

Isolation of Fungi

Fungal sample collection from human infections:

1. Skin Scraping

- **Used for:** Superficial fungal infections (e.g., ringworm, athlete's foot).
- **Method:** Skin scrapings are taken from the edge of a lesion using a sterile scalpel or blade. These are then examined under a microscope or cultured to identify fungi.
- **Applications:** Dermatophytes (fungi that infect skin, hair, and nails).



2. Nail Clippings

- **Used for:** Fungal nail infections (onychomycosis).
- **Method:** Small pieces of the infected nail are clipped and sent for culture or microscopic examination.
- **Applications:** Fungi like *Trichophyton* species, *Candida*.



3. Hair Sampling

- **Used for:** Scalp infections (tinea capitis).
- **Method:** Hair samples are plucked from the affected area, along with scales, for direct examination or culture.
- **Applications:** Dermatophyte infections of the scalp (e.g., *Microsporum* or *Trichophyton* species).



4. Swabs

- **Used for:** Mucosal infections (oral, vaginal, or throat candidiasis).
- **Method:** Sterile swabs are used to collect material from the infected site (e.g., mouth, throat, vagina). The swab is then placed in a transport medium for culture.
- **Applications:** Yeasts like *Candida albicans*.



5. Sputum Collection

- **Used for:** Pulmonary fungal infections.
- **Method:** The patient is asked to cough up sputum, which is then examined microscopically or cultured. In cases where a patient cannot produce sputum, an induced sputum sample may be collected.
- **Applications:** Fungi like *Aspergillus*, *Cryptococcus*, and *Histoplasma*.

6. Bronchoalveolar Lavage (BAL)

- **Used for:** Deep lung infections (invasive fungal infections).
- **Method:** A bronchoscope is used to wash a small area of the lungs with saline, and the fluid is collected for fungal culture or molecular testing.
- **Applications:** Invasive infections by *Aspergillus*, *Pneumocystis jirovecii*, and *Histoplasma*.

7. Blood Sampling

- **Used for:** Systemic or invasive fungal infections.
- **Method:** Blood samples are collected to culture fungi or for serological testing (e.g., antigen detection).
- **Applications:** Systemic candidiasis, cryptococcal infections, and other invasive mycoses like *Histoplasma* and *Coccidioides*.

8. Cerebrospinal Fluid (CSF) Collection

- **Used for:** Fungal infections affecting the central nervous system (e.g., cryptococcal meningitis).
- **Method:** A lumbar puncture (spinal tap) is performed to collect CSF. The sample is tested for fungal pathogens via culture or antigen detection.
- **Applications:** *Cryptococcus neoformans*, *Coccidioides*.

9. Biopsy

- **Used for:** Deep tissue fungal infections.
- **Method:** A small piece of tissue is surgically removed from the infected site and sent for histopathological examination or fungal culture.
- **Applications:** *Aspergillus*, *Histoplasma*, *Mucorales* in cases of mucormycosis.

10. Urine Sample

- **Used for:** Fungal infections of the urinary tract.
- **Method:** A urine sample is collected and cultured to detect fungi.
- **Applications:** *Candida* species, especially in cases of candiduria (fungal infection of the urinary tract).