



Facilitator Guide for Basic Culture Media and Isolation Techniques Laboratory Exercises

Introduction

The Basic Microbiology Curriculum: Basic Culture Media and Isolation Techniques Course is a blended learning activity that includes both eLearning and hands-on laboratory exercises. Both components of the course are equally important in providing knowledge and actual laboratory experience to the participant. This facilitator guide is meant to serve as a manual for the supervisor/mentor that will be overseeing the completion of the laboratory exercises after the eLearning activity has been completed. The manual contains instructions for the overall laboratory exercise components, objectives, laboratory setup, a supply list, laboratory exercises, instructions, and answer key as well as job aids.

The goal of these exercises is to allow the participant to use the information and procedures learned during the eLearning portion of the course and apply them using hands-on laboratory exercises. Please note: These laboratory exercises may be edited according to your laboratory's standard operating procedures or guidelines, if necessary. The job aids and laboratory exercises were created with the forethought that laboratory procedures may vary from laboratory to laboratory and therefore, may need to be edited according to the procedures or protocols followed within that laboratory.

The participant of the course is strongly recommended to complete the laboratory exercises to transfer the didactic content of the course to experiential knowledge gained through hands-on laboratory exercises with the equipment from their laboratory. The supervisor/mentor should work with the participant to develop these laboratory skills as well as confirm that these exercises have been completed. The number and types of exercises completed will be at the discretion of the supervisor/mentor based on procedures followed within their laboratory. After the laboratory exercises are completed and discussed with the supervisor/mentor, the 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 culture media and isolation techniques laboratory exercises, you will be able to:

- Explain the different types and forms of culture media.
- Correlate culture media with specimen type.
- Describe the critical steps in the inoculation of media to obtain isolated colonies.
- Identify commonly encountered problems with culture media and isolation techniques.

Initial Planning for the Laboratory Exercises

1. Communicate with the participant and schedule days/times to complete the laboratory exercises.
2. Collect the supplies and culture media necessary to complete the exercises (see supply and culture media list).

Day(s) of Scheduled Laboratory Exercises

1. Set up supplies for the exercises.
2. Remind the participant about the use of proper PPE and laboratory equipment according to your laboratory's procedures and safety manual.
3. Pull culture media out of the refrigerator (if necessary) to come to room temperature.
4. Participant should have a copy of the laboratory exercises and job aids as a printout from the eLearning course.

This job aid is a component of the free, on-demand CDC training course "Basic Culture Media and Isolation Techniques: Microbiology Curriculum." Find the course at <https://reach.cdc.gov/training>.

5. Have participant complete each exercise with your approval. Please feel free to instruct participant as they work or after the exercise is completed. Exercises may be completed all at once or as time permits.
6. Relay to the participant any information that is needed to comply with your laboratory's standard operating procedures (SOPs) or safety procedures.

Supply List

1. Personal protective equipment (PPE) and laboratory equipment
2. Loops (sterile plastic or metal)
3. Incinerator or Bunsen burner (if using metal loops)
4. Broth culture containing isolated colonies
5. Labelling pen
6. Biohazard waste container: for personal protective equipment
7. Sharps container: For loops
8. Incubator
- 9.

Culture Media List

1. Broth culture containing microorganisms to be plated
2. Culture media: BAP, CHOC, MAC, C-CNA/PEA, CAMPY, CHROMagar, HE/XLD, SMAC, AnaBAP
3. Previously inoculated media for observation

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Laboratory Exercise I

Objectives:

After completing this laboratory exercise, you will be able to:

- Explain the different types and forms of culture media.
- Correlate culture media with specimen type.

Exercise: Choose Appropriate Culture Media

Choose culture media appropriate for the specimen source and label the media.

- Give the participant a broth culture containing microorganisms of your choice. Provide information to the participant on where the specimen was isolated from (such as a wound, respiratory or stool). Ask the participant to plate the media based on the specimen source of the culture.
- Ask the participant to label their plates with name, source, and date.

Notes:

Mentor/Supervisor /Date

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Laboratory Exercise II

Objectives:

After completing this laboratory exercise, the participant should be able to:

- Describe the steps of streaking a plate.
- Describe the critical steps in the inoculation of media to obtain isolated colonies.

Exercise: Perform a Quadrant Streak

Perform quadrant streaking to obtain isolated colonies using the quadrant streaking procedure on the job aid or your laboratory standard operating procedure.

Instructions

- With the broth culture given to the participant in exercise one, and the labeled plates, have the participant perform quadrant streaking on each type of media.
- The participant should be able to follow the Quadrant Streaking job aid (See Appendix) to perform isolate streaking.
- After streaking the culture plates, have the participant invert the plates and incubate at the required temperature for 18-24 hours.

Notes:

Mentor/Supervisor /Date

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Laboratory Exercises III

Objectives:

After completing this laboratory exercise, the participant will be able to:

- Identify commonly encountered problems with culture media and isolation techniques.

Exercise: Common Problems

Observe culture media plates for commonly encountered problems that may arise.

- The participant should examine culture media plates from Laboratory exercise II that lacked isolated colonies after streaking in the four quadrants. The observations seen and the possible solutions should be discussed with the supervisor/mentor.
- Provide the participants with at least one culture media plate that had water on the media when it was streaked.
- Provide an example of growth of a microorganism not on the line of streaking on the culture plate.
- Provide the participants with at least one culture plate that has dried up.

Notes:

Mentor/Supervisor /Date

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