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# Bacterial Cultures Care Guide

## Introduction

Use the following guide to learn how to properly care for bacterial cultures.

## Safety Precautions

After use, agar plates will likely contain viable microbes. Although the bacteria are not likely to be pathogenic, do not open the plates unnecessarily. Use sterile techniques at all times when handling bacterial cultures. When plates are done being used they should be autoclaved or opened under a 10% bleach solution and soaked for at least one hour. Bleach solution is a corrosive liquid, which may discolor clothing and may cause skin burns. Avoid contact with heat, acids and organic materials; chlorine gas will be generated. Wear chemical splash goggles, chemical-resistant gloves, and a chemical-resistant apron. Wash hands thoroughly with soap and water before leaving the laboratory. Please follow all laboratory safety guidelines.

## Culturing and Maintenance

Prior to receiving bacterial cultures it is helpful to be aware of the required conditions for the particular strain of bacteria purchased. Each species has specific conditions necessary for optimal growth. Refer to the Bacterial Cultures Table below for incubation temperature and the appropriate general medium.

### Bacterial Cultures Table

Description ( <i>Genus species</i> )	Incubation Temperature	Medium
<i>Bacillus cereus</i>	(20–35) 30 °C†	Nutrient Agar
<i>Bacillus mycoides</i>	30 °C	Nutrient Agar
<i>Bacillus megaterium</i>	(25–35) 30 °C†	Nutrient Agar
<i>Bacillus subtilis</i>	(25–35) 25–30 °C†	Nutrient Agar
<i>Enterobacter aerogenes</i>	(30–37) 30 °C†	Nutrient Agar or MacConkey Agar
<i>Escherichia coli</i>	37 °C	Nutrient Agar or Lysogeny Broth
<i>Lactococcus lactis</i>	25–37 °C	Tryptic Soy Agar or M17 Broth
<i>Micrococcus luteus</i>	25 °C	Nutrient Agar
<i>Micrococcus roseus</i>	25–30 °C	Nutrient Agar
<i>Pseudomonas fluorescens</i>	(25–30) 25 °C†	Nutrient Agar
<i>Rhodospirillum rubrum</i>	25–30 °C	Tryptic Soy Agar
<i>Sarcina aurantiaca</i>	25–28 °C	Nutrient Agar
<i>Sarcina subflava</i>	25 °C	Nutrient Agar
<i>Serratia marcescens</i>	(5–40) 25 °C† or 37*	Nutrient Agar
<i>Vibrio fischeri</i>	25 °C	Photobacterium Agar

† The temperatures in parenthesis are the range and the temperature not in parenthesis is the optimal temperature.

\* Higher temperature expresses pigment formation.

Always keep culture tubes sealed with caps or foam plugs. Sealing the tubes prevents cross-contamination of cultures and inhibits dehydration of the medium. Although all bacterial cultures sold from Flinn Scientific are considered non-pathogenic, always practice aseptic laboratory technique.

Bacterial cultures will need to be sub-cultured to fresh media every two to three weeks to ensure a thriving culture. New cultures require approximately 24 to 48 hours in order for colonies to fully develop. Refrigeration will retard growth rates, allowing more time to work with cultures long-term if desired.

Many bacterial cultures grow on nutrient agar but some require more specialized media. Mueller-Hinton agar is a solid growth medium commonly used for antibiotic susceptibility testing. MacConkey agar is a culture media used to isolate and differentiate organisms that are capable of fermenting lactose. It contains bile salts and crystal violet that inhibits growth of gram-positive bacteria while promoting growth of gram-negative bacteria. Lactose and neutral red are added to the agar to differentiate lactose fermenting bacteria. Lactose fermenting bacteria form pink colonies. Non-lactose fermenting bacteria form colonies that appear colorless.

Maintaining a pure culture is extremely important when working with bacterial cultures. It is essential to avoid all contaminants. Culture dishes should be incubated upside down, this will prevent excessive accumulation of moisture from flooding or diluting the surface of the medium. As a means of preventing the medium in dishes from drying and cracking, place a small container of water in the incubator with the cultures.

Flinn Scientific does not recommend that students randomly culture bacteria or fungi from biological sources (oral swabs, coughing, etc). The potential for culturing dangerous concentrations of pathogenic bacteria is too great. Culture dishes should always be taped shut following inoculation.

## Disposal

Please consult your current *Flinn Scientific Catalog/Reference Manual* for general guidelines and specific procedures, and review all federal, state and local regulations that may apply, before proceeding. The agar plates, inoculating loops, and pipets may be disposed of according to Flinn Suggested Biological Disposal Method Type I by sterilizing the agar plates with a freshly prepared 10% bleach solution or autoclaved at the culmination of the activity.

## Materials required to grow *Bacterial Cultures* are available from Flinn Scientific, Inc.

Catalog No.	Description
AP1051	Inoculating Loop, Nichrome Wire
N0019	Nutrient Agar, Dehydrated, 100 g
FB0526	Nutrient Agar, Prepared, 10 plates
FB0528	Tryptic Soy Agar, Prepared, 10 plates
AP1565	Incubator

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.