

Respiratory Testing at OLS

Presented By:
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Associate Director of Clinical Services

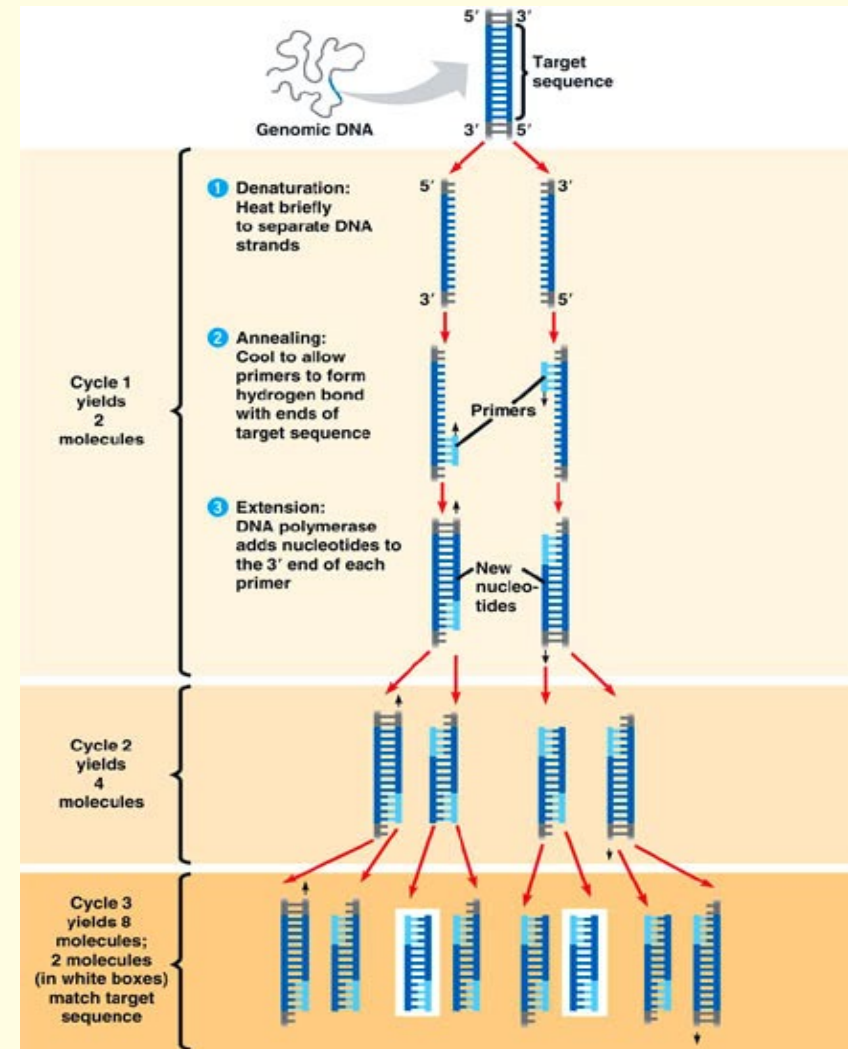


At the conclusion of this presentation, participants will be able to:

- **describe the different respiratory disease test methods available at OLS;**
- **identify which infectious agents can be detected;**
and
- **explain how to properly package and ship a specimen to OLS.**

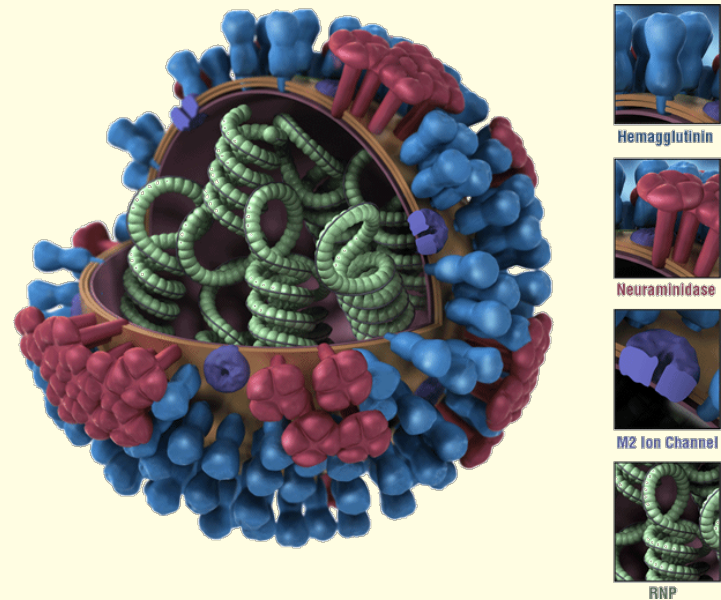


- PCR (polymerase chain reaction) is the primary method used at OLS
 - A process which amplifies single or few copies of nucleic acid (DNA, RNA) to generate millions of copies to increase detection.



Courtesy of: www.foodsafetywatch.com

- **OLS utilizes the CDC RT-PCR assay for Influenza**
 - **RT = reverse transcriptase; enzyme used to generate complementary DNA (cDNA) from an RNA template**
- **Specimens tested using A/B screen first, then reflexed to subtyping for A if positive**
- **Subtyping panel can detect some variants like H3N2v**



PCR (continued)

- **CDC RT-PCR assay contains 6 targets**
- **Each target corresponds to subtypes**
- **Designed to detect new and emerging strains**
- **OLS must send specimen to CDC for confirmation if variant is detected!**

TARGET	WHAT DOES IT MEAN?
infA	“seasonal” Influenza A
infB	“seasonal” Influenza B
pdmA	“swine-origin” Influenza A
pdmH1	“swine-origin” Influenza H1
infH1	“seasonal” Influenza AH1
infH3	“seasonal” Influenza AH3

EXAMPLE: infA+, pdmA+, infH3+ = Influenza AH3N2v

- **BioFire Torch**
- **Multiplex PCR = can detect multiple targets in one assay**
- **RP2.1 panel can detect 18 viruses and 4 bacteria**
- **Results available in about one hour**
- **Used by OLS for a subset of specimens that are negative for Influenza and in outbreaks**



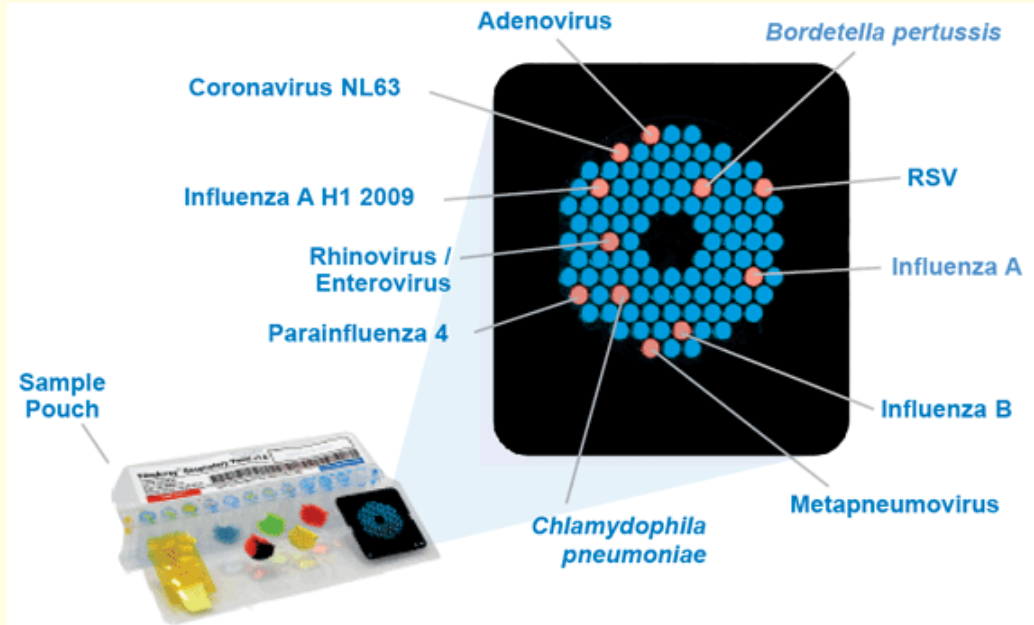
BioFire Torch

VIRAL TARGETS

- Adenovirus
- SARS-CoV-2
- Coronavirus HKU1
- Coronavirus NL63
- Coronavirus 229E
- Coronavirus OC43
- Human Metapneumovirus
- Human Rhinovirus/Enterovirus
- Influenza A
- Influenza A/H1
- Influenza A/H3
- Influenza A/H1-2009pdm
- Influenza B
- Parainfluenza Virus 1
- Parainfluenza Virus 2
- Parainfluenza Virus 3
- Parainfluenza Virus 4
- Respiratory Syncytial Virus

BACTERIAL TARGETS

- *Bordetella pertussis*
- *Chlamydomphila pneumoniae*
- *Mycoplasma pneumoniae*
- *Bordetella parapertussis*



- **Proper collection of specimens for respiratory testing is crucial!**
- **Use only supplies provided by OLS or those recommended for use**
- **Do not collect specimen if patient is on antiviral therapy**
 - **If specimen must be collected after therapy has begun, do so within 24 hours**
- **Specimens can only be transported in approved viral transport media (VTM, UTM)**
- **Do not collect specimens in saline, buffer, or any other media**
- **Do not use cotton swabs, calcium alginate swabs, or swabs with wooden shafts**

Collection (continued)

MEDIA

- VTM, UTM
- NO saline



SWABS

- Only polyester, Dacron, rayon
- NO cotton



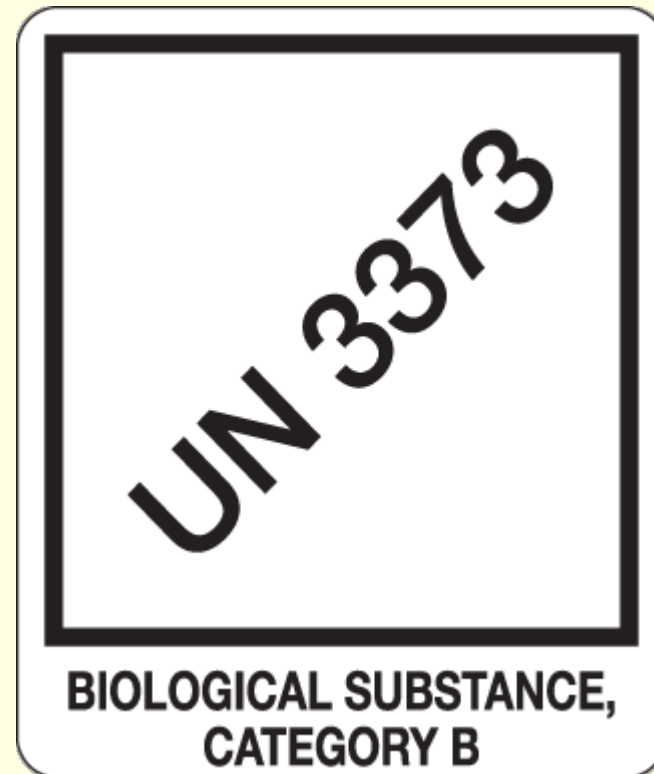
Specimen Handling

- After collection, immediately refrigerate
- Keep refrigerated until shipping
- If unable to reach OLS within 72 hours of collection, specimen must be FROZEN at $-80^{\circ}\text{C} \pm 10^{\circ}\text{C}$
 - Recommended to use manual defrost freezer
 - Freeze/thaw cycles will degrade RNA



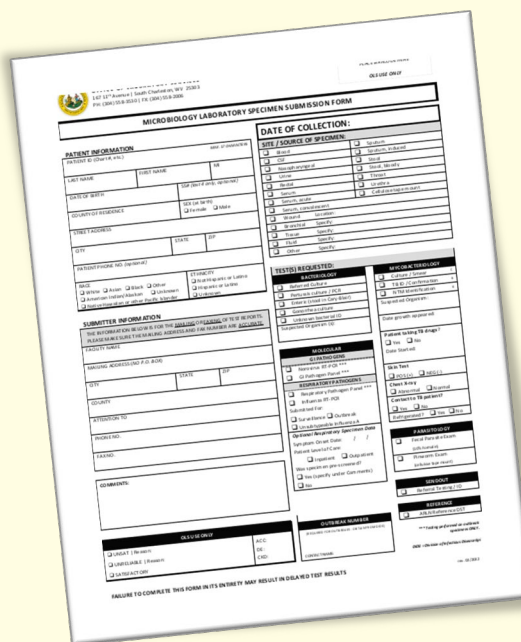
Shipping

- All specimens must be shipped on cold packs
- Use current IATA, DOT shipping regulations
- Overnight shipping preferred
- Avoid USPS if at all possible



OLS Submission Form

- Can be downloaded and printed from OLS website:
<https://dhhr.wv.gov/ols>
- Go to Forms page
(https://dhhr.wv.gov/ols/labs/Documents/Micro/Test%20Request%20Form_Micro_UPDATED-10Feb2022.pdf)



The image shows a 'MICROBIOLOGY LABORATORY SPECIMEN SUBMISSION FORM' from the West Virginia Department of Health & Human Resources. The form is divided into several sections: PATIENT INFORMATION, DATE OF COLLECTION, SITE / SOURCE OF SPECIMEN, TESTS REQUESTED, SUBMITTER INFORMATION, and COMMENTS. It includes checkboxes for various specimen types and test requests, and a section for the submitter's name and address. The form is tilted slightly to the right.

OLS Collection Kit Request Form

- Can be downloaded and printed from OLS website:
<https://dhhr.wv.gov/ols>
- Go to Forms page
(https://dhhr.wv.gov/ols/forms/Documents/Specimen%20Kit%20Requisition%20Form_Flu_Apr2022-FILLABLE.pdf)

INFLUENZA/RESPIRATORY PATHOGEN SPECIMEN COLLECTION KIT REQUEST FORM

REQUEST FROM:

ORGANIZATION: _____

STREET ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

DATE OF POSITION REQUEST: _____ TIME: _____

PHONE NUMBER: _____

COLLECTION KIT	QUANTITY	
	ORDERED	SENT
Complete Collection Kit Includes: viral transport media (1), nasopharyngeal swab (1), plastic biohazard bag (2), ice pack (1), absorbent material, shipping box, specimen submission/request form.		


INDIVIDUAL KIT COMPONENTS	QUANTITY	
	ORDERED	SENT
Transport Media (VTM or UTM)		
Nasopharyngeal Swabs		
Biohazard Bag, 95Pa		
Biohazard Bag, Rippered (with absorbent material)		
FedEx® Return Shipping Label		
Shipping Box, insulated		

NOTE: Specimen Submission Test Request Forms can be downloaded from our website at https://dhhr.wv.gov/ols/forms/Specimen%20Kit%20Requisition%20Form_Flu_Apr2022-FILLABLE.pdf

CONTACT INFORMATION	
Section/Unit	Extension
Molecular Unit	20828
Containers Unit	20132

STATE OF WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES BUREAU FOR PUBLIC HEALTH
OFFICE OF PUBLIC HEALTH SERVICES
100 UNIVERSITY STREET CHARLESTON, WV 25309
PHONE: (304) 251-3000 FAX: (304) 251-3001

Influenza PCR



WVDHHR/BPH - Office of Laboratory Services
167 11th Avenue, South Charleston, WV 25303
Phone: (304) 558-3530 Fax: (304) 558-6210
Andrea M. Labik, Sc.D. - Laboratory Director

MCRO
Virology Isolation

Lab Number: M12001306-01 **Submitter:** [REDACTED]
Submitter #: [REDACTED] **Patient Name:** [REDACTED]
Patient Name: [REDACTED] **Address:** [REDACTED]
Address: [REDACTED] **Attention To:** MICRO LAB
Phone #: [REDACTED] **Birth Date:** [REDACTED]
Age: [REDACTED] **Sex:** [REDACTED] **Patent ID:** [REDACTED]
Last 4 SSN: [REDACTED]

Specimen Source: Nasopharyngeal **Other:** [REDACTED]
Date Collected: 04/19/2012
Date Received: 04/24/2012
Comments:

Influenza PCR

Result	Interpretation	Date Reported	Tech ID
Positive A H3	Influenza A H3 viral RNA detected by PCR	04/24/2012	E016077


Comments:

Report Approved By: MS541B **Date Reported:** 04/25/2012

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Respiratory Virus Panel



WVDHHR/BPH - Office of Laboratory Services
167 11th Avenue, South Charleston, WV 25303
Phone: (304) 558-3530 Fax: (304) 558-6210

Laboratory Results
Virology Isolation
Final Report

Lab Number: E22M0[REDACTED]-01 **Submitter:** [REDACTED]
Submitter #: [REDACTED] **Patient Name:** [REDACTED]
Patient Name: [REDACTED] **Address:** [REDACTED]
Address: [REDACTED] **Attention To:** [REDACTED]
Phone #: [REDACTED] / Kanawha **Birth Date:** [REDACTED]
Age: [REDACTED] **Sex:** Male **Patent ID:** [REDACTED]
Last 4 SSN: [REDACTED]

Specimen Source: Nasopharyngeal **Other:** [REDACTED]
Date Collected: 08/30/2022
Date Received: 08/30/2022
Comments:

Respiratory Panel

Analyte	Result	Interpretation	Date Resulted	Tech ID
2019-nCoV PCR	Not Detected	SARS-CoV-2 RNA not detected.	08/30/2022	E040557
Adenovirus	Negative	Adenovirus RNA not detected.	08/30/2022	E040557
Bordetella pertussis	Negative	B. pertussis DNA not detected.	08/30/2022	E040557
Chlamydia pneumoniae	Negative	C. pneumoniae DNA not detected.	08/30/2022	E040557
Coronavirus 229E	Negative	Coronavirus 229E RNA not detected.	08/30/2022	E040557
Coronavirus HKU1	Negative	Coronavirus HKU1 RNA not detected.	08/30/2022	E040557
Coronavirus NL63	Negative	Coronavirus NL63 RNA not detected.	08/30/2022	E040557
Coronavirus OC43	Negative	Coronavirus OC43 RNA not detected.	08/30/2022	E040557
Human Enterovirus/Rhinovirus	Positive	Enterovirus/Rhinovirus RNA detected.	08/30/2022	E040557
Human Metapneumovirus	Negative	Metapneumovirus RNA not detected.	08/30/2022	E040557
Influenza A	Negative	Influenza A RNA not detected.	08/30/2022	E040557

Attention To: Primary Contact
[REDACTED]

Date Printed: 09/06/2022 16:14 Page 1 of 2

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Summary

- **OLS provides Influenza and expanded respiratory virus screening year-round**
- **Proper collection of specimens for respiratory virus testing is critical to ensure quality results**
- **Package and ship your specimens according to current regulations**
- **Contact OLS with ANY questions! We are here to help.**

Office of Laboratory Services
167 11th Avenue
South Charleston, WV 25303
304-558-3530
<http://dhhr.wv.gov/ols>

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Courtesy of: www.umcsn.com