I. Exp. 3: Collection of Microbes

1. Observe different types of microbial colonies
2. Identification of molds
3. Isolation of molds
4. Isolation of bacteria
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1. Observe different types of microbial colonies
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1. Microbial Colonies
   ◦ **Colony**: a visible mass of microbial cells originating from one cell.
   ◦ (2) Types
     ♦ Large, fuzzy, hairy, 3D, growing upward & touching the lid, various colors—**MOLD**
     ♦ Small, creamy, moist, circular, various colors—**BACTERIA**
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1. Microbial Colonies

Mold Colonies

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

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- Molds Vegetative Structures: obtains nutrients
  - Absorb nutrients thorough 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
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Fig. 12.1 Textbook

(a) Septate hypha
(b) Coenocytic hypha
(c) Growth of a hypha from a spore
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- Molds Reproductive Structures: Spores
  - How molds are identified
  - 2 Types
    - **Sexual**: genetic exchange between 2 parents (meiosis)
      - Not as common in nature
      - To be discussed in lecture
    - **Asexual**: no genetic exchange (mitosis)
      - More common in nature
      - To be discussed in lab
Asexual Spores: 2 Types

1. Conidiospores or conidia: 2 types
   - Microconidia
   - Conidiophore: supporting structure
     - Holds conidia
   - Examples: *Penicillium sp.* and *Aspergillus sp.*
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Penicillium sp.
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- *Aspergillus sp.*
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- Asexual Spores: 2 Types
  1. Conidiospores or conidia: 2 types
     - **Macroconidia:** much larger than microconidia
     - Examples: *Alternaria, Stemphyllum, 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
  2. Sporangiospores
    - Sporangium: sac
    - Sporangiophore: supporting structure
      - Holds sporangiospores
    - Examples: *Rhizopus sp.* and *Mucor sp.*
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- *Rhizopus sp.* and *Mucor sp.*
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- How to make a slide
  - Choose a sporulating mold colony
  - Place 2 drops of ethanol on slide
  - Aseptically remove a small but visible piece of the mold
  - 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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- Isolation of a mold
  - **Pure Culture:** one type of microbe
  - To get alone

- Which plate would you use for molds?
- Procedure to be explained by lab instructor
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- Isolation of Bacteria
  - Pure Culture: one type of microbe
  - Procedure called Streaking or Streaking for Isolation
  - T-Streak: to separate individual colonies

- To be demonstrated by instructor