

# REALM PROJECT

REopening Archives, Libraries, and Museums

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#REALMproject



# Panelists

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# We want to hear from you!



- Chat
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# Where are you today?



# IMLS

- Project funder
- Consult on project goals and activities
- Coordinate formation of project steering committee and working groups

The Institute of Museum and Library Services is the primary source of federal support for the nation's libraries and museums. We advance, support, and empower America's museums, libraries, and related organizations through grantmaking, research, and policy development. Our vision is a nation where museums and libraries work together to transform the lives of individuals and communities.

- **REALM Project steering committee**

Comprised of leaders from across the archive, library, museum, and scientific fields that are meeting regularly to provide guidance through the duration of the research study.

- **REALM working groups**

- REALM Operations Working Group
- REALM Scientific Working Group

Bringing in the perspectives, needs and interpretations from across individual institutions, consortial systems, and member organizations.

# Battelle

- Nonprofit contract research institute headquartered in Columbus, Ohio
- Research and development across public health, consumer, industrial, medical, energy, national security
- Division of biodefense & emerging infectious diseases including a biosafety Level (BSL)-3 laboratory
- SARS-CoV-2 Critical Care Decontamination System

# OCLC

- Lead and manage execution of project deliverables
- Coordinate Battelle scientific research
- Collect, synthesize stakeholder input to inform decisions
- Activate a cross-sector communication network
- Publish and distribute research and information to the archives, libraries and museums communities

# Project activities

- Literature reviews of published science
- Ongoing engagement with representatives and subject matter experts from archives, libraries, and museums
- Laboratory testing of materials
- Synthesize the above inputs into toolkit resources
- Share project information and toolkit resources

# REALM Project research

- Battelle is conducting laboratory studies of how long SARS-CoV-2 survives on materials commonly found in libraries, archives, and museums.
  - Test 1 results published on June 22, 2020.
  - Test 2 results published on July 20, 2020.
  - Test 3 results to be published in August.
  - Test 4 initiated on July 31, 2020.
- Materials testing in sets of five items per test.
- Systematic Literature Review of SARS-CoV-2 literature available as of May 2020; published on June 17, 2020.
- A second literature review initiating in August, to be published in September.

# PHASE 1

**MAY –  
AUGUST 2020**

**Preparing for  
reopened libraries:  
Research on high-priority  
materials and workflows**

# PHASE 2

**JUNE –  
OCTOBER 2020**

**Additional research  
to support operations  
of libraries, archives,  
and museums**

# PHASE 3

**OCTOBER 2020 –  
SEPTEMBER 2021**

**Monitor, update,  
and, communicate**

# LITERATURE REVIEWS

# Phase 1 literature review questions



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**How might the virus spread through public library general operations?**



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**How long does the virus survive on material surfaces through environmental attenuation? (Virus dying naturally, without intervention.)**

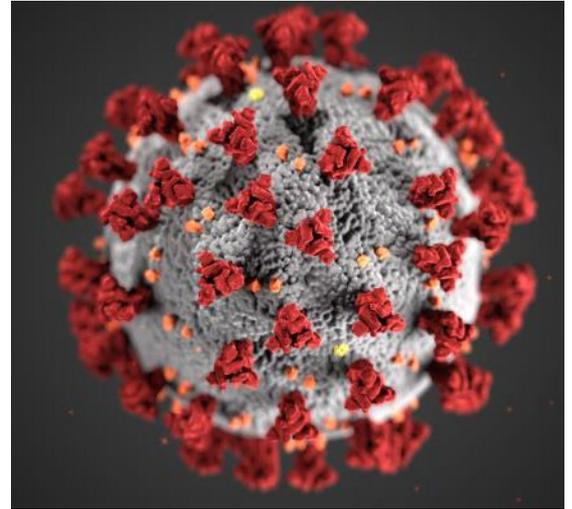


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**How effective are various prevention and decontamination measures that are readily available to public libraries in the near term? (Cleaning agents, PPE, shields, etc.)**

# State of COVID-19 research

- Because SARS-CoV-2 is emerging, knowledge about it is a work in progress; scientists are actively working to study and understand the virus.
- **The human infectious dose is still unknown.** Studies of other viruses (e.g. SARS-CoV, MERS, influenza) have shown a wide range.
- More empirical studies and peer-reviewed publications are needed to verify, expand, correct, and refute results from early work and fill in gaps in the research.
- First literature review was completed in May.
- A second review will be conducted this month.



# How the virus spreads

From the review of published scientific literature:

- SARS-CoV-2 is generally thought to spread via
  1. Direct transmission: virus-containing water droplets expelled from infected persons
  2. Indirect transmission: objects, or fomites, can harbor the virus for an extended period of time after being contaminated by an infected individual
- Other areas that require more exploration are aerosol particle transmission and human matter (in solid and aerosol)
- Environmental factors such as humidity, temperature, ventilation/air flow, and air conditioning may also affect the spread of SARS-CoV-2



# Survival of virus on surfaces

From the review of published scientific literature:

- If SARS-CoV-2 is transferred to a physical surface, its survival time appears to vary based on material composition and roughness, before dying off on its own through natural attenuation.
- A few early studies (not peer-reviewed) reported that the virus may survive longer on plastics and stainless steel than on paper products and other metals, such as copper.
- However, it is not possible to draw firm conclusions from the results:
  - Small number of studies
  - Inconsistent experimental design



# Prevention and decontamination

Researchers suggested several feasible, low-cost options for reducing the presence of SARS-CoV-2, which may help keep prevent spread:

- **Clean surfaces often**
- **Practice social distancing**
- **Wash hands frequently**
- **Wear personal protective equipment (PPE)**

Other factors that may impact survivability and help control spread may be ways that need more studies to find out if they work:

- **Heat treatment**
- **Sunlight and other light-based treatments**
- **Ventilation systems**
- **Open spaces**





# What is the current state of facilities operations at your organization?

Facilities are not open to the public  
or staff

Facilities are not open to the public,  
but some or all staff are on site

Facilities are partially open, with  
limited services, and/or programs

Facilities are fully open to  
visitors/patrons

# LAB TESTING



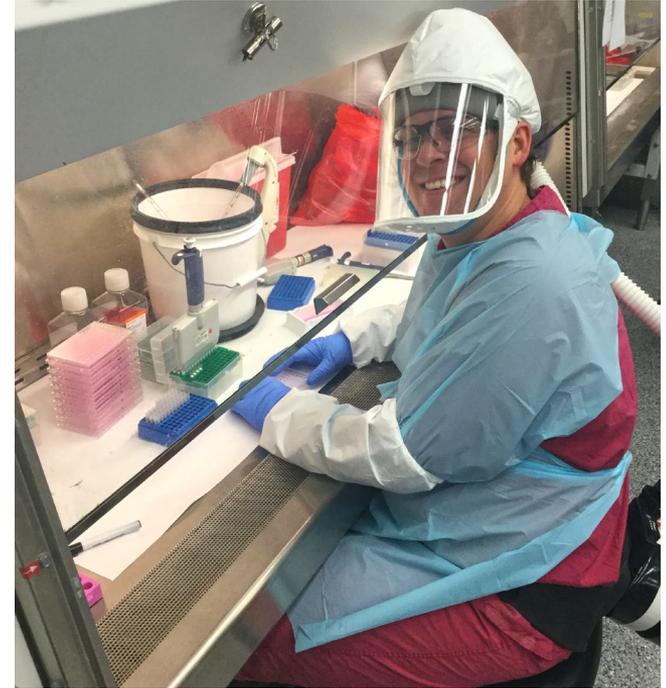
# Testing overview

## Objectives

- Determine the affect of ambient environmental conditions on the SARS-CoV-2 virus when applied to common materials found in libraries, archives and museums
- Provide data to consider for selecting potential quarantine durations before materials can return to public circulation

## Experimental design

- 5 test rounds, 5 material types per round
- Droplets of live virus applied to material surface via 'fake spit'
- Materials stored in stacked or unstacked configurations
- Quantity of viable virus was measured at selected time points to capture the attenuation or drop in total virus

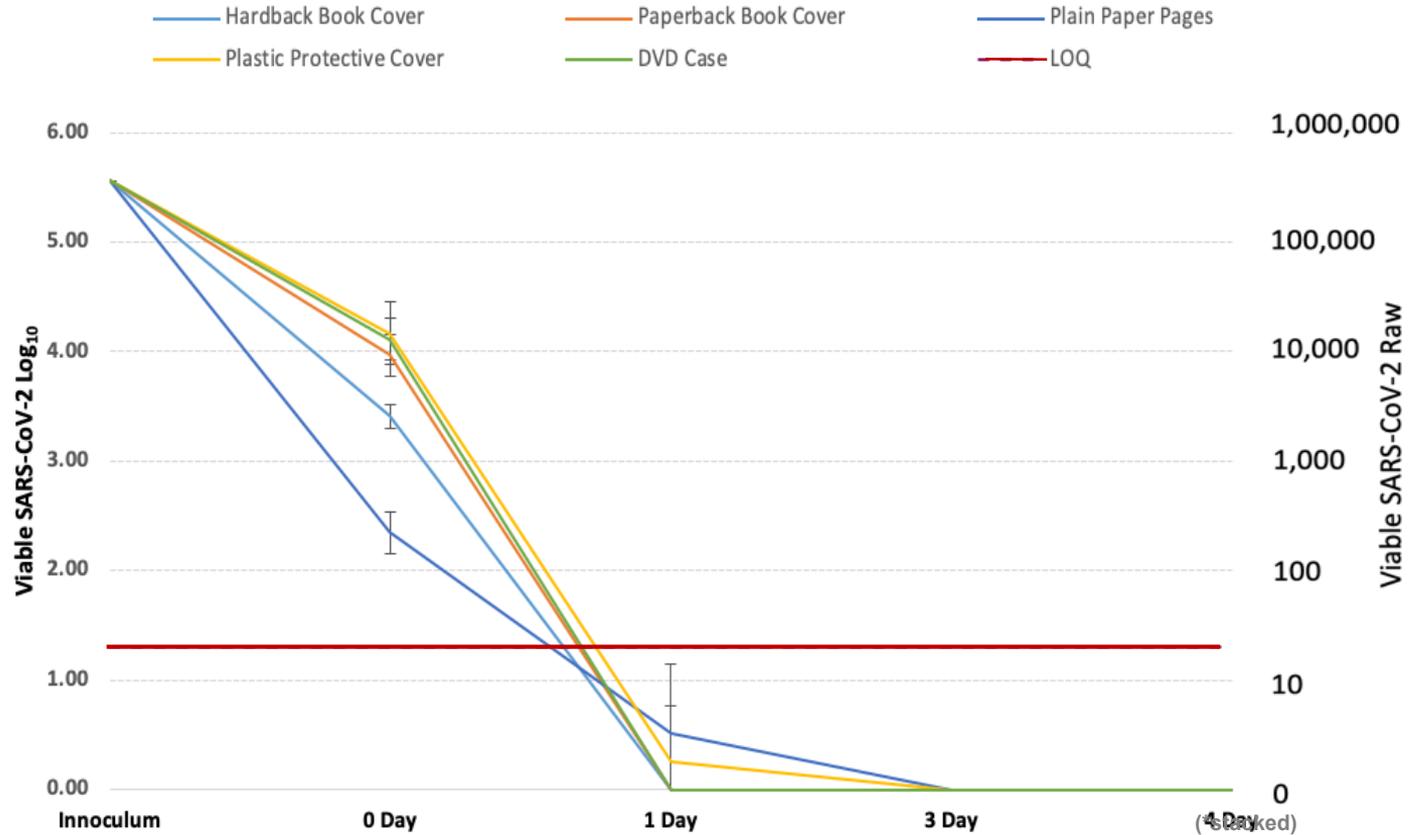


# Testing walkthrough

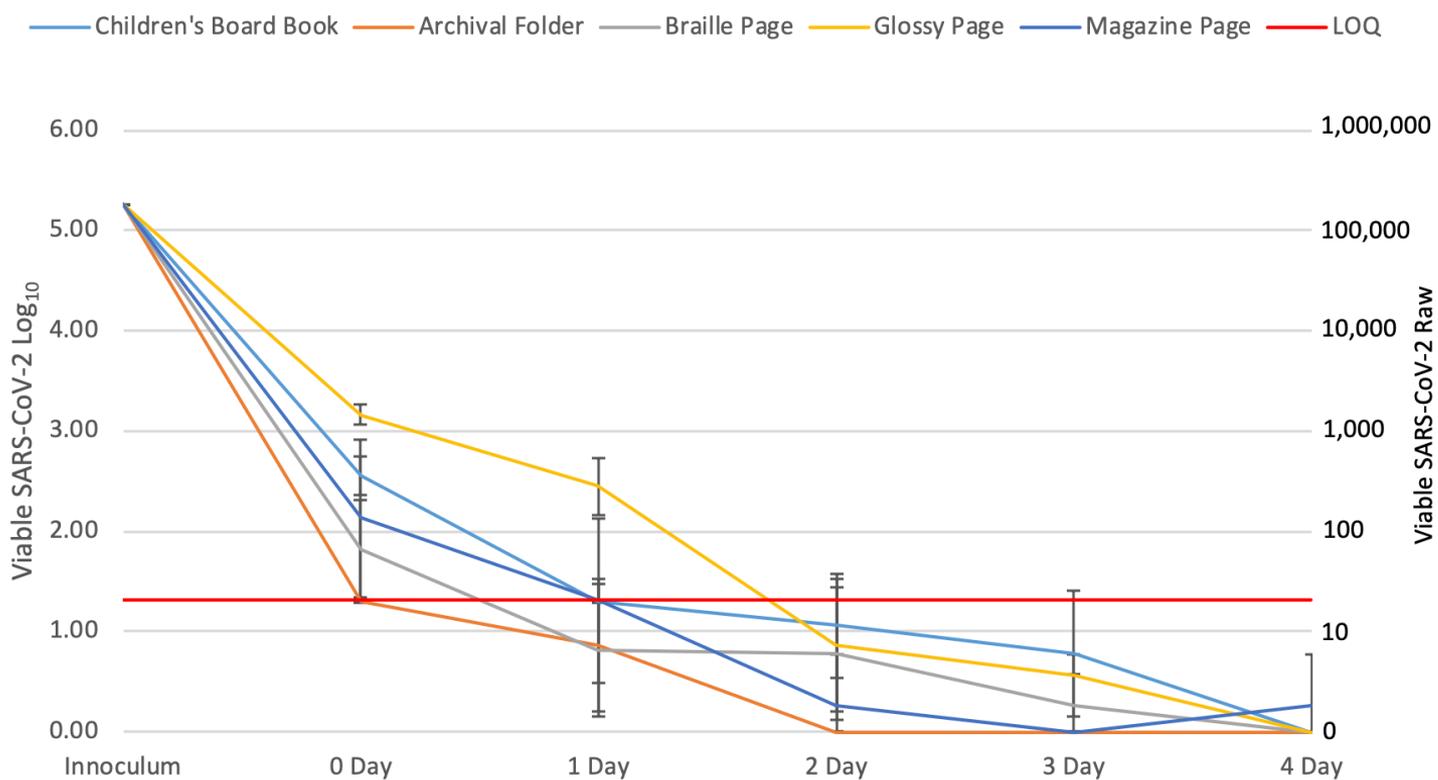
- Material prep:
  - Cut each material type into rectangular coupons
- Material inoculation:
  - Apply droplets of virus stock solution with a known starting concentration of virus.
- Environmental testing and analysis:
  - At each timepoint, a set of coupons are removed and processed to measure the quantity of virus, typically on a Log scale (e.g. 5 Log = 100k virus count).
- Limit of quantitation (LOQ):
  - Once the virus count drops below 13.1, researchers can only determine the presence or absence of virus, manually under the microscope.
- Limit of detection (LOD):
  - Absence of virus in material sample or complete attenuation.



# Test 1 SARS-CoV-2 natural attenuation (unstacked\*)



# Test 2 SARS-CoV-2 natural attenuation (stacked)



# Test 1 and Test 2 results (10 items)

Test #	ITEM	ATTENUATION DAYS	CONFIGURATION
1	Hardback book cover	1	Not stacked
1	Softback book cover	1	Not stacked
1	Plain paper pages	3	Inside closed book
1	Plastic book covering	3	Not stacked
1	DVD case	1	Not stacked
2	Braille paper pages	4	Stacked
2	Glossy pages in coffee table book	4	Stacked
2	Children's board book (inside)	4	Stacked
2	Magazine pages	4*	Stacked
2	Archival folders	2	Stacked

\* The magazine pages showed a *trace* amount of virus at four days. Day four was the final timepoint tested.

# Test 3 on plastic materials

- Talking book cassettes (ABS)
- DVD (polycarbonate)
- Acrylic sheet (Plexiglass)
- Low-density polyethylene (LDPE) bag
- High-density polyethylene (HDPE) container

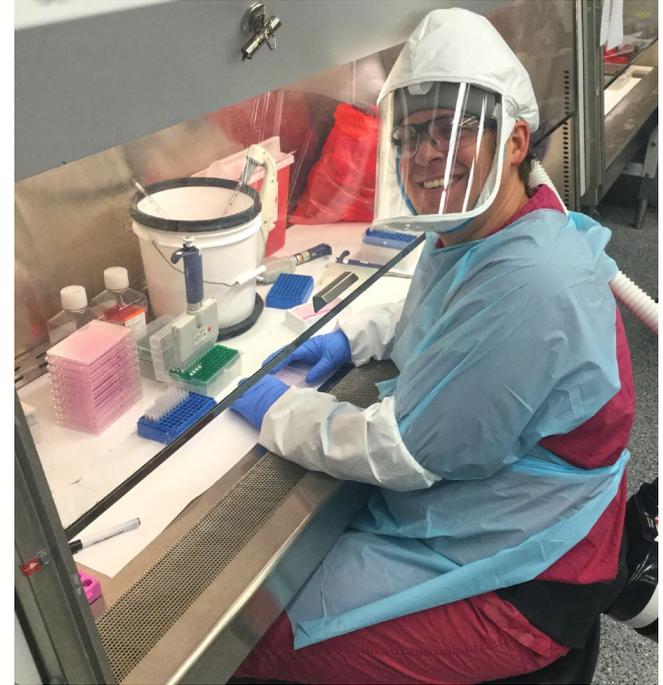


# Test 4, stacked materials

- Hardcover books, stacked
  - Trade paperback books, stacked
  - Plastic protective covering, stacked
  - DVD cases, stacked
  - Expanded polyethylene foam
- Testing began July 31
  - Timepoint days 0-2-3-4-6
  - Results expected in early September

# Coming soon

- Phase 2 lab testing (10 items total)
- Phase 2 literature review complete in September
- New project website
- Shareable resources in a variety of formats that will apply the research
- Continuing to learn from archives, libraries and museums during their reopening to gain real-world perspectives.





# What type of information would help you the most in the coming months? (Choose TWO.)

An online community to connect with colleagues around COVID-19 questions and procedures.

Printable materials to help communicate COVID-19 information to stakeholders and/or the public.

Short videos to explain test results and the testing science.

Webinars to learn about test results and new resources.

Additional clarification on the science and testing being conducted by Battelle.

A summary of current research on COVID-19

# Questions?

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