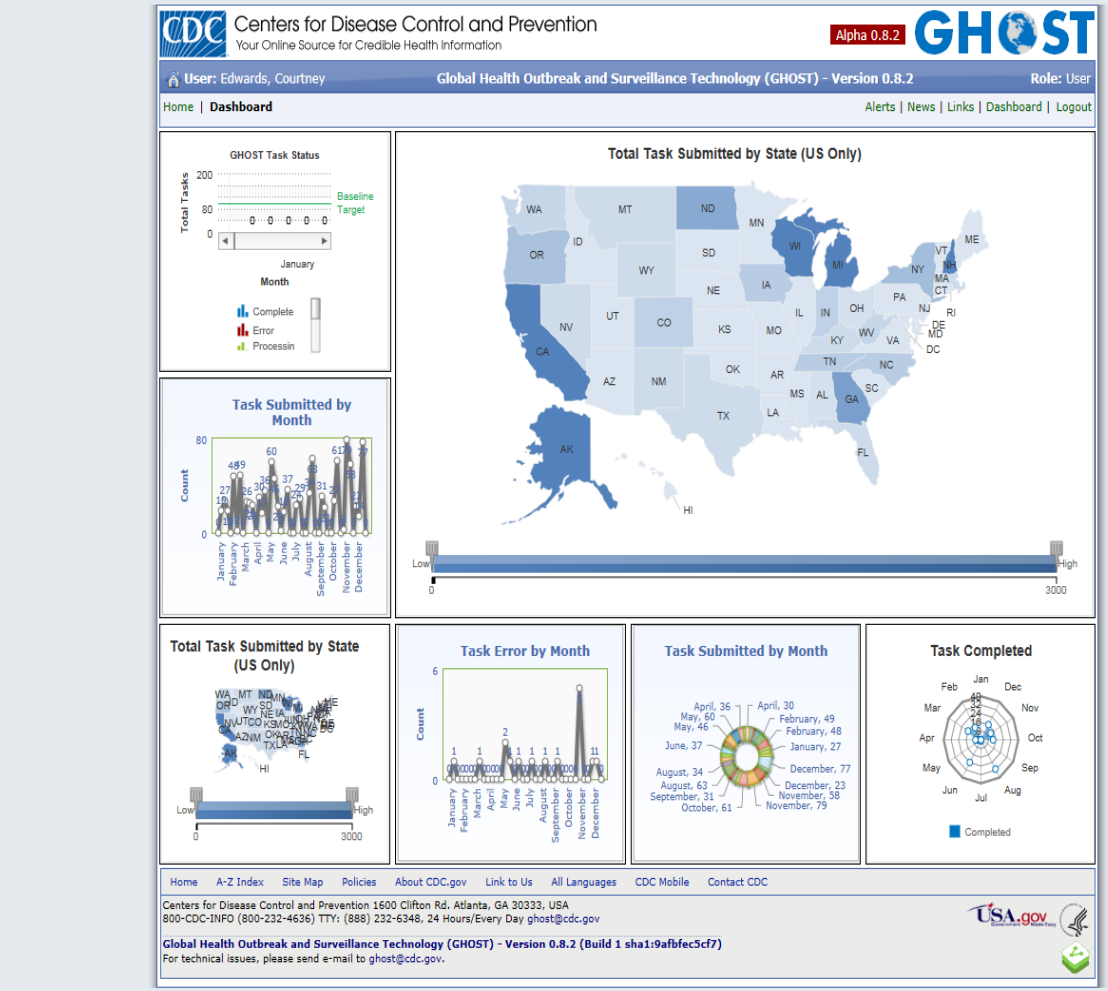
Salmonella javiana



GHOST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Logged Off
GHOST - Version 0.8.2 (Buil...
Centers for Disease Control and Prevention
Your Online Source for Credible Health Information
Alpha 0.8.2
GHOST
User: Edwards, Courtney
Global Health Outbreak and Surveillance Technology (GHOST) - Version 0.8.2
Role: User
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Alerts | News | Links | Dashboard | Logout
GHOST Task Status
Total Tasks
Baseline
Target
January
Month
Complete
Error
Processin
Total Task Submitted by State (US Only)
Task Submitted by Month
Count
Low
High
0
3000
Total Task Submitted by State (US Only)
Task Error by Month
Task Submitted by Month
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Task Completed
Completed
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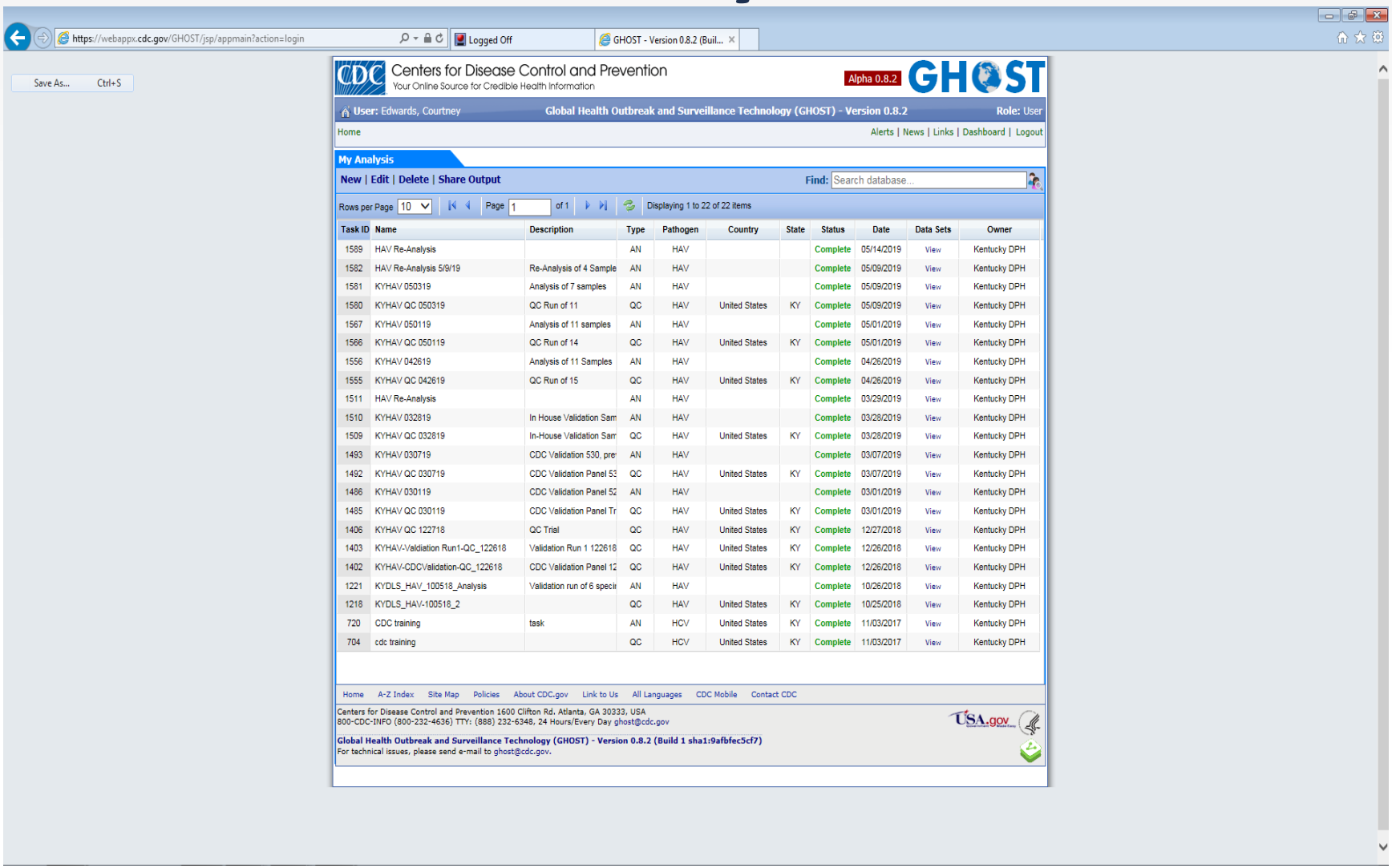
Global Health Outbreak and Surveillance Technology (GHOST) - Version 0.8.2 (Build 1 sha1:9afbfec5cf7)
For technical issues, please send e-mail to ghost@cdc.gov.
USA.gov

Analysis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Logged Off
GHOST - Version 0.8.2 (Buil...
Save As... Ctrl+S
Centers for Disease Control and Prevention
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Alpha 0.8.2
GHOST
User: Edwards, Courtney
Global Health Outbreak and Surveillance Technology (GHOST) - Version 0.8.2
Role: User
Home
Alerts | News | Links | Dashboard | Logout
My Analysis
New | Edit | Delete | Share Output
Find: Search database...
Rows per Page 10
Page 1 of 1
Displaying 1 to 22 of 22 items
Task ID | Name | Description | Type | Pathogen | Country | State | Status | Date | Data Sets | Owner
1589 | HAV Re-Analysis | | AN | HAV | | | Complete | 05/14/2019 | View | Kentucky DPH
1582 | HAV Re-Analysis 5/9/19 | Re-Analysis of 4 Sample | AN | HAV | | | Complete | 05/09/2019 | View | Kentucky DPH
1581 | KYHAV 050319 | Analysis of 7 samples | AN | HAV | | | Complete | 05/09/2019 | View | Kentucky DPH
1580 | KYHAV QC 050319 | QC Run of 11 | QC | HAV | United States | KY | Complete | 05/09/2019 | View | Kentucky DPH
1567 | KYHAV 050119 | Analysis of 11 samples | AN | HAV | | | Complete | 05/01/2019 | View | Kentucky DPH
1566 | KYHAV QC 050119 | QC Run of 14 | QC | HAV | United States | KY | Complete | 05/01/2019 | View | Kentucky DPH
1556 | KYHAV 042619 | Analysis of 11 Samples | AN | HAV | | | Complete | 04/26/2019 | View | Kentucky DPH
1555 | KYHAV QC 042619 | QC Run of 15 | QC | HAV | United States | KY | Complete | 04/26/2019 | View | Kentucky DPH
1511 | HAV Re-Analysis | | AN | HAV | | | Complete | 03/29/2019 | View | Kentucky DPH
1510 | KYHAV 032819 | In House Validation Sam | AN | HAV | | | Complete | 03/28/2019 | View | Kentucky DPH
1509 | KYHAV QC 032819 | In-House Validation Sam | QC | HAV | United States | KY | Complete | 03/28/2019 | View | Kentucky DPH
1493 | KYHAV 030719 | CDC Validation 530, pre | AN | HAV | | | Complete | 03/07/2019 | View | Kentucky DPH
1492 | KYHAV QC 030719 | CDC Validation Panel 53 | QC | HAV | United States | KY | Complete | 03/07/2019 | View | Kentucky DPH
1486 | KYHAV 030119 | CDC Validation Panel 52 | AN | HAV | | | Complete | 03/01/2019 | View | Kentucky DPH
1485 | KYHAV QC 030119 | CDC Validation Panel Tr | QC | HAV | United States | KY | Complete | 03/01/2019 | View | Kentucky DPH
1406 | KYHAV QC 122718 | QC Trial | QC | HAV | United States | KY | Complete | 12/27/2018 | View | Kentucky DPH
1403 | KYHAV-Valdiation Run1-QC_122618 | Validation Run 1 122618 | QC | HAV | United States | KY | Complete | 12/26/2018 | View | Kentucky DPH
1402 | KYHAV-CDCValidation-QC_122618 | CDC Validation Panel 12 | QC | HAV | United States | KY | Complete | 12/26/2018 | View | Kentucky DPH
1221 | KYDLS_HAV_100518_Analysis | Validation run of 6 specir | AN | HAV | | | Complete | 10/26/2018 | View | Kentucky DPH
1218 | KYDLS_HAV-100518_2 | | QC | HAV | United States | KY | Complete | 10/25/2018 | View | Kentucky DPH
720 | CDC training | task | AN | HCV | United States | KY | Complete | 11/03/2017 | View | Kentucky DPH
704 | cdc training | | QC | HCV | United States | KY | Complete | 11/03/2017 | View | Kentucky DPH
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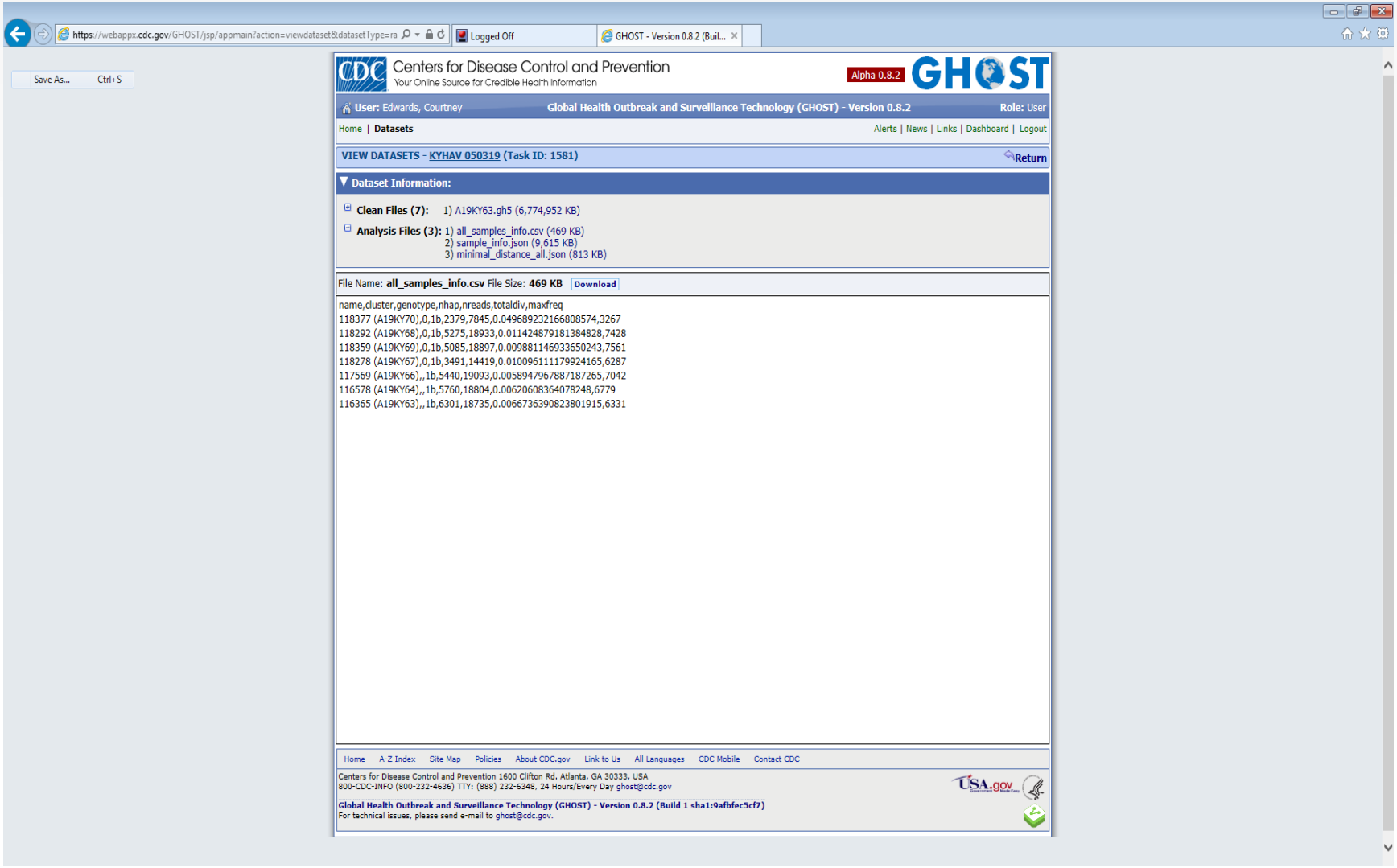
Initial Report



New Reports

Analysis Summary

N=49 samples were analyzed by the GHOST system. 81.63% (N=40) samples were found to match with known clusters. 18.37% (N=9) samples did not match with known clusters.

Genotype	Number	Proportion
1b	48	97.96%
1a	1	2.04%

Sample Table of Contents

1. 115695 (A19KY32) - matches A17 Cluster 1
2. 115771 (A19KY36) - matches A17 Cluster 1
3. 115978 (A19KY47) - matches A17 Cluster 1
4. 116301 (A19KY38) - matches A17 Cluster 1
5. 116367 (A19KY39) - matches A17 Cluster 1
6. 116368 (A19KY40) - matches A17 Cluster 1
7. 116369 (A19KY41) - matches A17 Cluster 1
8. 116579 (A19KY48) - matches A17 Cluster 1
9. 116976 (A19KY50) - matches A17 Cluster 1
10. 116977 (A19KY51) - matches A17 Cluster 1
11. 116978 (A19KY52) - matches A17 Cluster 1
12. 118278 (A19KY67) - matches A17 Cluster 1
13. 118292 (A19KY68) - matches A17 Cluster 1
14. 118302 (A19KY56) - matches A17 Cluster 1
15. 118359 (A19KY69) - matches A17 Cluster 1
16. 118377 (A19KY70) - matches A17 Cluster 1
17. 118385 (A19KY57) - matches A17 Cluster 1
18. 118925 (A19KY59) - matches A17 Cluster 1
19. 63458 (A19KY24) - matches A17 Cluster 1
20. 65065 (A19KY16) - matches A17 Cluster 1
21. 65114 (A19KY17) - matches A17 Cluster 1
22. 65118 (A19KY18) - matches A17 Cluster 1
23. 65125 (A19KY26) - matches A17 Cluster 1
21. 65114 (A19KY17) - matches A17 Cluster 1
22. 65118 (A19KY18) - matches A17 Cluster 1
23. 65125 (A19KY26) - matches A17 Cluster 1
24. 67423 (A19KY27) - matches A17 Cluster 1
25. 67610 (A19KY28) - matches A17 Cluster 1
26. 67627 (A19KY29) - matches A17 Cluster 1
27. 68168 (A19KY20) - matches A17 Cluster 1
28. 526 (A19KY8) - matches A16 Cluster 1
29. 527 (A19KY9) - matches A16 Cluster 1
30. 530 (A19KY15) - matches A16 Cluster 1
31. 537 (A19KY13) - matches A16 Cluster 1
32. 538 (A19KY14) - matches A16 Cluster 1
33. 68704 (A19KY30) - matches A16 Cluster 1
34. 115769 (A19KY35) - matches A17 Cluster 3
35. 116608 (A19KY49) - matches A17 Cluster 3
36. 117576 (A19KY53) - matches A17 Cluster 3
37. 63448 (A19KY22) - matches A17 Cluster 3
38. 115703 (A19KY34) - matches None
39. 116578 (A19KY64) - matches None
40. 118275 (A19KY54) - matches None
41. 535 (A19KY11) - matches None
42. 536 (A19KY12) - matches A16 Cluster 2
43. 59188 (A19KY21) - matches A17 Cluster 17
44. 63452 (A19KY23) - matches A17 Cluster 15
45. 115694 (A19KY31) - matches None
46. 116374 (A19KY42) - matches None
47. 117574 (A19KY45) - matches None
48. 116365 (A19KY63) - matches None
49. 117569 (A19KY66) - matches None

Samples Matching Active Clusters

This section contains samples which match to active major clusters in the GHOST reference set. As new clusters are identified they will be added to the reference set.

Cluster Matching Reference A17 Cluster 1 (N=2265 Cases)

The cluster contains 55.1% (N=27) of the samples analyzed. Genotype 1b.

Samples

115695 (A19KY32), 115771 (A19KY36), 115978 (A19KY47), 116301 (A19KY38), 116367 (A19KY39), 116368 (A19KY40), 116369 (A19KY41), 116579 (A19KY48), 116976 (A19KY50), 116977 (A19KY51), 116978 (A19KY52), 118278 (A19KY67), 118292 (A19KY68), 118302 (A19KY56), 118359 (A19KY69), 118377 (A19KY70), 118385 (A19KY57), 118925 (A19KY59), 63458 (A19KY24), 65065 (A19KY16), 65114 (A19KY17), 65118 (A19KY18), 65125 (A19KY26), 67423 (A19KY27), 67610 (A19KY28), 67627 (A19KY29), 68168 (A19KY20)

Closest Reference Sequences

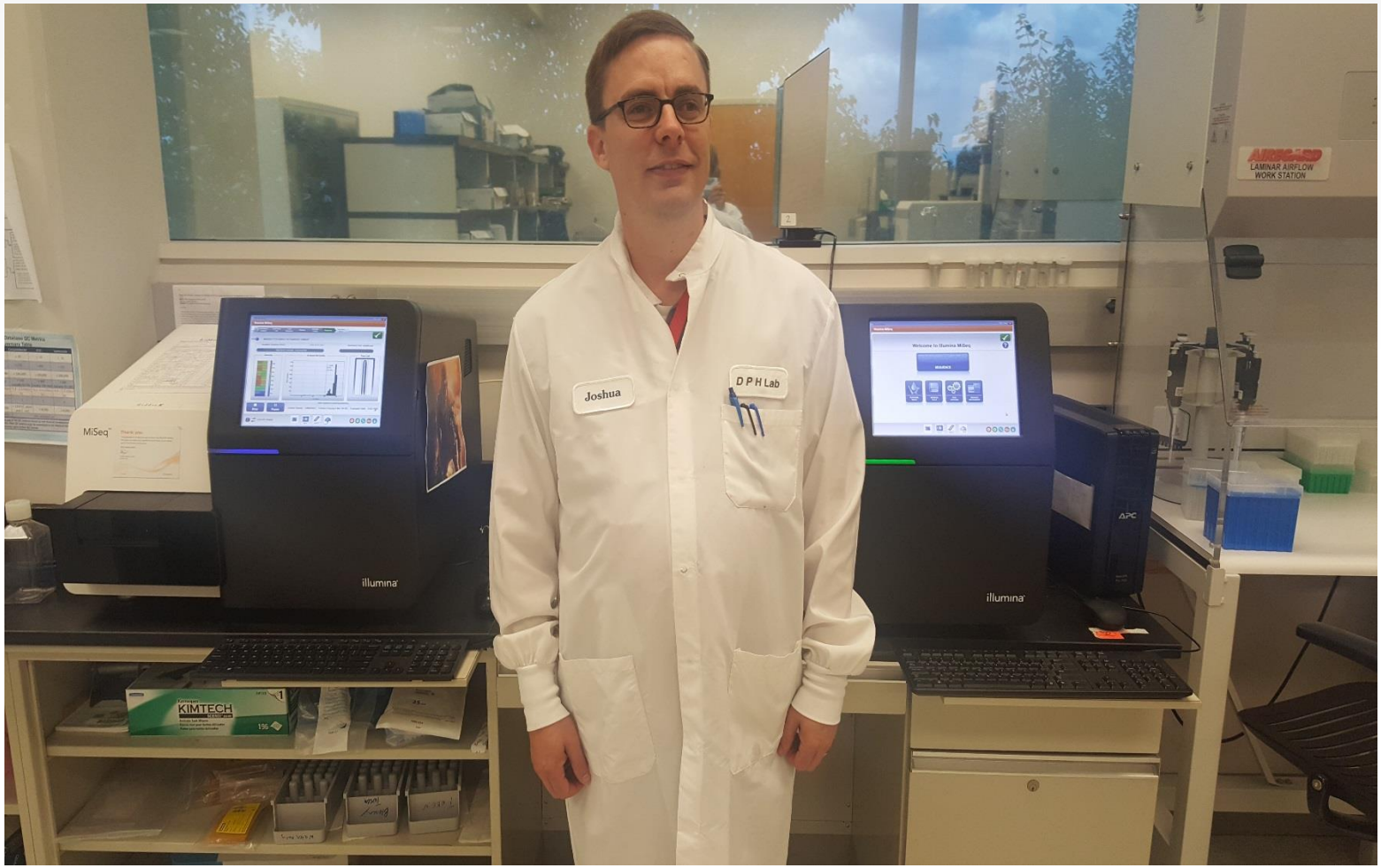
Reference	Distance (bp)	States seen
A17 Cluster 1	0	AL, AZ, CA, CO, FL, IL, IN, KY, MD, MI, MN, NC, NH, NY, OH, PA, SC, TN, Unknown, UT, VA, WA, WI, WV, WY
A17 Cluster 12	1	CA
A17 Cluster 5	1	CA, IN, KY, LA, MA, NY, PA, TN, UT, WA

Cluster Matching Reference A16 Cluster 1 (N=445 Cases)

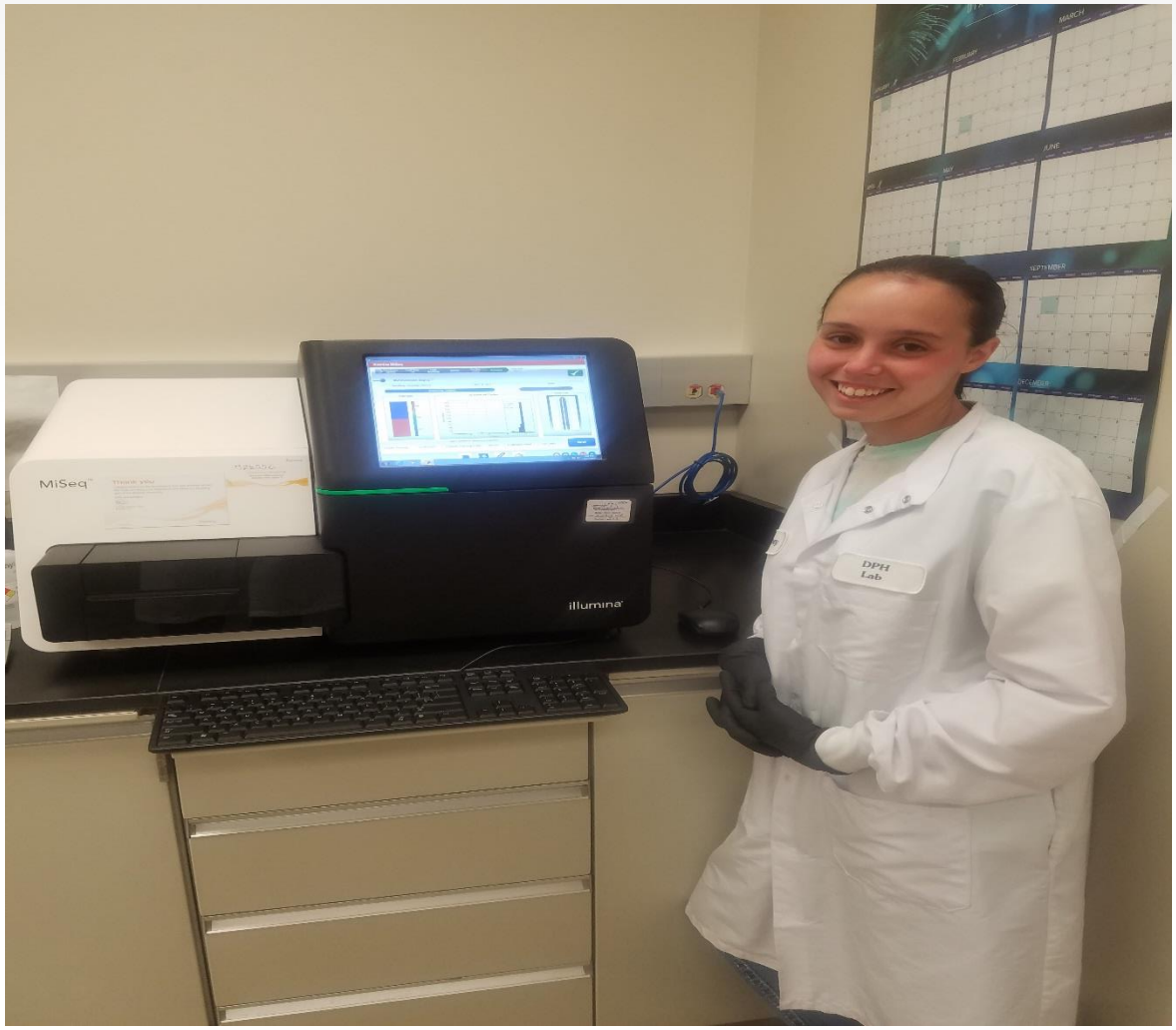
The cluster contains 12.24% (N=6) of the samples analyzed. Genotype 1b.

Samples

Riddick and Xander



Harold



Acknowledgements

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Associate Director of Pathology Informatics, University of Kentucky

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PulseNet USA
Center for Disease Control and Prevention

Yury Khudyakov, PhD
Viral Disease Branch, CDC

Courtney Edwards
Lab Scientist II, KY Division of Laboratory Services