



# Responding to the COVID Crisis: Rapid Testing & Keeping Students On Campus

April 15, 2021 | 12:15 - 1 PM ET



**Moderator:** Debra Summers  
University of Illinois  
UC Berkeley



**Jay Walsh**

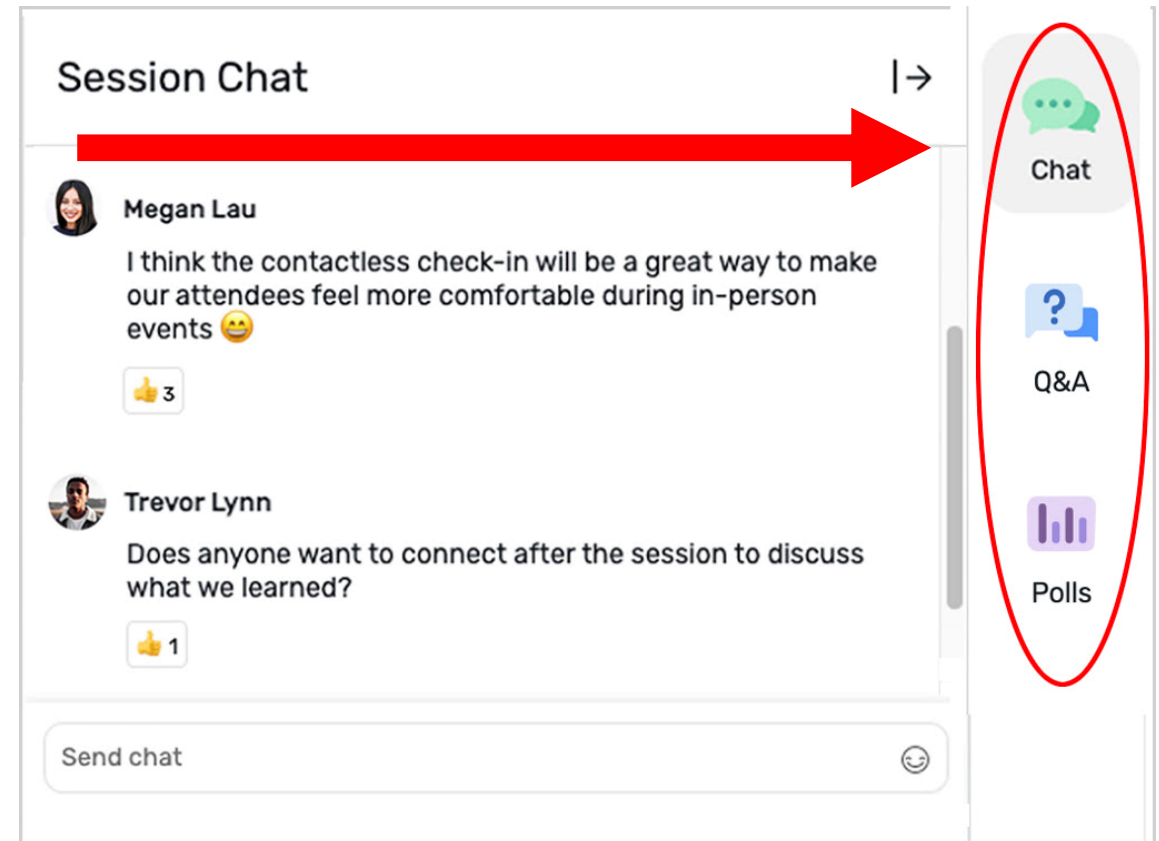
## TECH SUPPORT

### Having technical problems?

Look for the Tech Q&A doc in chat on the right side of your screen.

Or email [info@uidp.net](mailto:info@uidp.net).

If the session shuts down due to connection issues, do NOT close the Attendee Hub window. The room will reopen just a couple of minutes.

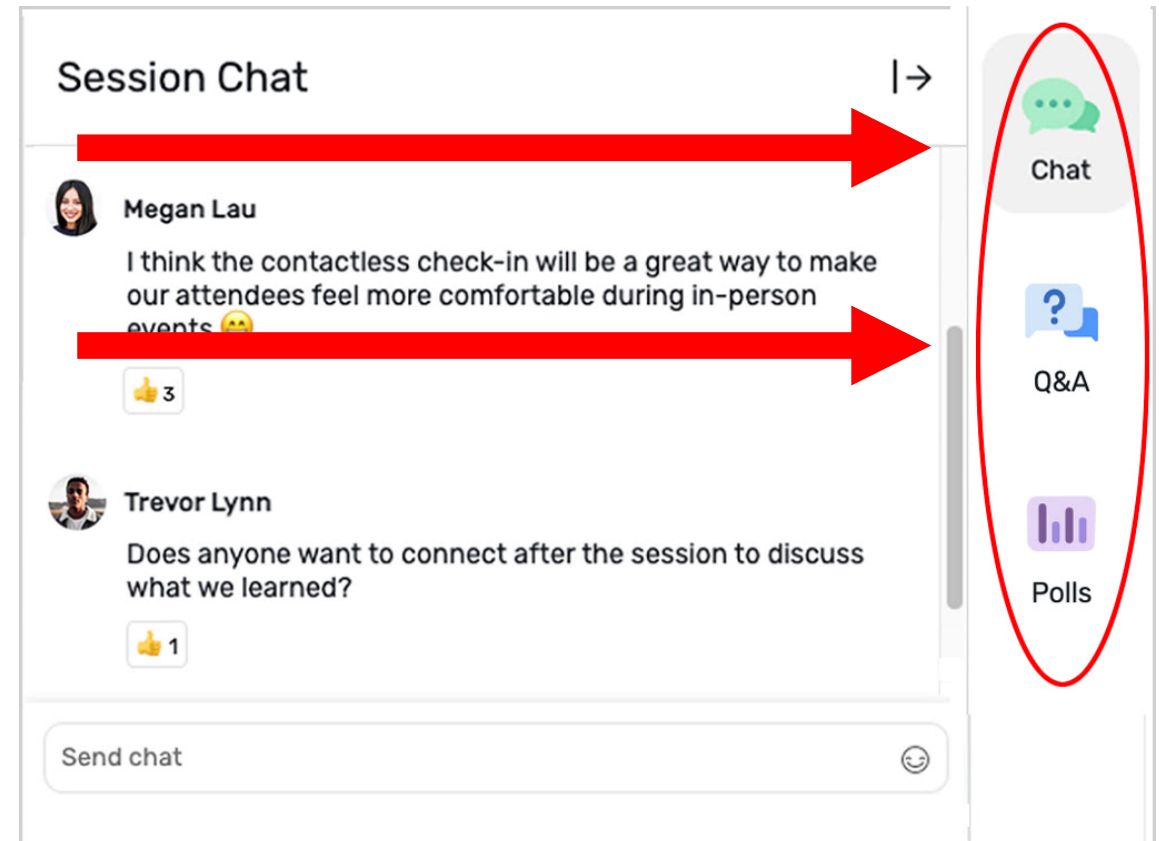


# how to PARTICIPATE

## Live Chat and Q&A

At the right of your screen

- Chat with one another
- Submit questions using the Q&A

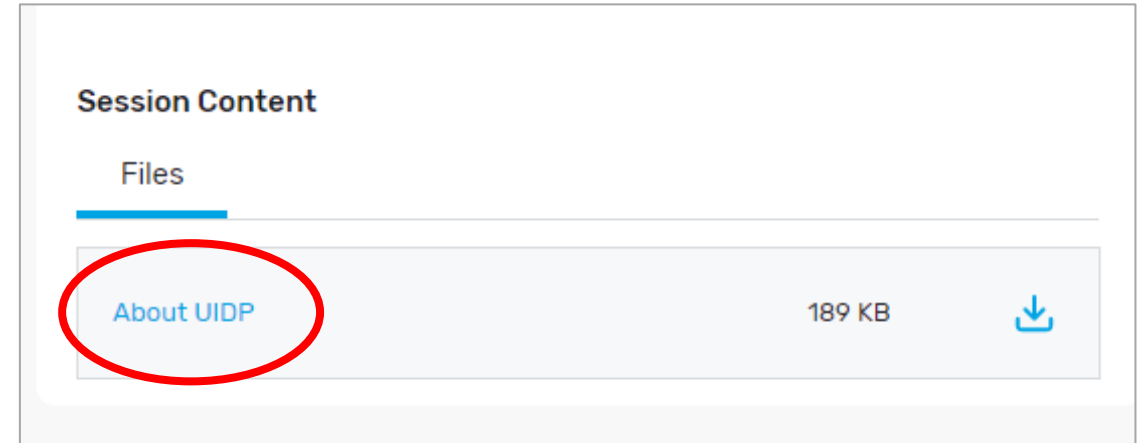


# how to PARTICIPATE

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## Handouts and Recordings

- Download available handouts from the Session Content tab on the bottom of your screen.
- Session recordings will be posted in the Attendee Hub. You will be notified via email when they are available at uidp.org.



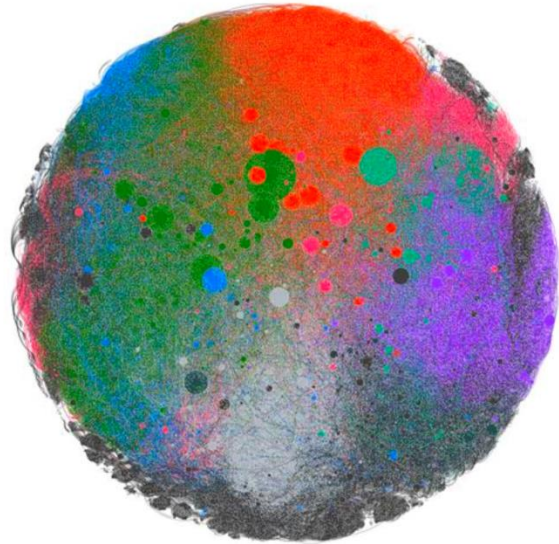


# Responding to the COVID Crisis: Rapid Testing & Keeping Students On Campus

**Jay Walsh**  
on behalf of SHIELD Team, including  
**Martin Burke, Rebecca Smith, Nigel Goldenfeld, Paul Hergenrother, Tim Fan, Bill Sullivan**  
University of Illinois at Urbana-Champaign



# Target



Modeling to guide test frequency and scheduling

# TEST



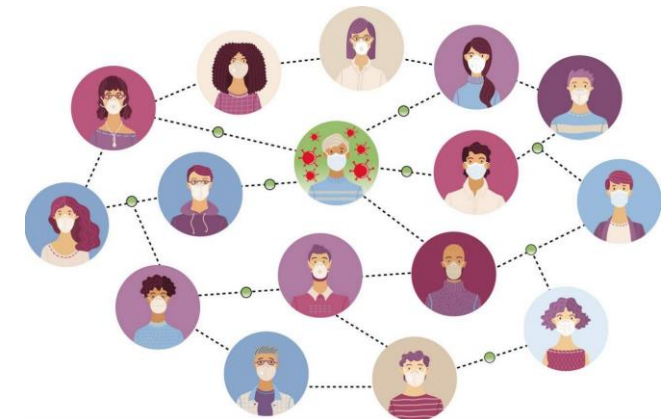
**covidSHIELD Test**  
direct saliva → PCR test for SARS-CoV-2 that is fast and scalable

# Tell



Test results, exposure notifications, and access status

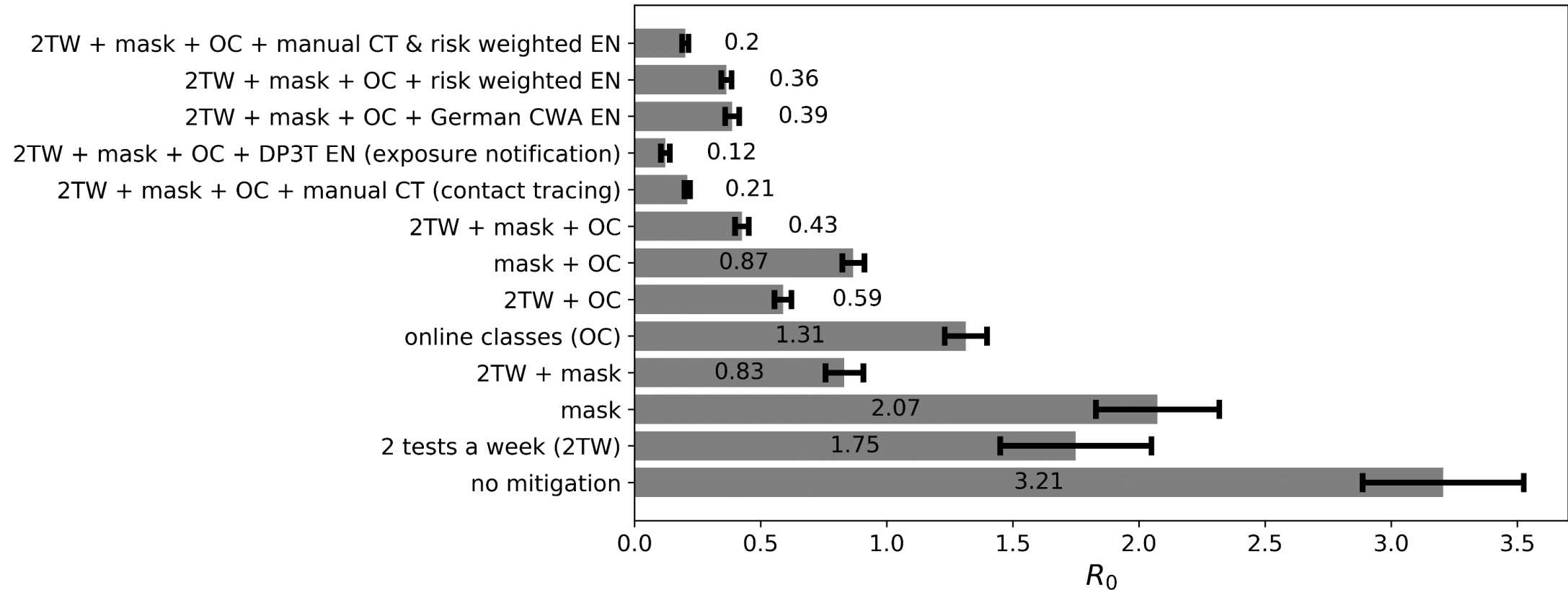
+



manual contact-tracing

# Target

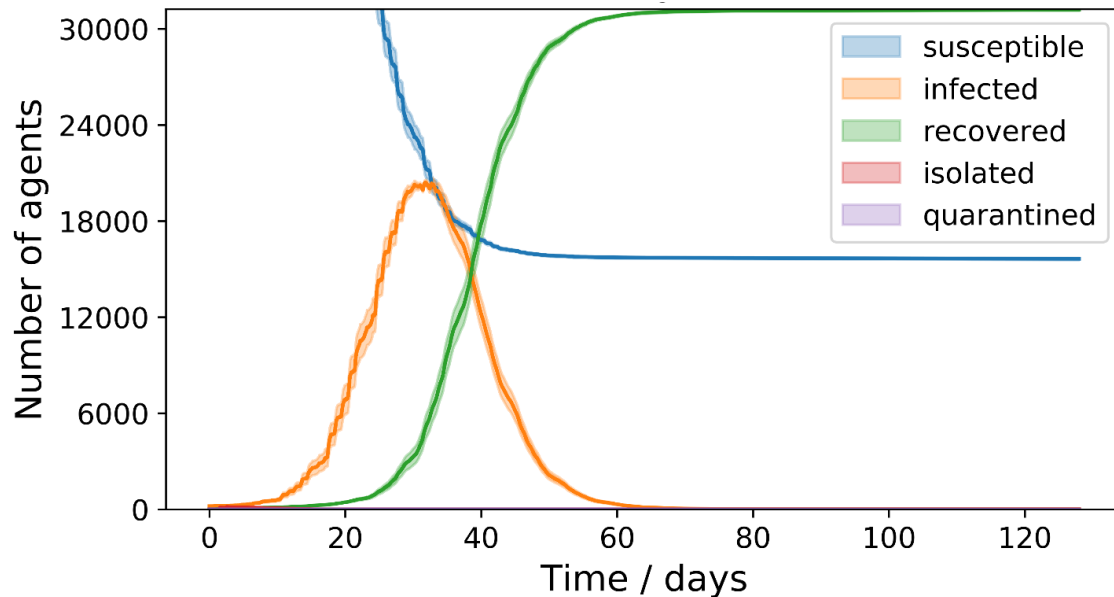
## SHIELD works by multi-layer approach



$R_0$  - How many people an index case infects with different layers of SHIELD

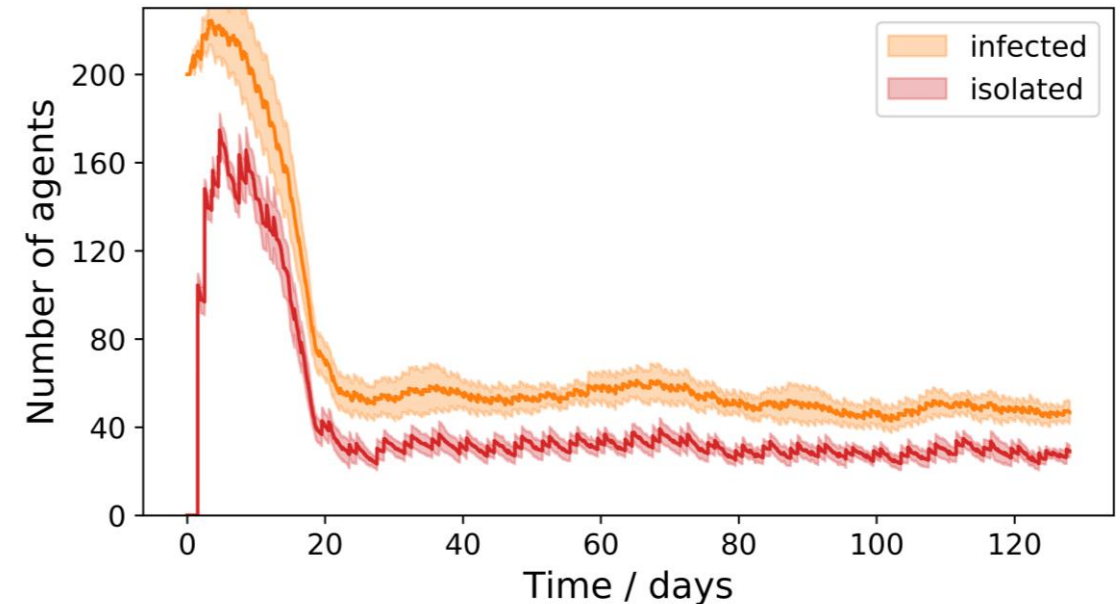
# Modeling for SHIELD at UIUC with 2x/week testing, masks, classes >50 online, & manual contact tracing

If we do nothing...  
> 30,000 infections



If we do SHIELD

- Effective control of number of infections
- Manageable by public health
- Initial “bump” when students arrive is mitigated
- Outcome: safer environment
- Students educated in person, local economy stays open



Detailed modeling of 45,000 students working and socializing, transmitting SARS-CoV-2 via proximity and aerosol

Ahmed Elbanna, Nigel Goldenfeld, Sergei Maslov, Alexei Tkachenko, Zach J. Weiner, Tong Wang, George N. Wong, Hantao Zhang



# Design Considerations

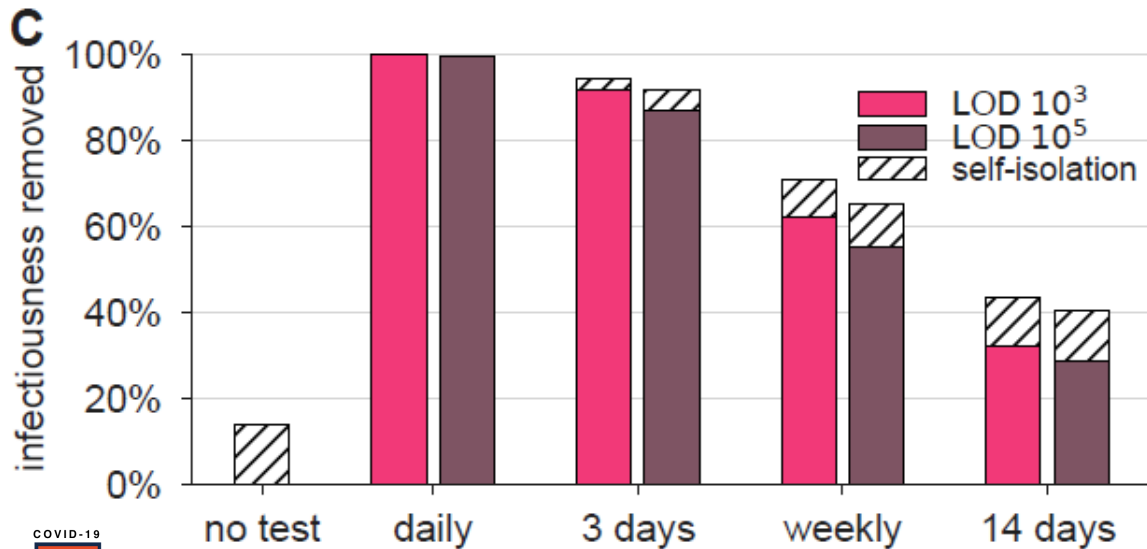
## Requirements for test:

- **Sufficient Sensitivity**
  - catch the positives
  - minimal false negatives
- **Sufficient Specificity**
  - only be positive for SARS-CoV-2
  - minimal false positives
- **Fast Turn Around**
  - so we can isolate and quarantine quickly
- **High Frequency**
  - so we can test people before they infect others
    - low cost (so we can test often)
    - minimally invasive (so people will be ok with testing often)
    - no supply chain issues

# Test – why saliva?

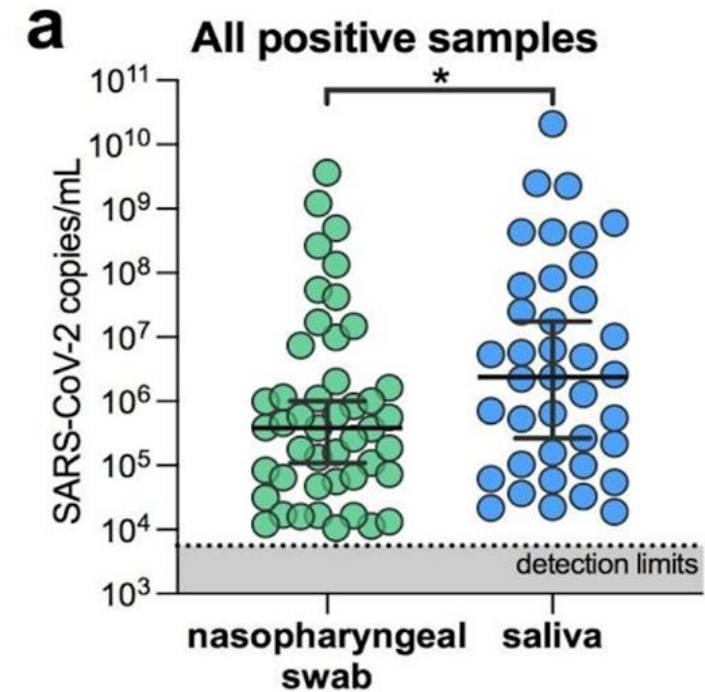
## Logistical considerations:

- Avoids swab and VTM (supply chain limiting)
- Easy and rapid self collection
- No/less need for health-care workers
- Much easier on patient
- Compatible with frequent repeat testing



## Scientific/medical considerations:

- Saliva likely provides a more relevant indication of infectiousness
- Early report of excellent sensitivity in saliva



medRxiv 2020.04.16.20067835

Cost, Time, and/or Supply chain bottlenecks

# Test

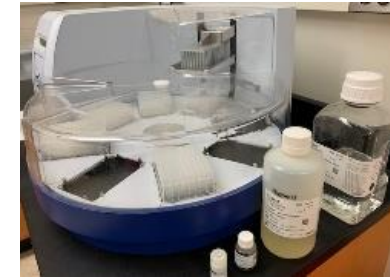
Standard method:



NP swab



Viral Transport Medium



RNA purification kit



RT-qPCR

Saliva (FDA EUA April 2020):



Saliva collection



RNA purification kit



RT-qPCR

UIUC covidSHIELD Test (Paul Hergenrother):

[medRxiv: https://www.biorxiv.org/content/10.1101/2020.06.18.159434v1](https://www.biorxiv.org/content/10.1101/2020.06.18.159434v1)

LOD 500-1000 copies SARS-CoV-2/mL saliva



Saliva collection



RT-qPCR

# The ~~Manhattan~~ Champaign-Urbana Project

May 3-June 18 2020

**Dr. Diana Ranoa**

IGB  
Hergenrother lab



**Dr. Fadi Alnaji**

Microbiology  
Brooke lab

**Dr. Robin Holland**

Veterinary Clinical Medicine  
Fan lab



**Kelsie Green**

Chemistry  
Burke lab

Paul Hergenrother, Tim Fan, Chris Brooke, Martin Burke

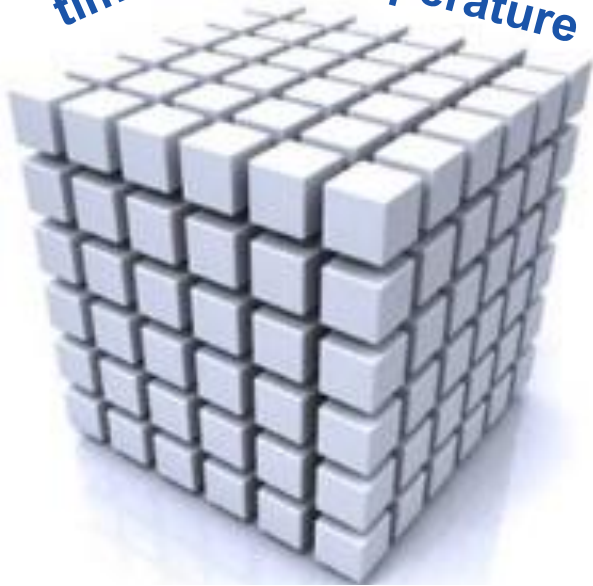


# covidSHIELD Test

buffer/additive

time

temperature



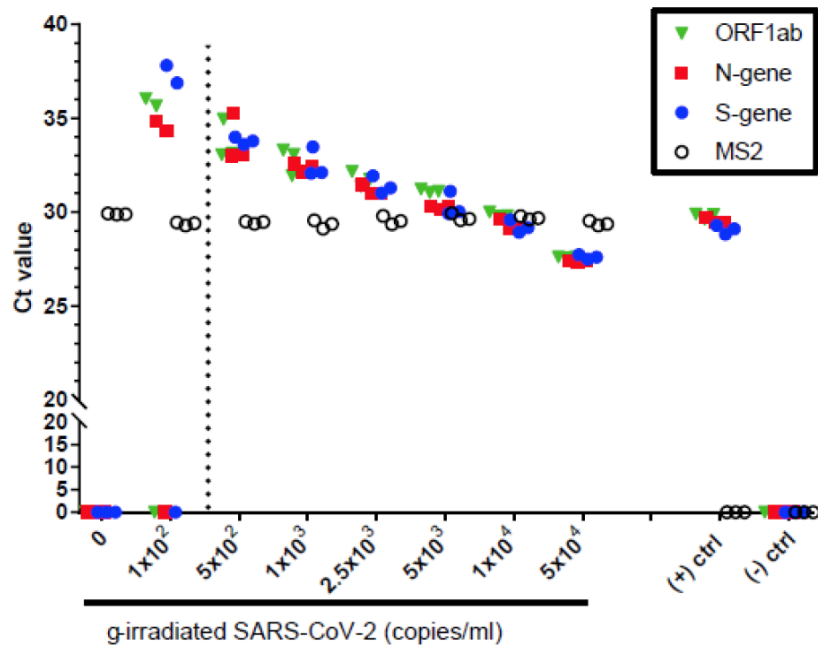
saliva

PCR



1. Heat at 95 C for 30 min

2. Add TBE/Tween buffer



## Saliva-Based Molecular Testing for SARS-CoV-2 that Bypasses RNA Extraction

Diana Ranoa, Robin Holland, Fadi G Alnaji, Kelsie Green, Leyi Wang, Christopher Brooke, Martin Burke, Tim Fan, Paul J Hergenrother

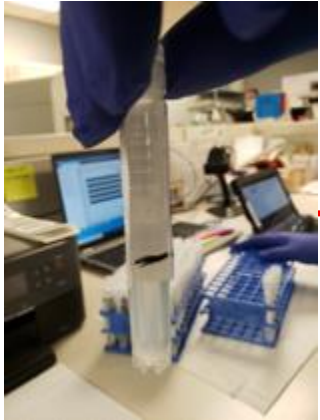
doi: <https://doi.org/10.1101/2020.06.18.159434>

<https://www.biorxiv.org/content/10.1101/2020.06.18.159434v1>

LOD = 500-1000 copies/mL



# After Heat In-Activation: Sample Transfer



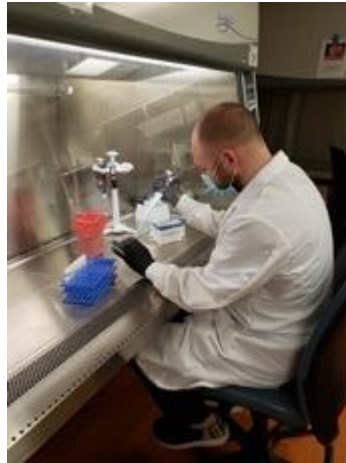
OPTION 1



- Faster turnaround time
- It frees up our scientist
- Not good with viscous samples
- Needs a certain volume

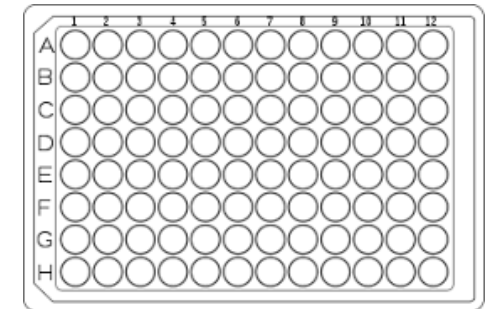


OPTION 2



- Qualified Molecular Scientist
- Transfer a small amount of sample
- Can handle samples not put on the robot

96 Well Plates



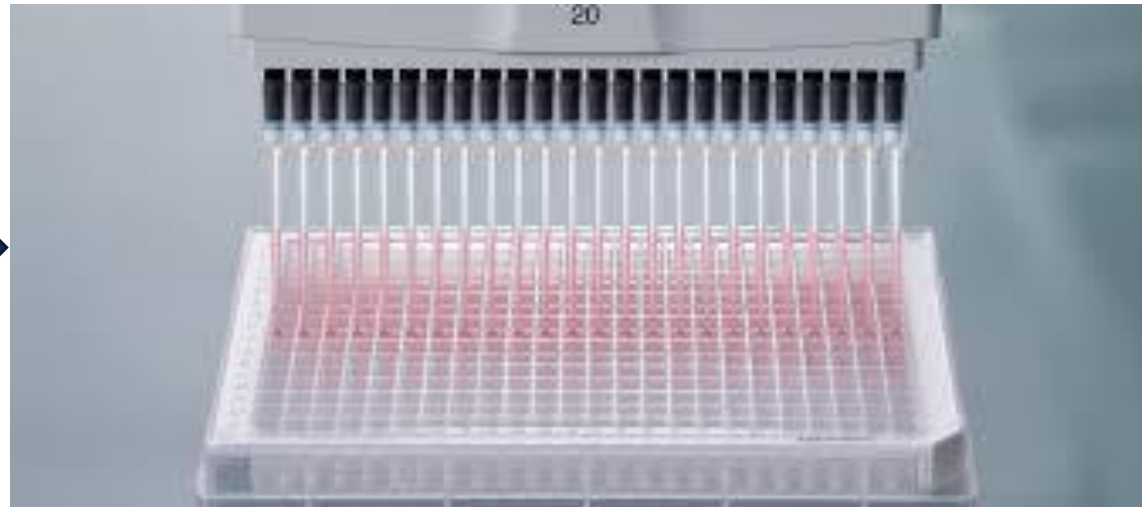
# Sample Transfer #2: 96 Well Plate to 384 Well Plate

96 Well Plate



- The 96 well plate was preloaded with detergent that isolates the RNA after water bath step

384 Well Plate



- 384 Plate is Pre-Loaded with PCR solution
- Our Master Mix **provides sensitivity and specificity** of this assays
- Primers for **N, OR lab and S** genes are in the Master Mix
  - These are the COVID genes we test for

Transfer Process



- Lab Scientist uses Gilson Platemaster to transfer samples from 96 to 384 well plate



# TEST: Transformation of VetMed Diagnostics Lab into human COVID-19 testing facility

**I** COLLEGE OF VETERINARY MEDICINE  
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

NEWS CALENDAR DIRECTORY CONTACT INTRANET LIBRARY SEARCH

LEYI WANG

**I** ILLINOIS  
Carl R. Woese Institute  
for Genomic Biology



## VETERINARY DIAGNOSTIC LABORATORY

UNIVERSITY OF ILLINOIS COLLEGE OF VETERINARY MEDICINE > DVM RESOURCES > VETERINARY DIAGNOSTIC LABORATORY

Rick Fredrickson

### DVM RESOURCES /

- Referral Services
- Veterinary Diagnostic Laboratory**
  - Look Up Tests
  - Laboratory Users Guide
  - Register for Access to Online

GO TO SUBMISSION FORMS

### OVERVIEW

The Veterinary Diagnostic Laboratory provides diagnostic medical testing for infectious agents, toxins, and other causes of disease in animal diagnostic samples submitted by veterinary practitioners serving animal owners, public officials associated with public health, law or wildlife management, and scientists with collaborative research projects.

### Veterinary Diagnostic Laboratory

**For Correspondence**  
1224 Veterinary Medicine Basic  
Sciences Building  
2001 South Lincoln Avenue  
Urbana, IL 61802  
[vdldirectoroffice@vetmed.illinois.edu](mailto:vdldirectoroffice@vetmed.illinois.edu)

**For Specimens**  
P.O. Box U



NATIONAL GEOGRAPHIC

ANIMALS | CORONAVIRUS COVERAGE

### Seven more big cats test positive for coronavirus at Bronx Zoo

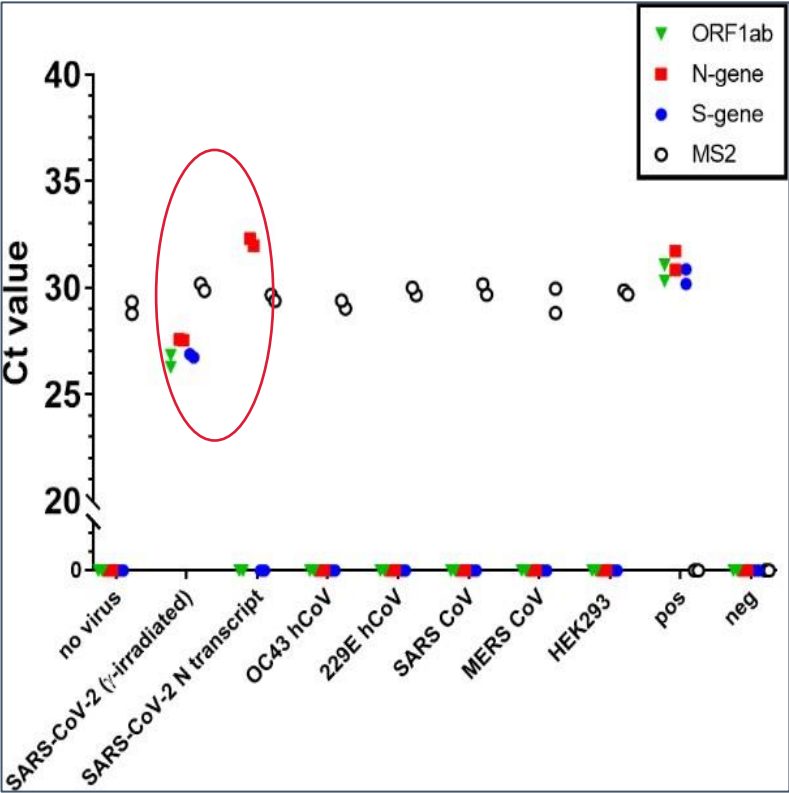
A Malayan tiger at the Bronx Zoo, photographed in 2017. Five of the zoo's tigers and three of its lions have tested positive for the virus that causes COVID-19.



Tim Fan  
and  
Paul Hergenrother

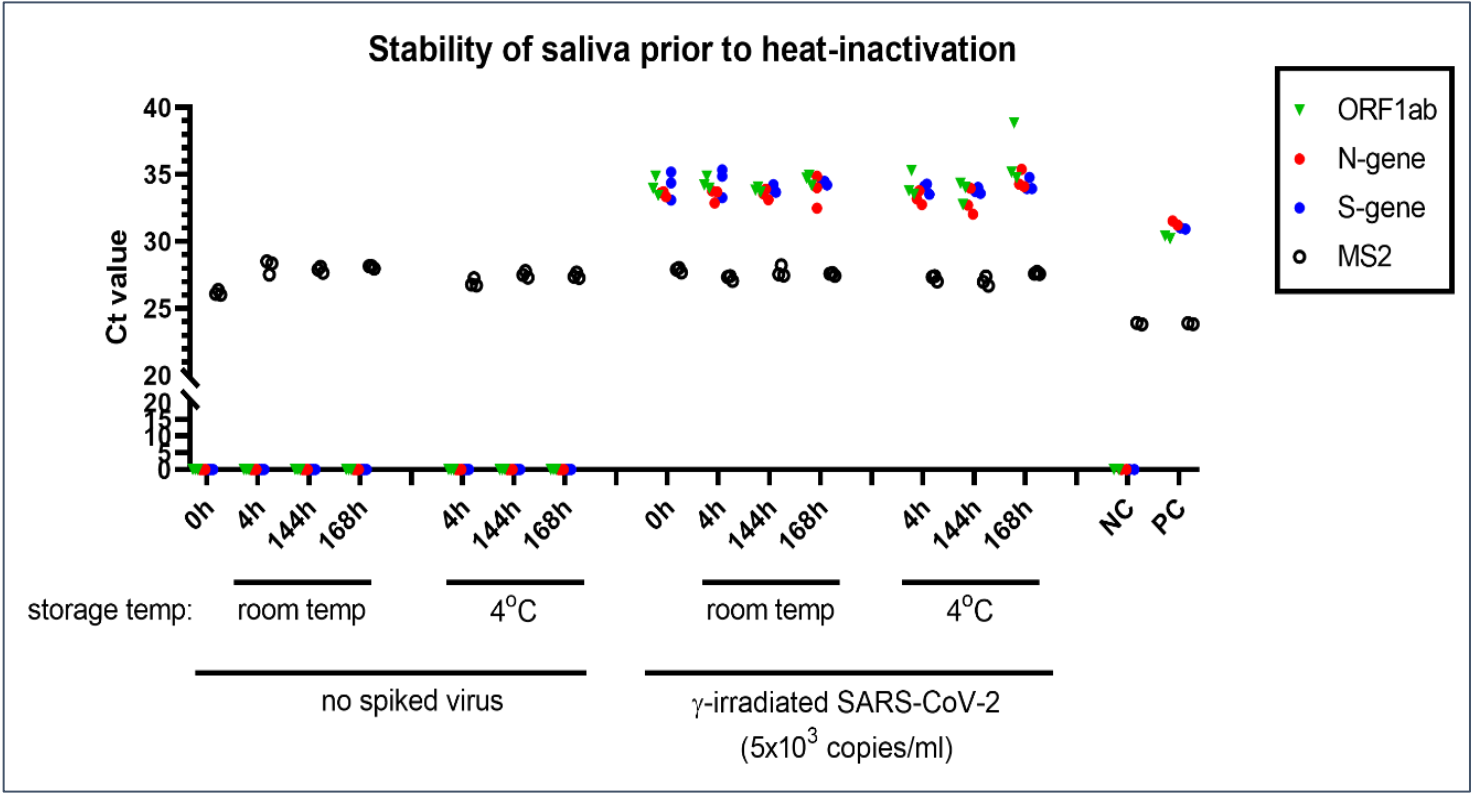
# Data behind the covidSHIELD EUA

The test performed well against samples that contained the virus

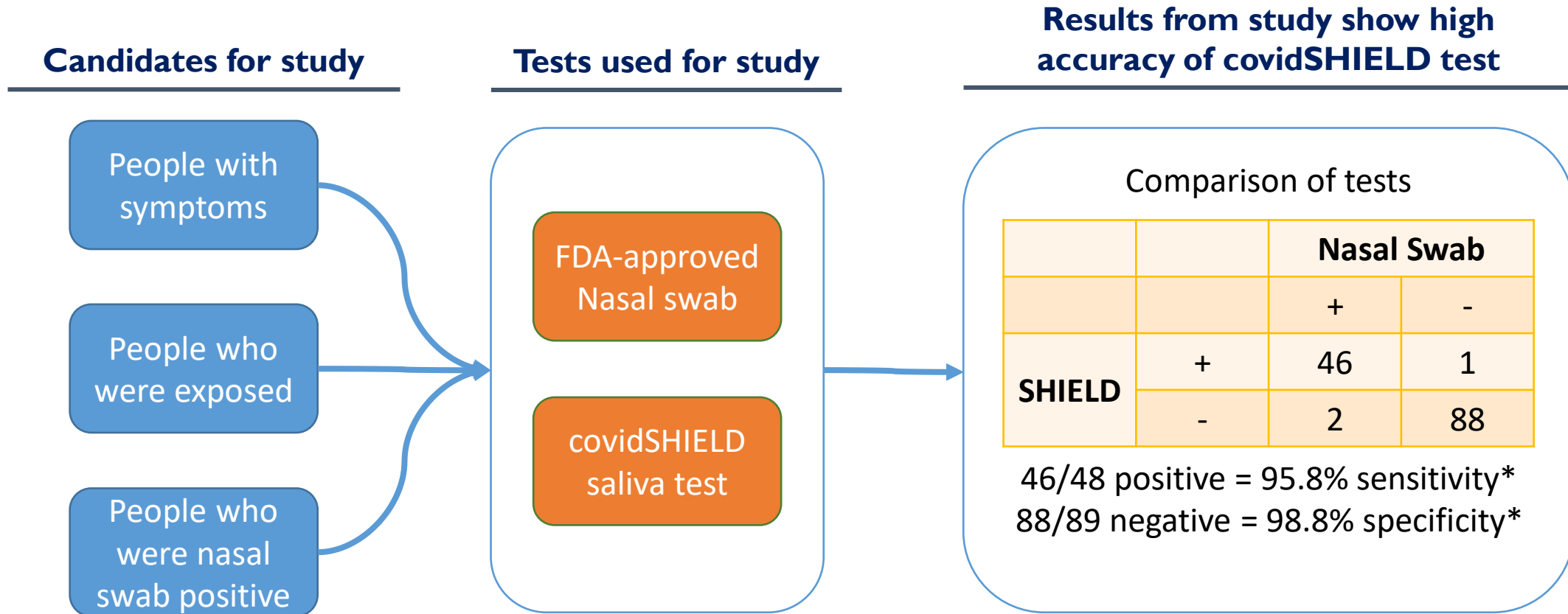


The test did not give false positives when similar viruses were present

The test also showed to be very stable regardless of storage temperature or time before batching



# What is behind the covidSHIELD FDA emergency use authorization?



## Key Terms

**Sensitivity** (Baratloo et al. 2015) – the ability of a test to detect a true positive =  $\frac{\text{true positive}}{\text{true positive} + \text{false negative}} * 100$

**Specificity** (Baratloo et al. 2015) – the ability of a test to detect a true negative =  $\frac{\text{true negative}}{\text{false positive} + \text{true negative}} * 100$

\*technically: sensitivity is PPA; specificity is NPA



# Logistics of testing up to 20,000 students/faculty/staff a day

Converted Veterinary Diagnostic Lab into Human COVID-19 Lab

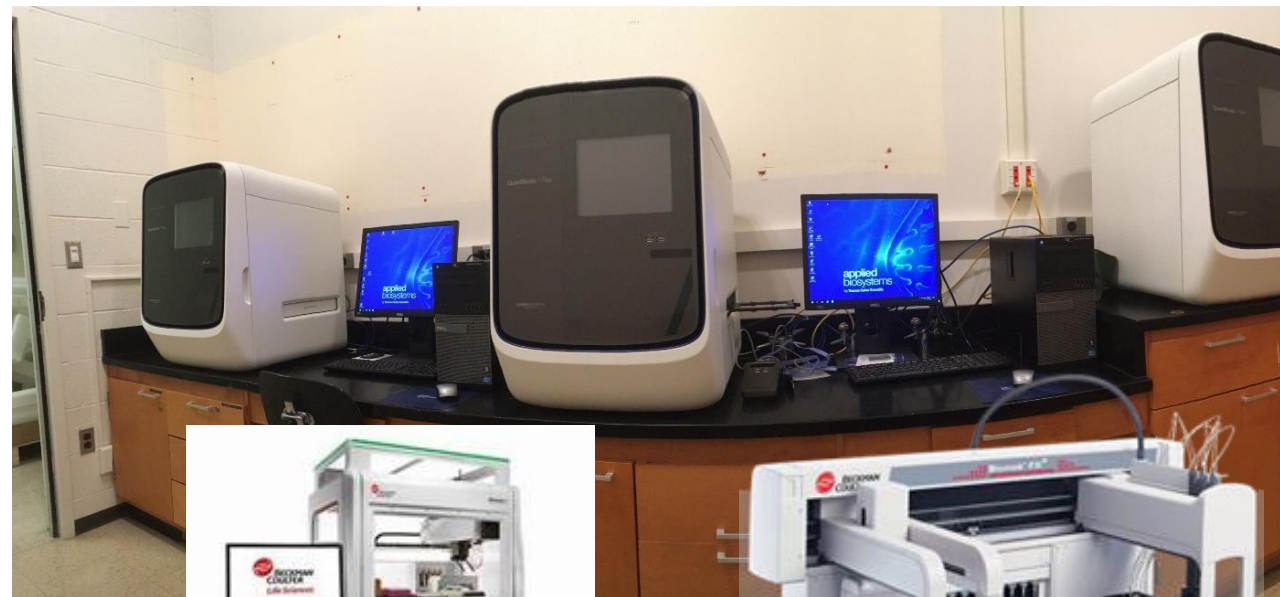
40 testing lines on campus (20 locations)

Large tents/indoors spaces for social distancing

Easy scan-in system (scan I-card, label printed and affixed to tube)

Samples brought to the COVID-19 Lab every hour

Ran >950,000 tests on students/faculty/staff July-December with this process, results generally within 3-12 hours



THANK YOU  
HEALTHCARE  
WORKERS!



# Safer in ILLINOIS

POWERED BY  
**I** ROKWIRE

Get started



## Join the fight against COVID-19

Track and manage your health to help  
keep our Illinois community safe

Continue



## How it works

Testing and limiting exposure are key  
to slowing the spread of COVID-19.

### You can use this app to:

- Provide any COVID-19 symptoms you experience
- Automatically receive or enter test results from your healthcare provider
- Allow your phone to send exposure notifications to you and the people you've come in contact with during the last 14 days

Next



# Tell

7:22

COVID-19



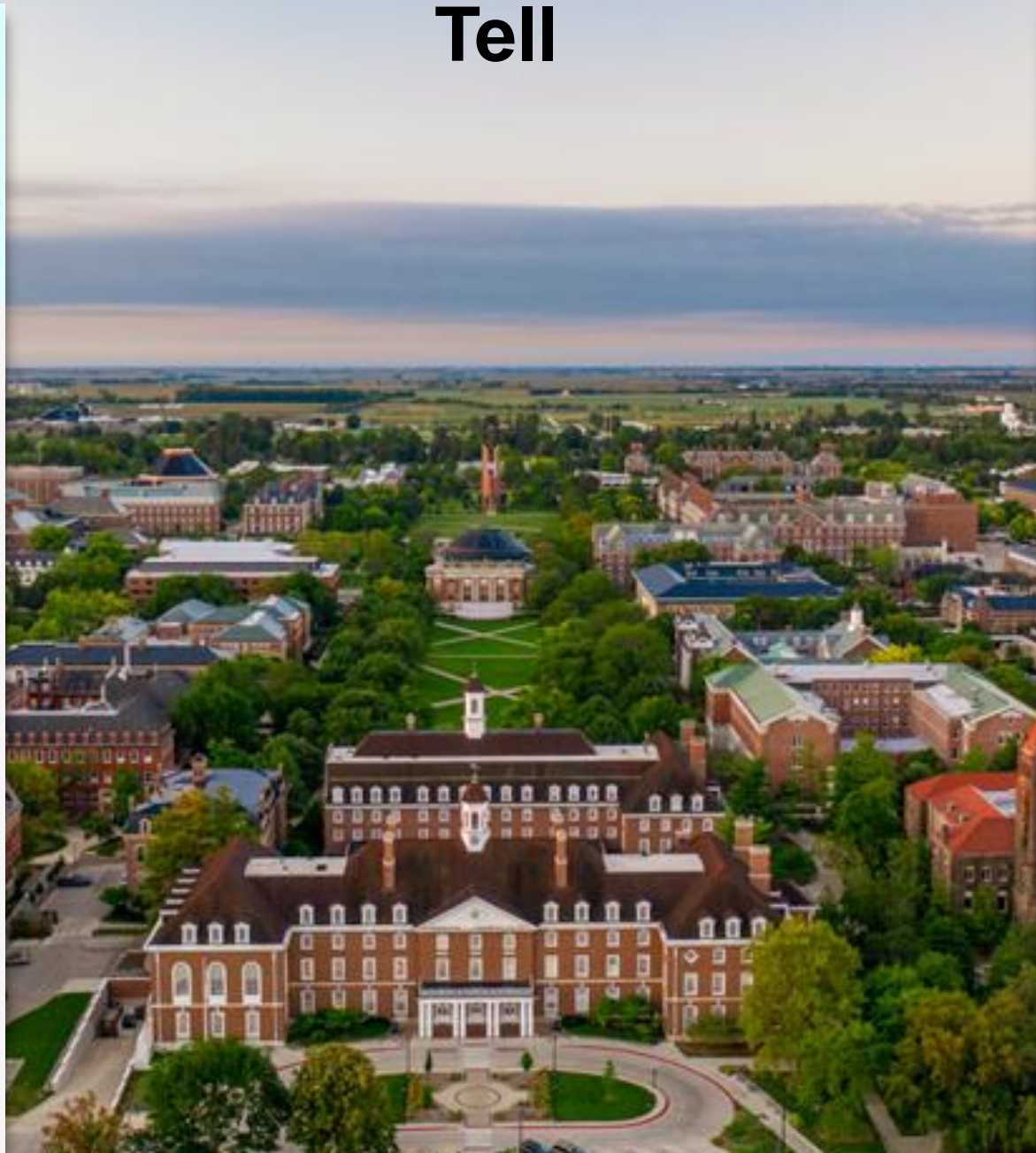
**William C Sullivan**  
Faculty/Staff

Champaign, Illinois ▾



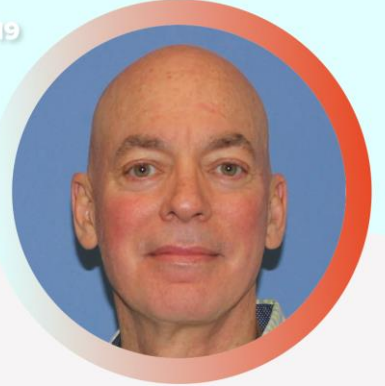
Building Access  
**GRANTED**

● ●




2:26

COVID-19



**William C Sullivan**  
Faculty/Staff

Champaign, Illinois ▾



Building Access  
**DENIED**

● ●



# Results

## Shield Testing Data

Results for University of Illinois, Urbana-Champaign.  
Direct linking to this site will not work. To share please use <https://go.illinois.edu/COVIDTestingData>  
View this webpage for more explanation of the data displayed in the dashboard. <https://covid19.illinois.edu/on-campus-covid-19-testing-data-dashboard/>

### Total Test Results

960,607

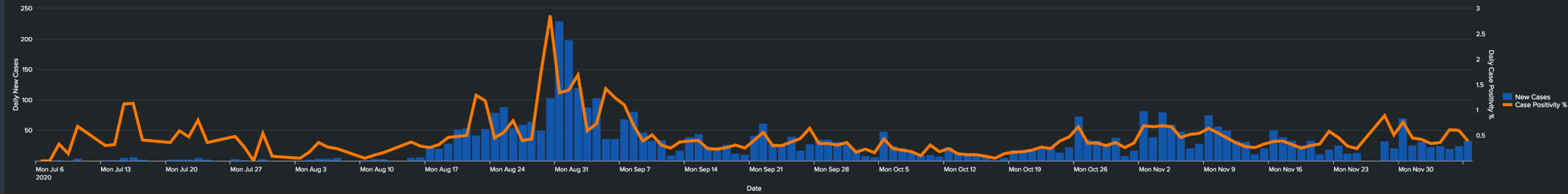
### Past 7-Day Case Positivity Rate

0.43%

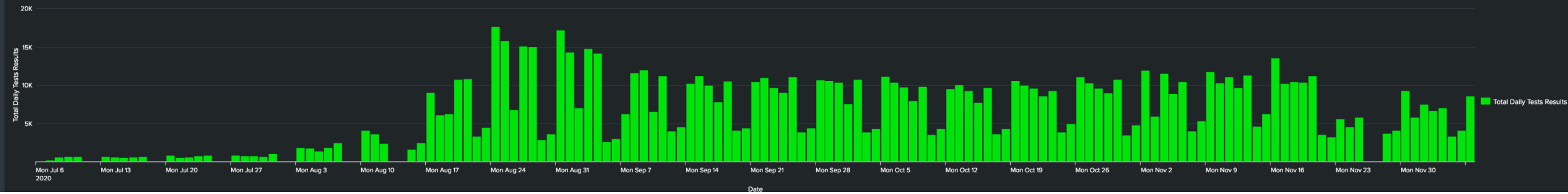
Case positivity is unique new cases/total number of test results.

### Unique New Cases

Unique New Cases are the first time an individual is detected COVID-19 positive by the SHIELD saliva test



### Total Number of Daily Tests



# Results

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Results for University of Illinois, Urbana-Champaign.  
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### Total Test Results

Mid-summer bump  
**960,607**

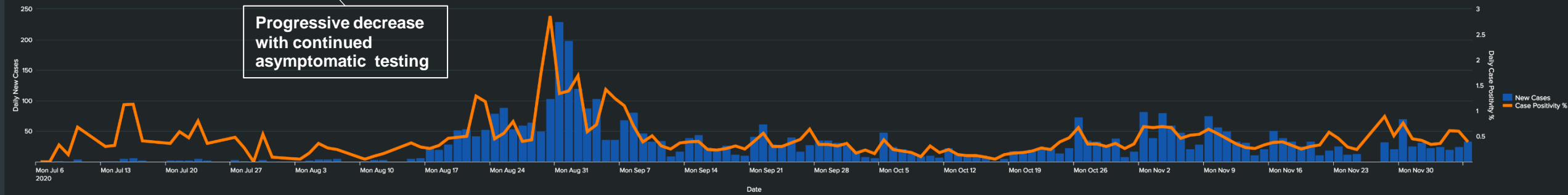
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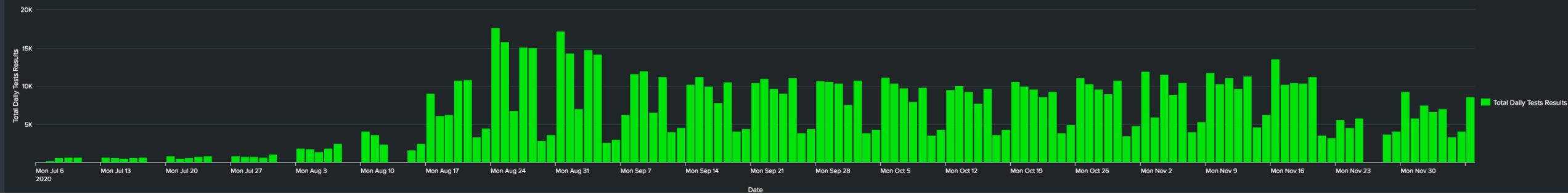
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### Total Test Results

# 960,607

Unsafe undergraduate activities

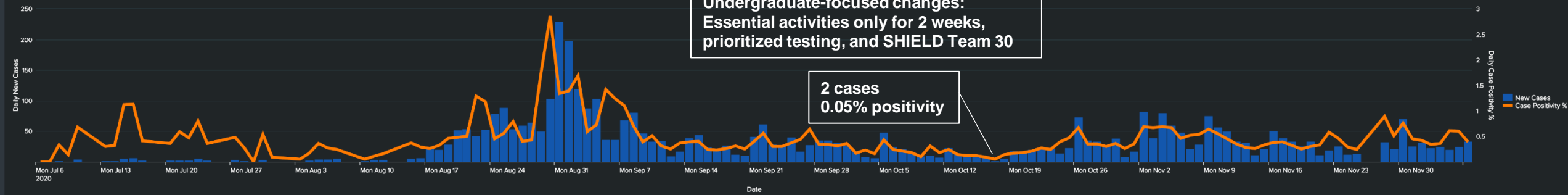
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# 0.43%

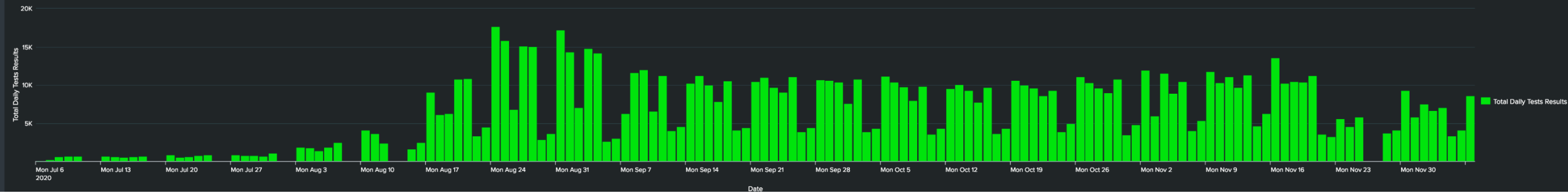
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960,607

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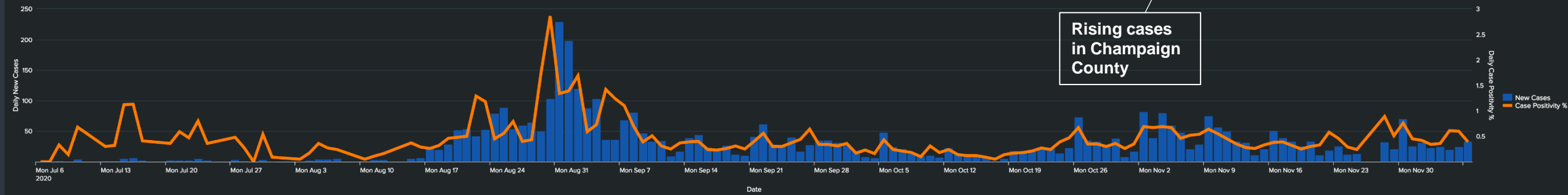
0.43%

SHIELD Surge

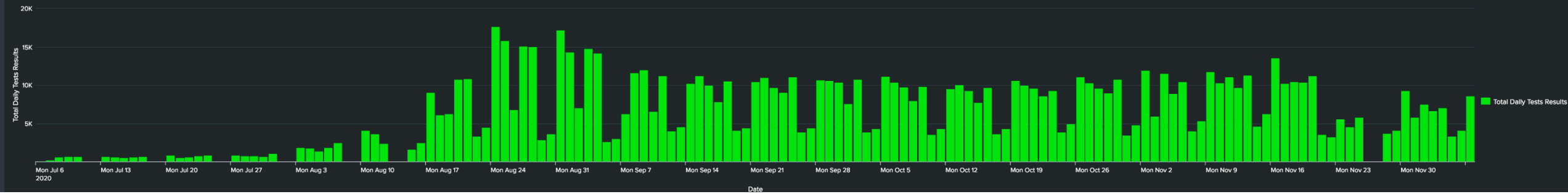
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### Total Number of Daily Tests



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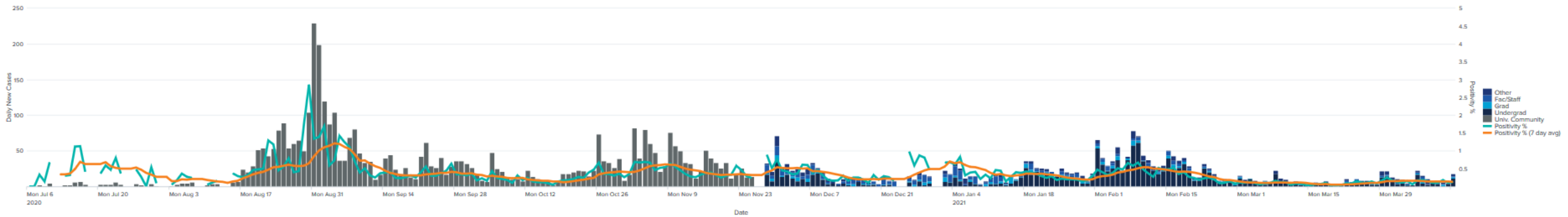
Most Recent Reported Day Last 7 Days All Time

Most Recent Report Date: April 12, 2021

New Cases		Total Tests		Positivity Rate		30-Day Positivity Rate	
<b>73</b>		<b>55,274</b>		<b>0.13 %</b>		<b>0.11 %</b>	
Positivity is new cases/total number of test results.		Positivity is new cases/total number of test results.		Positivity is new cases/total number of test results.		Positivity is new cases/total number of test results.	
Population	New Cases	Population	Tests	Population	Positivity %	Population	Positivity %
Other	19	Other	4019	Other	0.47 %	Other	0.31 %
Fac/Staff	13	Fac/Staff	12498	Fac/Staff	0.10 %	Fac/Staff	0.07 %
Grad	7	Grad	8631	Grad	0.08 %	Grad	0.07 %
Undergrad	34	Undergrad	30126	Undergrad	0.11 %	Undergrad	0.11 %

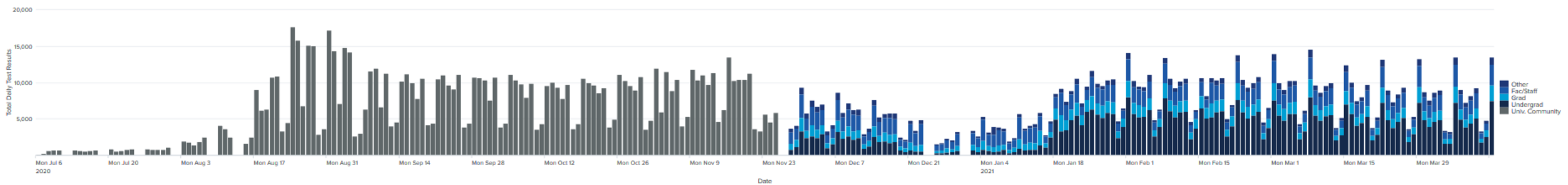
## New Cases

Click & drag over a portion of the chart to zoom in



## Total Number of Daily Tests

Click & drag over a portion of the chart to zoom in



# Key Takeaways

- Fast/frequent testing can help **mitigate the spread** of COVID-19 in a large and diverse university community
- Testing is not a silver bullet; it should be integrated into a **wholistic approach** that includes epidemiological modeling, rapid isolation and contact tracing, masks, social distancing, and community engagement
- The University remained **open with in-person instruction and we have no evidence of spread of COVID-19** in our classrooms, and no evidence of transmission from from UIUC community to our surrounding community
- Most initial positive tests have been in people that are **asymptomatic or minimally-symptomatic**
- covidSHIELD direct saliva→PCR test enables fast/frequent testing on scale
- Data-driven dynamic prioritization of testing strategy can maximize impact
- Mechanisms to help people that test positive get safely **isolated quickly**, and to support/enforce isolation and quarantine are important
- Access to lots of safe socialization options are important, coupled to strong consequences for bad choices in socialization behavior
- **Changes for the Spring:** phased reintroduction over two weeks (freshman, sophomores, juniors, and then seniors), two negative tests 4 days apart for re-entry status, and prospective 3 weeks of essential activities only

Please submit your questions using the questions tab.

Session Chat



Chat



Q&A

**M** Monique Brown

What's the benefit of changing the check-in process?

**M** Megan Lau

I think the contactless check-in will be a great way to make our attendees feel more comfortable during in-person events 😊



3

**D** Doug Brashear

I can't wait to use these new features for my next event!

**K** Katrina Tanner

I've noticed the same trends as an event attendee. It's wonderful to learn how event planners are staying current.



7

**C** Chris McAndrews

Same!

**T** Trevor Lynn

Does anyone want to connect after the session to discuss what we learned?



1

**C** Casey Hartnett

I'm interested





# Beyond Bargaining: Negotiating Strategically

April 15, 2021 | 1:30 - 2:45 PM ET



**Moderator:**  
**Laura Demarse**  
North Carolina State University



**Jonathan Hughes**  
Vantage Partners



**Ben Siddall**  
Vantage Partners



Strengthening  
University-Industry  
Partnerships

THANK YOU!



- Did you enjoy the session? Rate it in the Attendee Hub!
- You'll receive a survey via email about UIDPVirtual at the end of the week. Please give us your feedback.



Strengthening  
University-Industry  
Partnerships