BIO 201 Lab 2 Experiment 3

Professor Diane Hilker

Overview

I. **Exp. 3: Collection of Microbes**

1. Observe different types of Microbial Colonies

2. Identification of Molds

3. Isolation of Bacteria

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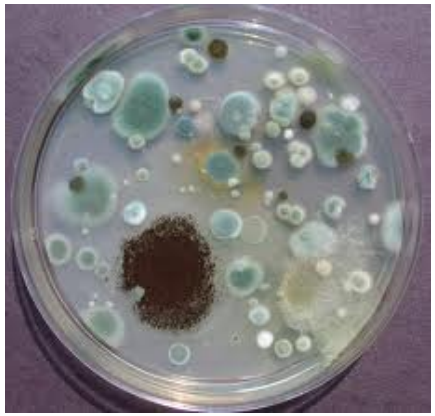
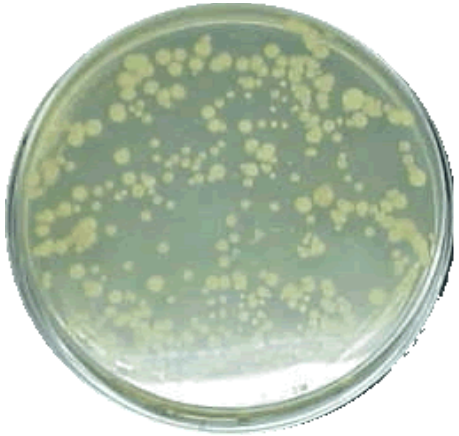
1. **Microbial Colonies**
   - **Colony**: a visible mass of microbial cells originating from one cell.
   - **(3) Types**
     - Large, fuzzy, hairy, 3D, growing upward & touching the lid, various colors-**MOLD**
     - Small, creamy, moist, circular, various colors-**BACTERIA**
     - Medium, dry, crusty, white-beige-**YEAST**

I. Exp. 3: Collection of Microbes

1. Microbial Colonies



Mold Colonies



Bacterial Colonies

Yeast Colonies

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- **Culture Media Used**
  - **Potato Dextrose Agar (PDA)**
    - Supports mainly mold growth
    - pH 5.2-acidic
    - High in carbohydrates
  - **Nutrient Agar (NA)**
    - Supports mainly bacterial growth
    - pH 7.0-neutral
    - High in proteins

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- **Molds**

  Vegetative Structures: obtain nutrients

  - Absorb nutrients through cell wall
  - Can't identify a mold based on vegetative structure

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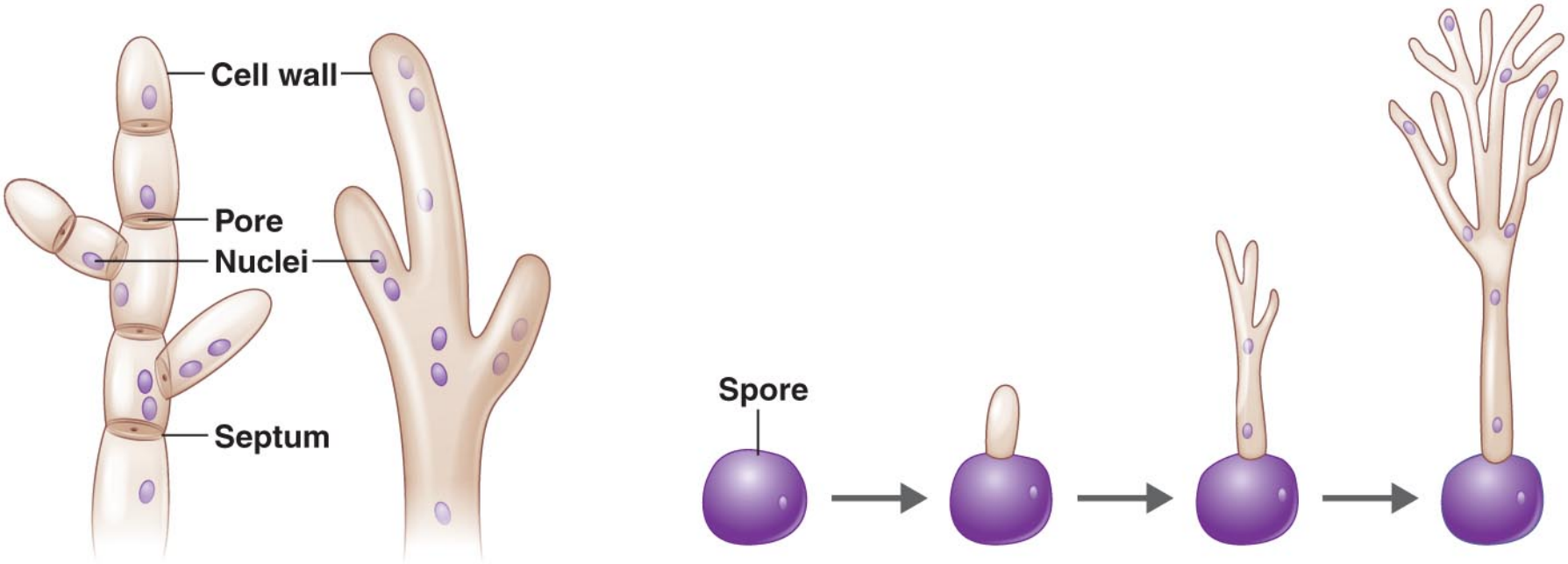
- **Thallus**: body of mold consisting of filaments
- **Hyphae or hypha**: filaments-multicellular
  - Can be very long; elongate at the tips
- **Septa or septum**: cross-walls
- **Coenocytic hyphae:** no cross-walls
- **Mycelium**: filamentous mass visible to the eye

I. Exp. 3: Collection of Microbes

Fig. 12.2 Textbook



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I. Exp. 3: Collection of Microbes

- **Molds–Reproductive Structures: Spores**
  - Molds identified based on **type of spores**
  - 2 Types of Spores:
    - **Sexual Spores:** genetic exchange between 2 parents (meiosis)
      - Not as common in nature
      - To be discussed in lecture
    - **Asexual Spores:** no genetic exchange (mitosis)
      - More common in nature
      - To be discussed in lab

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- **Asexual Spores: 2 Types**

  I. Conidiospores or conidia: 2 types based on size of spore

  1. **Microconidia**
     - **Conidiophore:** supporting structure
       - Holds conidia
       - Examples: *Penicillium sp.* and *Aspergillus sp.*

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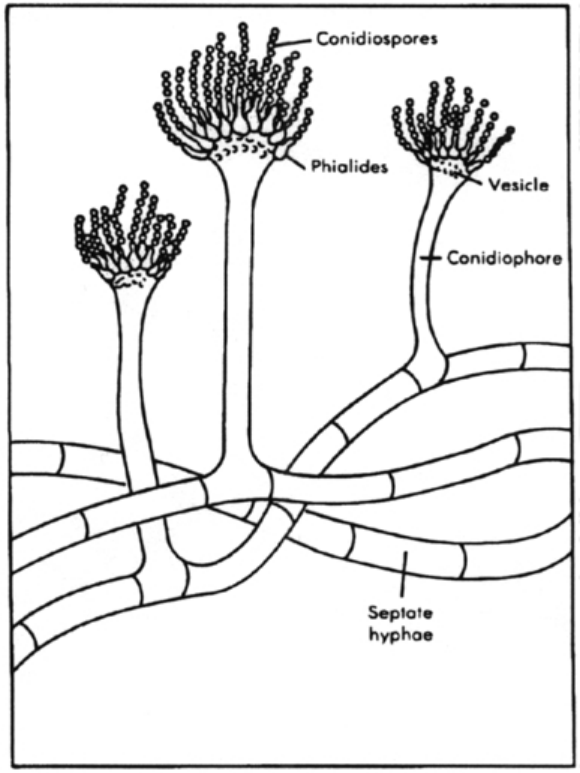
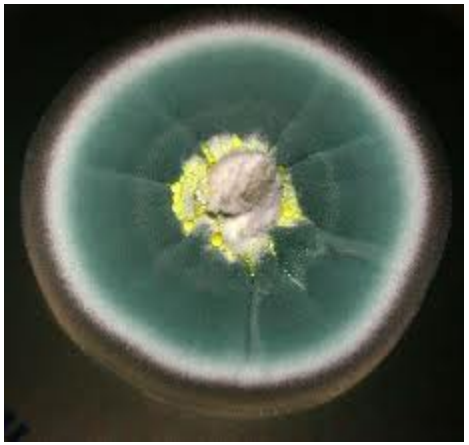
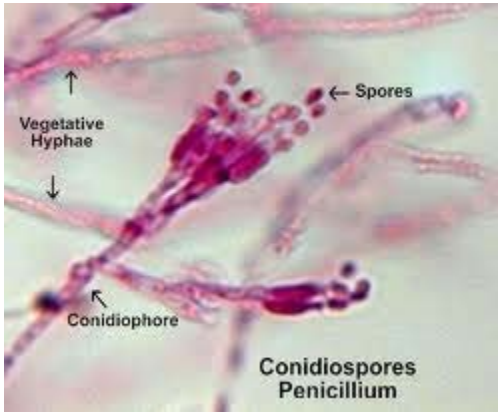
- *Penicillium sp.*







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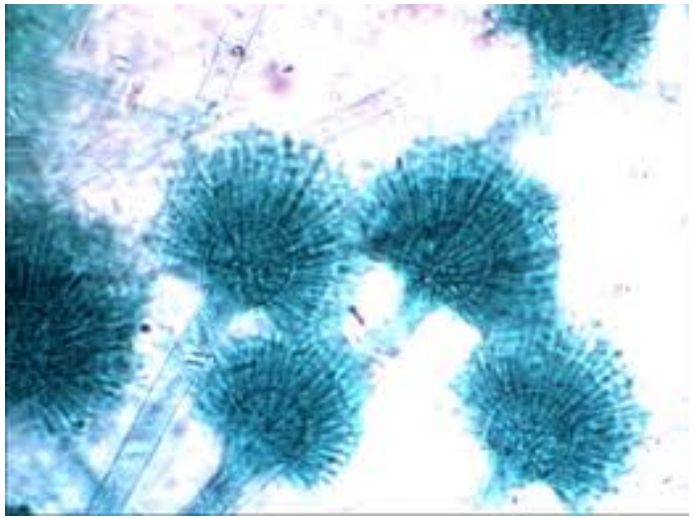
- *Aspergillus sp.*



I. Exp. 3: Collection of Microbes

- **Asexual Spores: 2 Types**

  I. Conidiospores or conidia: 2 types based on size of spore

  2. Macroconidia: much larger than microconidia

  - Examples: *Alternaria, Stemphyllium, Stachybotrys, Curvulvaria, Fusarium, and Microsporum*

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- **Macroconidia**

Alternaria

Curvulvaria

Stemphyllium

Fusarium

Microsporum

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- **Macroconidia**
  Stachybotrys

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- **Asexual Spores: 2 Types**
  - **II. Sporangiospores**
    - **Sporangium:** sac
    - **Sporangiophore:** supporting structure
      - Holds sporangiospores
    - Examples: *Rhizopus sp. and Mucor sp.*

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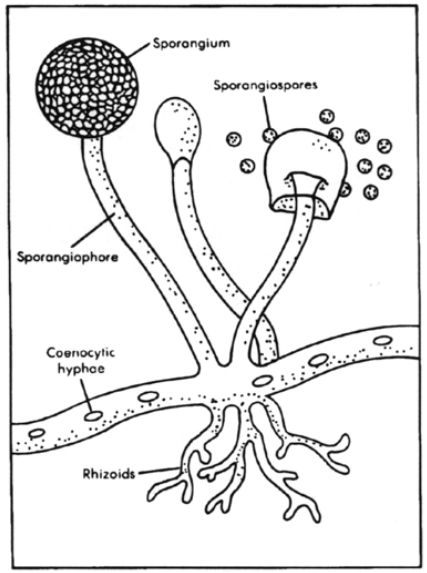
- *Rhizopus sp. and Mucor sp.*



I. Exp. 3: Collection of Microbes

- **How to make a slide under a Biological Safety Cabinet (BSC)**
  - Choose a sporulating mold colony
  - Place 2 drops of ethanol on slide
  - Aseptically remove a small but visible piece of the mold using acceptable tools
  - Add 1 drop of **Lactophenol Cotton Blue**
  - Cover with cover slip
  - Observe under Scan (dim light), Low and High Power if needed

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- **Observing Prepared Slides**
  - Observe prepared mold slides using Scan, Low and High Powers
    - *Rhizopus sp.* –sporangiospores
    - *Penicillium sp.* – condiospores (microconidia)
    - *Aspergillus sp.* – condiospores (microconidia)
  - Observe hyphae
  - Can you tell the difference between sporangiospores and condiospores?

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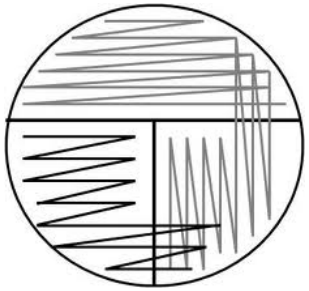
- **Isolation of Bacteria**
  - **Pure Culture:** 1 type of microbe; to get alone
  - Procedure called **Streaking** or **Streaking for Isolation**
  - **T-Streak Method:** to separate individual colonies



  - To be demonstrated by instructor