INTRODUCTION TO LABORATORY INFORMATICS: LIFE OF A SPECIMEN

AN ONLINE LEARNING COURSE
AVAILABLE ON WWW.CDC.TRAIN.ORG

Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

This project was supported by Cooperative Agreement #NU60OE000103 funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC or the Department of Health and Human Services.

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES

DESCRIPTION

Laboratory informatics is the specialized application of information technology to enable and enhance scientific processes and the delivery of laboratory information. It is a critical part of today's laboratory operations, helping to ensure high quality and reliable data and results.

This basic-level eLearning course is the first of a two-part introductory module on laboratory informatics. The course provides information on the role and processes of laboratory informatics through exploration of the "life of a specimen" as a specimen moves through the laboratory. Topics covered include the roles of various personnel in the laboratory informatics enterprise, data relationships, data quality and standards, and the generation and flow of information as a specimen progresses through the pre-analytic, analytic, and post-analytic phases.

AUDIENCE

This online course is designed for public health and clinical laboratory staff (including managers and leaders) and persons interested in the role and importance of informatics to the operation and mission of the laboratory.

Learners who complete this course can then take the second course in the two-part module– *Introduction to Laboratory Informatics: Life of a Result.*

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Recognize what laboratory informatics is and how it directly supports patient care and public health goals
- Identify who plays a role in laboratory informatics and explain the purpose of each role
- Identify the sequence of data and information flow within the laboratory from specimen collection/receipt to specimen storage/disposal
- Recognize the importance of data quality and the factors that impact data quality
- Identify the different types of data standards and the importance of using those standards
- Define what a LIMS and LIS are, their capabilities, and how they differ from other systems used in the laboratory

CONTINUING EDUCATION

The Centers for Disease Control and Prevention Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 2 contact hours. P.A.C.E.® course number: 288-006-18.

For a complete list of courses, visit www.cdc.gov/labtraining.

INTRODUCTION TO LABORATORY INFORMATICS: LIFE OF A RESULT

AN ONLINE LEARNING COURSE
AVAILABLE ON WWW.CDC.TRAIN.ORG

Sponsored by the
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Centers for Disease Control and Prevention

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CENTERS FOR DISEASE CONTROL AND PREVENTION

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES

DESCRIPTION

Laboratory informatics is the specialized application of information technology to enable and enhance scientific processes and the delivery of laboratory information. It is a critical part of today's laboratory operations, helping to ensure high quality and reliable data and results.

This basic-level eLearning course is the second of a two-part introductory module on laboratory informatics. The course provides information on the role and processes of laboratory informatics through exploration of the "life of a result" as data and results move through the laboratory and outside the laboratory. Topics covered include characterization of the recipients of laboratory data, data and results storage, and the communication of data and results (especially electronically) to various stakeholders.

AUDIENCE

This online course is designed for public health and clinical laboratory staff (including managers and leaders) and persons interested in the role and importance of informatics to the operation and mission of the laboratory.

This course is intended for learners who have taken the first course in the two-part module– *Introduction to Laboratory Informatics: Life of a Specimen*.

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Identify where and how data and results are stored inside the laboratory
- Recognize how data and results are transmitted inside and outside the laboratory to stakeholders
- Identify two paths that data and results can follow to impact the health of individual patients and the public
- Recognize how the proper recording, coding, storage, and transmission of data and results can impact patient care and public health
- Identify what data standards are used, their purpose, and components involved
- Explain what Electronic Test Orders and Results (ETOR), Electronic Laboratory Reporting (ELR) and Electronic Health Record (EHR) are and how they differ

CONTINUING EDUCATION

The Centers for Disease Control and Prevention Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 2 contact hours. P.A.C.E.® course number: 288-007-18.

For a complete list of courses, visit www.cdc.gov/labtraining.

Basic Culture Media

Basic Microbiology Curriculum

Online Course

Sponsored by the Centers for Disease Control and Prevention, Division of Laboratory Systems

DESCRIPTION

This eLearning course is designed to familiarize laboratorians with basic culture media used in the microbiology laboratory. Laboratorians will review and contrast the various culture medias, describe the process of streaking a plate, identify types of colonial morphology and explain commonly encountered problems that occur with culture media.

AUDIENCE

New or existing public health laboratorians, who have a science background, are entering or reentering the microbiology field and who need training in routine basic culture media essential for performing job requirements.

OBJECTIVES

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

- Distinguish enrichment, differential, and selective media.
- Review the principles of the most commonly used media.
- Contrast various culture media.
- Describe the steps of streaking a plate.
- Interpret results on various culture media.
- Recognize the different types of colonial morphology.
- Identify commonly encountered problems with basic culture media.

REGISTRATION

FREE REGISTRATION

- Register online at www.cdc.gov/labtraining
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for **1.0** contact hours.

SPECIAL NEEDS

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

P.A.C.E. Course Number: 288-008-18

MICROBIOLOGY CURRICULUM: BASIC MICROSCOPY

AN ONLINE LEARNING COURSE

AVAILABLE ON WWW.CDC.TRAIN.ORG

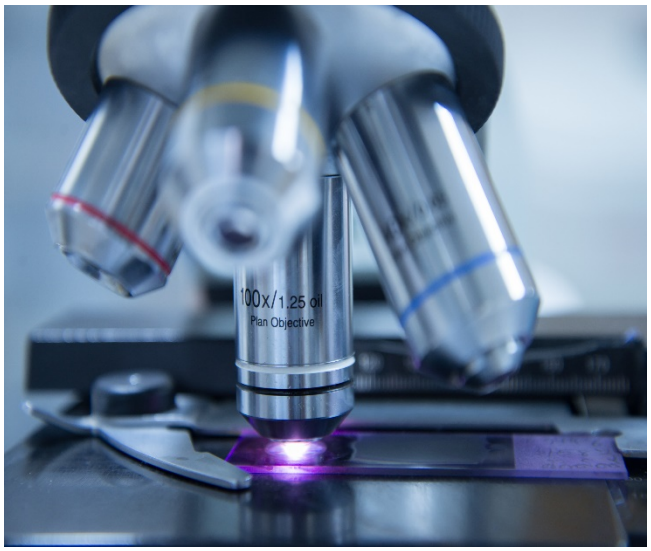
Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

The microscope is an important diagnostic tool, used in laboratories, that allows you to view organisms too small to otherwise be seen. In order to accurately use the microscope, laboratory professionals must have a basic understanding of its parts and sections, care, maintenance, focus, and procedures for ensuring optimal illumination.

This basic-level eLearning course will review the correct use and maintenance of the brightfield microscope, including troubleshooting commonly encountered problems.



AUDIENCE

This basic level course is designed for new or existing public health and clinical laboratory professionals, individuals with a science background who are entering or reentering the microbiology field, or individuals needing training in basic microscopy principles and techniques.

SPECIAL NEEDS

Course content is closed captioned, where applicable; and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Identify the major components of the microscope and their function.
- Identify how to maintain a microscope.
- Discuss the role of Kohler illumination in microscopy.
- Describe the process to correctly focus on the appropriate field of view.
- Use the ocular micrometer to measure an object under the microscope.
- Demonstrate the ability to troubleshoot encountered problems with the microscope.

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 1.0 contact hours. P.A.C.E.® course number: 288-010-19

For a complete list of courses, visit www.cdc.gov/labtraining.

FUNDAMENTALS OF WORKING SAFELY IN A BIOSAFETY CABINET

AN ONLINE LEARNING/ELEARNING COURSE

AVAILABLE ON WWW.CDC.TRAIN.ORG

Sponsored by the
Division of Laboratory Systems, Center for Surveillance, Epidemiology and Laboratory Services, Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

A biological safety cabinet (BSC) is the primary means of containment developed for working safely with infectious microorganisms. Class II BSCs, the most common cabinets used in laboratories, are designed to provide personnel protection (for you and those around you), product protection (for your samples or specimens), and environmental protection.

This basic-level eLearning course module provides information on the safe use of Class II biological safety cabinets. Topics covered include major parts of a BSC, how a BSC works, how to work safely inside a BSC, and what to do if there is an emergency while working in a BSC. Videos, interactive exercises, job aids, and a modifiable checklist template are included in the course to enhance the learning experience.

AUDIENCE

This online course is designed for public health and clinical laboratory staff, safety professionals and persons interested in safe use of biosafety cabinets.

SPECIAL NEEDS

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

FREE REGISTRATION

- Register online at www.cdc.gov/labtraining
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 1.0 contact hours. P.A.C.E.® course number: 288-014-19

OBJECTIVES

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

- Identify the major parts of a Class II BSC
- Discuss general facts about BSCs
- List the factors that affect BSC airflow
- Describe the preparation steps for work in a BSC
- Describe the practices for working safely in a BSC
- Describe the steps for completion of work in a BSC
- Describe the BSC procedures to follow in an emergency

For a complete list of courses, visit www.cdc.gov/labtraining.

eLearning

Good Laboratory Practices for Molecular Genetics Testing

Sponsored by the Centers for Disease Control and Prevention, Division of Laboratory Systems

Course Number

P.A.C.E. ® Course Number: 288-018-18

Description

This on-line learning module is presented in first person. This means the learner is actually depicted as getting an assignment and doing the work throughout the course. This training is not meant to be prescriptive. There are several different ways to obtain information and perform the tasks described in the training. We are simply providing examples of potential options. The characters and scenarios in this training are fictitious and are based on possible real-life situations. For the purposes of this training module, the manufacturer details are fictional and do not indicate CDC's support for any commercially available product or service. Although some of the recommendations in this training exceed CLIA and other requirements that pertain to molecular genetic testing, following these good laboratory practices will likely lead to improvements in the quality and use of genetic laboratory services and should improve health outcomes for the public.

Audience

Laboratorians (including laboratory directors) who perform molecular genetics testing or are considering adding it to the laboratories testing menu.

Objectives

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

- Define how to comply with CLIA requirements as they apply to molecular genetic testing.
- Select quality management approaches for molecular genetic testing Consistent with good laboratory practices and the testing performed in your laboratory.
- Develop policies, processes, and procedures for the molecular genetic testing performed in your laboratory consistent with both CLIA requirements and good laboratory practices

Registration - Free Registration

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov
- For additional program information, email labtraining@cdc.gov or call (404) 498-6022

eLearning

Continuing Education

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E. ® Program. This course is approved for **1.5** contact hours.

Special Needs

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

For a complete list of courses, visit www.cdc.gov/labtraining

Online Course

Biochemicals and Gram Positive Organism ID

Basic Microbiology Curriculum

Sponsored by the Centers for Disease Control and Prevention, Division of Laboratory Systems

DESCRIPTION

This eLearning course is designed to familiarize laboratorians with how to read a Gram stain, the colonial characteristics and biochemical tests used to identify Gram positive microorganisms as well as commonly used testing algorithms. The course will only cover aerobic microorganisms, those that grow in the presence of oxygen.

AUDIENCE

New or existing public health and clinical laboratorians who have a science background, are entering or reentering the microbiology field and who need training in biochemical test methods and Gram positive microorganism identification essential for performing job requirements.

OBJECTIVES

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

- Identify different types of bacterial morphology seen on a Gram stain
- Identify different types of colonial characteristics
- Use flowcharts and identification charts to identify some common aerobic Gram positive microorganisms
- Associate various biochemical tests with their correct applications
- Interpret the results of biochemical methods

REGISTRATION

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov
- For additional program information, email labtraining@cdc.gov or call (404) 498-6022

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for **1.5** contact hours.

SPECIAL NEEDS

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

P.A.C.E.® Course Number: 288-020-18

Online Course

Biochemicals and Gram Negative Organism ID

Basic Microbiology Curriculum

Sponsored by Centers for Disease Control and Prevention, Division of Laboratory Systems

DESCRIPTION

This eLearning course is designed to familiarize laboratorians with how to read a Gram stain, colonial characteristics, and biochemical tests used to identify Gram negative microorganisms as well as commonly used testing algorithms. The course will only cover aerobic microorganisms, those that grow in the presence of oxygen.

AUDIENCE

New or existing public health and clinical laboratorians, who have a science background, are entering or reentering the microbiology field and who need training in biochemical test methods and Gram negative microorganism identification essential for performing job requirements.

OBJECTIVES

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

- Identify different types of bacterial morphology seen on a Gram stain
- Identify different types of colonial characteristics
- Use flowcharts and identification charts to identify some common aerobic Gram negative microorganisms
- Associate various biochemical tests with their correct applications
- Interpret the results of biochemical methods

REGISTRATION

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov
- For additional program information, email labtraining@cdc.gov or call (404) 498-6022

CONTINUING EDUCATION

The Centers for Disease Control and Prevention,Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for **1.0** contact hours.

SPECIAL NEEDS

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

P.A.C.E.® Course Number: 288-021-18

eLearning

BIOTHREAT PREPAREDNESS TRAINING FOR SENTINEL LABORATORIES - *Bacillus anthracis*

Description

This module has been developed to provide clinical laboratory scientists with information about the laboratory identification of *Bacillus anthracis*.

The goal is to assist clinical laboratory scientists in better recognizing potential biothreat agents they might encounter during routine laboratory work-ups of sputum, blood and aspirate/biopsy specimens.

Laboratory managers may consider using this course:

To assess staff competency in performing laboratory procedures accurately, and
To determine if staff are referring specimens for test confirmations correctly.

Objectives

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

- Describe laboratory tests for presumptive identification of *Bacillus anthracis.*
- Describe how to rule out or refer presumptive organisms for *B. anthracis.*
- Discuss the role of the LRN sentinel laboratory in detection of *B. anthracis.*

Registration - Free Registration

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov
- For additional program information, email labtraining@cdc.gov or call (404) 498-6022

Continuing Education

This course is being revised, so P.A.C.E® credits are not offered at this time. You may receive a course completion certificate without P.A.C.E® credits. The revised course will offer P.A.C.E® credits.

Special Needs

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

For a complete list of courses, visit www.cdc.gov/labtraining

eLearning

BIOTHREAT PREPAREDNESS TRAINING FOR SENTINEL LABORATORIES - *Brucella* spp.

Description

This module has been developed to provide clinical laboratory scientists with information about the laboratory identification of *Brucella* species.

The goal is to assist clinical laboratory scientists in better recognizing potential biothreat agents they might encounter during routine laboratory work-ups of sputum, blood and aspirate/biopsy specimens.

Laboratory managers may consider using this course:

To assess staff competency in performing laboratory procedures accurately, and
To determine if staff are referring specimens for test confirmations correctly.

Objectives

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

- Describe laboratory tests for identification of *Brucella spp*.
- Describe how to rule out or refer isolates for *Brucella spp.* using standardized laboratory protocols.
- Discuss the role of the sentinel laboratory in bioterrorism response.

Registration - Free Registration

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov
- For additional program information, email labtraining@cdc.gov or call (404) 498-6022

Continuing Education

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Special Needs

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For a complete list of courses, visit www.cdc.gov/labtraining

eLearning

BIOTHREAT PREPAREDNESS TRAINING FOR SENTINEL LABORATORIES - *Burkholderia* spp.

Description

This module has been developed to provide clinical laboratory scientists with information about the laboratory identification of *Burkholderia* spp.

The goal is to assist clinical laboratory scientists in better recognizing potential biothreat agents they might encounter during routine laboratory work-ups of sputum, blood and aspirate/biopsy specimens.

Laboratory managers may consider using this course:

To assess staff competency in performing laboratory procedures accurately, and
To determine if staff are referring specimens for test confirmations correctly.

Objectives

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

- Summarize the basic epidemiology and ecology of *Burkholderia* spp.
- List important aspects of biosafety in working with *Burkholderia* spp. in the laboratory.
- Outline the role of the LRN sentinel laboratory in the detection of *Burkholderia* spp.
- Apply various laboratory tests that are used to presumptively identify *Burkholderia* spp.
- Use sentinel laboratory protocols to Rule Out or Refer isolates for the identification of *Burkholderia* spp.

Registration - Free Registration

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov
- For additional program information, email labtraining@cdc.gov or call (404) 498-6022

Continuing Education

This course is being revised, so P.A.C.E® credits are not offered at this time. You may receive a course completion certificate without P.A.C.E® credits. The revised course will offer P.A.C.E® credits.

Special Needs

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

For a complete list of courses, visit www.cdc.gov/labtraining

Dangerous Goods Packing and Shipping Training of Trainers (TOT) Opportunity

Free Virtual Course Jan 11th – 25th, 2020

Background

Clinical and public health laboratory professionals who pack and ship Division 6.2 Infectious Substances and Dry Ice (dangerous goods) must be trained and certified, but there are a limited number of free courses. In response to the need for additional trainings, CDC has partnered with Sandia National Laboratories and the Association for Public Health Laboratories (APHL) to pilot a virtual dangerous goods packing and shipping training of trainers (TOT) program that focuses on IATA/DOT regulations.

Goal

The goal of this TOT program is to train-instructors to deliver Dangerous Goods Packing and Shipping training to increase training access to sentinel laboratories. This TOT will be one component of a larger coordinated packing and shipping training program that includes 1) APHL-sponsored packing and shipping virtual seminars, 2) CDC packing and shipping eLearning course, and 3) TOT participants delivering packing and shipping training to others within their jurisdictions.

Course Description

This three-part intermediate-level course will train, prepare, and certify instructors to deliver Dangerous Goods Packing and Shipping training. Participants will learn to train others to mark, label, pack, and complete documentation for a variety of dangerous goods shipments (e.g., Category A and Category B infectious substances, exempt human specimens, dry ice). Participants will complete a written exam and practical exercises to demonstrate competency. Successful completion of the course will qualify participants to train others on Dangerous Goods Packing and Shipping.

Learning Objectives

1. After successful completion of Part 1 - Dangerous Goods Packing and Shipping Training, participants should be able to:

    - Discuss details of packing and shipping regulations.
    - Demonstrate expertise in dangerous goods packing and shipping regulations.

2. After successful completion of Part 2 - Dangerous Goods Packing and Shipping TOT Intersession and Work Group Assignments, participants should be able to:

    - Identify supplies they will need to implement a training (IATA Dangerous Goods Regulations manual, etc.).
    - Develop training materials and tools needed for trainings they deliver (shipping kits, electronic training files, etc.).
    - Evaluate and coach others in the proper application of dangerous goods packing and shipping regulations.
    - Answer frequently asked questions related to dangerous goods packing and shipping regulations that go beyond the typical, basic packing and shipping course.

3. After successful completion of Part 3 - Dangerous Goods Packing and Shipping Teach-back, participants should be able to:

    - Demonstrate competency in IATA's qualification requirements for instructors of packing and shipping dangerous goods.
    - Demonstrate appropriate use of adult learning theory in teaching packing and shipping courses.
    - Deliver effective Dangerous Goods Packing and Shipping training to laboratory professionals.

Audience

This course is intended for clinical and state/local public health laboratory professionals with a minimum of one-year experience in a laboratory, who train other laboratory professionals as a regular part of their job, and who are responsible for packing, marking, and labeling shipments of all categories of infectious substances, dry ice and liquid nitrogen. Candidates should:

- Have supervisor support to attend training and to lead subsequent trainings
- Be able to lead at least 4 training courses/year for a total of 80 participants (20 participants per course)
- Have access to a physical and virtual training space and other necessary resources

Instructor

Eric Cook, MPH, CBSP, Senior Member Technical Staff
International Biological and Chemical Threat Reduction Program
Sandia National Laboratories, Albuquerque, New Mexico

Continuing Education

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for __ contact hours of P.A.C.E. ® credit. P.A.C.E.® number: _____.

Duration and Dates

This course will be held virtually from January 11th – 25th, 2020. Duration of each day is listed in the schedule below. Full teach back sessions will occur after virtual training dates.

Application & Registration

Please email Isaiah Hurtado, TOT program coordinator, at labtrainingneeds@cdc.gov of your interest to participate in the Packing & Shipping TOT program by 5:00 pm on Tuesday, November 24th. Further registration instruction and session meeting links will be provided.

Support to Trainees

The following support will be provided to TOT attendees:

- Hard copies of the 2020 Dangerous Goods Regulations manual with 2021 supplements.
- Electronic copies of the TOT course materials
- P.A.C.E.® credits for Part 1 and Part 2 of the TOT course. To receive credit, learners must attend all sessions and pass the final exam.

The following support will be provided to participants who successfully complete the TOT course:

- Follow-up technical assistance calls with a packing and shipping SME for three months post-training and a copy of the collated FAQs
- Electronic copies of one-day workshop training materials (e.g., slides, handouts, examination)
- Course registration management on CDC TRAIN for one-day trainings
- P.A.C.E. ® credits for standard one-day workshops
- Electronic course evaluations, pretest and posttest, and P.A.C.E.® certificates dissemination through CDC TRAIN

CDC will not fund the cost of training facilities, printed course materials, or travel for courses that trainers conduct. CDC will also not fund copies of future editions of the Dangerous Goods Regulations manual. IATA offers free, downloadable versions of the regulations' significant changes and an addendum to the previous year's regulations.

Post Training Expectations and Commitments of Trainers

TOT graduates will be asked to:

- Have access to a physical and virtual training space to host trainings
- Complete TOT evaluation surveys (immediately post course and between a 3- and 6-month follow-up)
- Contact designated course packing and shipping SME for training technical assistance within 3 months of the TOT course
- Lead at least 4 Dangerous Goods Packing and Shipping training courses/year for a total of 80 participants (20 participants per course)
- Share course information (date, location, etc.) with CDC packing and shipping TOT program coordinators one month before trainings to post on CDC TRAIN
- Distribute course materials to attendees (either electronically or in print)
- Comply with CDC/DLS requirements for courses to qualify P.A.C.E.® credits
- Send electronic list of attendees who passed the course to CDC no later than three business days after each training

Disclosure

CDC, our planners, and our presenters wish to disclose they have no financial interests or other relationships with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters. Presentations will not include any discussion of the unlabeled use of a product or a product under investigational use.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the Division of Laboratory Systems, Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention, or the U.S. Department of Health and Human Services.

Special Needs

In compliance with the Americans with Disabilities Act (ADA), individuals seeking special accommodation should submit their request in writing to labtrainingneeds@cdc.gov by Monday, January 4th, one week before the program. Please allow sufficient time for CDC to make arrangements.

Questions

Please contact Isaiah Hurtado at labtrainingneeds@cdc.gov for more information.

Course Agenda

Eric Cook is the instructor for all lecture sessions and facilitator for all exercises, group discussions, and Q&A.

Jan 6	**Introduction Session**
11:00 a.m. EST	**Session 0 –** Introduction to TOT purpose, program expectations, agenda, materials, staff and participants.
11:30 a.m.	Adjourn

Jan 11	**Part 1. Dangerous Goods Packing & Shipping Training**
11:00 a.m. EST	**Session I** Facilitated group discussions of the risks associated with shipping
11:30	Review of applicable regulations (lecture)
12:00	Introduction to the nine classes of dangerous goods, and general definitions (lecture)
12:30	Analysis and discussion of infectious substance definitions and classification: Category A, Category B and exempt materials (lecture)
1:00	Break
1:15	**Session II -** Group classification exercises: participants are given a list of various biohazardous materials and using definitions from the regulations, work as a group to proper classify them (lecture)
1:45	Proper shipping names for infectious substances; individual naming exercise: participants assign proper shipping names to the materials classified previously as a group (lecture)
2:15	Group discussion and facilitated exercise to determine the principles of packaging (group exercise)
2:30	Facilitated discovery and group presentations on key components of Packing Instruction 620, 650 and 954 (group exercise)
3:00 p.m.	Adjourn

Jan 12	**Part 1. Dangerous Goods Packing & Shipping Training Cont.**
11:00 a.m. EST	**Session III -** Marking and labeling infectious substance packages and dry ice (Lecture)
11:30	Overpacks: what are they, when to use, how to mark and label (lecture)
12:00	Group exercise: marking and labeling an infectious substance package
12:30	Required Documentation: packing lists, pro forma invoice, waybills, item lists of contents, shipper's declaration for dangerous goods (lecture)
1:00	Break
1:15	How to complete the shipper's declaration for a Category A shipment (lecture)
1:30	Required information on air waybill (for Category B) (lecture)
1:45	Class activity: Completing a Shipper's Declaration
2:00	Hands on Packaging, Marking/Labeling and Documentation exercise (lecture)
2:45	Distribution and explanation of intersession assignments (lecture)
3:00 p.m.	Adjourn

Dangerous Goods Packing and Shipping TOT Intersessional Assignments

1. Instructor worksheet.
2. Shipping process template. Participants will work in teams of two or three to create a shipping process map or SOP using the template provided.
3. Instructor guide review and question/comment assignment. Participants will be given a copy of the instructor guide for review and provide comments throughout.

Jan 19	**Part 2. Dangerous Goods Packing and Shipping TOT Intersession and Workgroup Assignments**
11:00 a.m. EST	**Session IIIa** - Review instructor worksheet with TOT instructor, intersession assignment 1
11:30	Instructor lead discussion on worksheet questions and answers (Q&A)
1:00	Break
1:15	Instructor lead discussion on worksheet questions and answers cont. (Q&A)
2:00	How to apply instructor worksheet as an instructor (Lecture)
3:00 p.m.	Adjourn

Jan 20	**Part 2. Dangerous Goods Packing and Shipping TOT Intersession and Workgroup Assignments (cont.)**
11:00 a.m. EST	**Session IIIb** - Review the shipping process template with instructor, intersession assignment 2
11:15	Group presentations and instructor feedback sessions (group exercise)
12:45	Break
1:00	**Session IIIc -** Review instructional guide with TOT instructor, intersession assignment 3
1:15	Instructor lead review of Instructional Guide to effective trainings (Q&A)
2:30	Review of part 2 assignments (Lecture)
2:45	Break
3:00 p.m.	**Final Examination**

Jan 25	**Part 2. Dangerous Goods Packing and Shipping TOT Examination Feedback and How to Customize Content**
11:00 a.m. EST	**Session IVa – Instructor review results of final exam results and feedback (lecture)**
12:00	Question and answer content review with TOT instructor (Q&A)
12:45	Break
1:00	**Session IVb –** How to customize content to meet your specific needs
1:15	Theories and strategies for adult learners (lecture)
2:00	Tailoring content to specific laboratory needs (Q&A)
3:00 p.m.	Adjourn

Dangerous Goods Packing and Shipping TOT Teach Back Session

Teach back sessions and feedback are important steps in providing high quality Dangerous Good Packing and Shipping trainings. TOT participants will be divided into three teams for teach back sessions. Each team will teach back the full course to a live audience of participants (most likely online). Each team will divide up the course materials among themselves, plan, and implement their teach backs. Teach backs will occur during the weeks of January 1st, 8th, and 15th. Teams will communicate teach back training dates, times, and locations (either physical address or webinar log in details) to the TOT trainer and CDC packing and shipping TOT program coordinators at labtrainingneeds@cdc.gov at least one week in advance. The TOT trainer will be available for each teach back session to provide support, coaching and mentoring. After each teach back, teams will schedule a one-hour follow-up session with the TOT trainer/packing and shipping SME to debrief.

TBD	**Training of Trainers Graduate Teach Backs**
	Session I Teach Back - Facilitated, group discussions of the risks associated with shipping
	Review of applicable regulations
	Introduction to the nine classes of dangerous goods, and general definitions
	Analysis and discussion of Infectious substance definitions and classification: Category A, Category B and exempt materials
	Break
	Session II Teach Back - Group classification exercises: participants are given a list of various biohazardous materials and using definitions from the regulations, work as a group to proper classify them
	Proper shipping names for infectious substances; individual naming exercise: participants assign proper shipping names to the materials classified previously as a group
	Group discussion and facilitated exercise to determine the principles of packaging
	Facilitated discovery and group presentations on key components of Packing Instruction 620, 650 and 954
	Lunch
	Session III Teach Back - Marking and labeling infectious substance packages and dry ice
	Overpacks: what are they, when to use, how to mark and label
	Group exercise: marking and labeling an infectious substance package
	Required Documentation: packing lists, pro forma invoice, waybills, item lists of contents, shipper's declaration for dangerous goods
	Break
	Session IV Teach Back - How to complete the shipper's declaration for a Category A shipment
	Required information on air waybill (for Category B)
	Class activity: Completing a Shipper's Declaration
	Final, hands on Packing, Marking/Labeling and Documentation exercise
	Final Certification Exam
	Adjourn

eLearning

BIOTHREAT PREPAREDNESS TRAINING FOR SENTINEL LABORATORIES - *Francisella tularensis*

Description

This module has been developed to provide clinical laboratory scientists with information about the laboratory identification of *Francisella tularensis*.

The goal is to assist clinical laboratory scientists in better recognizing potential biothreat agents they might encounter during routine laboratory work-ups of sputum, blood and aspirate/biopsy specimens.

Laboratory managers may consider using this course:

To assess staff competency in performing laboratory procedures accurately, and
To determine if staff are referring specimens for test confirmations correctly.

Objectives

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

- Describe laboratory tests for presumptive identification of *Francisella tularensis*.
- Describe how to rule out or refer presumptive organisms for *F. tularensis*.
- Discuss the role of the sentinel laboratory in detection of *F. tularensis*.
- Describe the basic epidemiology and ecology of *F. tularensis* in the U.S. including animal reservoirs, vectors, and transmission cycles.

Registration - Free Registration

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov
- For additional program information, email labtraining@cdc.gov or call (404) 498-6022

Continuing Education

This course is being revised, so P.A.C.E® credits are not offered at this time. You may receive a course completion certificate without P.A.C.E® credits. The revised course will offer P.A.C.E® credits.

Special Needs

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

For a complete list of courses, visit www.cdc.gov/labtraining

LABORATORY CONTINUITY OF OPERATIONS (COOP) PLANNING COURSE

AN ONLINE LEARNING COURSE

AVAILABLE ON WWW.CDC.TRAIN.ORG

Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

Continuity of Operations (COOP) plans ensure continued performance of essential functions under a broad range of circumstances. The Laboratory Continuity of Operations (COOP) Planning Course is designed to provide guidance and the tools necessary for the development of laboratory continuity plans. A COOP plan is a living document and will likely need to be revised over time. Since COOP planning can vary based on need, this course will outline one scenario.

This basic-level eLearning course will provide the purpose and components of a laboratory COOP plan. Topics covered include planning objectives and considerations that apply when developing a COOP plan, identifying factors to consider when selecting alternate work facilities, and maintenance cycle and revisions of a COOP plan.

AUDIENCE

This online course is designed for public health and clinical laboratory managers and staff, safety professionals and persons interested or required to develop a laboratory continuity plan.

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

When you complete this course, you will be able to:

- Identify the purpose of a COOP plan.
- Identify the components of a COOP plan.
- Identify the planning objectives and considerations that apply when developing a COOP plan.
- Identify factors to consider when selecting alternate work facilities.
- Describe the maintenance cycle and revisions of a COOP plan.

CONTINUING EDUCATION

Continuing education credits are not available for this course currently. You may download a certificate from the CDC upon completing this course.

For a complete list of courses, visit www.cdc.gov/labtraining.

FUNDAMENTALS OF PERSONAL PROTECTIVE EQUIPMENT (PPE) IN CLINICAL LABORATORIES

AN ONLINE LEARNING COURSE
AVAILABLE ON WWW.CDC.TRAIN.ORG

Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

Safety is imperative when working with potentially harmful materials and other hazards in the laboratory. This course is designed to assist clinical and public health laboratory professionals with applying risk management strategies to identify hazards, assess risks, and select appropriate personal protective equipment (PPE) options.

AUDIENCE

This basic level course is designed for new or existing public health and clinical laboratory professionals who handle potentially hazardous materials.

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

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

- Describe how PPE helps protect laboratory professionals.
- Recognize hazards and risks associated with laboratory procedures.
- Identify PPE options, limitations, and considerations for selecting appropriate PPE.
- Select appropriate PPE options for given clinical laboratory scenarios.

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for contact hours. P.A.C.E.® course number: 288-006-20.

For a complete list of courses, visit www.cdc.gov/labtraining.

Packing and Shipping Dangerous Goods: What the Laboratory Staff Must Know

ON DEMAND ELEARNING

Description

The goal of this course is to provide training on packing and shipping Division 6.2 infectious substances and dry ice. This course provides a certificate of completion but does not provide certification for transport of dangerous goods. Individuals can only be certified by their employer.

Audience

This basic-level course is intended for public health and clinical laboratory staff involved in any step of the packing or transport process of patient samples or cultures.

Objectives

At the conclusion of this program, the learner will be able to:

- Recognize requirements for initial and recurrent training and certification for the transportation of Division 6.2 infectious substances and dry ice
- Identify applicable regulations and requirements for the transportation of Division 6.2 infectious substances and dry ice
- Determine the proper course of action for packing and shipping Division 6.2 infectious substances and dry ice

Free Registration

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, email labtraining@cdc.gov

Special Needs

Course content is closed captioned, where applicable, and optimized for a screen reader.

Continuing Education

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 2.0 contact hour of P.A.C.E. ® credit.

P.A.C.E.® number: 288-014-20.

eLearning

BIOTHREAT PREPAREDNESS TRAINING FOR SENTINEL LABORATORIES - *Yersinia pestis*

Description

This module has been developed to provide clinical laboratory scientists with information about the laboratory identification of *Yersinia pestis.*

The goal is to assist clinical laboratory scientists in better recognizing potential biothreat agents they might encounter during routine laboratory work-ups of sputum, blood and aspirate/biopsy specimens.

Laboratory managers may consider using this course:

To assess staff competency in performing laboratory procedures accurately, and
To determine if staff are referring specimens for test confirmations correctly.

Objectives

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

- Summarize the basic epidemiology and ecology of *Yersinia pestis*.
- List important aspects of biosafety in working with *Y. pestis* in the laboratory.
- Outline the role of the LRN sentinel laboratory in the detection of *Y. pestis*.
- Apply various laboratory tests that are used to presumptively identify *Y. pestis*.
- Use sentinel laboratory protocols to Rule Out or Refer isolates for the identification of *Y. pestis*.

Registration - Free Registration

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov
- For additional program information, email labtraining@cdc.gov or call (404) 498-6022

Continuing Education

This course is being revised, so P.A.C.E® credits are not offered at this time. You may receive a course completion certificate without P.A.C.E® credits. The revised course will offer P.A.C.E® credits.

Special Needs

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

For a complete list of courses, visit www.cdc.gov/labtraining

BASIC MOLECULAR BIOLOGY MODULE 1: BASIC SCIENCE

AN ONLINE LEARNING COURSE

AVAILABLE ON WWW.CDC.TRAIN.ORG

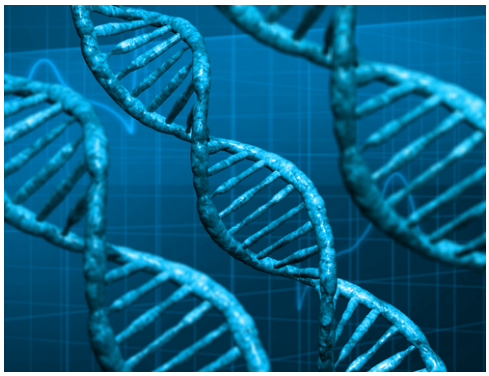
Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

Molecular techniques have been widely used in clinical diagnosis, e.g., diagnosing disease, predicting disease course, and identifying infectious agents. This basic Molecular Biology course series will introduce the scientific background for molecular diagnosis, the principles of laboratory settings, and common methods.

This basic-level eLearning course, Module 1, provides information on the fundamental characteristics of DNA and RNA, nucleotide base-pairing rules, and the basic techniques and workflow applied in molecular diagnostics.



AUDIENCE

This online course is designed for public health and clinical laboratory staff, and persons interested in the basic science of molecular biology.

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Identify techniques in molecular diagnostics
- Identify the workflow of molecular diagnostics
- Predict the DNA sequences based on base-pairing rules
- Differentiate the characteristics of DNA and RNA
- Identify the process of DNA replication and RNA transcription

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 1.0 contact hours. P.A.C.E.® course number: 288-001-19

For a complete list of courses, visit www.cdc.gov/labtraining.

FUNDAMENTALS OF CENTRIFUGE SAFETY

AN ONLINE LEARNING COURSE
AVAILABLE ON WWW.CDC.TRAIN.ORG

Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

Centrifuges are instruments used to separate mixtures, based on particle size and density, by spinning the mixtures at high speed. These instruments are essential tools in all types of laboratories. Serious injuries or potential exposures can occur if centrifuges are improperly used or maintained.

This basic-level eLearning course provides information on the safe use of centrifuges. Topics covered include major parts of a centrifuge, types of centrifuges, potential hazards, how to work safely with a centrifuge, and what to do if there is an emergency.

AUDIENCE

This online course is designed for public health and clinical laboratory staff, safety professionals and persons interested in safe use of centrifuges.

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Identify common types of centrifuges used in laboratories
- Describe the potential hazards associated with centrifuge use
- Identify control measures to minimize exposure to centrifuge hazards
- Identify safe work practices for centrifuge use
- Describe what to do in the event of an emergency

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 0.5 contact hours. P.A.C.E.® course number: 288-001-20

For a complete list of courses, visit www.cdc.gov/labtraining.

BASIC MOLECULAR BIOLOGY MODULE 2: LABORATORY PRACTICE

AN ONLINE LEARNING COURSE
AVAILABLE ON WWW.CDC.TRAIN.ORG

Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

Molecular techniques have been widely used in clinical diagnosis, e.g., diagnosing disease, predicting disease course, and identifying infectious agents. This basic Molecular Biology course series will introduce the scientific background for molecular diagnosis, the principles of laboratory settings, and common methods.

This basic-level eLearning course, Module 2, provides information on general laboratory practices. Topics covered include biosafety practices, laboratory area flow, and practices to minimize contamination.

AUDIENCE

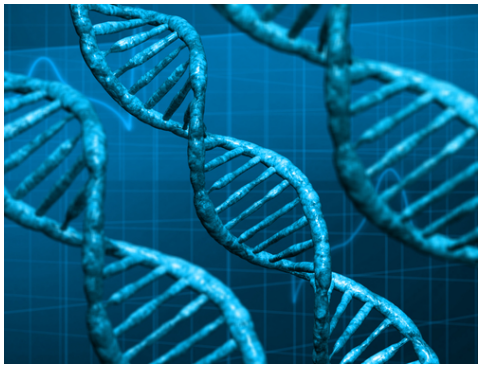
This online course is designed for public health and clinical laboratory staff, and persons interested in molecular biology laboratory practice.

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov



OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Identify the general practices and biohazards associated with performing molecular biology procedures in BSL-2 and BSL-3 laboratories
- Explain the differences of the working areas needed to perform procedures in molecular biology
- Outline the unidirectional workflow used to minimize contamination in the laboratory
- Identify general decontamination practices in the molecular biology laboratory

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 1.0 contact hours. P.A.C.E.® course number: 288-002-19

For a complete list of courses, visit www.cdc.gov/labtraining.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES

Good Laboratory Practice Recommendations for Biochemical Genetic Testing: Preanalytic Phase

CENTERS FOR DISEASE CONTROL AND PREVENTION

This online training will provide an overview of the quality practices in the preanalytic phase of biochemical genetic testing, specifically quality assurance for test requisitions, specimen collection and submission; communications between the laboratory, clinicians and other stakeholders; and preanalytic quality assessment.

THIS ONLINE TRAINING WAS SUPPORTED BY COOPERATIVE AGREEMENT # U60HM000803 FUNDED BY THE CENTERS FOR DISEASE CONTROL AND PREVENTION. ITS CONTENTS ARE SOLELY THE RESPONSIBILITY OF THE AUTHORS AND DO NOT NECESSARILY REPRESENT THE OFFICIAL VIEWS OF CDC OR THE DEPARTMENT OF HEALTH AND HUMAN SERVICES.

FREE ONLINE TRAINING MODULE

- Locate the course online at www.cdc.gov/labtraining.
- Follow the link to register for the course in TRAIN.
- If you have difficulty with the online registration process, please email labtraining@cdc.gov.

CEUs:

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

This course is approved for 1.5 hour of P.A.C.E.® credit.

P.A.C.E.® Course#: 288-002-20

Objectives

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

- **Recognize the role each stakeholder group plays in the pre-analytic procedures and processes**
- **Choose the preanalytic procedures and processes for biochemical genetic tests that are consistent with regulatory requirements and good laboratory practices**
- **Select indicators to evaluate the quality of the pre-analytical phase of biochemical genetic testing**
- **Explain the communication needs of each stakeholder group**

Audience

This basic to intermediate online training module is appropriate for laboratory professionals working in biochemical genetic testing or reference laboratories, and healthcare professionals who order biochemical genetic tests.

Special Needs

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

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES

FUNDAMENTALS OF CHEMICAL FUME HOOD SAFETY

AN ONLINE LEARNING COURSE
AVAILABLE AT WWW.CDC.TRAIN.ORG

Sponsored by the
Division of Laboratory Systems
Center for Surveillance, Epidemiology, and Laboratory Services
Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

A chemical fume hood is the main piece of laboratory equipment that protects laboratory staff working with hazardous chemicals. When properly used, fume hoods protect staff from inhaling chemical gases, vapors, and aerosols. They serve as a physical barrier between staff and the hazardous materials inside the hood, and provide some splash protection.

This basic-level eLearning course provides an essential understanding of the major components of a chemical fume hood and proper practices for its safe and effective operation. Topics covered include the major components and types of fume hoods and their monitors, maintaining proper airflow, daily use protocols and good fume hood work practices, and what to do if there is an emergency.

AUDIENCE

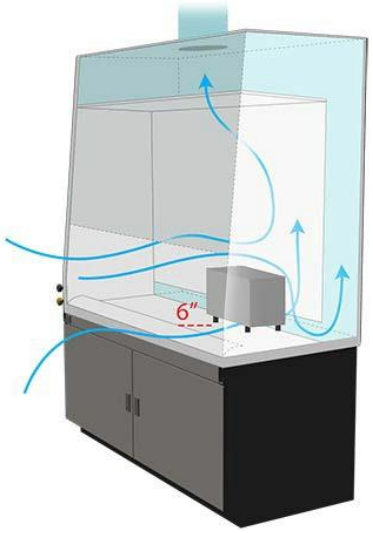
This online course is designed for public health and clinical laboratory staff, safety professionals, and persons interested in the safe use of chemical fume hoods as determined by your laboratory-specific risk assessment.

SPECIAL NEEDS

Course content is closed-captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov.



OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Identify general facts about fume hoods
- List factors that affect the proper fume hood airflow
- Describe startup procedures prior to working in a fume hood
- Describe proper practices for working in a fume hood
- Describe finish procedures for completion of work in a fume hood
- Describe the procedures to follow during an emergency

CONTINUING EDUCATION

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

This course is approved for 1.0 contact hours. P.A.C.E.® course number: 288-003-20.

For a complete list of courses, visit www.cdc.gov/labtraining.

BASIC MOLECULAR BIOLOGY MODULE 3: NUCLEIC ACID EXTRACTION

AN ONLINE LEARNING COURSE
AVAILABLE ON WWW.CDC.TRAIN.ORG

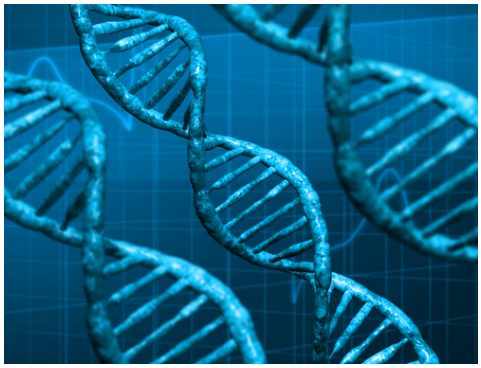
Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

Molecular techniques have been widely used in clinical diagnosis, e.g., diagnosing disease, predicting disease course, and identifying infectious agents. This basic Molecular Biology course series will introduce the scientific background for molecular diagnosis, the principles of laboratory settings, and common methods.

This basic-level eLearning course, Module 3, provides information on nucleic acid extraction. Topics covered include extraction method selection, basic extraction steps, and nucleic acid analysis.



AUDIENCE

This online course is designed for public health and clinical laboratory staff, and persons interested in nucleic acid extraction.

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Identify the four major factors used in selection of the nucleic acid extraction method
- Outline the three basic steps in nucleic acid extraction
- Explain how to analyze nucleic acid quantity and purity by spectrophotometry and gel electrophoresis
- Identify common problems in nucleic acid extraction

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 1.5 contact hours. P.A.C.E.® course number: 288-003-19

For a complete list of courses, visit www.cdc.gov/labtraining.

BASIC MOLECULAR BIOLOGY MODULE 4: PCR AND REAL-TIME PCR

AN ONLINE LEARNING COURSE
AVAILABLE ON WWW.CDC.TRAIN.ORG

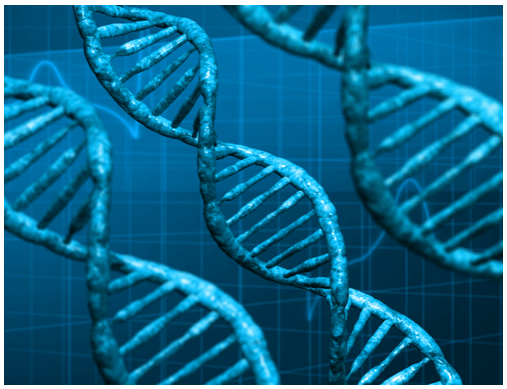
Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

Molecular techniques have been widely used in clinical diagnosis, e.g., diagnosing disease, predicting disease course, and identifying infectious agents. This basic Molecular Biology course series will introduce the scientific background for molecular diagnosis, the principles of laboratory settings, and common methods.

This basic-level eLearning course, Module 4, provides information on the principle of PCR and real-time PCR. Topics covered include PCR steps, PCR product analysis, real-time PCR characteristics, real-time PCR quantification, and roles of PCR controls.



AUDIENCE

This online course is designed for public health and clinical laboratory staff, and persons interested in PCR and real-time PCR techniques.

SPECIAL NEEDS

Course content is closed captioned, where applicable, and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Explain the basic steps involved in PCR
- Identify the components of PCR, reverse transcription PCR, and PCR product analysis
- Recognize the characteristics of real-time PCR
- Identify the techniques used to detect products in real-time PCR
- Differentiate the nucleic acid quantification processes used in real-time PCR
- Explain the roles of PCR controls

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 1.0 contact hours. P.A.C.E.® course number: 288-004-19

For a complete list of courses, visit www.cdc.gov/labtraining.

MICROBIOLOGY CURRICULUM ROUTINE MICROSCOPY PROCEDURES

AN ONLINE LEARNING COURSE

AVAILABLE ON WWW.CDC.TRAIN.ORG

Sponsored by the
Division of Laboratory Systems,
Center for Surveillance, Epidemiology and Laboratory Services,
Centers for Disease Control and Prevention

CENTERS FOR DISEASE CONTROL AND PREVENTION

DESCRIPTION

Laboratory professionals should have basic knowledge and understanding of routine microscopy procedures and techniques. This course is designed to explore the processes, procedures, and techniques necessary for completing routine microscopic examinations of laboratory specimens.

This e–Learning course will introduce laboratory professionals to microscopy procedures for smear preparation, as well as preparing and interpreting the results of a Gram stain, wet mount, potassium hydroxide (KOH), and India Ink procedures.

AUDIENCE

This basic level course is designed for new or existing public health and clinical laboratory professionals, individuals with a science background who are entering or reentering the microbiology field, or individuals needing training on basic microscopy procedures.

SPECIAL NEEDS

Course content is closed captioned, where applicable; and optimized for a screen reader.

FREE REGISTRATION

- Locate the course online at www.cdc.gov/labtraining
- Follow the link to register for the course in TRAIN
- If you have difficulty with the online registration process, please email labtraining@cdc.gov

OBJECTIVES

At the conclusion of this course, the participant will be able to:

- Outline the steps of preparing a smear.
- Express the purpose of the Gram stain procedure.
- Identify the types of reagents used in the Gram stain procedure.
- Sequence the steps in the Gram stain procedure.
- Interpret the results seen in the bacterial cells, with the effects of the various reagents during the Gram stain procedure.
- Outline the steps of preparing a wet mount and interpret results.
- Describe the potassium hydroxide (KOH) procedure and its uses.
- Identify the steps and results obtained in the India Ink procedure.
- Identify and resolve commonly encountered problems during routine microscopy procedures.

CONTINUING EDUCATION

The Centers for Disease Control and Prevention, Division of Laboratory Systems is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. This course is approved for 1.5 contact hours. P.A.C.E.® 288-004-20.

For a complete list of courses, visit www.cdc.gov/labtraining.