CDC Laboratory Training Update

An Overview of Tools Available for Your Outreach Efforts

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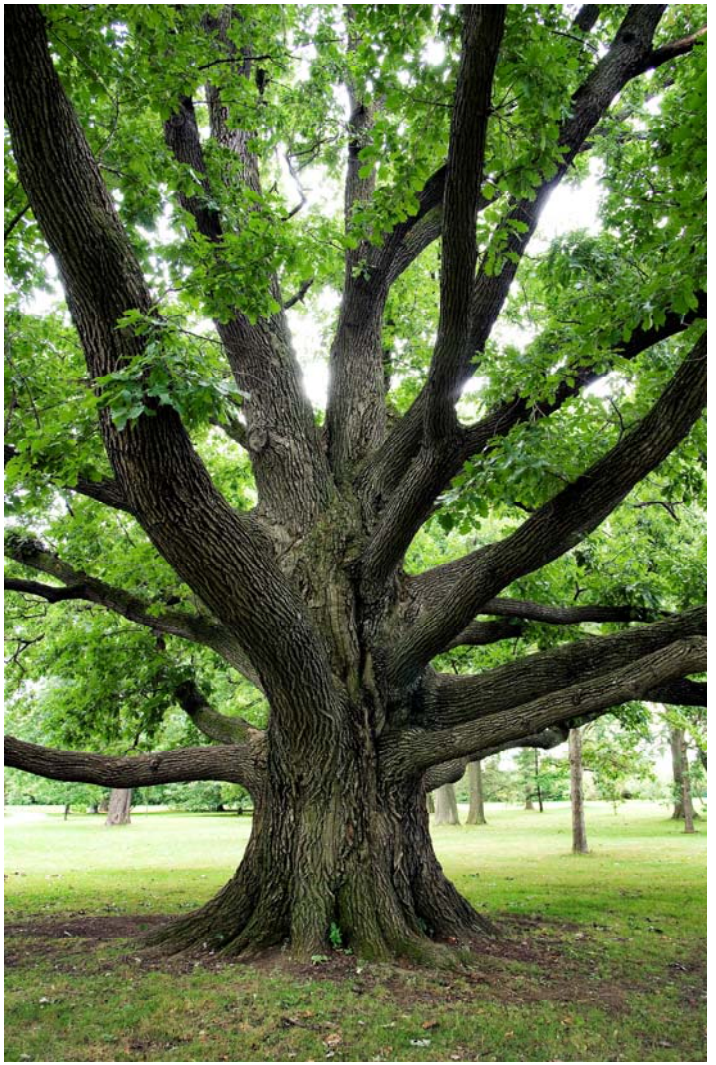
Division of Laboratory Systems – Laboratory Training

“THE GOAL OF AN OUTREACH CAMPAIGN IS TO BRING AWARENESS TO SOMETHING OF VALUE.” – LISA BARONE, VP OF STRATEGY AT OVERIT[1]

[1] Overit is an internet marketing company known for its creativity and passion for giving back to the community.

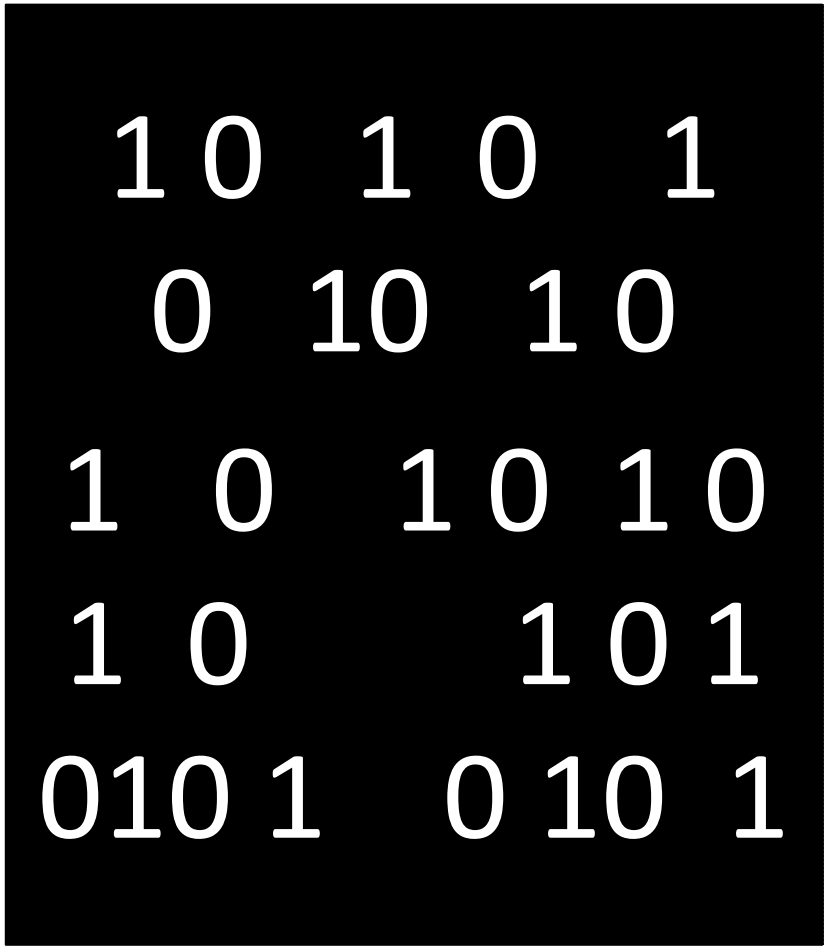
Outreach Efforts

- Outreach
  - The extending of services or assistance beyond current or usual limits
  - *also,* the extent of such services or assistance
  - Merriam Webster Dictionary



Outreach Efforts

- Outreach is not a “one and done” activity
- Repetitive effort is required
- Learn to make repetition look like something new

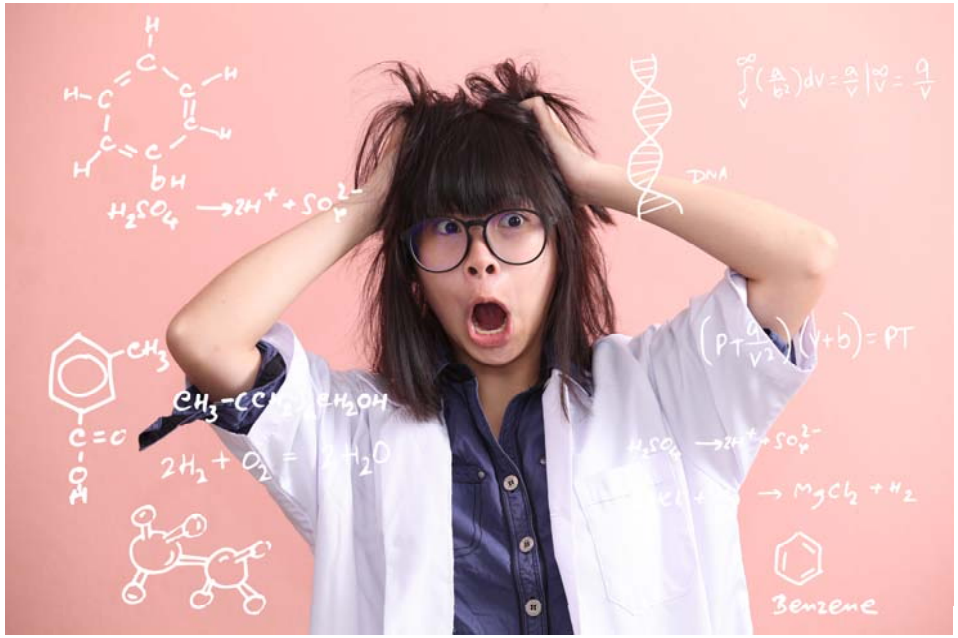


Outreach Efforts

- The message stays the same, change how you deliver it.
  - Core training of knowledge and skills (workshop, eLearning course, blended learning program, micro learning modules)
  - Exercise the knowledge and skills (table top exercises, drills, virtual exercises)
  - Refresh the knowledge and skills (job aids, micro learning modules, podcasts, Twitter announcements, Facebook posts)

Easy for you to say!

There are only 24 hours in a day!



There is only one of me!

The reason we are gathered here today …

- Networking
- Finding people with a similar approach
- Sharing what you have
- Pooling resources
- Tell us how we can help you succeed

www.cdc.gov/labtraining

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

SEARCH

CDC A-Z INDEX

CDC Laboratory Training

Register for Live Training

New: Sign-up now for the opportunity to attend live CDC webinars and workshops before the registration date expires.

All Live Events >

24/7 Online Training

Click here for a current schedule of eLearning courses, educational videos, and webinars.

All Online Training >

Other Training Options

View a list of additional online training provided by our external partners.

All Other Training Options >

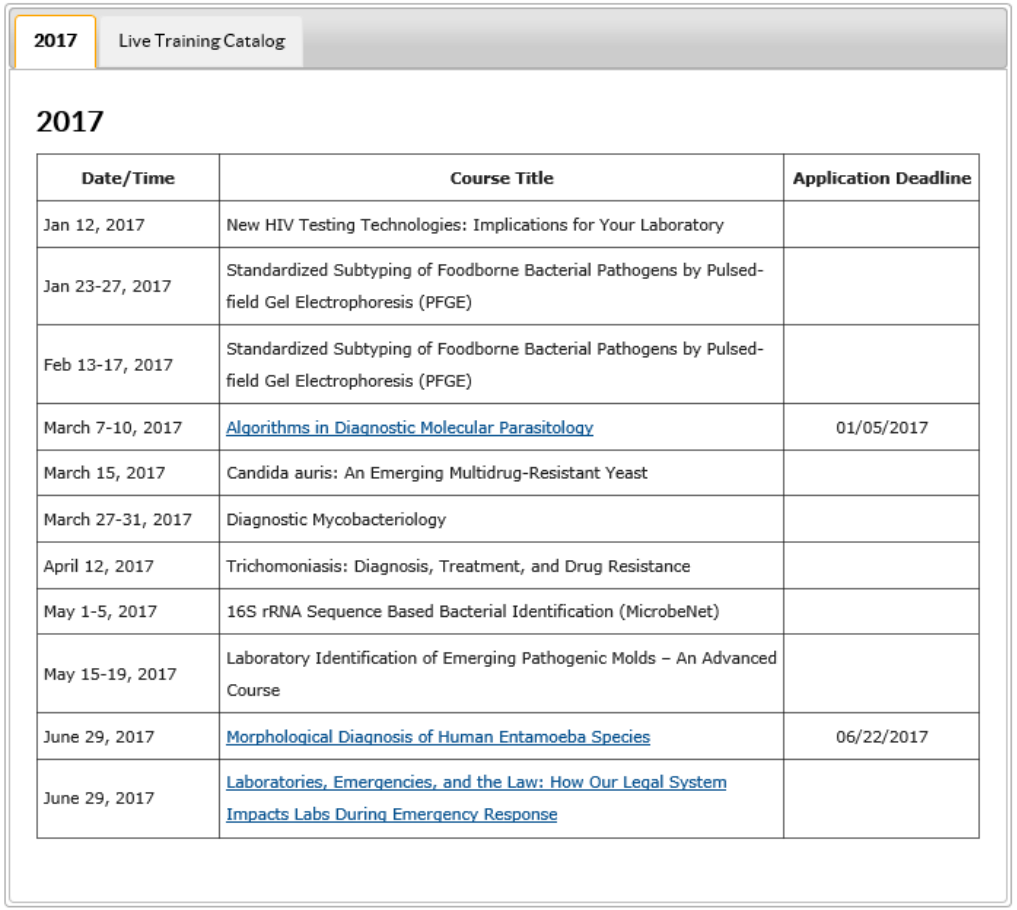
Help/FAQs

Have a question about how CDC Train works? Need help with a course, or just have a question?

All Help/FAQs >

Navigating the Website

- Live Training
  - Hands-on Workshops
  - Webinars
  - Seminars
- Critical Dates
  - Registration Deadline
  - Training Date(s)
- Other Important Dates
  - Hotel Registration Deadline
  - Security Application Deadline



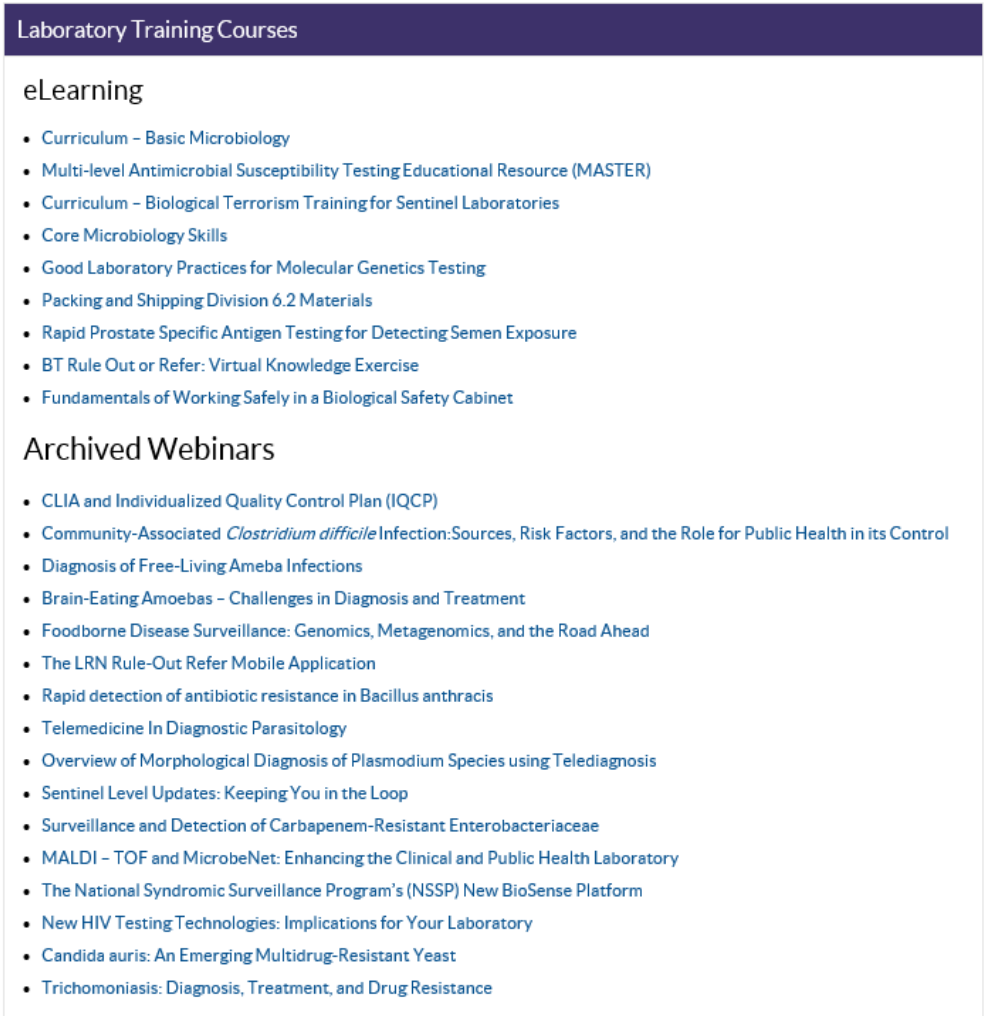
2017 | Live Training Catalog

2017

Date/Time	Course Title	Application Deadline
Jan 12, 2017	New HIV Testing Technologies: Implications for Your Laboratory	
Jan 23-27, 2017	Standardized Subtyping of Foodborne Bacterial Pathogens by Pulsed-field Gel Electrophoresis (PFGE)	
Feb 13-17, 2017	Standardized Subtyping of Foodborne Bacterial Pathogens by Pulsed-field Gel Electrophoresis (PFGE)	
March 7-10, 2017	Algorithms in Diagnostic Molecular Parasitology	01/05/2017
March 15, 2017	Candida auris: An Emerging Multidrug-Resistant Yeast	
March 27-31, 2017	Diagnostic Mycobacteriology	
April 12, 2017	Trichomoniasis: Diagnosis, Treatment, and Drug Resistance	
May 1-5, 2017	16S rRNA Sequence Based Bacterial Identification (MicrobeNet)	
May 15-19, 2017	Laboratory Identification of Emerging Pathogenic Molds – An Advanced Course	
June 29, 2017	Morphological Diagnosis of Human Entamoeba Species	06/22/2017
June 29, 2017	Laboratories, Emergencies, and the Law: How Our Legal System Impacts Labs During Emergency Response	

Navigating the Website

- Online training
  - eLearning Courses
  - Archived Webinars
  - Virtual Exercises
  - Blended Learning
- Training available 24/7



Laboratory Training Courses

eLearning

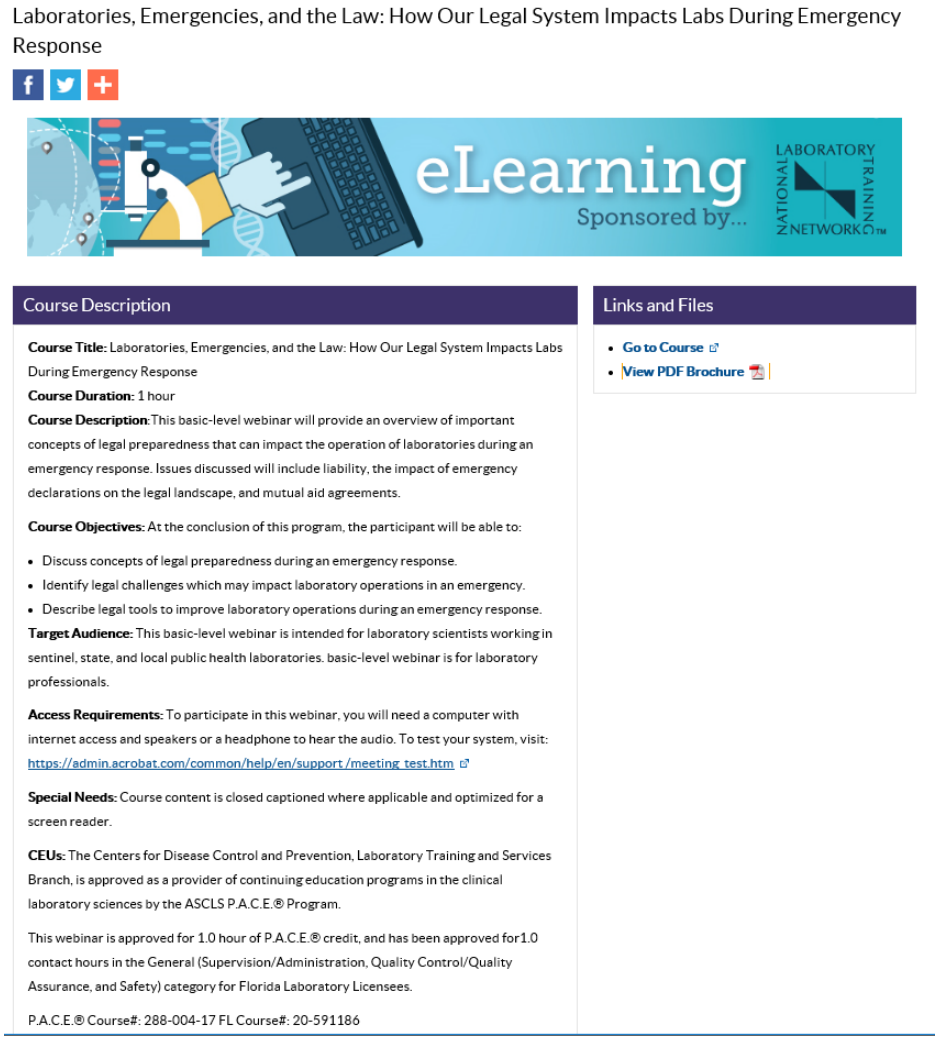
- Curriculum – Basic Microbiology
- Multi-level Antimicrobial Susceptibility Testing Educational Resource (MASTER)
- Curriculum – Biological Terrorism Training for Sentinel Laboratories
- Core Microbiology Skills
- Good Laboratory Practices for Molecular Genetics Testing
- Packing and Shipping Division 6.2 Materials
- Rapid Prostate Specific Antigen Testing for Detecting Semen Exposure
- BT Rule Out or Refer: Virtual Knowledge Exercise
- Fundamentals of Working Safely in a Biological Safety Cabinet

Archived Webinars

- CLIA and Individualized Quality Control Plan (IQCP)
- Community-Associated *Clostridium difficile* Infection:Sources, Risk Factors, and the Role for Public Health in its Control
- Diagnosis of Free-Living Ameba Infections
- Brain-Eating Amoebas – Challenges in Diagnosis and Treatment
- Foodborne Disease Surveillance: Genomics, Metagenomics, and the Road Ahead
- The LRN Rule-Out Refer Mobile Application
- Rapid detection of antibiotic resistance in Bacillus anthracis
- Telemedicine In Diagnostic Parasitology
- Overview of Morphological Diagnosis of Plasmodium Species using Telediagnosis
- Sentinel Level Updates: Keeping You in the Loop
- Surveillance and Detection of Carbapenem-Resistant Enterobacteriaceae
- MALDI – TOF and MicrobeNet: Enhancing the Clinical and Public Health Laboratory
- The National Syndromic Surveillance Program's (NSSP) New BioSense Platform
- New HIV Testing Technologies: Implications for Your Laboratory
- Candida auris: An Emerging Multidrug-Resistant Yeast
- Trichomoniasis: Diagnosis, Treatment, and Drug Resistance

Course Page

- Course Page
  - Title
  - Course Description
  - Learning Objectives
  - Target Audience Description
  - Requirements
  - Continuing Education Credit Description
- Brochure
- Link to Course in TRAIN



Laboratories, Emergencies, and the Law: How Our Legal System Impacts Labs During Emergency Response

eLearning
Sponsored by...
NATIONAL LABORATORY TRAINING NETWORK

Course Description

Course Title: Laboratories, Emergencies, and the Law: How Our Legal System Impacts Labs During Emergency Response
Course Duration: 1 hour
Course Description: This basic-level webinar will provide an overview of important concepts of legal preparedness that can impact the operation of laboratories during an emergency response. Issues discussed will include liability, the impact of emergency declarations on the legal landscape, and mutual aid agreements.

Course Objectives: At the conclusion of this program, the participant will be able to:

- Discuss concepts of legal preparedness during an emergency response.
- Identify legal challenges which may impact laboratory operations in an emergency.
- Describe legal tools to improve laboratory operations during an emergency response.

Target Audience: This basic-level webinar is intended for laboratory scientists working in sentinel, state, and local public health laboratories. basic-level webinar is for laboratory professionals.

Access Requirements: To participate in this webinar, you will need a computer with internet access and speakers or a headphone to hear the audio. To test your system, visit: https://admin.acrobat.com/common/help/en/support/meeting_test.htm

Special Needs: Course content is closed captioned where applicable and optimized for a screen reader.

CEUs: The Centers for Disease Control and Prevention, Laboratory Training and Services Branch, is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program.

This webinar is approved for 1.0 hour of P.A.C.E.® credit, and has been approved for1.0 contact hours in the General (Supervision/Administration, Quality Control/Quality Assurance, and Safety) category for Florida Laboratory Licensees.

P.A.C.E.® Course#: 288-004-17 FL Course#: 20-591186

Links and Files

- Go to Course
- View PDF Brochure

Connections to Other Training Sources

CDC Laboratory Training understands that there are numerous credible providers of quality laboratory training available online. Below, we have gathered a group of training providers that you might find helpful. If you would like to add your state or group to this list, please email us at labtraining@cdc.gov.

The Centers for Disease Control and Prevention (CDC), or the Department of Health and Human Services (HHS) cannot attest to the accuracy of a non-federal site. Linking to a non-federal site does not constitute an endorsement by HHS or any of its employees of the sponsors or the information and products presented on the site. You will be subject to the destination site's privacy policy when you follow the link. For more information on exit notifications and disclaimers for non-federal Web sites, the following resources may be helpful: HHS Web standards (http://www.hhs.gov/web/).

- Association of Public Health Laboratories +
- Iowa State Hygienic Laboratory at the University of Iowa +
- CDC Learning Connection +
- American Society for Microbiology +

Iowa State Hygienic Laboratory at the University of Iowa -

Iowa/State Hygienic Laboratory at the University of Iowa

We offer a variety of learning modules in the following topic areas: CLIA compliance, rule out/refer procedures for agents of bioterrorism, and general laboratory topics such as influenza surveillance, chain of custody, and foodborne outbreak investigation.

Courses are also offered through Prepare Iowa for public health professionals on topics such as the role of sentinel labs in emergency response and biosafety.

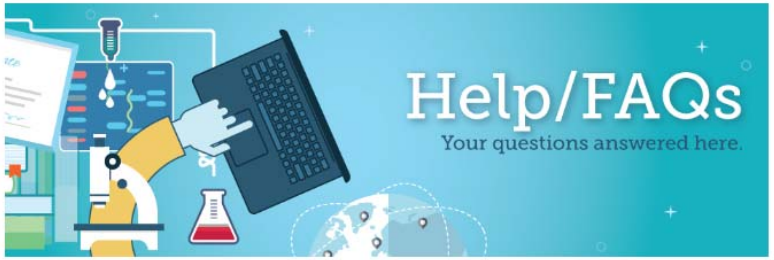
Contact information:
Beth Hochstedler,
Education, Training and Outreach Director
beth-hochstedler@uiowa.edu, phone: 319-335-4303

Link to courses:
http://www.shl.uiowa.edu/dcd/sentlabtrain/courses/index.xml

- Sharing your resources
  - Send us a link
  - Send us a description
  - Send us a point of contact
  - Send us contact information

Addressing Questions

- Consult the “Frequently Asked Questions” section of the website
- Send an email to labtraining@cdc.gov
- Call: 404-498-6022



What is CDC TRAIN? +

I'm having trouble with TRAIN. Who do I talk to about this? +

How do I register for a FREE account on CDC TRAIN? +

How do I register for or launch a course or event? +

How, and why should I add CDC Laboratory Training to my TRAIN account as a provider? +

What equipment do I need to participate in a live webinar from CDC? +

Where do the live workshops take place? +

Who can sign up for live workshops at CDC? +

Who decides if I am eligible for a live workshop? +

What normally happens at a Live Workshop? +

I have a great idea for a course that I'd like to see. How do I get you that idea? +

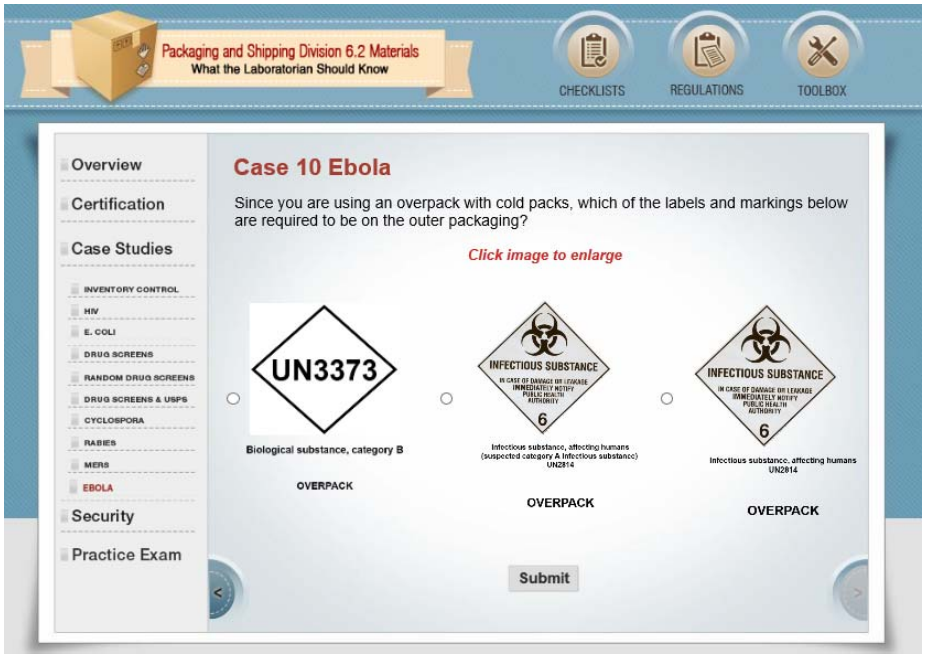
Resources +

Preparedness

- 10 years ago preparedness was focused on
  - Biologic Threats
  - Chemical Threats
  - Radiation Threats
- Response coordinated by the Laboratory Response Network (LRN)
- Today preparedness relates to all hazards
  - Natural Disasters
  - Accidents
  - Outbreaks of all types

Sample Transport

- Packaging and Shipping of Division 6.2 Materials
  - 1 Day Seminar Version
    - Instructor - Pat Payne
    - Meets initial and refresher training requirements
  - Online self-study course
    - Available 24/7
    - Meets initial and refresher training requirements



- In Development:
  - Division 6.2 Inspection Checklists
  - Consistent feedback to labs shipping samples

Biosafety

- Available:
  - Fundamentals of Working Safely in a Biological Safety Cabinet
- In Process:
  - Fundamentals of Centrifuge Safety
  - Chemical Fume Hood
- In the Queue:
  - PPE
  - Respirators

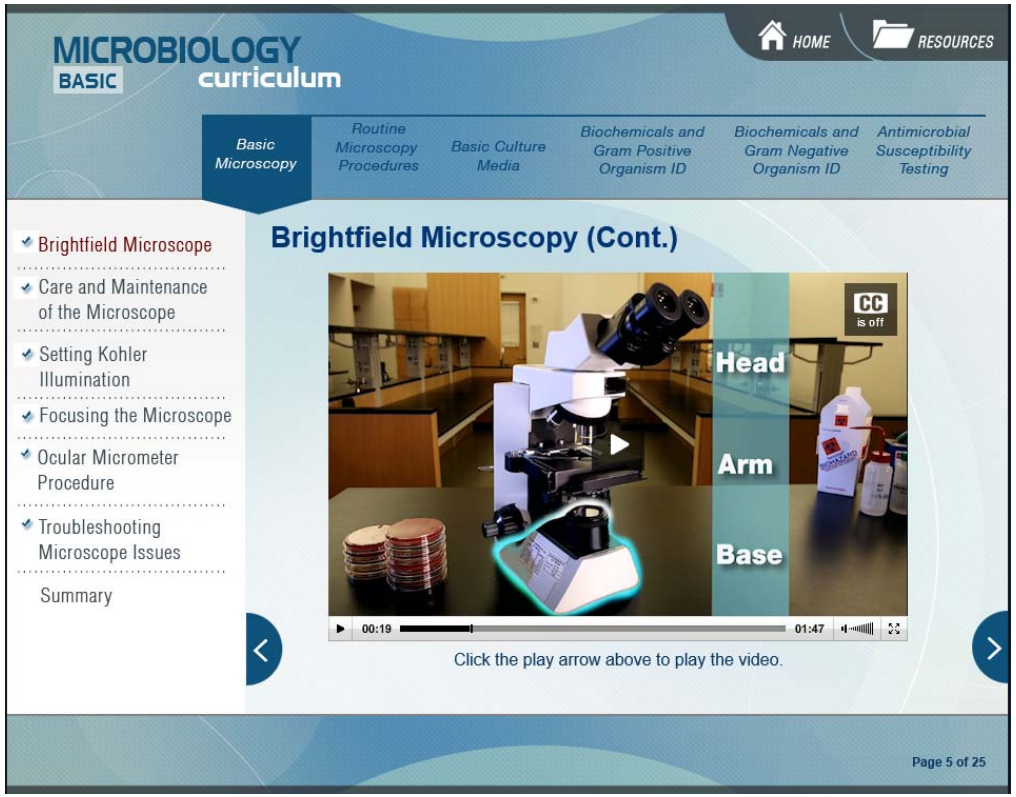
- Additional Topics
  - Cryogenic Safety
  - Communicating Hazards of Chemicals
  - Hearing Protection
  - Compressed Gases
  - Ergonomic Safety

Fundamental Skills

- Hands-On Workshops
  - Rabies
  - Mycology (2)
  - TB
  - Influenza
  - MicrobeNet
  - PulseNet
  - BioNumerics
  - CaliciNet
  - Parasitology (3)
  - AST
- Online Self-Study
  - AST (3)
  - In Development:
    - Continuity of Operations Planning (COOP)
    - Informatics (APHL/CDC)
- Blended Learning
  - Basic Microbiology
  - In Development: Basic Molecular Biology

Basic Microbiology Blended Learning

- Didactic content addressed online
  - Self-study modules
  - Emphasis on visual learning through videos and animations
- Experiential knowledge addressed through locally mentored exercises
  - Download PDF or Word files
  - Edit to meet individual lab requirements



Basic Microbiology Blended Learning

Basic Microscopy Laboratory Exercises

After you have completed the Basic Microscopy eLearning course, it is strongly recommended that you complete the following laboratory exercises to transfer the didactic content of the course to experiential knowledge gained through hands-on laboratory exercises with your equipment in your laboratory. Your supervisor/mentor should work with you to develop these laboratory skills as well as confirm that these exercises have been completed. The number and types of exercises you will complete will be at the discretion of your supervisor/mentor based on procedures followed within your laboratory. Included in the laboratory exercises portion of this course are the objectives of the exercises as well as the prepared exercises. After the laboratory exercises are completed and discussed with your supervisor/mentor, your supervisor/mentor should then follow-up the exercises with instruction related to your laboratory's specific procedures or guidelines.

Laboratory Exercise Objectives:

After completing the basic microscopy laboratory exercises, you will be able to:

- Demonstrate the ability to correctly locate various components of a brightfield (compound) microscope.
- Recognize the various components of a brightfield microscope and their function.
- Utilize the Kohler illumination procedure and job aid to correctly perform Kohler illumination on a brightfield microscope.
- Apply focusing techniques for the 10X, 40X, and 100X objectives to achieve optimal field of view.
- Use the 100X objective with oil immersion to detect and identify microscopic organisms.
- Compute total magnification for the 40X high dry objective as well as other objectives.
- Apply the calibration of the ocular micrometer procedure and job aid to correctly perform ocular micrometer calibration on a brightfield microscope.
- Calculate size of an organism using the newly established calibration factors determined as a result of the ocular micrometer calibration procedure.
- List the make and model of the brightfield microscope used in their laboratory.
- Describe where to find manufacturer's instructions for the brightfield microscope.
- Demonstrate proper care and maintenance procedures for the brightfield microscope.
- Summarize what, when, and where to document routine maintenance performed on the bright microscope for your laboratory records.

Note: Be sure to review the proper use of personal protective equipment (PPE) and laboratory equipment according to your laboratory's procedures and safety manual.

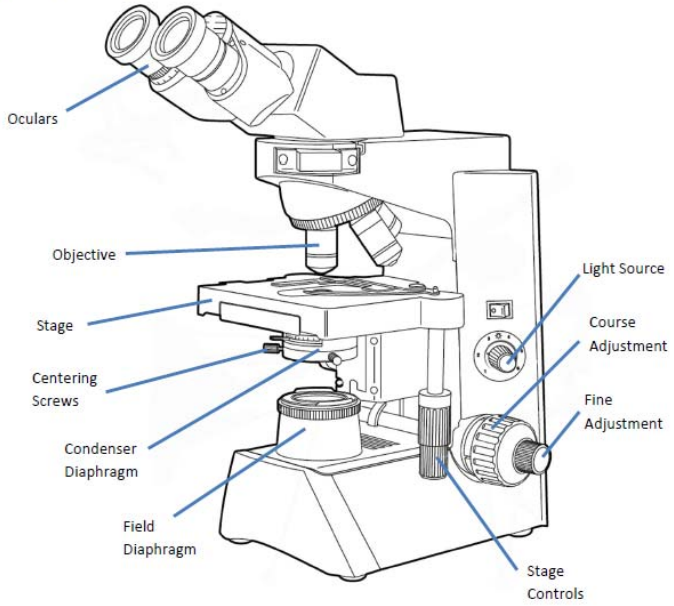
CDC

Laboratory Training Branch

Components of the Microscope

Introduction

Microscopy has a very important role in microbiology laboratories. A microscope is an essential tool to see microorganisms that are too small to be seen by the naked eye. In order to use your microscope effectively and efficiently in your daily routine, it is necessary that you become familiar with the major components of the microscope.



CDC

Laboratory Training Branch

Basic Microbiology Blended Learning

- Results:
  - 2400 scientists trained annually (and increasing); more than 6200 scientists trained since training release
  - Laboratories now control staff training
  - Laboratories can scale capacity as needed
  - Laboratories adopting lab exercises as proficiency validations for CLIA compliance

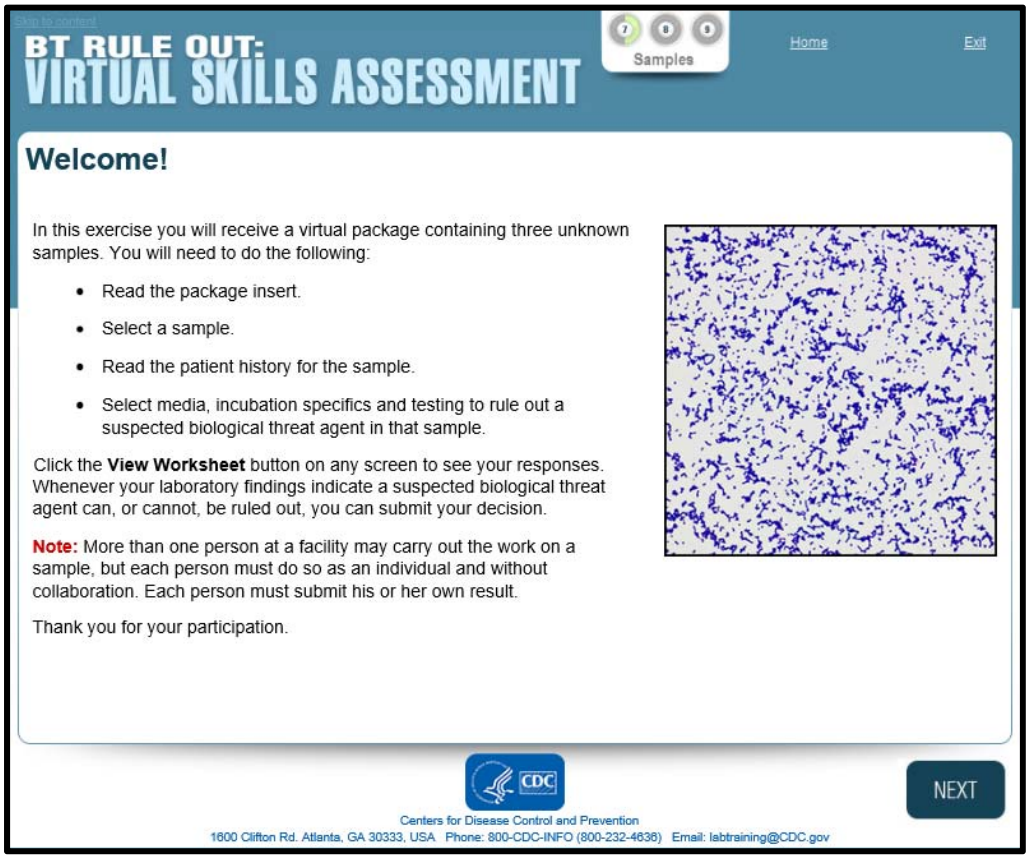
Rule-Out-or-Refer

- Train-the-Trainer Workshop

- Online Modules
  - Anthrax
  - Brucella
  - Burkholderia
  - Francisella tularensis
  - Yersinia Pestis

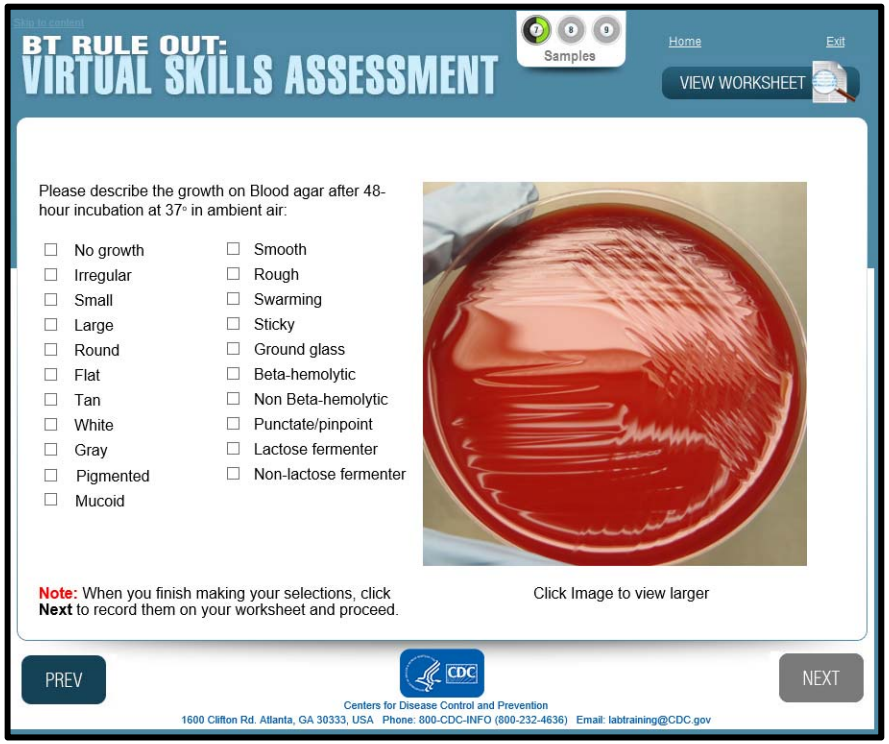
Virtual Exercise

- Virtual Exercises
  - Safely apply Rule-out-or-Refer procedures in a virtual environment
  - Assesses knowledge of procedures
  - Assesses ability to interpret test results
  - Exercise 3: Now Available
  - Exercises 1, 2, and 4: Coming Soon



Virtual Exercise

- Sample information provided

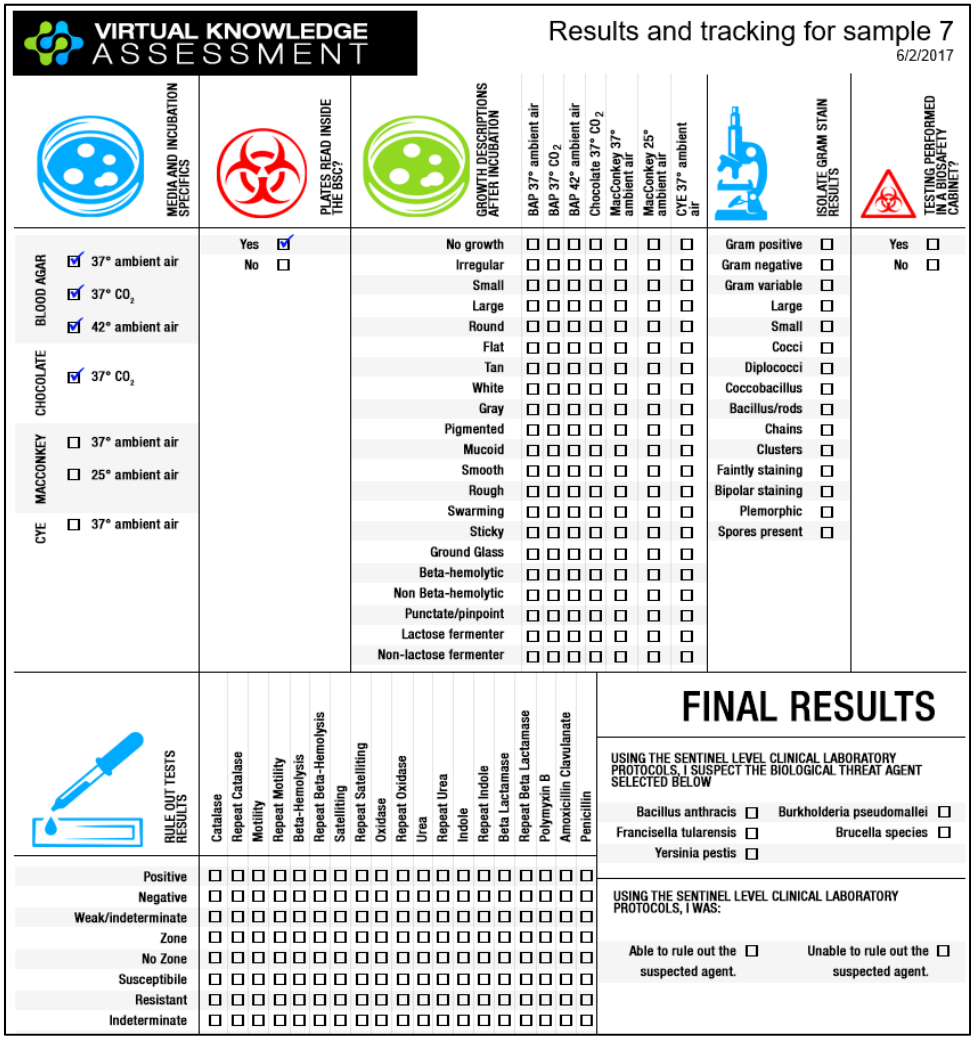


- Participant selects a test and is presented with results
- Results are interpreted and recorded

Virtual Exercise

- Based on interpretation of results, participant chooses:
  - Rule Out
  - Refer
  - Suspected agent

- 89% passed Exercise 1
- 92% passed Exercise 2



VIRTUAL KNOWLEDGE ASSESSMENT

Results and tracking for sample 7

6/2/2017

MEDIA AND INCUBATION SPECIFICS	PLATES READ INSIDE THE BSC?	GROWTH DESCRIPTIONS AFTER INCUBATION	BAP 37° ambient air	BAP 37° CO_2	BAP 42° ambient air	Chocolate 37° CO_2	MacConkey 37° ambient air	MacConkey 25° ambient air	CYE 37° ambient air	ISOLATE GRAM STAIN RESULTS	TESTING PERFORMED IN A BIOSAFETY CABINET?
BLOOD AGAR ☑ 37° ambient air	Yes ☑	No growth	☐	☐	☐	☐	☐	☐	☐	Gram positive ☐	Yes ☐
BLOOD AGAR ☑ 37° CO_2	No ☐	Irregular	☐	☐	☐	☐	☐	☐	☐	Gram negative ☐	No ☐
BLOOD AGAR ☑ 42° ambient air		Small	☐	☐	☐	☐	☐	☐	☐	Gram variable ☐	
CHOCOLATE ☑ 37° CO_2		Large	☐	☐	☐	☐	☐	☐	☐	Large ☐	
MACCONKEY ☐ 37° ambient air		Round	☐	☐	☐	☐	☐	☐	☐	Small ☐	
MACCONKEY ☐ 25° ambient air		Flat	☐	☐	☐	☐	☐	☐	☐	Cocci ☐	
CYE ☐ 37° ambient air		Tan	☐	☐	☐	☐	☐	☐	☐	Diplococci ☐	
		White	☐	☐	☐	☐	☐	☐	☐	Coccobacillus ☐	
		Gray	☐	☐	☐	☐	☐	☐	☐	Bacillus/rods ☐	
		Pigmented	☐	☐	☐	☐	☐	☐	☐	Chains ☐	
		Mucoid	☐	☐	☐	☐	☐	☐	☐	Clusters ☐	
		Smooth	☐	☐	☐	☐	☐	☐	☐	Faintly staining ☐	
		Rough	☐	☐	☐	☐	☐	☐	☐	Bipolar staining ☐	
		Swarming	☐	☐	☐	☐	☐	☐	☐	Plemorphic ☐	
		Sticky	☐	☐	☐	☐	☐	☐	☐	Spores present ☐	
		Ground Glass	☐	☐	☐	☐	☐	☐	☐		
		Beta-hemolytic	☐	☐	☐	☐	☐	☐	☐		
		Non Beta-hemolytic	☐	☐	☐	☐	☐	☐	☐		
		Punctate/pinpoint	☐	☐	☐	☐	☐	☐	☐		
		Lactose fermenter	☐	☐	☐	☐	☐	☐	☐		
		Non-lactose fermenter	☐	☐	☐	☐	☐	☐	☐		

RULE OUT TESTS RESULTS	Catalase	Repeat Catalase	Motility	Repeat Motility	Beta-Hemolysis	Repeat Beta-Hemolysis	Satellitting	Repeat Satellitting	Oxidase	Repeat Oxidase	Urea	Repeat Urea	Indole	Repeat Indole	Beta Lactamase	Repeat Beta Lactamase	Polymyxin B	Amoxicillin Clavulanate	Penicillin
Positive	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Negative	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Weak/indeterminate	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Zone	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
No Zone	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Susceptibile	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Resistant	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Indeterminate	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

FINAL RESULTS

USING THE SENTINEL LEVEL CLINICAL LABORATORY PROTOCOLS, I SUSPECT THE BIOLOGICAL THREAT AGENT SELECTED BELOW

Bacillus anthracis ☐ Burkholderia pseudomallei ☐

Francisella tularensis ☐ Brucella species ☐

Yersinia pestis ☐

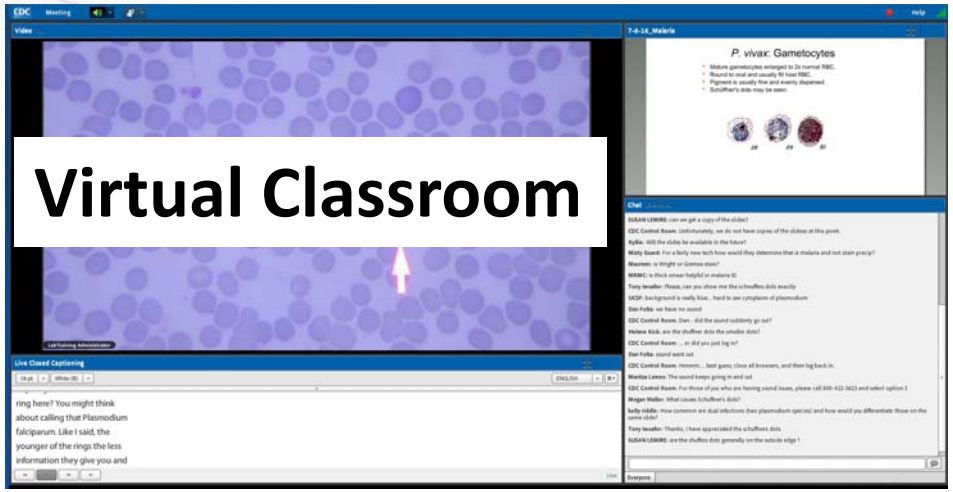
USING THE SENTINEL LEVEL CLINICAL LABORATORY PROTOCOLS, I WAS:

Able to rule out the suspected agent. ☐ Unable to rule out the suspected agent. ☐

eTrack

- eTrack = TinCan API
- Requirements:
  - SCORM-conformant LMS
- If your LMS meets the criteria listed above:
  - CDC courses can be virtually hosted by your LMS
    - You will need to load a small manifest file for each course onto your LMS
    - Manifest file connects your registrants to the course hosted on CDC servers
  - For people who register through your site:
    - You will receive demographic data provided by your LMS
    - Pass/Fail results and exam score
- Plan to release eTrack in Fall

What's Next?


Virtual Classroom
P. vivax: Gametocytes
Live Closed Captioning
ring here? You might think
about calling that Plasmodium
falciparum. Like I said, the
younger of the rings the less
information they give you and

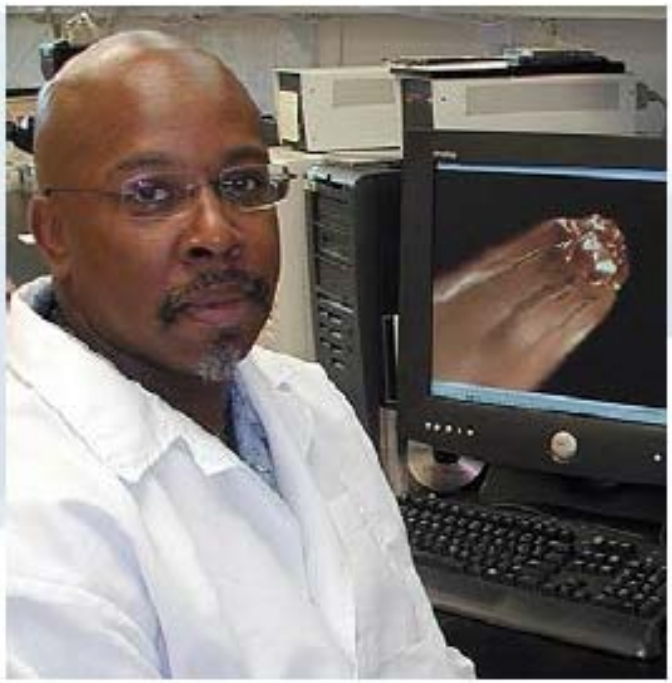

Gamification


Micro-learning


Virtual Reality

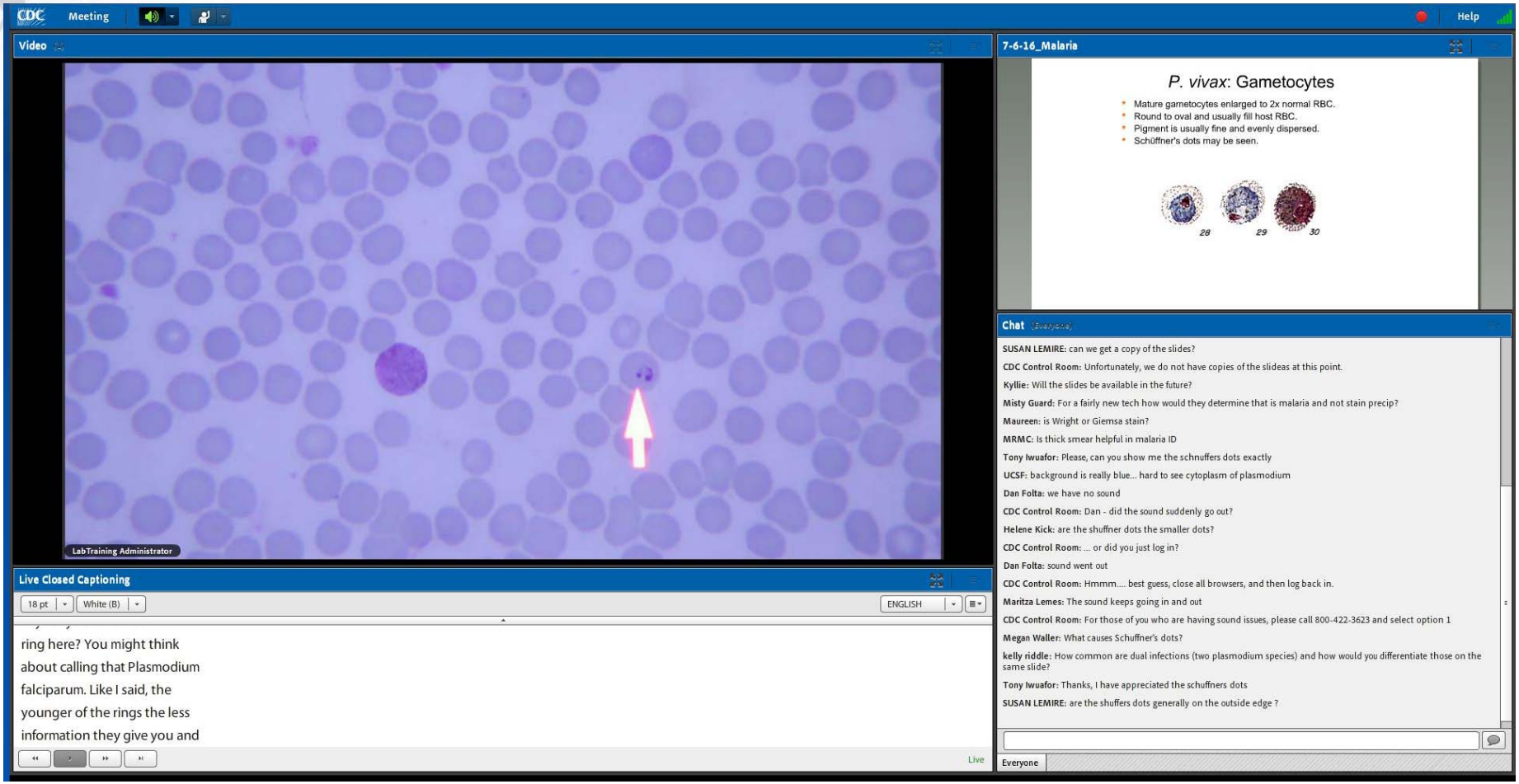
Virtual Classroom

- Objective: Build new skills upon current foundation
- Format: Virtual Classroom
- Morphological Diagnosis of Plasmodium Species



Henry S. Bishop
Microbiologist
Parasitic Disease Branch,
Division of Parasitic Diseases and Malaria,
Center for Global Health, CDC

Virtual Classroom



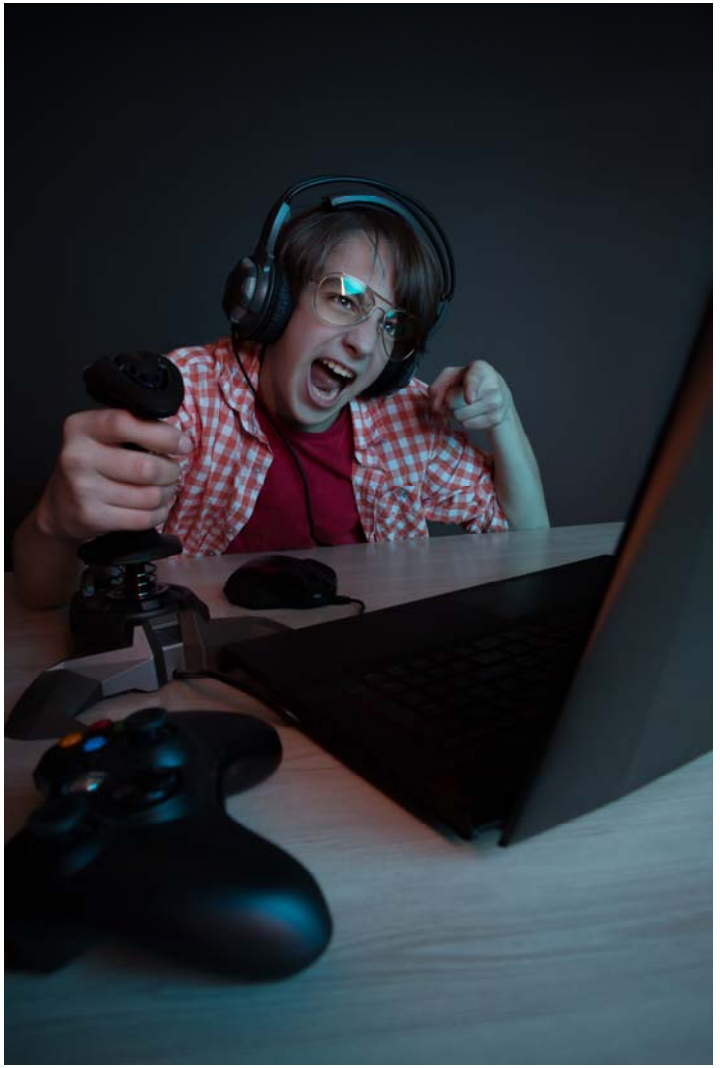
Ring Forms of Plasmodium Species

Virtual Classroom

- Results:
  - 455 scientists from all 50 states and 24 different countries participated in the course
  - 87% successfully identified the organisms in the practical exam

Gamification

- Virtual Exercises are first step
- Focus on application of skills
- Assess application of skills
- Tap into phenomenal retention statistics



Micro Learning

- Adapt training to learner needs and schedule
- People have less than 1% of their day to apply to training
- Deliver content in bites the learner can manage

Virtual Reality

- Incredible potential
- Technology not yet ready for most laboratory test procedures
- Looking for the right application and funding

Summary

- Consider these tools, and others, in developing your outreach strategy to save time and resources.
- Network with others with similar goals to maximize resources.
- Remember the message must be consistent but the delivery does not need to be repetitive.

Contact Information

QUESTIONS?

Contact us at: labtraining@cdc.gov

Visit our website at: www.cdc.gov/labtraining