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Culturing and Maintaining Fungi

Live Material Care Guide

Background

Kingdom Mycetae, also referred to as Kingdom Fungi, consists of very unique organisms. Fungi are found in both terrestrial and aquatic environments all over the world. They obtain nutrients from the environment through absorption. This unique trait sets them apart from plants and animals. Fungi are also the primary decomposers of organic matter, making them indispensable to ecosystems. Some species, however, are parasitic, causing massive damage to crops and livestock. Other types of fungi are quite beneficial to society, such as those used to make antibiotics (i.e., *Penicillium*) as well as yeasts and mushrooms used in food. Species range in size from microscopic, single-celled creatures to huge multicellular organisms.

Culturing/Media

Upon arrival of fungal stock cultures, place cultures in a dark or dimly lit area at a temperature appropriate for the type of fungus. Recommended temperatures and appropriate media for many common fungal species are shown in the chart below.

<i>Aspergillus niger</i> . Ascomycete. Black mold found on plants. Citric acid producer.	25 °C Potato Dextrose Agar
<i>Penicillium notatum</i> . Ascomycete. Blue mold on cheese and fruit. Producer of penicillin.	25 °C Potato Dextrose Agar
<i>Rhizopus stolonifer (nigricans)</i> . Plus Zygomycete. Black bread mold. Used with minus strain for zygospore demonstration.	25 °C Potato Dextrose Agar
<i>Rhizopus stolonifer (nigricans)</i> . Minus Zygomycete. Black bread mold. Used with plus strain for zygospore demonstration.	25 °C Potato Dextrose Agar
<i>Saccharomyces cerevisiae</i> . Ascomycete. Baker's and brewer's yeast.	25–30 °C Potato Dextrose Agar
<i>Saccharomyces cerevisiae var. ellipsoides</i> . Ascomycete. Winemaker's yeast.	25–30 °C Potato Dextrose Agar
<i>Sordaria fimicola</i> . Wild type. Ascomycete. Produces brown ascospores.	30 °C Cornmeal Glucose-Yeast Agar
<i>Sordaria fimicola</i> . Tan Mutant. Ascomycete. Produces tan ascospores.	30 °C Cornmeal Glucose-Yeast Agar

Keep culture tubes sealed with the caps, or replace with plugs, to avoid cross-contamination and dehydration. Fungal cultures should be subcultured to fresh agar every few weeks to maintain active growth. Cultures typically require 3 to 7 days before they begin to develop.

Sterile techniques need to be implemented at all times when handling fungal cultures. Wear gloves and goggles while handling organisms. It is important to sterilize the metal inoculating loop between "dips" to control cross contamination. Place the inoculating loop in the flame until it glows red and remove from flame and hold still until cool. If a hissing sound is heard when the loop enters the media, remove and reflare to sterilize. Upon finishing work with fungal cultures, sterilize the work area and wash your hands with soap. (It is also a good idea to sterilize the incubator/cabinet handle and any surface that may have been touched by your glove with a 70% ethanol or 10% bleach solution in a spray bottle.)

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. Fungal cultures may be disposed of according to Flinn Suggested Biological Waste Disposal Method Type I.

Tips

- Although all fungal strains sold by Flinn Scientific are nonpathogenic, we recommend and strongly encourage that teachers and students practice aseptic techniques when working with fungi. Flinn Scientific, Inc. assumes no responsibility for infection resulting from laboratory use of fungus.
- Sterilization prior to disposal is highly recommended—autoclaving is the preferred method.
- Prepare 10% bleach solutions for sterilization by diluting regular household bleach by a factor of 10 (i.e., add 100 mL of bleach to 1 L of water). Use within one week.
- In general, fungi, including yeast, and bacteria will remain viable longer on solid agar slants than submerged in broths. Even healthy-looking cultures need to be subcultured periodically to prevent the buildup of toxic gases.

Materials for *Maintaining Fungal Cultures* are available from Flinn Scientific, Inc.

Catalog No.	Description
LM1019	<i>Aspergillus niger</i> , Black Mold
LM1020	<i>Penicillium notatum</i> , Blue Mold
LM1023	<i>Saccharomyces cerevisiae</i> , Baker's and Brewer's Yeast
LM1150	<i>Sordaria fimicola</i> , Wild-type
LM1219	<i>Sordaria fimicola</i> , Tan Mutant
LM1021	<i>Rhizopus stolonifer (nigricans)</i> , Plus
LM1022	<i>Rhizopus stolonifer (nigricans)</i> , Minus
P0263	Potato Dextrose Agar, 3 Melt-and-Pour Bottles
FB2012	Cornmeal-Glucose Agar, 40 g
AB1470	Petri Dish, Disposable Polystyrene, 20
AP1051	Inoculating Loop
AP1565	Incubator

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