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 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 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
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

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Course Title</th>
<th>Application Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 12, 2017</td>
<td>New HIV Testing Technologies: Implications for Your Laboratory</td>
<td></td>
</tr>
<tr>
<td>Jan 23-27, 2017</td>
<td>Standardized Subtyping of Foodborne Bacterial Pathogens by Pulsed-field Gel Electrophoresis (PFGE)</td>
<td></td>
</tr>
<tr>
<td>Feb 13-17, 2017</td>
<td>Standardized Subtyping of Foodborne Bacterial Pathogens by Pulsed-field Gel Electrophoresis (PFGE)</td>
<td></td>
</tr>
<tr>
<td>March 7-10, 2017</td>
<td>Algorithms in Diagnostic Molecular Parasitology</td>
<td>01/05/2017</td>
</tr>
<tr>
<td>March 15, 2017</td>
<td>Candida auris: An Emerging Multidrug-Resistant Yeast</td>
<td></td>
</tr>
<tr>
<td>March 27-31, 2017</td>
<td>Diagnostic Mycobacteriology</td>
<td></td>
</tr>
<tr>
<td>April 12, 2017</td>
<td>Trichomoniasis: Diagnosis, Treatment, and Drug Resistance</td>
<td></td>
</tr>
<tr>
<td>May 1-5, 2017</td>
<td>16S rRNA Sequence Based Bacterial Identification (MicrobeNet)</td>
<td></td>
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<tr>
<td>May 18-19, 2017</td>
<td>Laboratory Identification of Emerging Pathogenic Molds – An Advanced Course</td>
<td></td>
</tr>
<tr>
<td>June 29, 2017</td>
<td>Morphological Diagnosis of Human Entamoeba Species</td>
<td>05/22/2017</td>
</tr>
</tbody>
</table>
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 Amoeba Infections
- Brain-Eating Amoebae - Challenges in Diagnosis and Treatment
- Foodborne Disease Surveillance: Genomics, Metagenomics, and the Road Ahead
- The RN 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

- Title
- Course Description
- Learning Objectives
- Target Audience
- Requirements
- Continuing Education Credit Description

- Brochure
- Link to Course in TRAIN
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 laboratorytraining@cdc.gov.

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**External Training Links**

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

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**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:**

Deth Hochstedler,
Education, Training and Outreach Director

deth.hochstedler@biol.edu, phone: 319-335-4303

**Link to courses:**

http://www.shi.uiowa.edu/cdc/sendlabtrain/courses/index.xml

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**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
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 Microscopy Laboratory Exercises**

After you have completed the Basic Microscopy 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 skills as well as confirm that these exercises have been completed. The number and type 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:**

- 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.

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**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.
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 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
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

Gamification

Virtual Reality

Micro-learning
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.
QUESTIONS?

Contact us at: labtraining@cdc.gov

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